



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



2.6.1 - Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



Marathi

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. (Bachelor of Arts)

Name of Department:

Sr.No.	PO Number	Contents
1	PO1	मराठी विषयाची पदवी घेऊन विद्यार्थी त्याचे व्यावहारिक उपयोजन करू लागला .
2	PO2	विद्यार्थ्यांस प्रकाशन व्यवसायामध्ये काम करण्यास संधी निर्माण झाली.
3	PO3	व्यावसायिक कार्यक्रमांचे निवेदन, सूत्रसंचालन, वक्तृत्व करण्यास सक्षम बनला.
4	PO4	प्रिंट आणि इलेक्ट्रॉनिक मिडियामध्ये काम करू लागलापत्रकार .,निवेदक, संपादक, मुद्रितशोधक, जनसंपर्कअधिकारी आदी.
5	PO5	मराठी साहित्याचा इतिहास समजावून घेऊन भाषेचे व्याकरण, स्पर्धापरीक्षांमधील मराठीचा परिचय झाला.
6	PO6	प्रतिभाशक्ती असणारा विद्यार्थी सकस साहित्याच्या वाचनातून परिपूर्ण बनला.
7	PO7	भाषिक संशोधनासाठीची पूर्वतयारी पदवी आणि पदव्युत्तर

		अभ्यासक्रमातून झाली.
8	PO8	अध्यापन क्षेत्रात जाण्यासाठी रुची निर्माण झाली.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: F.Y. B.Com. (Bachelor of Commerce)

Name of Department: Marathi

Sr.No.	PO Number	Contents
1	PO1:	अध्यापन क्षेत्रात जाण्यासाठी रुची निर्माण झाली.
2	PO2:	विद्यार्थ्यांस प्रकाशन व्यवसाया मध्ये काम करण्यास संधी निर्माण झाली.
3	PO3:	व्यावसायिक कार्यक्रमांचे निवेदन, सूत्रसंचालन, वक्तृत्व करण्यास सक्षम बनला.
4	PO4:	प्रिंट आणि इलेक्ट्रॉनिक मिडिया मध्ये काम करू लागलापत्रकार ., निवेदक, संपादक, मुद्रितशोधक, जनसंपर्क अधिकारी आदीं.

5	PO5	मराठी साहित्याचा इतिहा ससमजावून घेऊन भाषेचे व्याकरण, स्पर्धा परीक्षां मधील मराठीचा परिचय झाला.
6	PO6	प्रतिभाशक्ती असणारा विद्यार्थी सकस साहित्याच्या वाचनातून परिपूर्ण बनला.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: S.Y. B.Sc. Marathi (science)

Name of Department: Marathi

Sr. No.	PO Number	Contents
1	PO 1:	मराठीतील भाषिक कौशल्य आत्मसात केल्याने ते समाजातील घटकांशी प्रभावीपणे संवाद साधू लागले.

2	PO 2:	मराठीसाहित्यवसंस्कृतीयांचामेळघालूनत्याविषयीस माजघटकांशीसंवादसाधूलागले.
3	PO 3:	विद्यार्थ्यांस प्रकाशन व्यवसायामध्ये काम करण्यास संधी निर्माण झाली.
4	PO 4:	व्यावसायिक कार्यक्रमांचे निवेदन, सूत्रसंचालन, वक्तृत्व करण्यास सक्षम बनला.
5	PO 5	मराठीभाषेचेव्याकरण, स्पर्धापरीक्षांमधीलमराठीचापरिचयझाला.
6	PO 6	प्रतिभाशक्तीअसणाराविद्यार्थीसकससाहित्याच्यावाच नातूनपरिपूर्णबनला.
7	PO 7	विद्यार्थ्यांमध्ये मराठी विज्ञान साहित्य विषयी आवड निर्माण झाली.
8	PO 8	विद्यार्थ्यांमध्ये लेखन करण्याची आकलन ,वाचन , .झाली निर्माण क्षमता

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**
Name of Programme: M.A. (Master of Arts)

Name of Department: Marathi

Sr. No.	PO Number	Contents
1	PO 1:	मराठी विषयाची पदवी घेऊन विद्यार्थी त्याचे व्यावहारिक उपयोजन करू लागला.
2	PO 2:	विद्यार्थ्यांस प्रकाशन व्यवसाया मध्ये कामकरण्यास संधी निर्माण झाली.
3	PO 3:	व्यावसायिक कार्यक्रमांचे निवेदन,सूत्रसंचालन , वक्तृत्व करण्यास सक्षम बनला.
4	PO 4:	प्रिंट आणि इलेक्ट्रॉनिक मिडिया मध्येकामकरूलागला ,संपादक ,निवेदक ,पत्रकार . .जनसंपर्कअधिकारीआदीं ,मुद्रितशोधक
5	PO 5	मराठीसाहित्याचाइतिहाससमजावूनघेऊनभाषेचेव्याकरण.स्पर्धापरीक्षांमधीलमराठीचापरिचयझाला ,
6	PO 6	प्रतिभाशक्तीअसणाराविद्यार्थीसकससाहित्याच्यावाचनातूनपरिपूर्णबनला.
7	PO 7	भाषिकसंशोधनासाठीचीपूर्वतयारीपदवीआणिपदव्युत्तरअभ्यासक्रमातूनझाली.
8	PO 8	अध्यापनक्षेत्रातजाण्यासाठीरुचीनिर्माणझाली .
9	PO 9	विद्यार्थ्यांसमराठीभाषाआणिवाङ्मयाचेप्रगतज्ञानप्राप्तझाले.
10	PO 10	विद्यार्थी वाङ्मयीन प्रवाहांचे नीट आकलन करू लागला.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune -
28.**

**Name of Department: Marathi
Course Outcome**

Class: F.Y.B.A (First Semester)

Name of Subject: सामान्यस्तर अभ्यासपत्रिका क्र' ०१.समकालीन मराठी कथा

Subject Code: 11021 A

Sr.No.	CO Number	Contents
1	CO1	साहित्याभ्यासातून जीवनविषयक समज विकसित झाले .
2	CO2	समकालीन मराठी कथांचा अभ्यास केला.
3	CO3	व्यक्तिमत्त्वविकासात भाषेचे स्थान स्पष्ट झाले.
4	CO4	जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित केली.
5	CO5	साहित्याभ्यासातून जीवनविषयक समज विकसित केला.
6	CO6	समकालीन मराठी कथांचा अभ्यास केला. .

Class: F.Y.B.A. (II Semester)

Name of Subject: : एकांकिका मराठी साहित्य. एकांकिका आणि भाषिक कौशल्येविकास, विठ्ठल तो आला आला – पु. ल. देशपांडे , हंडाभर चांदण्या- दत्ता पाटील

Subject Code: 12021

Sr.No.	CO Number	Contents
1	CO1	एकांकिका या साहित्यप्रकारची ओळख करून घेतली.
2	CO2	एकांकिका या साहित्यप्रकाराचे स्वरूप, घटक आणि प्रकार यांची ओळख करून घेतली.
3	CO3	मराठी साहित्यातील निवडक एकांकिकाचे विठ्ठल तो आला व हांडभर चादण्या या एकांकिकाचे अध्ययन केले.

Class S.Y.B.A. III Semester)

Name of Subject: G2 भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार कांदबरी:

Subject Code: 23023 A

Sr.No.	CO Number	Contents
1	CO1	कांदबरी या साहित्यप्रकाराचे स्वरूप . घटक, प्रकारआणि वाटचाल समजून घेतली.
2	CO2	नेमेलेल्या कांदबरीचे आकलन आस्वाद आणि विश्लेषण करण्यास सक्षम बनला.
3	CO3	भाषिक कौशल्य विकास होण्यासाठी मदत झाली.

Class S.Y.B.A. (IV Semester)

Name of Subject: G2 भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्यप्रकार: ललितगद्य

Subject Code: 24023

Sr.No.	CO Number	Contents
1	CO1:	ललितगद्य गद्य स्वरूप साहित्यप्रकाराचे या , समजून वाटचाल आणि प्रकार घटक, घेतली.
2	CO2:	नेमलेल्या अभ्यास पुस्तकातील ललित गद्यचे आकलन आणि विश्लेषण बनला.
3	CO3	भाषिक कौशल्य विकास होण्यासाठी मदत झाली.

Class S.Y.B.A. III Semester)

Name of Subject: S1 आधुनिक मराठी साहित्य- प्रकाशवाटा :
प्रकाश .डॉ

Subject Code: 23021

Sr.No.	CO Number	Contents
1	CO1	आत्मचरित्र या साहित्य प्रकारचे स्वरूप समजावून संकल्पना घेतले.
2	CO2	आत्मचरित्र या साहित्य प्रकाराचे प्रेरणा आणि वाटचाल यांची ओळख करून दिली .
3	CO3	ललित गद्य तील अन्य साहित्यप्रकाराच्या तुलनेत आत्मचरित्र्येचे वेगळेपण समजावून घेतली.
4	CO4	नेमलेल्या या आत्मचरित्राचे आकलन आस्वाद, विश्लेषण आणिकरून.

Class S.Y.B.A. III Semester)

Name of Subject: S आधुनिक मराठी साहित्य .डॉ- प्रकाशवाटा :
आमटे प्रकाश

Subject Code: 24021

Sr.No.	CO	Contents
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	Number	
1	CO1	आत्मचरित्र या साहित्य प्रकारचे स्वरूप समजावून संकल्पना घेतले.
2	CO2	आत्मचरित्र या साहित्यप्रकाराचे प्रेरणा आणि वाटचाल यांची ओळख करून दिली .
3	CO3	ललित गद्य तील अन्य साहित्यप्रकाराच्या तुलनेत आत्मचरित्र्येचे वेगळेपण समजावून घेतली.
4	CO4	नेमलेल्या या आत्मचरित्राचे आकलन आणि आस्वाद, .करणे विश्लेषण करून दिले.

Class S.Y.B.A. सेमिस्टर-III साहित्यविचार S2

Name of Subject: साहित्यविचार

Subject Code: 23022

Sr.No.	CO Number	Contents
1	CO1	भारतीय आणि पाश्चत्य साहित्यातील आधारे साहित्याची संकल्पना प्रयोजन आणि स्वरूप, समजून विचारघेतले..
2	CO2	साहित्याची निर्मितीप्रक्रीया समजावून घेतले.
3	CO 3	साहित्याची भाषा आणि शैली विषयक विचार समजावून घेतले. .

Class S.Y.B.A. -IV साहित्य समीक्षा S2

Name of Subject: साहित्य समीक्षा

Subject Code: 24022

Sr.No.	CO Number	Contents
1	CO:1	साहित्य समीक्षेची संकल्पना स्वरूप,यांचा परिचय करून घेतले..
2	CO:2	साहित्य आणि समीक्षा यांचे परस्पर संबध

		समजावून घेतले.व अभ्यासले ...
3	CO:3	साहित्य प्रकारानुसार समीक्षेचे स्वरूप समजावून घेतले.व अभ्यासले ..
	CO:4	ग्रंथ परिचय समजावून फरक यातील परीक्षण. घेतले..

Class S.Y.B.A. I Semester)

Name of Subject: SEC)) प्रकाशन व्यवहार आणि संपादन

Subject Code: 23025

Sr.No.	CO Number	Contents
1	CO1	प्रकाशन व्यवहार आणि संपादन यांचे उपयोजन समजून घेतली .
2	CO2	ग्रंथनिर्मिती प्रक्रिया समजून घेतली.
3	CO3	संहिता संपादन समजून घेतले.
4	CO4	प्रकाशन संस्था व जाहिरात हे घटक समजले.

Class S.Y.B.A. IV उपयोजित लेखन कौशल्ये SEC

Name of Subject: उपयोजित लेखन कौशल्ये SEC

Subject Code: 24025

Sr.No.	CO Number	Contents
1	CO1	जाहिरात यासाठी संपादन आणि लेखन मुलाखत, .मिळविणे कौशल्ये आवश्यक
2	CO2	जाहिरात यासाठी संपादन आणि लेखन मुलाखत, .मिळविणे प्रशिक्षण आवश्यक
3	CO3	जाहिरात यासाठी संपादन आणि लेखन मुलाखत, मिळविणे कौशल्ये उपयोजन आवश्यक
4	CO4	माहितीपर नोंदींची ओळख करून घेतली.

T.Y.B.A. (Third Year) Marathi

Class T.Y.B.A. V :

आधुनिकमराठीसाहित्यआणिव्यवहारिकवउपयोजितमराठी, (G3)

Name of Subject: V

आधुनिकमराठीसाहित्यआणिव्यवहारिकवउपयोजितमराठी Subject

Code: 35023

Sr.No.	CO Number	Contents
1	CO:1	आधुनिक मराठी साहित्यातील विविध वाड.मय प्रकारांचा परिचय वाढला.
2	CO:2	प्रवास वर्णन या साहित्य प्रकारचा परिचय झाला
3	CO:3	भाषेचा यथायोग्य वापर करण्याची क्षमता विकसित झाली.
4	CO:4	ग्रंथ परीक्षण करण्याची क्षमता विकसित झाली.

Class T.Y.B.A. VI : -मराठी भाषिक कौशल्य विकास आणि आधुनिक मराठी साहित्य प्रकार रूप कवितेचे **G3**

Name of Subject: मराठी भाषिक कौशल्य विकास आणि आधुनिक मराठी साहित्य रूप कवितेचे

Subject Code: 36023

Sr.No.	CO Number	Contents
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1	CO:1	मराठी साहित्य कौशल्य विकास आणि शासन व्यवहार यांची ओळख झाली.
2	CO:2	राज्यघटनेतील भाषा विषयक तरतुदी माहिती करून घेतली.
3	CO:3	मराठी राजभाषा अधिनियम माहिती झाली .
4	CO:4	मराठी कवितेचे स्वरूप आणि वाटचाल समजली.

Class T.Y.B.A. V : मध्ययुगीन मराठी वाङ्मयाचा स्थूल इतिहास
इ.स.प्रारंभ ते १६०० **S3**

Name of Subject: मध्ययुगीन मराठी वाङ्मयाचा स्थूल इतिहास
इ.स.प्रारंभ ते १६०० **S3**

Subject Code: 35021

Sr.No.	CO Number	Contents
1	CO:1	साहित्य इतिहासाची संकल्पना मराठी साहित्याचा उगम समजावून घेतला.
2	CO:2	यादवकाल आणि बहामनी काळातील साहित्य निर्मिती समजावून घेतली.
3	CO:3	महानुभाव व वारकरी संप्रदायातील साहित्याच्या प्रेरणा ,प्रवृत्ती आणि स्वरूप समजावून घेतले.

Class T.Y.B.A. VI : मध्ययुगीन मराठी वाङ्मयाचा स्थूल
इतिहास इ.स. १८१७ ते १६०१ S3

Name of Subject: मध्ययुगीन मराठी वाङ्मयाचा स्थूल इतिहास
इ.स. १८१७ ते १६०१ **S3**

Subject Code: 36021

Sr.No.	CO	Contents
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	Number	
1	CO:1	शिवकाल आणि पेशवेकालातील वाङ्मयीन मराठीचे स्वरूप समजले.
2	CO:2	संत तुकाराम ,मोरोपंत ,अनंतफंदी ,रामदास , ,संत .इ प्रभाकर ,रामजोशी या पंडित व शाहीर कवींचे योगदान अभ्यासले.
3	CO:3	बखर वाङ्मय प्रेरणा व स्वरूप समजले.
4	CO:4	सभासद बखर बखर पानिपत ,बखर भाऊसाहेबांची , शिव आज्ञापत्र शिवछत्रपतींचे अभ्यासले ..

Class T.Y.B.A सेमिस्टर -V Course 3029:भाषाविज्ञान(S4)

Name of Subject: सेमिस्टर -V Course

3029:भाषाविज्ञान(S4)

Subject Code: 35022

Sr.No.	CO Number	Contents
1	CO1:	भाषाकुलाची संकल्पना जाणून घेऊन मराठी भाषेच्या उत्पत्तीचा अभ्यास केला.
2	CO2:	मराठी भाषेचा उत्पत्तीकाळ जाणून घेऊन तत्कालीन भाषिक स्थित्यंतराचा आढावा घेतला .
3	CO3:	१३ व्या व १७ व्या शतकातील मराठी भाषेची स्थिती गती जाणून घेण्याची क्षमता प्राप्त झाली..
4	CO4:	भाषा म्हणून मराठीच्या वाटचालीचा ऐतिहासिक आढावा घेता येऊ लागला.

Class T.Y.B.A सेमिस्टर -VI S4 वर्णनात्मक भाषा विज्ञान

DSE 2 D (3+1)

Name of Subject: सेमिस्टर -VI S4 वर्णनात्मक भाषा विज्ञान

Subject Code: 36022

Sr.No.	CO Number	Contents
1	CO:1	रूपविन्यास आणि मराठीची रूप व्यवस्था समजावून घेणे.
2	CO:2	वाक्यविन्यास आणि मराठी भाषेसंदर्भात वाक्यव्यवस्थेचा परिचय करून देणे .
3	CO:3	अर्थविन्यास या संकल्पनेचा भाषा विज्ञानाच्या अंगाने परिचय करून देणे .
4	CO:4	क्षेत्रभेटीचे व संशोधन प्रकल्पाचे महत्व सांगणे.

Class T.Y.B.A सेमिस्टर -V कार्यक्रम संयोजनातील भाषिक कौशल्ये १ भाग : **SEC**

Name of Subject: सेमिस्टर -V कार्यक्रम संयोजनातील भाषिक कौशल्ये १ भाग : **SEC**

Subject Code: 35025

Sr.No.	CO Number	Contents
1	CO:1	मराठी साहित्य भाषिक कौशल्ये विकास व यांची माहिती झाली .
2	CO:2	कार्यक्रमाचे स्वरूप व प्रकार समजून घेतली .
3	CO:3	कार्यक्रम संयोजनातील भाषिक कौशल्ये अवगत केली .
4	CO:4	कार्यक्रम नियोजन कौशल्ये यांची सूत्रसंचालन, . मिळवली
	CO:5	आयोजक व कार्य यांचे निवेदक, जाहिरातदार, प्रायोजक, महत्त्वसमजून घेतली .

Class T.Y.B.A सेमिस्टर -VI कार्यक्रम संयोजनातील भाषिक कौशल्ये भाग : २ **SEC**

Name of Subject: सेमिस्टर -VI कार्यक्रम संयोजनातील भाषिक
कौशल्येभाग : २ **SEC**

Subject Code: 36025

Sr.No.	CO Number	Contents
1	CO:1	कार्यक्रम संयोजनातील लेखन कौशल्ये संपादन केली.
2	CO:2	कार्यक्रम संयोजनातील भाषिक कौशल्ये अवगत झाली
3	CO:3	आभासी कार्यक्रम संयोजन अवगत झाले.
4	CO:4	निमंत्रण पत्रिका लेखन अहवाल,लेखन मानपत्र, .समजली कौशल्ये
	CO:5	कवी संमेलन ,पुस्तक प्रदर्शन ,मराठी भाषा दिन या कार्यक्रमांचे यशस्वी संयोजन केले.

F.Y.Bcom.

Class: F.Y.Bcom. **117 A** (First Semester)

Marathi

Name of Subject: : सेमिस्टर-I भाषा, साहित्य आणि
कौशल्यविकास

उत्कर्षवाटा

संपादक- प्रा. शिरीष लांडगे, प्रा. तुकाराम रोंगटे, प्रा.राजेंद्र सांगळे.

Subject Code: 117A

Sr.No.	CO Number	Contents
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1	CO1:	विविध क्षेत्रातील मराठीचा अभ्यास करण्यासाठी प्रसारमाध्यमाचे स्वरूप व त्यातील भाषणव्यवहार समजावून देणे.
2	CO2:	प्रसारमाध्यमातील विविध लेखन प्रकारांचा अभ्यास वा प्रत्यक्ष लेखन अभिरुचीचा विकास करणे.
3	CO3:	वाणिज्य शाखा व मराठी भाषा यातील परस्परसंबंधाचे मूल्यमापन करणे
4	CO4:	साहित्याभ्यासातून जीवन विषयक समज विकसितकरणे.
	CO5:	मराठी साहित्यातील भिन्न भिन्न प्रवाह आणि प्रकार ओळख करून देणे.

Class: F.Y.Bcom भाषा आणिकौशल्यविकास

Name of Subject: : सेमिस्टर-II भाषा आणिकौशल्यविकास

Subject Code: 117B

Sr.No.	CO Number	Contents
1	CO1:	विद्यार्थ्यांस शुद्धलेखनविषयक नियमांचा परिचय करून देणे
2	CO2:	व्यक्तिमत्त्व विकासात भाषेचे स्थान स्पष्ट करणे.
3	CO3	विद्यार्थ्यांना पारिभाषिक संज्ञांचा परिचय देणे .
4	CO4:	जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे
	CO5:	भाषिक कौशल्ये विकास करणे.

Marathi:S.Y. B.Sc. (science)

Class (First Semester) Marathi:S.Y. B.Sc. (science)

Name of Subject: सेमिस्टर-I उपयोजित मराठी S.Y.B.sc

Subject Code- 83111

Sr.No.	CO Number	Contents
1	CO1:	विद्यार्थ्यांस शुद्धलेखनविषयक नियमांचा परिचय करून देणे
2	CO2:	व्यक्तिमत्त्व विकासात भाषेचे स्थान स्पष्ट करणे.
3	CO3	विद्यार्थ्यांना पारिभाषिक संज्ञांचा परिचय देणे .
4	CO4:	जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे
5	CO5:	भाषिक कौशल्ये विकास करणे.

Class (Second Semester) Marathi:S.Y. B.Sc. (science)

Name of Subject: सेमिस्टर-II मराठी कथा दर्शन

Subject Code- 83112

Sr.No.	CO Number	Contents
1	CO:1	साहित्य विषयक अभिरुची विकसित झाले ..
2	CO:2	मराठी भाषा संबधाची परस्पर यांच्या आणि साहित्य, . देणे करून जाणीव
3	CO:3	साहित्य विषयक अभ्यासातून जीवनविषयक समज विकसित झाले ..
4	CO:4	विज्ञान साहित्य विषयक आकलन क्षमता वाढवणे .
5	CO5:	भाषिककौशल्ये विकास करणे.
	CO6:	विविध क्षेत्रातील मराठीचा अभ्यास करण्यासाठी प्रसारमाध्यमाचे स्वरूप व त्यातील भाषण व्यवहार समजावून देणे.

Marathi: M.A

Class (First Semester) Marathi: M.A

Name of Subject: सेमिस्टर-I भाषाव्यावहार आणि भाषिक कौशल्ये भाग १

Subject Code- 10401

Sr.No.	CO Number	Contents
1	CO:1	विविध स्तरावरील भाषिक कौशल्ये व क्षमता विकसित झाल्या.
2	CO:2	भाषाव्यवहाराचे औपचारिक आणि अनौपचारिक क्षेत्रनिहाय स्वरूप समजावून घेतल्या.
3	CO:3	व्यक्तिमत्त्व विकासासाठी भाषिक कौशल्ये आत्मसात करणे.
4	CO:4	प्रकाशन व्यवसायाचे स्वरूप समजले.

Class (First Semester) Marathi: M.A

Name of Subject: सेमिस्टर-I अर्वाचीन मराठी वाङ्.मयाचा इतिहास (१८१८ ते १९२०)

Subject Code -10402

Sr.No.	CO Number	Contents
1	CO:1	अर्वाचीन मराठी भाषेचा परिचय करून देणे.
2	CO:2	मराठी भाषेच्या उत्पत्तीविषयीच्या विविध उपपत्ती समजावून घेणे.

Class (First Semester) Marathi: M.A**Name of Subject: सेमिस्टर-I भाषाविज्ञान : वर्णनात्मक****Subject Code -10403**

Sr. No.	CO Number	Contents
1	CO:1	भाषेचे स्वरूप व कार्ये, भाषेच्या अभ्यासाचे महत्त्व, भाषेच्या अभ्यासाची प्रमुख अंगे जाणून घेणे.
2	CO:2	स्वनविज्ञान, स्वनिम संकल्पना आणि मराठीची स्वनिम व्यवस्था समजावून घेणे.
3	CO:3	स्वनिम संकल्पना आणि मराठीची रुपिम व्यवस्था समजावून घेणे.
4	CO:4	वाक्यविन्यास व अर्थविन्यास याभाषा वैज्ञानिक संकल्पनांचा मराठीच्या संदर्भात स्थूल परिचय देणे.

Class (First Semester) Marathi: M.A**Name of Subject: सेमिस्टर-I ग्रामीण साहित्य****Subject Code -10404 :**

Sr. No	CO Number	Contents
1	CO:1	स्वातंत्र्योत्तर मराठी वाङ्मयाचे स्वरूप समजावून देणे.
2	CO:2	गावगाड्याची जडणघडण समजावून देणे.
3	CO:3	ग्रामीण साहित्यातील सामाजिक आणि सांस्कृतिक आकृतिबंध समजावून घेणे.
4	CO:4	ग्रामीण साहित्याचे मराठी साहित्याला असलेले योगदान स्पष्ट करणे.

Class First Year: II- Semester Marathi: M.A

Name of Subject : भाषाव्यावहार आणि भाषिक कौशल्ये भाग 2
Subject Code - २०४०१

Sr. No	CO Number	Contents
1	CO:1	मराठीच्या प्रमाणभाषेचे लेखन व मुद्रितशोधन या संकल्पना समजावून प्रत्यक्ष उपयोजन करता येणे.
2	CO:2	मुलाखत लेखनाची तंत्रे व कौशल्ये यांचा वापर करता येणे.
3	CO:3	अर्जलेखन व पत्रलेखनाचा व्यावहारिक वापर करता येणे.
4	CO:4	भाषांतरआणि अनुवादप्रक्रिया यांची. तात्विक व व्यावहारिक माहिती देणे.
5	CO:5	निवेदन कौशल्याची तात्विक व व्यावहारिक माहिती देणे.

Class First Year: II- Semester Marathi: M.A

Name of Subject : अर्वाचीन मराठी वाङ्.मयाचा इतिहास
(१९२० ते २०१०)

Subject Code - २०४०२

Sr.No.	CO Number	Contents
1	CO:1	मराठीतील विविध सामाजिक राजकीय अभ्यास करणे.
2	CO:2	मराठी वाङ्.मयाचा आणि कथा कांदबरी, नाटक, कवितावाङ्.मयाचा परिचय करून देणे.

Class First Year: II- Semester Marathi: M.A

Name of Subject : भाषाविज्ञान :सामाजिक

Subject Code -२०४०३

Sr.No	CO Number	Contents
1	CO:1	भाषा म्हणजे काय व तिचे मानवी जीवनातील कार्य कोणते ते समजून घेणे.
2	CO:2	सामाजिक भाषाविज्ञानाचे उपयोजन करणे.

Class First Year: II- Semester Marathi: M.A

Name of Subject : दलित साहित्य

Subject Code -२०४०४

Sr.No	CO Number	Contents
1	CO:1	स्वातंत्र्यप्राप्ती नंतरच्या कालखंडात दलित साहित्याच्या निर्मितीची कारणे, परंपरा, आणि यासाहित्याने दिलेल्या आव्हानांचा अभ्यास करणे.
2	CO:2	दलित साहित्यातून व्यक्त होणा-या वेदनांचे व विद्रोहाचे स्वरूप जाणून घेणे.
3	CO:3	दलित साहित्याने निर्माण केलेल्या विविध वाङ्मय प्रकारांच्या विकासांचे मुल्यामापन करणे.

Marathi: M.A

Class Second Year: III- Semester Marathi: M.A

Name of Subject : प्रसारमाध्यमासाठी लेखन कौशल्ये : भाग -१

Subject Code -30401

Sr.N	CO	Contents
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o.	Numb er	
1	CO:1	प्रसारमाध्यमांकरिता लेखन कौशल्य आत्मसात करणे.
2	CO:2	प्रसारमाध्यमांचे समाजातील महत्त्व विशद करणे.
3	CO:3	प्रसार माध्यमांच्या स्वरूपाचे ज्ञान करून देणे.
4	CO : 4	दृक्य श्राव्य नव माध्येमासाठी लेखन करण्याची क्षमता विकसित करणे.

Class Second Year: III- Semester Marathi: M.A

Name of Subject : साहित्य: समीक्षा

Subject Code -30402

Sr.N o.	CO Numb er	Contents
1	CO1:	साहित्यसमीक्षा व्यवहाराची समजवाढीस लावणे.
2	CO2:	समीक्षेची संकल्पना समजावून घेणे.
3	CO3:	समीक्षा व्यवहारातील मूल्य कल्पनांचा परिचय करून घेणे.
4	CO4:	विविध समीक्षा पद्धती मागील विचारव्यूह, दृष्टी समजावून घेणे.
5	CO5:	समीक्षा करण्याची दृष्टी व क्षमता विकसित करणे.
6	CO:6	संशोधनाची संकल्पना , प्रयोजने आणि विविध संशोधन पद्धती समजावून घेतले..

Class Second Year: III- Semester Marathi: M.A

Name of Subject : नेमलेल्या अर्वाचीन साहित्यकृतीचा अभ्यास
भाग -१

Subject Code -30404

Sr.No.	CO Number	Contents
1	CO1:	अर्वाचीन कालखंडातील साहित्यप्रकार लक्षात स्वरूप व सन्कल्पना, घेतले..
2	CO2:	साहित्यकृतीची वैशिशिष्ट्य जाणून घेतले..
3	CO3:	साहित्यकृतील वाङ्मयीन मुल्ये आणि जीवनमूल्ये जाणून घेणे.
4	CO4:	कालखंड आणि साहित्यकृतीच्या निर्मितीला अनुबंध शोधणे .

Class Second Year: III- Semester Marathi: M.A

Name of Subject : लोकसाहित्याची मूलतत्वे आणि मराठी
लोकसाहित्य

Subject Code -30405

Sr.No.	CO Number	Contents
1	CO1:	लोकसाहित्याचे स्वरूप समजावून घेणे.
2	CO2:	लोकसाहित्याची व्यापकता व सर्वसमावेशकता लक्षात आणून देणे.

Class Second Year: IV- Semester Marathi: M.A

Name of Subject : प्रसार माध्यमांसाठी लेखन कौशल्ये : भाग -२

Subject Code -40401

Sr.	CO	Contents
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No.	Number	
1	CO1	प्रसारमाध्यमांत सेवेची संधी मिळविण्यासाठी विद्यार्थ्यांची भाषिक क्षमता विकसित करणे.
2	CO2	विविध प्रसारमाध्यमांची त्यांना व्याख्या करता येईल

Class Second Year: IV- Semester Marathi: M.A
Name of Subject : साहित्यसंशोधन
Subject Code -40402

Sr. No.	CO Number	Contents
1	CO1	संशोधनाची संकल्पना, प्रयोजने आणि विविध संशोधन पद्धती समजावून घेणे.
2	CO2	वाङ्मयीन संशोधनाच्या विविध अभ्यास क्षेत्रांचा परिचय करून घेणे.
3	CO3	आंतर विद्याक्षेत्रीय संशोधनाचे स्वरूप आणि महत्त्व लक्षात घेणे.
4	CO4	मराठी साहित्यसंशोधकांची परंपरा समजावून घेणे.

Class Second Year: IV- Semester Marathi: M.A
Name of Subject : नेमलेल्या अर्वाचीन साहित्यकृतीचा अभ्यास
भाग २-Subject Code -40404

Sr. No.	CO Number	Contents
1	CO1	अर्वाचीन कालखंडातील साहित्यप्रकार लक्षात स्वरूप व सन्कल्पना, घेतले..

2	CO2 :	विविध वाङ्मयीन. कृतीतून लेखकाचे योगदान व त्याचे तौलनिक आकलन करणे.
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Class Second Year: IV- Semester Marathi: M.A

Name of Subject : लोकसाहित्याची मूलतत्वे आणि मराठी
लोकसाहित्य

Subject Code -40405

Sr. No.	CO Number	Contents
1	CO1 :	लोकसाहित्यातील विविध प्रकार समजावून घेणे.
2	CO2 :	लोकसाहित्यातील सामाजिक, धार्मिक सांस्कृतिक जाणीवा स्पष्ट झाले ..



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



Hindi

F.Y.B.COM Hindi (sem – 1)

C.O

- १) विद्यार्थियों को हिंदी काव्य साहित्य से परिचित कराना ।
- २) हिंदी कहानी साहित्य से अवगत कराना।
- ३) हिंदी भाषा द्वारा लेखन की ओर रुझान बढ़ाना ।
- ४) हिंदी भाषा द्वारा संवाद कौशल्य विकसित कराना ।
- ५) विज्ञापन लेखन कौशल्य विकसित कराना ।
- ६) हिंदी कंप्यूटिंग का परिचय देना ।

P.O

- १) काव्य साहित्य से अध्ययन से काव्य सृजन की प्रेरणा विकसित होती है ।
- २) हिंदी कहानी साहित्य से कहानी लेखन के रुझान को बढ़ावा देना और कल्पना शक्ति का विकास होता है ।
- ३) हिंदी भाषा के विशुद्ध लेखन का कौशल्य विकसित होता है ।
- ४) मौलिक लेखन का विकास होता है ।
- ५) हिंदी विज्ञापन लेखन से विश्व स्तर पर ज्ञान के विविध स्रोत उपलब्ध होते हैं ।

F.Y.B.A. HINDI(sem – 1)

C.O

- १) विद्यार्थियों को हिंदी काव्य साहित्य से परिचित कराना ।
- २) हिंदी कहानी साहित्य से अवगत कराना ।
- ३) हिंदी भाषा द्वारा लेखन की ओर रुझान बढ़ाना ।
- ४) हिंदी भाषा में अनुवाद संबंधी जानकारी देना ।
- ५) हिंदी कंप्यूटिंग का परिचय देना ।
- ६) हिंदी भाषा में संवाद कौशल्य विकसित कराना ।

P.O

- १) काव्य साहित्य से अध्ययन से काव्य सृजन की प्रेरणा विकसित होती है ।
- २) लेखन क्षमता और कल्पना शक्ति का विकास होता है ।
- ३) हिंदी भाषा के विशुद्ध रूप को स्थायित करने में साध्यता होती है ।
- ४) अनुवाद की प्रक्रिया समझने से अनुवाद कार्य में निपुणता आती है ।
- ५) लक्ष्य भाषा और स्तोत भाषा की ज्ञान वृद्धि होती है ।
- ६) कंप्यूटर के कारण विश्व स्तर पर ज्ञान के विविध स्तरों के स्तोतों की सामग्री उपलब्ध होती है ।

F.Y.B.COM (Sem-2)

C.O

- १) छात्रों को हिंदी काव्य साहित्य का परिचय देना।
- २) हिंदी कहानी साहित्य से अवगत करना।
- ३) हिंदी भाषा द्वारा संवाद कौशल विकसित करना।

- ४) विज्ञापनलेखनकेप्रकारोंकोअवगतकराना।
- ५) अनुवादकास्वरूपसेअवगतकरना।
- ६) पारिभाषिकशब्दावलीसेअवगतकराना।

P.O

- १) काव्यसाहित्यकेअध्ययनसेकाव्यसृजनकीप्रेरणाकोबढ़ावादेना।
- २) हिंदीकहानीसाहित्यसेकहानीलेखनकेरुझानकोबढ़ावादेनाऔरकल्पना शक्तिकाविकासहोता है।
- ३) मौलिकलेखनकाविकासहोताहै।
- ४) हिंदीविज्ञापनलेखनप्रकारोंकेअध्ययनसेछात्रोंमेंसृजनात्मकबढ़जातीहै।
- ५) अनुवादकेमाध्यमसेदोभाषाओंकाज्ञानहोजाताहै।
- ६) छात्रोंमेंहिंदीशब्दोंकाशब्दभंडारवृद्धिगतहोताहै।

F.Y.B.A. (Sem – २)

C.O

- १) छात्रोंकोहिंदीकाव्यसाहित्यकापरिचयदेना।
- २) हिंदीकहानीसाहित्यसेअवगतकराना।
- ३) निबंधलेखनकौशलकोविकसितकरना।
- ४) छात्रोंकोविज्ञापनलेखनसेअवगतकरना।

P.O

- १) हिंदीकाव्यसाहित्यकेअध्ययनसेकाव्यसृजनकीप्रेरणाविकसितहोतीहै।

- २) कहानीसाहित्यकेअध्ययनसेकहानीलेखनऔरकल्पनाशक्तिकाविकास होताहै।
- ३) निबंधलेखनकौशलकाविकासहोताहै।
- ४) हिंदीविज्ञापनलेखनमेंसृजनात्मकबढ़जातीहै।

S.Y.B.A. Hindi (SEM -3)

S-1काव्यशास्त्र

C.O

- १) भारतीयकाव्यशास्त्रकापरिचयदेना।
- २) काव्यभाषातत्वआदिअवगतकराना।
- ३) काव्यकेतत्व, शब्द- शक्तियोंकापरिचयदेना।
- ४) रसकास्वरूपसमझाना।
- ५) भारतीयकाव्यशास्त्रमेंरुचिपैदाकरनातथाआलोचनात्मकदृष्टिकोविकसितकराना।

P.O

- १) काव्यमें कौनसे हेतु का आकलन हो जाता है।
- २) काव्य किसे कहते हैं और काव्य कैसे होना चाहिए यह अवगत हो जाता है।
- ३) काव्य में शब्द ताकत और सार्थकता पर जोर दिया जाता है।
- ४) काव्य के माध्यम से रसानुभूति होती है।
- ५) भारतीय काव्य कितना रुचकर है, तथा जागृती का एक माध्यम है। यह भी स्पष्ट हो जाता है।

S.Y.B.A. Hindi(Sem-3)

S-२ मध्ययुगीन काव्य तथा उपन्यास साहित्य

C.O

- १) कबीर के साहित्य का परिचय देना।
- २) मीराबाई के काव्य से परिचित कराना।
- ३) भारतीय उपन्यास की अवधारणा समझाना।
- ४) उपन्यास कृति की मूल्यांकन कला विकसित कराना।
- ५) साहित्य कृतियों के प्रस्तुत जीवन मूल्यों का आत्मविस्तृत कराना।

P.O

- १) कबीर के साहित्य के द्वारा जागृती हो जाती है।
- २) मीराबाई के काव्य से समाज दर्शन हो जाता है।

- ३) भारतीय उपन्यासके माध्यमसे कई मात्रामें अच्छे विचार सामने आते हैं।
- ४) उपन्यासकृतिका मूल्यांकन करनेके बाद कलाका भी विकास हो जाता है।
- ५) साहित्यकृतियां मानव जीवनके मूल्योंको विकसित करती हैं।

S.Y.B.A. Hindi (Sem- 3)

G-२ आधुनिक काव्य, कहानी तथा व्यावहारिक हिंदी

C.O

- १) छात्रोंको काव्यसाहित्यसे परिचित कराना।
- २) छात्रोंको कहानीसाहित्यसे परिचित कराना।
- ३) हिंदीकर कव्यवस्थासमझाना।
- ४) शब्दयुग्मका अर्थलिखकर प्रत्यक्षबोध कराना।
- ५) संक्षेपणलेखनका प्रत्यक्षबोध कराना।
- ६) सर्जनात्मकताका विकास कराना।

P.O

- १) काव्यनिर्मितीके हेतुका पता चल जाता है।

- २) कहानीकेमाध्यमसेपटकथाकिसप्रकारलिखीजासकतीहै, उसकहानीकाप्रकारज्ञात होजाताहै।
- ३) हिंदीकरक- व्यवस्थाकेकारनहिंदीभाषाकिपकड़मजबूतहोतीहै।
- ४) सार्थकशब्दऔरवाक्यद्वाराभाषासमृद्धबनतीहै।
- ५) संक्षेपणलेखनकेमाध्यमसेकमसमयमेंज्यादासिखनेकोमिलताहै।
- ६) सर्जनात्मकताकेकारणव्यक्तिविकासहोजाताहै।

S.Y.B.A. Hindi(Sem-3)

SEC. २A अनुवादस्वरूपएवंव्यवहार

C.O

- १) अनुवादकौशलसेछात्रोंकोअवगतकराना।
- २) अनुवादकास्वरूपसमझाना।
- ३) अनुवादक्षेत्रसेपरिचयकराना।
- ४) हिंदीसेमराठीमेंप्रत्यक्षअनुवादकराना।
- ५) अंग्रेजीसेहिंदी,मराठीमेंअनुवादकौशलकाविकासकराना।

P.O

- १) अनुवादकेद्वाराविद्यार्थियोंकीज्ञातक्षमताबढ़जातीहै।
- २) अनुवादकेमाध्यमसेदोभाषाओंकाज्ञानहोजाताहै।
- ३) अनुवादकेद्वाराएकभाषाकेविचारदूसरीभाषामेंलेजातेहैं।
- ४) हिंदीसेमराठीमेंप्रत्यक्षअनुवादकरनेसेदोभाषाकीजानकारीहोजातीहै।
- ५) एकभाषाकेअच्छेविचारविभिन्नभाषामेंअनुवादकेमाध्यमसेविस्तृतहोजातेहैं।

S.Y.B.A. Hindi(Sem-3)

M.I.L.

C.O

- १) हिंदीवर्णमालालिपिकापारिचयकराना।
- २) वर्णोंकाउच्चारणऔरवर्गीकरणकापरिचयकराना।
- ३) लघुकथाओंद्वाराभाषाकौशलकाशिक्षणदेना।
- ४) भाषाकौशलशिक्षणकोअवगतकराना।

P.O

- १) भाषाकीशुद्धताकोबढ़ावादेना।
- २) भाषाउच्चारणमेंशुद्धताकीसहायताकरना।
- ३) लघुकथाओंकेमाध्यमसेभाषामेंरूचिउत्पन्नहोजाना।
- ४) भाषाकीशुद्धताकीजानकारीहोजाना।

S.Y.B.A. (Sem – 4)

S-1साहित्यकेभेद

C.O

- १) छात्रोंकोसाहित्यकेभेदसेअवगतकराना।
- २) छात्रोंकोपद्यभेदसेअवगतकराना।
- ३) महाकाव्य, खंडकाव्यऔरमुक्तककाव्यकापरिचयकराना।
- ४) नाटककास्वरूपसमझाना।
- ५) छात्रोंमेंनाट्यअभिनयकीरूचिविकसितकरना।

P.O

- १) काव्यसाहित्यकेभेदकाज्ञानहोताहै।
- २) पद्यभेदकाव्यसाहित्यकेविविधकाव्योंकाज्ञानवृद्धिगतकरताहै।
- ३) हिंदीकाव्यसाहित्यमेंप्रबंधकाव्यकेविविधभेदोंकाज्ञानविकसितहोताहै।
- ४) नाटक के स्वरूप को जाननेसे नाटक के भेद और तत्व को समजा जा सकता है।
- ५) नाट्य अभिनय की रूचि विकसित करने से छात्रों में सृजनात्मक वृद्धिगत होती है।

S.Y.B.A. (Sem – 4)

S-2मध्ययुगीनकाव्यतथानाटकसाहित्य

C.O

- १) रहीमकेकाव्यकाबोधकरना।
- २) बिहारीकीकाव्यअभिव्यंजनासमझाना।
- ३) हिंदीनाटकऔररंगमंचसेअवगतकरना।
- ४) छात्रोंमेंअभिनयगुणविकसितकरना।
- ५) नाट्यालोचनासेअवगतकरना।

P.O

- १) रहीमकेसाहित्यकेद्वारासमाजजाग्रतिहोजातीहै।
- २) बिहारीकेकाव्यसेसमाजदर्शनहोजाताहै।
- ३) हिंदीनाटकऔररंगमंचमाध्यमसेनाटककेप्रतिरुचीऔरसृजनता विकसितहोतीहै।
- ४) अभिनयकाअध्ययनछात्रोंमेंरुची, अभिनयनिपुणताऔरसृजनात्मकता जागृतकरताहै।
- ४)नाट्यआलोचनाद्वारानाट्यसाहित्योंकाविकासहोताहै।

S.Y.B.A. (Sem – 4)

G-2आधुनिकहिंदीव्यंगसाहित्यतथाव्यावहारिकहिंदी

C.O

- १) छात्रोंकोव्यंगपाठसेपरिचितकराना।
- २) छात्रोंकोकहानीव्यंगपाठकाबोधकराना।
- ३) साक्षात्कारकलासेअवगतकराना।
- ४) भाषाकामोबाईलतंत्रसमझाना।
- ५) पल्लवनकलासेअवगतकराना।

P.O

- १) व्यंगपाठकेनिर्मितीकाहेतुज्ञातहोजाताहै।
- २) कहानीकेमाध्यमसेव्यंगकथाकिसप्रकारलिखीजासकतीहै, उसव्यंग कहानीकाप्रकारज्ञातहोजाताहै।
- ३) साक्षात्कारकलाअवगतकरानेसेछात्रोंमेंसमाजमेंजागृतविविधकालाओं काज्ञानविकसितहोताहै।
- ४) मोबाईलद्वाराभाषासेसंबधितऑप्सभाषाकाज्ञानवृधिन्गतकरताहै।

S.Y.B.A. (Sem – 4)

SEC-2B माध्यमलेखन

C.O

- १) छात्रोंकोमाध्यमलेखनसेपरिचितकरना।
- 2) सृजनात्मकलेखनकौशलविकसितकरना।
- ३) फीचरलेखनसेअवगतकरना।
- ४) श्रव्य-दृश्यमाध्यमसेअवगतकरना।

P.O

- १) माध्यमलेखनकेद्वारामद्धमस्वरूप,महत्वऔरउद्देशकाज्ञानविकसित होताहै।
- 2) सृजनात्मकलेखनकौशलकाविकासहोताहै।
- ३) फीचरलेखनपत्रकारितालेखनकेज्ञानकोविकसितकरताहै।
- ४) श्रव्य-दृश्यमाध्यमोंकिभाषासेकईमात्रामेंअच्छेविचारसामनेआतेहै।

T.Y.B.A. HINDI(Sem – 5)

S-4 - भाषा विज्ञान

C.O

- १) भाषा विज्ञानं के स्वरूप का परिचय देना ।
- २) छात्रों को भाषा विज्ञानं की व्याप्ति समझना ।
- ३) भाषा विज्ञानं के अध्ययन की दिशाओं का परिचय देना ।
- ४) साहित्य – अध्ययन में भाषाविज्ञान की उपयोगिता समझना ।

P.O

- १) भाषाविज्ञान के स्वरूप को जाननेसे भाषिक – संरचना को समझा जाता है ।
- २) भाषाविज्ञानं भाषा के अलग अलग स्तर पर और दर्शनशास्त्र ,मनोविज्ञान ,अर्थशास्त्र विविध शास्त्रों में भाषा विज्ञानं की महत्ता समझ में आती है ।
- ३) भाषा के विशुद्ध रूप को समझा जाता है । तथा विविध शब्दों के उगम स्रोतों को समझा जाता है ।
- ४) वर्तनी में भाषा विज्ञानं की महत्वपूर्ण भूमिका होती है । विशुद्ध उच्चारण में सहायता होती है ।

T.Y.B.A. HINDI(Sem – 5)

S-3 – हिंदी साहित्य का इतिहास

C.O

- १)हिंदी साहित्य लेखन का परिचय देना ।
- २) हिंदी साहित्य इतिहास के कालविभाजन तथा नामकरण का परिचय देना ।

- ३) आदिकालीन , भक्तिकालीन , रीतिकालीन प्रमुख साहित्यिक प्रवृत्तियों का परिचय देना ।
- ४) रचनाकारों और साहित्यिक वृत्तियों से परिचित कराना ।

P.O

- १)हिंदी के साहित्यिक इतिहास का परिचय प्राप्त होने से छात्रों को इतिहास कालीन प्रवृत्तियों का ज्ञान होता है ।
- २) हिंदी के साहित्यिक इतिहास से विविध आचार्यों द्वारा कालविभाजन तथा नामकरण से तत्कालीन परिस्थियों का आकलन होता है ।
- ३) आदिकालीन , भक्तिकालीन , रीतिकालीन प्रवृत्तियों और तत्कालीन परिस्थितियों का परिचय प्राप्त होता है ।
- ४) हिंदी के रचनाकारों का और उनके साहित्यिक कृतियों का ज्ञान प्राप्त होता है ।

T.Y.B.A. HINDI(Sem – 5)

G-3 कथेतर विधाएँ

C.O

- १) छात्रों को संस्मरण से अवगत कराना ।
- २) छात्रों को रेखाचित्र से अवगत कराना ।
- ३) छात्रों की मूल्यांकन की दृष्टि का विकास कराना ।
- ४) सभा – इतिवृत्त लेखन कौशल्य वृद्धि का विकास कराना ।
- ५) वार्ता – लेखन कौशल्य दृष्टि निर्माण कराना ।

P.O

- १) संस्मरण विधा के तत्व और लेखन की प्रेरणा प्राप्त होती है।
- २) शब्दचित्र / रेखाचित्र विधा के तत्व को समझने से रेखाचित्र लेखन कौशल्यका विकास होता है।
- ३) छात्रों की मुल्यांकन दृष्टी विकसित होने के कारण उस विधा के तत्वों का ज्ञान होता है।
- ४) सभा – इतिवृत्त या समाचार लेखन विकसित होता है।
- ५) वार्ता –लेखन की दृष्टी विकसित होने के कारण वार्ताकन में कुशलता आती है।

T.Y.B.A. (Sem-6)

S-3 हिंदीसाहित्यकाइतिहास (आधुनिककालसामान्यपरिचय)

C.O

- १) आधुनिककलकीपृष्ठभूमिसेछात्रोंकोअवगतकराना।
- २) भारतेंदुयुगीन,द्विवेदीयुगकेकाव्यकीविशेषताओंसेछात्रोंकोअवगतकराना।
- ३) आधुनिककलकेरचनाकारोंऔररचनाओंसेपरिचितकराना।
- ४) हिंदीगद्यकेउद्भवऔरविकाससेछात्रोंकोअवगतकराना।

P.O

- १) हिंदीसाहित्यकेइतिहासकेप्रतिरूचिऔरज्ञानवृद्धिनातहोताहै।
- २) हिंदीसाहित्यकेछायावादीकाव्योंकीविशेषताएँऔरउनकीसार्थकतापरजोर दियाजाताहै।
- ३) आधुनिककलकेरचनाकारोंऔरउनकीरचनाओंकेमाध्यमसेकाव्यकितना रुचकरहै,तथाजागृतीकाएकमाध्यमहै। यहभीस्पष्टहोजाताहै।
- ४) हिंदीगद्यसाहित्यकाउद्भवऔरविकासकैसेहुआहै,यहअवगतहोजाताहै।

T.Y.B.A. (Sem-6)

S-4 हिंदी भाषा और उसका विकास

C.O

- १) भाषाविज्ञानकेस्वरूपकापरिचयदेना।
- २) छात्रोंकोभाषाविज्ञानकीव्याप्ति।
- ३) भाषाविज्ञानकेअध्ययनकीदिशाओंकापरिचयदेना।
- ४) भाषाविज्ञानकेअनुप्रयोगात्मकपक्षकोसमझाना।
- ५) साहित्य- अध्ययनमेंभाषाविज्ञानकीउपयोगितासमझाना।

P.O

- १) भाषाविज्ञानकेअध्ययनसेछात्रोंमेंहिंदीभाषाकेविविधरूपोंकाऔरभाषा विशेषताओंकाज्ञानविकसितहोताहै।
- २) भाषाविज्ञानकीव्याप्तिहिंदीकीविविधबोलियाँऔरशब्दभंडारकोविकसित करताहै।
- ३) भाषाविज्ञानकेविविधदिशाओंकेज्ञानकोविकसितकरताहै।
- ४) अनुप्रयोगात्मकभाषापक्ष,भाषासंरक्षणऔरसांस्कृतिकप्रतिमानोंकाविश्लेषण केज्ञानकोवृद्धिगतकरताहै।

ॡ) भाषाविज्ञानकीउपयोगितासाहित्यअध्ययनमेंरुचीविकसितकरताहै।

T.Y.B.A. (Sem-6)

G-3गज़लविधाऔरपत्राचार

C.O

- १) छात्रोंकोगज़लसाहित्यसेअवगतकरना।
- २) छात्रोंकोगज़लकारकेव्यक्तित्वसेअवगतकरना।
- ३) छात्रोंमेंमुल्यांकनकीदृष्टिकाविकासकरना।
- ४) छात्रोंकोसरकारीपत्रलेखनसेअवगतकरना।

P.O

- १) गज़लकिसेकहतेहैऔरगज़लकैसेहोनीचाहिएयहअवगतहोताहै।
- २) गज़लकारकेसाहित्यकेद्वाराजागृतीहोजातीहै।
- ३) मुल्यांकनकरनेकीदृष्टिविकसितहोतीहै।
- ४) सरकारीपत्रलेखनकरनेकीजानकारीअवगतहोतीहै।



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



English

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: BA

Name of Department: English

Sr.No.	PO Number	Contents
1	PO1	Students will be able to interact with tolerance, understanding, sympathy, respect, harmony with fellow human beings and nature (Values)
2	PO2	Students will be able to read, understand and appreciate minor and major forms of literature in English (Aesthetic)
3	PO3	Students will be able to use English language proficiently and effectively in all walks of life (Skills)
4	PO4	Students will be able to read understand, appreciate and distinguish the writers of the world (Global)
5	PO5	Students will be employable with technical and professional linguistic proficiency and soft skills
6	PO6	Students will be able to control and manage their self with more positive approach with evolved emotional quotient (Self-Management)
7	PO7	Students will be able to think and take decisions independently in their lives (Cognitive)
8	PO8	Students will be able to progress for higher education in Humanities, Social Sciences, Law, Management, Media and Public Services (Progression)

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: FYBA

Name of Subject: Compulsory English: Visionary Gleam

Subject Code: 11001 & 12001

Sr.No.	CO Number	Contents
1	CO1	Students will be able to read and understand the simple pieces of prose and poetry in English
2	CO2	Students will be able to apply some concept of Grammar with more clarity hitherto unknown
3	CO3	Students will be able to speak in English in basic everyday situations
4	CO4	Students will be able to look at life with better understanding
5	CO5	Students will be able to appreciate ideas and develop independent outlook
6	CO6	Students will be able to understand and implement the basic values of life

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: FYBA

Name of Subject: Optional English: Initiation

Subject Code: 11331& 12331

Sr.No.	CO Number	Contents
1	CO1	Students will be able to read and understand the minor forms of literature in English
2	CO2	Students will be able to explain the elementary poetic devices
3	CO3	Students will be able to phonetically transcribe words
4	CO4	Students will be able to distinguish minor forms of literature in English with their elements
5	CO5	Students will be able to look at life broadly with the universal approach
6	CO6	Students will be able to understand and implement the basic human values

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: FYBA

Name of Subject: SEC-2C & SEC-2D: Life Skills & Life Values

Subject Code: 35334 & 36334

Sr.No.	CO Number	Contents
1	CO1	Students will be able to communicate with confidence
2	CO2	Students will be able to solve personal and professional problems systematically
3	CO3	Students will be able manage themselves emotionally
4	CO4	Students will be able to undertake leadership tasks
5	CO5	Students will be able to develop a positive attitude and a positive personality
6	CO6	Students will be able to lead a meaningful social life

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: SYBA

Name of Subject: Compulsory English

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	Students will be able to expose the best examples of literature in English and to contribute to their emotional quotient as well as independent thinking
2	CO2	Students will be able to instil universal human values through best pieces of literature in English
3	CO3	Students will be able to develop effective communication skills by developing ability to use right words in the right context.
4	CO4	Students will be able to enhance employability by developing their basic soft skills
5	CO5	Students will be able to appreciate ideas and develop independent outlook
6	CO6	Students will be able to revise and reinforce the learning of some important areas of grammar for better linguistic competence

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: SYBA

Name of Subject: DSC 1A Appreciating Drama (S1)

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand drama as a major form of literature
2	CO2	Students will be able to understand minor forms of drama
3	CO3	Students will be able to understand drama as a literary form
4	CO4	Students will be able to understand drama as a performing art form
5	CO5	Students will be able to understand elements of drama
6	CO6	Students will be able to understand types of drama
7	CO7	Students will be able to understand drama independently
8	CO8	Students will be able to understand aesthetics of drama

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: SYBA

Name of Subject: Advanced Study of English Language (G2)

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand various components of language
2	CO2	Students will be able to built overall linguistic competence
3	CO3	Students will get motivated for advance study of English language
4	CO4	Students will be able study language independently
5	CO5	Students will be able to express fluently and competently in English
6	CO6	Students will be able to learn grammar scientifically
7	CO7	Students will be able to understand how society influence the language
8	CO8	Students will be able to understand how language influence the society

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: SYBA

Name of Subject: DSE-2A & DSE-2B: Appreciating Poetry

Subject Code: 23332 &24332

Sr.No.	CO Number	Contents
1	CO1	Students will be able to define poetry, its elements and types
2	CO2	Students will be able to identify the poet in an epoch or era in terms of typical characteristics of the era
3	CO3	Students will be able to read and appreciate a poem independently
4	CO4	Students will be able to understand the aesthetic and intellectual value of a poem
5	CO5	Students will be able to read and understand poetry in English from different countries
6	CO6	Students will be able to look at life more sensitively and humanely

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: TYBA

Name of Subject: Compulsory English: New Horizons

Subject Code: 35001 &36001

Sr.No.	CO Number	Contents
1	CO1	Students will be able to read and understand some of the best pieces of prose and poetry in English
2	CO2	Students will be able to converse in English competently and effectively in real life situations
3	CO3	Student will be equipped with writing skills required in work environment
4	CO4	Students will be able to conduct themselves better in life with an evolved personality
5	CO5	Students will be able to foster harmony in society with sympathetic attitude to others around
6	CO6	Students will be able to apply soft skills and be employable

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: TYBA

Name of Subject: DSE-2C & DSE-2D: Introduction to Literary Criticism

Subject Code: 35332 & 36332

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand and explain the basic literary terms
2	CO2	Students will be able to define criticism and explain elements, types and function of criticism
3	CO3	Students will be able to read and understand some of the major writings on criticism
4	CO4	Students will be able to read a literary piece with critical approaches
5	CO5	Students will be able to appreciate and implement the theory of criticism to a literary text
6	CO6	Students will be able to make a critical analysis of a literary text in its basic form

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: English

Class: TYBA

Name of Subject: SEC-1C & 1D Enhancing Employability Skills

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	Students will be able to get the awareness of career opportunities available to them
2	CO2	Students will be able to identify the career opportunities suitable to them
3	CO3	Students will be able to understand the use of English in different careers
4	CO4	Students will be able to develop competence in using English for the career of their choice
5	CO5	Students will be able to enhance skills required for their placement
6	CO6	Students will be able to use English effectively in the career of their choice

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Master of Arts

Name of Department: English

Sr.No.	PO Number	Contents
1	PO1	Students will be able to appreciate and enjoy finest pieces of literature in English(Aesthetic)
2	PO2	Students will be able to use English language proficiently (Linguistic)
3	PO3	Students will be able to express themselves creatively (Creative)
4	PO4	Students will be able to critically analyse English literature and English Language (Analytic)
5	PO5	Students will be able to understand culturally diverse societies (Global)
6	PO6	Students will be able to get jobs in the world of academics, administration, BPO and Media (Employable)
7	PO7	Students will be able to manage self and others in a more positive and constructive way (Self Management)
8	PO8	Students will be able to proceed for research in English literature and English language (Research)

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part I

Name of Subject: English Literature from 1550 to 1798

Subject Code: 10601 & 20601

Sr.No.	CO Number	Contents
1	CO1	To introduce students to the major movements and figures of English Literature through a study of selected literary texts/pieces published during the period prescribed for study.
2	CO2	To enhance learners' literary sensibility and their emotional response to literary texts and to help them understand the thematic and stylistic preoccupations of the writers prescribed for study.
3	CO3	To enable them to critically examine the writers' thematic concerns and to point out the (in) significance of such concerns in the postcolonial context.
4	CO4	To help them recognize the distinctive ways in which the writers differed, in their ideological positions, from their counterparts belonging to different ages.
5	CO5	To provide learners some basic information about England's political, social and cultural developments during the period prescribed for study.
6	CO6	To enable them to critically assess the 'universal' values that writers tend to project in their writings.
7	CO7	To help learners apply the literary-critical principles they study in the paper 'Literary Criticism and Theory' to the texts prescribed or to any other text they read.
8	CO8	To help them identify potential areas of research on which they can work independently for securing a degree or merely for the sake of obtaining knowledge.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part I

Name of Subject: English Literature from 1798 to the Present

Subject Code: 10602 & 20602

Sr.No.	CO Number	Contents
1	CO1	To familiarize students with the major movements and figures of English Literature
2	CO2	To enhance learners' literary sensibility and their emotional response to literary texts
3	CO3	To provide learners some basic information about England's political, social and Cultural developments during the different ages.
4	CO4	To help learners apply the literary-critical principles they study in the paper 'Literary Criticism and Theory' to the texts prescribed or to any other text they read
5	CO5	To explain to the learners the canonical relevance of the texts prescribed for them.
6	CO6	To help them identify potential areas of research on which they can work independently for securing a degree or merely for the sake of obtaining knowledge

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part I

Name of Subject: Contemporary Studies in English Language

Subject Code: 10603 & 20603

Sr.No.	CO Number	Contents
1	CO1	To introduce students to the basic tools essential for a systematic study of language
2	CO2	To acquaint students with the basic concepts and issues in linguistics
3	CO3	To introduce them to various sub-disciplines of linguistics
4	CO4	To initiate them into some of the theoretical assumptions underlying language and to enable them to apply the acquired linguistic skills in real life situations
5	CO5	To introduce learners to the syntactic features of the English language
6	CO6	To help them shake off some of the regional features of English pronunciation

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part I

Name of Subject: Literary Criticism and Theory

Subject Code: 10604 & 20604

Sr.No.	CO Number	Contents
1	CO1	To introduce students to the nature, function and relevance of literary criticism and theory
2	CO2	To introduce them to various important critical approaches and their tenets
3	CO3	To encourage them to deal with highly intellectual and radical content and thereby develop their logical thinking and analytical ability
4	CO4	To develop sensibility and competence in them for practical application of critical approach to literary texts
5	CO5	Students will be able to make a critical analysis of a literary text in its basic form
6	CO6	Students will be able to appreciate and implement the theory of criticism to a literary text

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part II

Name of Subject: Indian Writing in English (Core Paper)

Subject Code: 30601 & 40601

Sr.No.	CO Number	Contents
1	CO1	To introduce students to the various phases of the evolution in Indian Writing in English.
2	CO2	To make them aware of Indian cultural ethos and indigenous belief systems through the study of major literary works in the domain of Indian English literature.
3	CO3	To acquaint them with the writings of different Indian writers and help them to appreciate the variety and diversity of Indian Writing in English.
4	CO4	To expose students to the corpus of Indian Writing in English, and explain the socio-political and cultural contexts in which the works were written and received.
5	CO5	To develop the ability of students to critically examine and restate their understanding of literary texts.
6	CO6	To expose students to the uniqueness of artistic and innovative use of the English language in IWE and to enhance the literary and linguistic competence of students.
7	CO7	To instil human values and develop literary sensibility among students through exposure to IWE texts.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part II

Name of Subject: Applied Linguistics

Subject Code: 30602 & 40602

Sr.No.	CO Number	Contents
1	CO1	To introduce students to the field of Applied Linguistics
2	CO2	To help students understand how descriptive linguistics can be used practically to explain the behavioural and social use of language, especially with regard to language acquisition, second language acquisition/learning, language teaching methodology, etc.
3	CO3	To help students understand the correlation between the evolution of linguistic theory and the corresponding developments in the field of language learning and teaching
4	CO4	To enable students to understand the relationship between language learning theories, teaching methods, production of course materials and language testing
5	CO5	To introduce students to the relation between language and culture
6	CO6	To help students understand how linguistic concepts can be applied to the study of literature

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part II

Name of Subject: American Literature

Subject Code: 30606 & 40606

Sr.No.	CO Number	Contents
1	CO1	Provide students a general introduction to the major texts that led to the evolution of American literature as an independent branch of literature in English.
2	CO2	Familiarize students with the issues and problems America has gone through and how they find expression in her literature.
3	CO3	Help students gain a broad historical view of the entire period from the time of the early settlers
4	CO4	Provide students a general idea about the religious, socio-political, literary and cultural movements in America.
5	CO5	Acquaint students with some of the major conflicts, struggles and movements that are closely connected with the experiences of a group of people struggling establish their space within the nation.
6	CO6	To understand the westward movement to the contemporary period.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: English

Class: MA Part II

Name of Subject: World Literature in English

Subject Code: 30608 & 40608

Sr.No.	CO Number	Contents
1	CO1	To introduce students to some of the important literary texts of the world
2	CO2	To help them in gaining some insights into the socio-cultural aspects of the regions from where the texts are chosen.
3	CO3	To enable students to compare the authors of the world with Indian writers in English or the writers in their own languages.
4	CO4	To introduce students to the various techniques employed by the authors and how the techniques are adapted/adopted by Indian authors.
5	CO5	To help the students undertake research in comparative literature
6	CO6	Students will be able to understand how various techniques are adapted/ adopted by Indian authors.



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Economics



Pune District Education Association's
Annasaheb Magar Mahavidyalaya Hadapsar,
Pune-411028
DEPARTMENT OF ECONOMICS



Course Outcome

Name of Programme: BA

Class: FYBA

Semester: I

Name of Subject: Indian Economic Empowerment-I (G1)

Subject Code: 11151

Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Understand meaning, factors affecting Economics Environment, Challenges to Indian Economy.
2	CO-2	Able to compare Indian economy with the world economy.
3	CO-3	Defining role of agriculture and industrial sector in Indian economy.
4	CO-4	Expressing challenges to Indian Agriculture and Industry.
5	CO-5	Finding recent trends in Agriculture and Industry.
6	CO-6	Memorizing industrial policy and MSME.

Class: FYBA

Semester: II

Name of Subject: Indian Economic Empowerment-II (G1)

Subject Code: 12151

Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Understand Role and Growth of service sector in Indian Economy.
2	CO-2	Finding recent trends in Indian service sector.
3	CO-3	Memorizing bank Concept, Function, Types of Bank accounts.
4	CO-4	Finding recent trends in Indian Banking Environment.
5	CO-5	Understand challenges of Indian Economy-Poverty, Employment, Inequality, Informal Sector
6	CO-6	Understand Policy Measures of Poverty, Employment and skill development

Class: SYBA

Semester: III

Name of Subject: DSE-1A: Micro Economics-I (S1)

Subject Code: 23151

Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Knowing the decision making of the consumer
2	CO-2	Student will be able to explain the core concept in micro economics such as opportunity cost, markets, equilibriums etc.
3	CO-3	Student will be able to graphically present the data
4	CO-4	Understand the law of demand with the help of empirical evidence
5	CO-5	Understand the basic economic problems of micro economics
6	CO-6	Understand the law of supply as per market situation

Class: SYBA

Semester: IV

Name of Subject: DSE-1B: Micro Economics-I (S1)

Subject Code: 24151

Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Identifying the nature of revenue and cost of production
2	CO-2	Realizing various production theories
3	CO-3	Clarifying the meaning of marginal revenue, average revenue, total revenue and marginal cost, average cost, total cost and its implications
4	CO-4	Awareness of different market structures
5	CO-5	Knowing the theories of factor pricing
6	CO-6	Students will learn the different dimensions of welfare economics
Class: SYBA		Semester: III
Name of Subject: DSE-2A: Macro Economics –I (S2)		Subject Code: 23152
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Understand the basic concepts and economic theories.
2	CO-2	Awareness about various concepts of National Income.
3	CO-3	Understand classical and Keynesian approach about output and employment.
4	CO-4	Understand law of market, consumption function and investment function.
5	CO-5	Understand the concepts Marginal Efficiency of Capital, Investment Multiplier, Acceleration Principle.
6	CO-6	Able to compare between Micro Economics and Macro Economics
Class: SYBA		Semester: IV
Name of Subject: DSE-2B: Macro Economics –I (S2)		Subject Code: 24152
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Know the functioning of economy as whole.
2	CO-2	Understand concept of money, functions and value of money.
3	CO-3	Know inflation, deflation, Stagflation.
4	CO-4	Knowing the effects of trade cycle.
5	CO-5	Understand Macro Economic policies.
6	CO-6	Understand the working of Philips curve
Class: SYBA		Semester: III
Name of Subject: CC-1C: Financial System-I (G2)		Subject Code: 23153
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Understand the role and Importance of Indian financial system
2	CO-2	To impart the knowledge of structure of Indian financial system.
3	CO-3	Analyse the evaluation of banks in India – Commercial Banks, RRB, Co-Banks.
4	CO-4	Analyse the classification of Indian financial Market
5	CO-5	Understand the role and importance of foreign exchange market.
6	CO-6	Know the functioning of Indian financial institutions – Banking & Non-banking
Class: SYBA		Semester: IV

Name of Subject: CC-1D :Financial System-II (G2)		Subject Code: 24153
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Understand the role of RBI in Indian financial system
2	CO-2	Examine the functioning of Monetary policy in Indian financial system
3	CO-3	Analyze the role of financial regulators- SEBI and IRDA
4	CO-4	Understand Role of International financial Institutions- IMF, World bank, Asian development Bank
5	CO-5	Understand the recent trends and developments in banking system.
6	CO-6	Analyze the risk management in Indian financial system
Class: SYBA		Semester: III
Name of Subject: SEC-2A: Basic Concept of Research Methodology – I		Subject Code: 23154
1	CO-1	Understand various techniques of Research
2	CO-2	Identify various sources of information for data collection.
3	CO-3	Develop the understanding of the conducting survey on various issues.
Class: SYBA		Semester: IV
Name of Subject: SEC-2B: Basic Concept of Research Methodology- II		Subject Code: 24154
1	CO-1	Understand of sampling methods and the ability to use collection of data
2	CO-2	Identify the appropriate sample techniques for different kinds of research question
3	CO-3	Able to classify and present the collected data in the form of graph, diagram and chart.
Class: TYBA		Semester: V
Name of Subject: International Economics (S-3)		Subject Code: 35151
1	CO-1	Able to know Nature, Scope and Importance of International Economics
2	CO-2	Able to Know importance of International trade
3	CO-3	Ability to Compare Inter regional trade and International trade
4	CO-4	Understand the theories of international trade.
5	CO-5	Understand concept, importance, determinants of Terms of Trade, causes of unfavorable TOT.
6	CO-6	Know Balance of Trade and Balance of Payment. Causes and consequences of disequilibrium in BOP. Measures to correct disequilibrium in BOP.
Class: TYBA		Semester: VI
Name of Subject: International Economics (S-3)		Subject Code: 36151
1	CO-1	Ability to relate and explain the concept of Exchange Rate and Foreign Exchange Market.
2	CO-2	Ability to Compare Free Trade v/s Protection trade policy.
3	CO-3	Ability to describe the trends in Growth, Composition and Direction of India's Foreign Trade.
4	CO-4	Ability to comprehend the issues relating to Foreign Capital and Regional Cooperation
5	CO-5	Understand international policies of India.
6	CO-6	Ability to comprehend International Co-Operation.

Class: TYBA		Semester: V
Name of Subject: Public Finance(S-4)		Subject Code: 35152
1	CO-1	Understand the changing role of Government and the source of Public and Private Finance.
2	CO-2	Understand the concept principles of taxations and evaluation of Indian tax system.
3	CO-3	Know the meaning types, effects of public debt .Types method of repayment.
4	CO-4	Know the Financial Relation of state and center, Fiscal Policy.
5	CO-5	Understand the type's preparation of budget in India and know the concept, Gender Budget.
6	CO-6	To Know the central state financial relationship.
Class: TYBA		Semester: VI
Name of Subject: Public Finance(S-4)		Subject Code: 36152
1	CO-1	Understand the Fiscal policy and its instruments and objectives.
2	CO-2	Describing fiscal policy in Developing countries.
3	CO-3	Analyzing classification of Budget.
4	CO-4	To know Gender Budget and its importance in dynamic economy.
5	CO-5	Understand Deficit Financing and its objectives.
6	CO-6	Analyzing Finance commission.
Class: TYBA		Semester: V
Name of Subject: Indian Economic Development (G-3)		Subject Code: 35153
1	CO-1	Understand Meaning, indicators of economic development and growth .
2	CO-2	Study the concept of developed country and developing country.
3	CO-3	Compare among developed and under developed countries.
4	CO-4	Understand Characteristics of Developing Countries
5	CO-5	Know that which constraints are in development process.
6	CO-6	Evaluate the human development recourses- PQLI,HDI,GENDER INDEX,MPI
Class: TYBA		Semester: VI
Name of Subject: Indian Economic Development (G-3)		Subject Code: 36154
1	CO-1	Define the Economic Planning
2	CO-2	Understand the national Institutions
3	CO-3	Determine the difference between planning commission and NITI Aayog
4	CO-4	Understand the sustainable development
5	CO-5	Understand the Environment and Economic development
6	CO-6	Understanding Environmental policy
Class: TYBA		Semester: V
Name of Subject: SEC 3A Business Management		Subject Code: 35154
1	CO-1	To study Management of Business
2	CO-2	To Know Business Planning and Decision making
3	CO-3	To study Leadership Skill
Class: TYBA		Semester: VI

Name of Subject: SEC 3A Business Management : Project Report		Subject Code: 36154
1	CO-1	To analyses the data collected and interpreted in the most logical manner
2	CO-2	To ability to comprehend and illustrate findings
3	CO-3	To ability to illustrate findings in the most appropriate manner



Course Outcome

Name of Programme: MA

Class: MA ECONOMICS PART- I

Semester: I

Name of Subject: EC-1001: Micro Economics analysis - I

Subject Code:12301

Sr. No	CO Number	Contents of Course Outcome
1	CO-1	To Understand the Basic Micro Economic Problems of Scarcity and Choice, utility, demand modern utility an analysis ,Elasticity of demand
2	CO-2	Ability to analyze and demonstrate knowledge of the basic theories/laws in economics- law of demand, law of supply, production function, etc.
3	CO-3	To understand concepts one and two input production function.
4	CO-4	To understand concepts Law of Variable Proportions Returns to the Variable Factor Returns to Scale.
5	CO-5	To understand Analysis Characteristics and properties various concept and Curves of Production cost and Revenue.
6	CO-6	To understand Concept of Welfare Economics

Class: MA ECONOMICS PART- I

Semester: I

Name of Subject : EC-1002 : Public Economics - I

Subject Code:12302

Sr. No	CO Number	Contents of Course Outcome
1	CO-1	To understand Role and functions of the Government in economy.
2	CO-2	To understand concepts Private Goods, Public Goods, and Merit Goods.
3	CO-3	To understand and explain various theory or modals for public policy.
4	CO-4	Ability to analyze Taxation Concepts and theory
5	CO-5	Ability to analyze concept and theories of public expenditure.
6	CO-6	To understand Criteria for Public Investment; Social Cost-Benefit Analysis, Project Evaluation, Estimation of Costs, Discount Rate,

Class: MA ECONOMICS PART- I

Semester: I

Name of Subject: EC-1003 : International trade

Subject Code:12303

Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Ability to understand the concepts of international economics such as comparative cost and the Overview of Classical and Modern Trade Theories.
2	CO-2	Knowing the Terms of Trade.
3	CO-3	Ability to analyze Free Trade vs. Controlled Trade
4	CO-4	Student Learned The Trade Agreements and Organization.
5	CO-5	Ability to discuss and debate the effects of trade policy,Tariffs and Non-Tariff Barriers on Trade
6	CO-6	Understand role of international economic organization and global crisis development.

Class: MA ECONOMICS PART- I		Semester: I
Name of Subject: EC-1004 : Agriculture Economics - I		Subject Code:12304
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Ability to develop an understanding the role of agriculture in an economy and Barriers to Agricultural Growth in India.
2	CO-2	Ability to critically analyze Agriculture Productivity and Agricultural Labour
3	CO-3	Ability to critically analyze Agriculture and Finance
4	CO-4	Ability to critically analyze Agriculture and Markets
5	CO-5	Ability to critically analyze the various issues and challenges faced by agrarian economies w.r.t. production, productivity, efficiency, employment, etc.
6	CO-6	To discuss theAgricultural Growth and Rural Development
Class: MA ECONOMICS PART- I		Semester: II
Name of Subject: EC-2001: Micro-Economic Analysis–II		Subject Code:22301
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Understand Market Structures
2	CO-2	Comparison of Monopoly and Perfectly Competitive Market outcomes
3	CO-3	To enable understanding Monopoly and Regulation of Monopoly Power
4	CO-4	Understand Monopolistic Competition
5	CO-5	To enable students to apply micro economic concepts in various contexts.
6	CO-6	To discuss the modern developments in micro economics such as Game Theory
Class: MA ECONOMICS PART- I		Semester: II
Name of Subject: EC-2002 : PUBLIC ECONOMICS II		Subject Code:22302
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	To understand the Indian Tax System
2	CO-2	To understand Budget- Meaning and Components and Types
3	CO-3	To understand of various policies in public economics like fiscal policy, Monetary policy, public debt policy, fiscal finances, etc.
4	CO-4	Understand Public Debt and Deficit financing
5	CO-5	Ability to critically analyze Fiscal Policy
6	CO-6	Ability to critically analyze Indian Fiscal Federalism
Class: MA ECONOMICS PART- I		Semester: II
Name of Subject: EC-2003: INTERNATIONAL FINANCE		Subject Code:22303
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Ability to understand and interpret the concepts such as Balance of Payment, Devaluation of Indian Rupee
2	CO-2	Ability to critically analyze the effects of deficits, exchange risk, role of foreign capital on the world economy/trade.
3	CO-3	Ability to discuss and debate on subjects related to international trade and Finance in the Indian Economy.

4	CO-4	Ability to understand Exchange Rate Systems
5	CO-5	Ability to critically analyze Classification of International Capital Flows
6	CO-6	Student Learned The International Banking.
Class: MA ECONOMICS PART- I		Semester: II
Name of Subject: EC-2004 : Labour Economics		Subject Code:22304
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	To discuss and debate the Labour Markets and Wage Determination.
2	CO-2	Ability to develop an understanding of Wage Policy in India
3	CO-3	To demonstrate on the various aspects of labour dynamics and labourrelations w.r.t. India
4	CO-4	Understand Migration and Absenteeism
5	CO-5	To discuss and debate the various issues and challenges faced by labour
6	CO-6	Ability to critically analyze Labour Market reforms
Class: MA ECONOMICS PART- II		Semester: III
Name of Subject: EC-3001: Macro Economics analysis - I		Subject Code:32301
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Ability to analyse Traditional Approaches to Macroeconomics
2	CO-2	Ability to discuss and debate on National Income and Social Accounting
3	CO-3	To understand Demand and Supply of Money
4	CO-4	To discuss and debate on The Liquidity Theory, Gurley and Shaw Hypothesis, Demand for Money-Classical and Keynesian
5	CO-5	Ability to critically analyze Post Keynesian Theories of Demand for Money
6	CO-6	To demonstrate on the various aspects of RBI approach to Money Supply
Class: MA ECONOMICS PART- II		Semester: III
Name of Subject : EC-3002 : Growth and Development - I		Subject Code:32302
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Ability to apply the concepts of economic growth and Development
2	CO-2	To discuss and debate the economic growth and compare international comparison of economic development, etc.
3	CO-3	Ability to analyze and demonstrate knowledge of the economic growth and development theories of economic growth and development
4	CO-4	Ability to critically analyze Poverty, Inequality and Unemployment
5	CO-5	To understand Human Capital and Economic Development
6	CO-6	Ability to analyze Education, Skill and Wages, Health and Efficiency to Work
Class: MA ECONOMICS PART- II		Semester: III
Name of Subject: EC-3003 : Research Methodology-I		Subject Code:32303
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Ability to analyze Scientific Research : Methods - Stages /Steps

2	CO-2	Ability to develop Identification and Selection of Research Problems
3	CO-3	To understand Research design, Objective, Need and Types of research Design
4	CO-4	Ability to analyze Data Collection And Data Analysis
5	CO-5	To enable an understanding of Testing of Hypothesis and Types of Hypothesis
6	CO-6	Ability to apply the Report Writing
Class: MA ECONOMICS PART- II		Semester: III
Name of Subject: EC-3004 : Industrial Economics		Subject Code: 32307
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	To make the students understand concepts of industrial economics, Scope and Importance
2	CO-2	ability to apply knowledge of industrial Location Theories
3	CO-3	Ability to critically analyze Industrial Imbalance and Policy of Industrial Location
4	CO-4	To ability to comprehend Industrial Productivity, Efficiency and Skill Development
5	CO-5	Ability to critically analyze Industrial Policy in India and Changing Role and Performance of Public and Private Sector in India
6	CO-6	Ability to analyze Globalization of Labour Markets and Impact of Emerging Economies
Class: MA ECONOMICS PART- II		Semester: IV
Name of Subject: EC-4001: Macro Economics analysis - II		Subject Code: 42301
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	To understand Aggregate Demand and Aggregate Supply Analysis
2	CO-2	Knowing the Macroeconomic equilibrium, AS-AD Model
3	CO-3	To discuss the modern developments in macroeconomics- IS-LM Curves Model
4	CO-4	Ability to critically analyze Inflation-Unemployment Trade-Off: Phillips Curve and Rational Expectations Theory
5	CO-5	To ability to comprehend Stagflation and Supply-side Economics
6	CO-6	Ability to critically analyze The New Classical Macro Economics & the Open Economy Issues- Mundel-Fleming Model
Class: MA ECONOMICS PART- II		Semester: IV
Name of Subject : EC-4002 : Growth and Development - II		Subject Code: 42302
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Knowing the International agreements and Agriculture in India
2	CO-2	Ability to critically analyze Sectorial Development- Agriculture, Industry and Service Sector
3	CO-3	To discuss the Technology and Development
4	CO-4	Ability to critically analyze Environment and Development
5	CO-5	Ability to discuss and debate on The Role of the Government in the Developmental process, The Market versus Detailed Centralized Planning
6	CO-6	To analyze and evaluate the obstacles in the process of economic growth and development Strategies

Class: MA ECONOMICS PART- II		Semester: IV
Name of Subject: EC-4003 : Research Project		Subject Code: 42303
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	Students who complete their post-graduation in Economics are mentally equipped to pursue research in the same discipline.
2	CO-2	Preparing a small dissertation is intended to train them in scientific thinking and art of systematic presentation.
3	CO-3	It is essentially a job-oriented exercise to enable them to take up the exciting field of social and economic research.
4	CO-4	To enable an understanding of Research and its methods under various areas of economics.
5	CO-5	Ability to evaluate and examine subject areas in economics and explore possibilities of research.
6	CO-6	To demonstrate the practical and the applied aspects of research in relation to Economics.
Class: MA ECONOMICS PART- II		Semester: IV
Name of Subject: EC-4004 : Environmental Economics		Subject Code: 42306
Sr. No	CO Number	Contents of Course Outcome
1	CO-1	To understand Meaning, Nature, Scope and Significance of Environmental Economics
2	CO-2	Ability to discuss Trade-off, Environmental Kuznets Curve & Limits to Growth
3	CO-3	Ability to critically analyze Environment and Agricultural, Industrial Development
4	CO-4	To discuss Global Environmental Issues
5	CO-5	Ability to evaluate and examine Environmental Regulation – Theories and Analytical Tools
6	CO-6	Ability to critically analyze Climate Change, Environmental Agreements and Policies



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Political Science

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: FY BA Sem I

Name of Subject: Introduction to Indian Constitution

Subject Code: 11161 A

Sr.No.	CO Number	Contents
1	CO1	Students will be able to examine making process of Indian Constitution.
2	CO2	Students will be able to evaluate their Fundamental Rights, Fundamental duties and directive principles of state.
3	CO3	Students can understand the salient features of Indian constitution .
4	CO4	Students will be able to compare federal system in the world and they will examine federal system of India.
5	CO5	Students will be able to evaluate the constitution provisions and they will analyze constitutional amendments.
6	CO6	Students will be able to evaluate and understand the Basic structure of Indian Constitution.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: FY BA Sem II

Name of Subject: Introduction to Indian Constitution

Subject Code: 11162 B

Sr.No.	CO Number	Contents
1	CO1	Students will be able to examine function and role of the Parliament and state legislature.
2	CO2	Students will be able to explain function and role of the President, Prime Minister, Governor, Chief Minister.
3	CO3	Students will be able to explain the Judiciary System of India.
4	CO4	Students will be able analyze concept of Judiciary Review and Judicial Activism.
5	CO5	Students will be able to explain electoral system of India
6	CO6	They will evaluate electoral reforms in India.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SYBA Sem III

Name of Subject: Western Political Thought

Subject Code: 23161

Sr.No.	CO Number	Contents
1	CO1	Providing an insight into the dominant features of Ancient Western Political Thought: Ancient Greek political thought with focus on Aristotle and Plato
2	CO2	Roman Political Thought: its contributions with special emphasis on the emergence of Roman law
3	CO3	Critically examining Bodin's contributions to the theory of Sovereignty; Hobbes as the founder of the science of materialist politics; Locke as the founder of Liberalism with focus on his views on natural rights property and consent
4	CO4	Locke views on Freedom and Democracy;
5	CO5	Examining the features of Medieval Political Thought
6	CO6	Evaluating the Renaissance; political thought of Reformation; and Machiavelli

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SYBA Sem IV

Name of Subject: Western Political Thought

Subject Code: 24161

Sr.No.	CO Number	Contents
1	CO1	Rousseau's views on Freedom and Democracy
2	CO2	Bentham's Utilitarianism; and John Stuart Mill's views on liberty and representative government.
3	CO3	Hegel idealism theory
4	CO4	Taking an insight into the following: Hegel's views on Civil Society and State;
5	CO5	Utopian and Scientific socialism: basic characteristics-
6	CO6	Examining the varieties of non-Marxist socialism: Fabianism, Syndicalism, Guild Socialism, German Revisionism.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SYBA Sem III

Name of Subject: Political Journalism

Subject Code: 23162

Sr.No.	CO Number	Contents
1	CO1	Student will aware about Political Journalism their Definition and Meaning
2	CO2	Student will aware about Political Journalism Nature Scope
3	CO3	Student will aware about Agencies of Political Journalism like Print, Electronic, Web
4	CO4	Student will aware about History of Political Journalism
5	CO5	Student will aware about Pre-Independence, Post-Independence, World History
6	CO6	Student will aware about Methods of Political Journalism , Reporting of Political Events, Political Interview, Commentary of Legislation

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SYBA Sem IV

Name of Subject: Political Journalism

Subject Code: 24162

Sr.No.	CO Number	Contents
1	CO1	Student will aware about Indian Political Process & Journalism like Role of Social Media in Political Process
2	CO2	Student will aware about Role of Election and Media: Loksabha and Maharashtra Vidhansabha 2014 and 2019 General Elections, Political Parties and Social Media
3	CO3	Student will aware about Mediatisation of Politics, Definition and Meaning, Practices, Mediums
4	CO4	Student will aware about Media & Public Opinion,) Definition and Meaning, Practices, Mediums
5	CO5	Student will aware about Challenges before Political Journalism like Increase of Paid News
6	CO6	Student will aware about Party Spirited News Papers & Commercialization, Media Saturation

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SYBA Sem III

Name of Subject: An Introduction To Political Science

Subject Code: 23163

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand the thought process of Political Science .
2	CO2	Student will know how to study Political Science .
3	CO3	Discussing the Definition, Nature and Scope and there uses in daily life .
4	CO4	Explaining the Approaches to Study Political Science like Normative Approach, Empirical Approach and Feminist Approach .
5	CO5	Student will able to know the basic concept of Political Science
6	CO6	Student will able to know how Democracy work ,what are the features of Democracy . Student will understand the importance of Democracy

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SYBA Sem IV

Name of Subject: An Introduction To Political Science

Subject Code: 24163

Sr.No.	CO Number	Contents
1	CO1	Student will aware about Basic Political Values Liberty, Equality, Justice
2	CO2	Student will aware about Rights their Definition and Meaning
3	CO3	Student will aware about Right types & Their Challenges
4	CO4	Student will aware about Ideologies like Nationalism, Socialism, Fascism
5	CO5	Student will aware about United Nations – Structures, Functions and Challenges
6	CO6	Student will aware about Regional – EU, SAARC, OPEC, NATO MNCs

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: TY BA Sem V

Name of Subject: Public Administration

Subject Code: 35161

Sr.No.	CO Number	Contents
1	CO1	Student will aware about Meaning, Nature, Scope and Significance of public administration.
2	CO2	Student will aware about Evolution Of New Public Administration
3	CO3	Student will aware about Salient Features & Goals Of New Public Administration
4	CO4	Student will aware about Approaches to Public Administration like Traditional Approach
5	CO5	Student will aware about Approaches to Public Administration like Behavioural Approach System Approach
6	CO6	Student will aware about Concept of Governance, Idea of Good Governance, E-Governance, Public Private Partnership

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: TYBA Sem VI

Name of Subject: Public Administration

Subject Code: 36161

Sr.No.	CO Number	Contents
1	CO1	Student will aware about Bureaucracy & their Meaning and Definitions, Administrative Reforms
2	CO2	Student will aware about Personnel Administration & their Recruitment, Training, Promotion
3	CO3	Student will aware about Budgeting Meaning and types, Principles of sound Budget
4	CO4	Student will aware about Budgetary Process in India, Gender Budgeting
5	CO5	Student will aware about concept of Accountability and Control
6	CO6	Student will aware about Administrative Accountability, Legislative Control, Judicial Control

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: TYBA Sem V

Name of Subject: International Relations

Subject Code: 35162

Sr.No.	CO Number	Contents
1	CO1	Understand key concepts and concerns in international relations, including notably the way power is acquired and used globally and how states and non-state actors interact.
2	CO2	Demonstrate an appreciation for the practice of comparative political inquiry, and an understanding of institutions of American government or traditions of Western and non-Western political thought.
3	CO3	Become familiar with contemporary theories of international relations to use as lenses to differently explain outcomes and events in world affairs.
4	CO4	Become conversant in current international events through a close reading of the news and interpretation of events through international relations theories and concepts
5	CO5	Develop the ability to evaluate and synthesize information from diverse and reliable sources, identifying and differentiating between primary and secondary source material
6	CO6	Bring research skills to bear on a specific issue related to international affairs, producing a research paper, opinion paper, personal reflection or analytical essay. Exhibit familiarity with research methods by students of international relations and political science to pose and answer questions and conduct research.

Poona District Education Association's

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: BA

Name of Department: Political Science

Class: TY BA Sem VI

Name of Subject: International Relations

Subject Code: 36152

Sr.No.	CO Number	Contents
1	CO1	Student will aware about The Theory of Non-Alignment & Meaning and basic principles of Non-Alignment
2	CO2	Student will aware about Emergence of Non-Alignment, Non-Alignment as a Movement, Relevance of NAM In Post cold war period
3	CO3	Student will aware about Globalization, Meaning of Globalization, Evolution and Impacts of Globalization
4	CO4	Student will aware about Limits of Globalization & Role of The state
5	CO5	Student will aware about Neo-Colonialism, New International Economic Order, North-South Divide, South-South Co-operation
6	CO6	Student will aware about International Terrorism, Environmental Issues, Poverty, Development and Hunger Human Rights

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: TY BA Sem V

Name of Subject: Modern Political Analysis

Subject Code: 35163

Sr.No.	CO Number	Contents
1	CO1	Student will aware about Modern Political Analysis Meaning, Nature , Features of Modern Political Analysis
2	CO2	Student will aware about Difference between Traditional and Modern Political Approach
3	CO3	Student will aware about Political System their Meaning and Nature, Functions of the Political System
4	CO4	Student will aware about Classification of Political System : Gabriel Almond
5	CO5	Student will aware about Political culture their Meaning, Basic Elements, Types
6	CO6	Student will aware about Political Socialization Meaning, Agencies, Types

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: TYBA Sem VI

Name of Subject: Modern Political Analysis

Subject Code: 36163

Sr.No.	CO Number	Contents
1	CO1	Student will aware about Political Participation, Meaning & Nature
2	CO2	Student will aware about Levels of Participation, Factors affecting Political Participation
3	CO3	Student will aware about Political Elite Meaning, Nature
4	CO4	Student will aware about Different approaches of Mosca, Michels, Pareto, Burnham and C. wright Mills
5	CO5	Student will aware about Political Communication, Meaning, Nature, Agencies of Political Communication
6	CO6	Student will aware about Power, Influence, Authority and Legitimacy Meaning, Nature of Power and Influence, Different Types of Authority, Different Types of Legitimacy

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SYBA Sem III

Name of Subject: Basics Of Indian Constitution

Subject Code: 23165

Sr.No.	CO Number	Contents
1	CO1	Students will able to know the Importance of Fundamental Duties .
2	CO2	Explaining the Concept and Nature of Fundamental Duties .
3	CO3	Students will able to know how Directive Principles work for State .
4	CO4	Students will able to know the importance of Directive Principles for State Policy.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: SY BA Sem IV

Name of Subject: Basics Of Indian Constitution

Subject Code: 24165

Sr.No.	CO Number	Contents
1	CO1	Student will able to know basic knowledge of Constitution ,
2	CO2	Student will understand the features of Fundamental Duties
3	CO3	Student will able to know the Relations between Directive Principles and Fundamental Duties ,
4	CO4	Students will learn how Directive Principles and Fundamental Duties work Together .

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: TY BA Sem V

Name of Subject: Samyukta Maharashtra Movement

Subject Code: 35165

Sr.No.	CO Number	Contents
1	CO1	It's helps to know what are the Regional Aspirations in India and concept of Regionalism .
2	CO2	Students will able to know Genesis of Regionalism in India, they will study Indian National Congress and Regionalism .
3	CO3	Students will able to study Samyukta Maharashtra Movement .
4	CO4	Students will able to Analyse the Emergence and Development of Regional Consciousness in Maharashtra .

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BA

Name of Department: Political Science

Class: TYBA Sem VI

Name of Subject: Samyukta Maharashtra Movement

Subject Code: 36165

Sr.No.	CO Number	Contents
1	CO1	Students will able to know the basic Concept of Regionalism .
2	CO2	Explaining the role of Indian National Congress in Samyukta Maharashtra Movement
3	CO3	Student will able to know the impact of Samyukta Maharashtra Movement
4	CO4	Students will able to learn the impact of Regional Aspirations in India .

Poona District Education Association's

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem I

Name of Subject: Po-C1 Traditions Of Political Thought

Subject Code: (12401)

Sr.No.	CO Number	Contents
1	CO1	Student will become aware about the Ancient era's politics, specially thoughts of Confucius & Plato. Student will aware about how the concept of justice will improve with time & how this process is necessary.
2	CO2	Student will become aware about the modern era's thought like concept of dark era, struggle between the state & religion, absence of wisdom, rise of liberalism, rise of colonialism and imperialism, various state rising theory, separation of state & religion, rise of democracy etc.
3	CO3	Student will become aware about the industrial revolution and their impact on social. Economical and political sphere.
4	CO4	Student will become aware about How industrial revolution make positive & negative impact on the whole world. Specialty through the perspective of Mil and Marx. Student will aware about the concept of liberty, revolution, workers rights.
5	CO5	Student will become aware about the colonialism and their positive-negative impact. Freedom struggle movement in Asia and Africa Continent.
6	CO6	Student will aware about relation between western & eastern philosophy.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem I

Name of Subject: PO-C2: Administrative Theory

Subject Code: (12402)

Sr.No.	CO Number	Contents
1	CO1	Explaining the nature, and evolution of Public Administration; Private and Public Administration; Principles Of Socialist Management .
2	CO2	Discussing the Ecological approach to Public Administration .
3	CO3	TO understand the theories and concept to make sense of administrative practices
4	CO4	Explaining the Principals Of Public Administration for Analysing the Administrative Process: decision making ;communication and co-ordination .Discussing Weberian and Marxian theories of bureaucracy .
5	CO5	Discussing the New Trends in Public Administration ; New Public Management and Challenges
6	CO6	Explaining the Planning and Planned Administration in India. Continuity and Change in Indian Management .

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem I

Name of Subject: PO- C3 : Political Institutions in India

Subject Code: (12403)

Sr.No.	CO Number	Contents
1	CO1	Discussing the Nationalist legacies ; Explaining Democracy , Development and Social Transformation .
2	CO2	Assessing the nature of Indian Federalism with Strong Centre Framework .
3	CO3	Discussing about the President and Prime Minister; there Principle of Collective responsibility .
4	CO4	Discussing the legislature; there Norms of representation and Power .
5	CO5	Explaining the Processes and Procedures of Union and State Legislatures.
6	CO6	Explaining the Power of Judiciary who protect our Rights ; Judicial interpretations of Fundamental Rights and Directive Principles.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem I

Name of Subject: PO-01 Modern political Ideology

Subject Code: (12404)

Sr.No.	CO Number	Contents
1	CO1	Student will become aware about difference between thoughts, theory & ideology. They will aware about how ideology becomes very important after rise of modern era.
2	CO2	Student will become aware about various ideologies & their features. They can define which ideology is good & bad for society. They will aware about the political process & how politics will happen in society through ideology.
3	CO3	Liberalism will teach them value of liberty, socialism will teach them value of equity, multiculturalism will teach them importance of various cultures.
4	CO4	Feminism will teach them gender equity. That all value is very much important for society
5	CO5	Student will become aware about historical development of worlds social, political, economical sphere.
6	CO6	They will understand how ideology can give shape to the nations history.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem II

Name of Subject: PO -04 Comparative Political Analysis

Subject Code: (22401)

Sr.No.	CO Number	Contents
1	CO1	Student will become aware about difference between comparative government & comparative politics, difference between old comparative politics & new comparative politics,
2	CO2	Student will become aware about various approaches of comparative political study. Like new institutionalism & structural functionalism etc.
3	CO3	Student will become aware about various theories of development & relation between military & violence.
4	CO4	Student will become aware about difference between political party & pressure groups.
5	CO5	Student will become aware about political party & pressure groups role & how they giving shape to Indian politics.
6	CO6	Student will become aware about social movements & NGOs role in Indian politics.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem II

Name of Subject: PO- C5 : Theory of International Politics

Subject Code: (22402)

Sr.No.	CO Number	Contents
1	CO1	Explaining the Meaning ,Nature and scope of International Politics
2	CO2	Describing the Cold War phases and understanding the post Cold War era.
3	CO3	Approaches and method to study the discipline through Political realism, Pluralism and World system's Model .
4	CO4	Discussing the Geopolitical Issues ;Theories of Geopolitics
5	CO5	Examining the issues of Underdevelopment, Terrorism, Regionalism and Integration that characterizes the Post second world war order.
6	CO6	.Study the importaance of international peace.

Poona District Education Association's

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem II

Name of Subject: PO-06 Public policy

Subject Code: (22403)

Sr.No.	CO Number	Contents
1	CO1	Student will become aware about concept of public policy, Formation & implementation process of public policy.
2	CO2	Student will become aware about which type of role play by legislature, executive, administration in policy making.
3	CO3	Student will become aware about which type of role play by legislature, executive, administration in policy implementing process.
4	CO4	Student will become aware about various policies of Indian government which they made for people.
5	CO5	Student will become aware about relation between public policy & globalization.
6	CO6	Student will become aware about how globalization change the nature of public policy.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA I Sem II

Name of Subject: PO- 06: Human Rights

Subject Code: (22405)

Sr.No.	CO Number	Contents
1	CO1	Explaining the nature and Meaning of Human Rights ; Universalist and Relativist Conceptions of Rights .
2	CO2	Identify and evaluate the historical. Philosophical, political and cultural development establishing human rights as a set of global norms ,agreements, and procedures .
3	CO3	Understanding the concept of Human Rights. Assessing the availability of Human Rights in the Constitution of India. Studying the State Human Rights Commission.
4	CO4	Discussing the major groups of Human Rights ,who helps to protect Rights . importance of Human Rights to survive ; Right to Self- determination ;Right to Development .
5	CO5	Explore global human rights institutions, law, and process, and asses the impact of their interaction with national and local culture practice and norms.
6	CO6	Synthesize interdisciplinary approaches and contributions to topic such as gender, race, poverty, violence and post-colonialism within a human rights framework.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA II Sem III

Name of Subject: PO- C7 : Modern political Thought

Subject Code: (32401)

Sr.No.	CO Number	Contents
1	CO1	Tracing the evolution of Indian political thought from ancient India to modern India.
2	CO2	Analysing the Political Liberalism of Mahadeo Govind Ranade ;Hi's views on Social Reforms.
3	CO3	Analysing the Gandhian Movements such as the Khilafat, Non Cooperation, Civil Disobedience movements
4	CO4	Assessing the alternatives to the Indian National Congress- the Forward Bloc, Congress Socialist Party, Communist Party of India.
5	CO5	Discussing the Secularism of Jawaharlal Nehru ; his ideology on Nationalism and Internationalism. Analysing the Ram Manohar Lohia's Linguistic Politics ; Thought process on Cast and Indian Politics.
6	CO6	. Describing the movements against caste and untouchability, Ambedkar's views on Social justice and the depressed classes.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA II Sem III

Name of Subject: PO – C8 Political Sociology

Subject Code: (32402)

Sr.No.	CO Number	Contents
1	CO1	Student will become aware about the concepts of Power, concept of politics & concept of society. They can understand how politics & society is interrelated.
2	CO2	Examining social stratification through the index of class, caste and elite through the perspective of Weber & Marx.
3	CO3	Student will become aware about the concept of Political socialization & Political Culture. They can understand how that concept giving shape to political process.
4	CO4	Discuss the approaches to the study of Political Culture. Evaluating the different agents of Political Socialization and their interrelationships.
5	CO5	Student will become aware about the concept of political participation and public opinion. They can understand How public opinion is create and which factors make impact on them.
6	CO6	Creating awareness among students about political development & their stages & various theories of Political development.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA II Sem III

Name of Subject: PO- C9 : World Politics –New Development

Subject Code: (32403)

Sr.No.	CO Number	Contents
1	CO1	Explaining scope and subject matter of International Relations as an autonomous academic discipline.
2	CO2	Explaining the Definition of Foreign Policy ; Role of state in making of Foreign Policy.
3	CO3	How to impact of World Tread on International Relation and politics ; Role of MNCS and TNCS .
4	CO4	Analysing the Foreign Basic Principles, Evolution and Bilateral Relations.
5	CO5	Studying the role of Diplomacy, Propaganda and Military capabilities in the making of foreign policy.
6	CO6	Examining the dynamics of globalization. Discussing on the major issue like Environmental depletion , Environmental awareness and Feminism.

Poona District Education Association's

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: MA

Name of Department: Political Science

Class: MA II Sem III

Name of Subject: PO-O10 Political Thought Of Dr. Babasaheb Ambedkar

Subject Code: (32405)

Sr.No.	CO Number	Contents
1	CO1	Student will become aware about basic structures of Constitution, preamble of constitution & view of Indian constitution.
2	CO2	Student will become aware about Ambedkar's view on caste system & untouchability. They will understand how caste play vital role in Indian society.
3	CO3	Student will become aware about social democracy, concept of social justice, liberty, equality, fraternity value system.
4	CO4	Student will become aware about Ambedkar's thought on Agriculture & industry. Also they aware about How that both fields are important for Indian economy.
5	CO5	Student will become aware about critique of Hinduism which did by Ambedkar. Also they aware about conversion of Untouchables.
6	CO6	Student will become aware about Navyana concept

Poona District Education Association's

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: MA

Name of Department: Political Science

Class : MA II Sem IV

Name of Subject: PO-C10 Fundamentals of Political Theory

Subject Code: (42401)

Sr.No.	CO Number	Contents
1	CO1	Discuss about Political Theory: Meaning, Nature and Scope
2	CO2	Discuss about Liberty, Equality and Fraternity
3	CO3	Discuss about Justice, Rights, Citizenship
4	CO4	Discuss about Power, Authority and Legitimacy
5	CO5	Discuss about State, Democracy
6	CO6	Discuss about Civil Society

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA II Sem IV

Name of Subject: PO-C 11 Political Process in India

Subject Code: (42402)

Sr.No.	CO Number	Contents
1	CO1	Student will become aware about electoral politics of India, one party dominance, competitive multi party system & coalition government.
2	CO2	Student will become aware about centre state financial relations, constitutional & Statutory institution their role, functions. For example Finance commission & NITI Ayog
3	CO3	Student will become aware about centre and state political relation, role of governor, article 356, demands of state autonomy in Indian federalism.
4	CO4	Student will become aware about social determinants of state politics, how religion, language, caste gave shape to politics.
5	CO5	Student will become aware about Mass mobilization, various movements of Indian society.
6	CO6	Student will become Aware about Indian internal political process.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MA

Name of Department: Political Science

Class: MA II Sem IV

Name of Subject: PO – C12 : Politics and Society

Subject Code: (42403)

Sr.No.	CO Number	Contents
1	CO1	Discussing how important to study Politics and Society ; explaining community, culture and religion.
2	CO2	Discussing what is the role of State in Politics and Society, Explaining how Inter-relationship works between Politics and Society.
3	CO3	Explaining how Social Movements are important for the Development. Discussing some important movement like Anti Corruption Movement, Nirbhaya Movement and Environmental Movement.
4	CO4	Discussing major issues in Society and Politics ; Importance of Human Rights to survive in Society ,discussing how Gender Discrimination is the major issue
5	CO5	Explaining inter-relations between Politics, Society and Economy. Discussing about Cast, Class and Inequality
6	CO6	Discuss relationship between society & politics.

Poona District Education Association's

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: MA

Name of Department: Political Science

Class: MA II Sem IV

Name of Subject: PO 0 13 Twentieth Century Political Thought

Subject Code: (42404)

Sr.No.	CO Number	Contents
1	CO1	Creating awareness about Twentieth Century Political Thought & try to understand the political process through the various thinkers view.
2	CO2	Student will become aware about concept of hegemony, difference between civil & political society.
3	CO3	Student will become aware about theory of action, Arendt's critique about totalitarianism, civic republicanism.
4	CO4	Student will become aware about Rawls concept of political liberalism, theory of justice and importance of equality.
5	CO5	Student will become aware about Foucault concept of power & knowledge, govern mentality and critique of modernity.
6	CO6	Student will become aware about Habermas theory of cosmopolitanism, ethics & public sphere.



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



Geography

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A

Name of Department: Geography

Class: FYBA

Name of Subject: Physical Geography-I

Subject Code:11201

Sr. No.	CO Number	Contents
1	CO1	Student will distinguish the basic concepts in Physical geography.
2	CO2	They identify the efficacy and application of Physical geography in different regions and environment.
3	CO3	Student will examine the Earth system (Lithosphere, Atmosphere, Biosphere and Hydrosphere).
4	CO4	Student will understand interior of the earth surface and different theory of land and sea distribution.
5	CO5	To define the concept of atmospheric layer, heat budget, wind system and type of condensation.
6	CO6	To acquire the knowledge of Water cycle, various hydrological concept.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A

Name of Department: Geography

Class: FYBA

Name of Subject: Human Geography-II

Subject Code:12201

Sr. No.	CO Number	Contents
1	CO1	Student will identify the basic concepts in Human Geography.
2	CO2	Student will observe the utility and application of Human Geography in different regions and environment.
3	CO3	To acquire the population pattern, factor influencing the distribution and mobility of population including settlement and economic activities.
4	CO4	Students utilize the knowledge of demographic transition theory.
5	CO5	They examine the Settlement pattern and rural and urban settlement.
6	CO6	Student will able to divide the Agriculture types and identify the problems of agriculture in India.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.
Name of Programme: B.A
Name of Department: Geography
Class: SYBA (S1)
Name of Subject: Geography of Maharashtra-III
Subject Code:23201**

Sr. No.	CO Number	Contents
1	CO1	To Summarize the historical and political background of the Maharashtra.
2	CO2	Student will to associate the information of Geographical structure and physical setup of Maharashtra.
3	CO3	To categorize the Soil type of the Maharashtra
4	CO4	To gather the information of the river system in Maharashtra. They will learn the landform created by rivers.
5	CO5	Student will to learn the difference in various climatic region of Maharashtra.
6	CO6	They will gather the information about the causes and effects of flood in the area.
7	CO7	Student will associate the mineral resources in Maharashtra and its impact on industry, economic development of Maharashtra.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A

Name of Department: Geography

Class: SYBA (S1)

Name of Subject: Geography of Maharashtra-IV

Subject Code:24201

Sr.No.	CO Number	Contents
1	CO1	Student will learn different agriculture type in Maharashtra and will understand the problem of agriculture in Maharashtra
2	CO2	it will gain the major crop as well as Cash crop in a horticulture in Maharashtra
3	CO3	Acquire the knowledge of population distribution and composition in Maharashtra.
4	CO4	Student will know the concept of rural development and case studies in Maharashtra
5	CO5	.will understand the role of tourism development as well as growth potential in a tourism in Maharashtra
6	CO6	will know on the different settlement type in Maharashtra and potential of major cities in Maharashtra

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: SYBA(G2)

Name of Subject: Environmental Geography (Sem III)

Subject Code: 23207

Sr.No.	CO Number	Contents
1	CO1	To know the content of Environmental Geography and to gather the approaches and importance of Env. Geography
2	CO2	To determine the term and function of ecosystem and acquire the knowledge of ecosystem
3	CO3	To group the ecosystems on the earth and examine the different ecosystems around us.
4	CO4	To Learn the concept of biodiversity, its types, areas in India and co relate the biodiversity and economic potential.
5	CO5	To learn the types of pollution and find the causes and effects of pollution.
6	CO6	To know the causes of air pollution and identify effects of it.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: SYBA(G2)

Name of Subject: Environmental Geography (Sem IV)

Subject Code: 24207

Sr.No.	CO Number	Contents
1	CO1	To gain the Knowledge of types of disaster.
2	CO2	To identify the impact of biological disaster.
3	CO3	Students will get aware about the use of chemical fertilizers, pesticides and insecticides and its impact on environment.
4	CO4	Students will acquaint with need of environmental planning and management in India.
5	CO5	To know the concept of environmental impact assessment.
6	CO6	To acquire the knowledge about the existence of environmental in India.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: SYBA(S2)

Name of Subject: Practical III (Scale and Map Projections)

Subject Code:23201

Sr.No.	CO Number	Contents
1	CO1	Student to memorizing different Map type, its elements and uses.
2	CO2	To gain knowledge of map scale, different types of scale.
3	CO3	Understand the construction of simple geographical scale.
4	CO4	Understand the basic concept of map projection.
5	CO5	Acquire knowledge of calculation of time on the basis of meridian.
6	CO6	Understand the different types of map projection and its classifications

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.
Name of Programme: B.A. Geography
Name of Department: Geography
Class: SYBA(S2)
Name of Subject: Practical Geography – II (Cartographic
Techniques, Surveying and Excursion / Village / Project Report)
Subject Code: 24201

Sr.No.	CO Number	Contents
1	CO1	To define concept of cartography its development and uses.
2	CO2	Students learn to different cartographic techniques and its applications in Geography.
3	CO3	Understand the different techniques of surviving.
4	CO4	Knowledge about the preparation of layout.
5	CO5	To calculate and conversion of survey area.
6	CO6	Understand the socio-economic condition of village.
7	CO7	Understand the Geographical condition of field.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: TYBA(S3)

Name of Subject: Geography of India-V

Subject Code:35201

Sr.No.	CO Number	Contents
1	CO1	To Learn the extension of India and associate the physical diversity of India
2	CO2	To know the west and east flowing rivers and to associate the differences between west flowing and east flowing rivers
3	CO3	To know the various river systems in India and acquire the information of river systems in Himalaya and rest of India
4	CO4	To identify the seasons in India and associate the seasons and weather
5	CO5	To gain the knowledge of Soil Types and natural vegetation in India and co relate the two.
6	CO6	To know the importance of boundaries in world politics and identify the issues related to international boundaries of India

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: TYBA(S3)

Name of Subject: Geography of India-VI

Subject Code:36201

Sr.No.	CO Number	Contents
1	CO1	To learn the cultural setting of India and categorize religions of India. Group the major tribes and associate the tribal areas and their problems
2	CO2	To understand the importance of Transport and communication, summarize the role of transportation in regional development of India, Identify Land, Air, and Water ways in India. Highlight the development in communication technology in India.
3	CO3	To apply the resources existed and its role in industrial development. Identify the types of resources.
4	CO4	Estimate iron ore and Manganese resources in India. Identify coal and petroleum resources in India as well as Hydro and Thermal Power
5	CO5	Define Agriculture. Determine the significance of Agriculture in the Indian Economy. Group the industries into Agro based industries.
6	CO6	Summarize the sugar, cotton and textile industries in India interpret the Agriculture revolution in India. Categorize Green, White and Blue revolution.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: TYBA(G3)

Name of Subject: Geography of Tourism-I

Subject Code:35206

Sr.No.	CO Number	Contents
1	CO1	To define the role of geography in tourism.
2	CO2	To Create the details physical tourism potential places in the district.
3	CO3	To memorize information about tourism types on nationality, travel time & purpose
4	CO4	To correlate between infrastructural Development and tourism development
5	CO5	To Associative traditional tourism types and dangling trend of tourism.
6	CO6	To identify the career opportunities in different types of tourism.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: TYBA(G3)

Name of Subject: Geography of Tourism-II

Subject Code:36206

Sr. No.	CO Number	Contents
1	CO1	To analyses the role of accommodation in tourism development
2	CO2	To interpreted the knowledge of accommodation types and factors of affecting choice of accommodation
3	CO3	To interpreted the social cultural impact on tourism activity.
4	CO4	To create awareness about environment impact on tourism.
5	CO5	To memorize the policies of tourism development in the world and planning stages of tourism in India
6	CO6	To examine major tourist centers in India on the basic physical impact, transportation, accommodation, infrastructure, economic activities, leisure activities.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: TYBA(S4)

Name of Subject: Practical V (Techniques of Spatial Analysis))

Subject Code:35203

Sr.No.	CO Number	Contents
1	CO1	Introduce the student of Troposheets
2	CO2	Student will understand mechanism function of topographical maps
3	CO3	To understand interpretation of Troposheets
4	CO4	Introduce the student of Weather Maps
5	CO5	To understand interpretation of weather map.
6	CO6	Get knowledge about GIS and Remote sensing techniques.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.A. Geography

Name of Department: Geography

Class: TYBA(S4)

**Name of Subject: Practical Geography – VI (Techniques of Spatial
Analysis, Surveying and Excursion / Village / Project Report)**

Subject Code: 36203

Sr.No.	CO Number	Contents
1	CO1	Get knowledge about Geo Statistical method.
2	CO2	To understand different type of Central Tendency and its application in practical Geography.
3	CO3	To understand different type of Dispersion and its application in practical Geography.
4	CO4	To understand the testing and application of hypothesis.
5	CO5	To calculate the correction with various methods and get the knowledge of Regression.
6	CO6	Understand the socio-economic condition of village.
7	CO7	Understand the Geographical condition of field.



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Psychology

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: Bachelor of Arts

Name of Department

Sr.No.	PO Number	Contents
1	PO1	Students should understand basic concepts, principles and theories of Psychology
2	PO2	Students should accomplish to understand the basic steps in scientific research and psychology.
3	PO3	Students should understand recent clarification, the causes, symptoms and treatment of various Psychological disorders
4	PO4	Students should develop the skill of psychological testing, its administration, scoring and interpretation of obtain result.
5	PO5	Students should define Nature and Scope of industrial psychology, personnel selection and training. Also they should know Recruitment Techniques and Assessment
6	PO6	Students Should know the basic concepts theories and application of social Psychology also they should understood the importance of close relationship and Pro-social behaviour.
7	PO7	Students should know the basic concepts of experimental psychology and research methodology and also develop some basic skill for scientific inquiry.
8	PO8	Students should undertake an independent small-scale research projects or projects related with social works.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: F.Y. B.A.

Name of Subject: Course DSC-PSY- 1A: Foundations of Psychology(2019-2020)

Subject Code: 11221

Sr.No.	CO Number	Contents
1	CO1	Students should understand the basic psychological processes and their applications in day-to-day life.
2	CO2	Students should develop the ability to evaluate cognitive processes, learning and memory of an individual.
3	CO3	Students should understand the importance of motivation and emotion of the individual.
4	CO4	Students should understand the personality and intelligence of the individuals by developing their psychological processes and abstract potentials.
5	CO5	Students should understanding Behaviour through methods in Psychology
6	CO6	Students should able to use techniques for improving memory while doing study.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: F.Y.B.A.

Name of Subject: Course DSC-PSY- 1B : Introduction to Social Psychology(2019-2020)

Subject Code: 12221

Sr.No.	CO Number	Contents
1	CO1	Students should understand the basics of social psychology.
2	CO2	Students should understand the nature of self, concept of attitude and prejudice of the individual.
3	CO3	Students should assess the interactional processes, love and aggression in our day today life.
4	CO4	Students should understand group dynamics and individual in the social world.
5	CO5	Students should able to apply aggression prevention and reducing techniques.
6	CO6	Students should able to spread awareness in community for their better mental health

Poona District Education Association's

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA-

Name of Subject: Name of Course/paper : Abnormal Psychology- I

Subject Code: 23221

Sr.No.	CO Number	Contents
1	CO1	Students should acquire the knowledge about the symptoms, diagnostic criteria, and causes of various psychological disorders
2	CO2	Students should examine multiple probable causes and correlates of behaviour.
3	CO3	Students should understand critiques, limitations, and implications of diagnosis and classification of psychological diseases.
4	CO4	Students should create awareness about mental health problems in society
5	CO5	Students should define the recent mental disorder and should get clear idea about various types of mental illness
6	CO6	Students should understand types the DSM V base classification of mental disorders.
7	CO7	Students should know what mental illness; criteria's of abnormal behaviour is and understand causes of mental illness.
8	CO8	Students should understand the various symptoms of psychological disorder.

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Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA

Name of Subject: Name of Course/paper: Development Psychology

Subject Code: 23222

Sr.No.	CO Number	Contents
1	CO1	Students should understand the importance, characteristics and concern in lifespan development
2	CO2	Students should understand biological, cognitive, and socio-emotional processes.
3	CO3	Students should understand Psychoanalytic, Cognitive, Behavioural and Social Cognitive, Ethological, Ecological and Eclectic theories of development
4	CO4	Students should understand methods of data collection and research designs used in Life-span development research
5	CO5	Students should know the basic concepts of human development processes.
6	CO6	Students should understand the developments process of human and hereditary and environmental factor involve in developments.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA

Name of Subject: Health Psychology

Subject Code: 23223

Sr.No.	CO Number	Contents
1	CO1	Students should able to explain health psychology and arrive at the introduction to the role of psychology in health.
2	CO2	Students should understand the nature of stress and coping
3	CO3	Students should able to understand various factors related to health and diseases.
4	CO4	Students should able to know the the Need of Health Psychology- Changing Patterns of Illness, Expanded Health Care Services, Increased Medical Acceptance
5	CO5	Students should able to apply Psychological Interventions for Chronic Health Disorders
6	CO6	Students should able to use their knowledge for quality of life and promoting the good health.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA

Name of Subject: Health promotion life Skill

Subject Code: 23224

Sr.No.	CO Number	Contents
1	CO1	Students should know the concept of Hygienic behaviour
2	CO2	Students should understand the types of infectious diseases and Signs and symptoms of infectious diseases
3	CO3	Students should apply their knowledge for prevent infectious diseases by follow the hygienic habits
4	CO4	Students should able to understand the importance of interpersonal relationship, peer pressure effect.
5	CO5	Students should know the how to deal with peer such as saying no to drugs, tobacco and 3- bullying and its effect
6	CO6	Students should able to map their own competency and competencies dealing with self-management

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA

Name of Subject: PSYCHOLOGY OF ABNORMAL BEHAVIOR-II

Subject Code: 24221

Sr.No.	CO Number	Contents
1	CO1	Students should learn descriptions, and theories underlying diagnostic cosmology of psychiatric disorders.
2	CO2	Students should learn and understand benefits, critiques, limitations, and implications of diagnosis and classification.
3	CO3	Students should acquire the knowledge about the symptoms, diagnostic criteria, and causes of various psychological disorders.
4	CO4	Students should examine multiple probable causes and correlates of behaviour.
5	CO5	Students should know how to prevent or treatment of mental disorder.
6	CO6	Students should create awareness about mental health problems in society.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA

Name of Subject: THEORIES OF PERSONALITY

Subject Code: 24221

Sr.No.	CO Number	Contents
1	CO1	Students should able to describe the concept of personality with various theories of personality on the basis of personality psychology.
2	CO2	Students should understand different framework and theoretical aspects of personality.
3	CO3	Students should analysis, observe and interpret individual differences in behaviour in the light of sound theoretical systems of personality.
4	CO4	Students should able to do comprehensive overview of the major theories personality.
5	CO5	Student should be able to identify and classify the various personality traits.
6	CO6	Students should be able to correlate real-life behaviour pattern with the theoretical assumptions.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA

Name of Subject: POSITIVE PSYCHOLOGY

Subject Code: 24223

Sr.No.	CO Number	Contents
1	CO1	Students should understand how the positive psychology as the science of happiness, human strengths, positive aspects of human behavior and 'psychology of well-being.'
2	CO2	Students should know how we lead our lives, find happiness and satisfaction, and face life's challenges.
3	CO3	Students should analysis that how positive psychology has become an evolving mosaic of research and theory from many different areas of psychology.
4	CO4	Students should apply techniques for how to become happy.
5	CO5	Students should able to set their realistic goals.
6	CO6	Students should able to apply the knowledge of resilience concept, and how to growth through Trauma.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: SYBA

Name of Subject: Basic Counselling Skills

Subject Code: 24224

Sr.No.	CO Number	Contents
1	CO1	Students should able to know basic counseling skills.
2	CO2	Students should able to know how to facilitating problem solving method with client and Improving clients feedback.
3	CO3	Students should follow the ethical issues and dilemmas at their work place.
4	CO4	Students should take require support from other related to counselling and know importance of being supervised when they deal with their peers.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: TYBA Revise Syllabus 2021-2022

Name of Subject: Testing Project + Psychology Testing (Theory)

Subject Code: 35221

Sr.No.	CO Number	Contents
1	CO1	Students should know the basic concepts of Psychology test, reliability, validity and norms.
2	CO2	Students should able to classify and categorize Psychological tests, reliability- validity and norms types.
3	CO3	Students should identify the reliability and validity of Psychological tests.
4	CO4	Students should evaluate the types of norms.
5	CO5	Students should able to conduct testing project for behaviour analysis.
6	CO6	Students should follow the ethical issues in test construction

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: TYBA

Name of Subject: PSYCHOLOGICAL TESTS + (1) STATISTICS Practical

Subject Code: 35222

Sr.No.	CO Number	Contents
1	CO1	Students should describe mapping of human behaviour.
2	CO2	Students should explain general ability testing, personality, adjustment and attitude.
3	CO3	Students should identify and classify the intellectual ability and personality patterns.
4	CO4	Students should conduct testing and evaluate intellectual ability, personality traits, adjustment and attitudes of participant.
5	CO5	Students should analyze statistical methods employed in behaviour analysis.
6	CO6	Students should acquire the skill of administering and scoring psychological tests.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: TYBA

Name of Subject: Industrial And Organizational Psychology

Subject Code: 35223

Sr.No.	CO Number	Contents
1	CO1	Students should define Nature and Scope of industrial psychology. They should understand history, present and future of I/O Psychology.
2	CO2	Students should describe the concept of industrial and organizational psychology, selection and training, evaluation and motivation at workplace.
3	CO3	Students should explain job profile, job analysis, recruitment techniques and employee training.
4	CO4	Students should identify and classify the appraisal rating system.
5	CO5	Students should compare different theories of motivation.
6	CO6	Students should evaluate the training programme and job performance.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: TYBA

Name of Subject: Personality development-1

Subject Code: 35224

Sr.No.	CO Number	Contents
1	CO1	Students should be able to describe the concept of personality.
2	CO2	Students should be able to identify and classify the various personality traits.
3	CO3	Students should be able to correlate real-life behaviour pattern with the theoretical assumptions.
4	CO4	Students should be able to apply psychological skill in daily life situation.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: TYBA

Name of Subject: Applied Psychology

Subject Code: 36223

Sr.No.	CO Number	Contents
1	CO1	Students should be able to describe the concept of applied psychology educational psychology family structure and developmental patterns.
2	CO2	student should know the Clinical Psychology related mechanism social issues and criminal behaviour.
3	CO3	student should able to classify the intellectual ability abnormality and criminal behaviour.
4	CO4	students should able to identify the problem and solution in the field of education.
5	CO5	Students should able to evaluate the interpersonal relations.
6	CO6	students should able to apply psychological remedies to assess the abnormal behaviour to tackle the social issues and to rectify the problematic behaviour.

Poona District Education Association's
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Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: TYBA

Name of Subject: Research Project + Experimental Psychology (Theory)

Subject Code: 36221

Sr.No.	CO Number	Contents
1	CO1	student should be able to describe the process of experiment in psychology concept of psychophysics.
2	CO2	students should be able to explain problem hypothesis variable sampling in experiment.
3	CO3	students should be able to identify and classify the learning system method of psychophysics.
4	CO4	students should be able to compare law of psychophysics type of hypothesis.
5	CO5	students should be able to explain psychophysics, various cognitive processes of human being.
6	CO6	Students should able to conduct research based project.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class: TYBA

Name of Subject: PSYCHOLOGICAL EXPERIMENTS + 1 STATISTICS PRACTICAL

Subject Code: 36222

Sr.No.	CO Number	Contents
1	CO1	Students should explain psychophysics, various cognitive processes of human being.
2	CO2	Students should classify and compare psychological experiments.
3	CO3	Students should conduct laboratory experiments.
4	CO4	Students should analyse statistical base of human behaviour.
5	CO5	Students should acquire the skill of interpreting the scores or performance of psychological experiments
6	CO6	Students should learn practical application of psychological knowledge through study tour and visit.

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: Bachelor of Arts

Name of Department: Psychology

Class:

Name of Subject: Personality Development-2

Subject Code: 36224

Sr.No.	CO Number	Contents
1	CO1	student should be able to describe the concept of self esteem in personality development.
2	CO2	students should be able to identify and classify behavioral assessment techniques.
3	CO3	students should be able to integrate personality of individuals.
4	CO4	student should be able to apply psychological skill to develop own personality.



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Commerce

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BCOM

Name of Department: Department of Commerce & Research Centre

Sr.No.	PO Number	Contents
1	PO1	Build a strong foundation of knowledge in different areas of Commerce
2	PO2	Develop the skill of applying concepts and techniques used in Commerce for real life problems
3	PO3	Create awareness among society about Law and Legislations related to commerce and business
4	PO4	Communicate effectively about Economic Environment of Country as well as World.
5	PO5	Provide a platform for overall development and develop knowledge level and awareness about Recent Trends of World
6	PO6	Use new technologies effectively to communicate ideas in the area of commerce.
7	PO7	Critically evaluate new research findings, ideas, methodologies and theoretical framework in specialized study
8	PO8	Work collaboratively and productively in groups

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: MCOM

Name of Department: Department of Commerce & Research Centre

Sr.No.	PO Number	Contents
1	PO1	Aware the internal and external effects in developing business strategy
2	PO2	Train the students' well-acquainted regarding current financial structure
3	PO3	Express an understanding of the tools and techniques necessary for research in Business.
4	PO4	Inculcate students to acquire sound knowledge, concept and structure of capital market and financial services
5	PO5	Develop competence with their usage in managerial decision making and control
6	PO6	Illustrate the implications of various financial ratios in decision making
7	PO7	Criticize the business ethics and professional values in running business
8	PO8	Gain ability to solve problems relating to Company Accounts, Valuations and special types of situations

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: BCOM

Name of Department: Department of Commerce & Research Centre

Class: FYBCOM (Semester-I)

Name of Subject: Compulsory English (SEM-I)

Subject Code: 111

Sr.No.	CO Number	Contents
1	CO1	<p>Student achievement: (Prose section) They can understand basic concepts in the prescribed textbook. They can remember and define through reading. (LSRW) Students realize the beauty and power of communicative English.</p>
2	CO2	Students can write in simple English
3	CO3	<p>Use of language: Students can use the language by effectively communicating and feel confident in and outside the world by linking and correlating meaning, and by speaking confidently. They can act out, make presentations and face interviews in their life.</p>
4	CO4	<p>Students understand the importance and utility of the English language through listening, speaking, reading and writing skills (LSRW) of the English language. They also learn summarizing and paraphrasing poetry. They can also write short dialogues. They can read and write</p> <p>emails, letters and formal and informal. They can write CV's and Resume's and covering letters as well as other official letters like apology, request, Leave applications, Applications for jobs etc. Thus, Their employability enhances and English becomes the medium of their livelihood and personality.</p>
5	CO5	<p>Speaking skill: Through this skill, students can defend themselves in Group discussions, argue in debates and face interviews.</p>
6	CO6	<p>Creativity enhancement: (grammatically correct English) Students can: be bloggers</p>

Name of Subject: Financial Accounting (SEM-I)**Subject Code: 112**

Sr. No.	CO Number	Contents
1	CO1	It impart knowledge about various accounting concept, conventions & Principles & create awareness about application of these concept in business world.
2	CO2	Discuss & understand emerging trends in accounting & its effect on Accounting.
3	CO3	It help to students understand knowledge about process of dissolution of partnership firm
4	CO4	Students will be able To knowledge about single entry systems & process of conversion of single entry into double entry system.
5	CO5	understanding the conceptual framework of the GST, components and types of GST taxes and Registration Process.
6	CO6	Students will be able Explain suffered recoupment and lapse of short-working with examples

Name of Subject: Business Economics (Micro) (SEM-I)**Subject Code: 113**

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand the concepts of business economics (micro-economics)
2	CO2	Students will be able to compare between micro economics and macro economics
3	CO3	Students will be able to interpret the approaches of consumer behavior : cardinal approach and ordinal approach
4	CO4	Students will be able to understand the concept of demand and estimate the various types of elasticity of demand
5	CO5	Students will be able to determine price under varied demand and supply condition
6	CO6	Students will be able to understand theories of production function

Name of Subject: Business Mathematics and Statistics (SEM-I)

Subject Code: 114A

Sr. No.	CO Number	Contents
1	CO1	introduce the basic concept of Simple interest, compound interest and EM and Annuity
2	CO2	Students will be able to understand the contribution of shares and mutual funds in a systematic investment plan.
3	CO3	Discuss the technique of collecting, Analyzing and Interpreting data by different methods of sampling.
4	CO4	understand the classification and representation of data in tabular form. And computation of various measures of central tendency and measures of dispersion.
5	CO5	Identify and measure the dispersion by using Range, Variance and Standard Deviation.
6	CO6	Differentiate various types and methods of calculating correlation and regression for the bivariate data Measures of relative

Name of Subject: Banking and Finance (SEM-I)

Subject Code: 115B

Sr.No.	CO Number	Contents
1	CO1	Students will be able to explain the structure of Indian Banking
2	CO2	Students will be able to understand the primary and secondary functions of a bank.
3	CO3	Students will be able to understand the concepts related to Lending and ratios.
4	CO4	Students will be able to understand the process of opening and operating procedure of Bank accounts.
5	CO5	Students will be able to categorize various types of bank accounts holders.

6	CO6	Students will be able to analyse various methods of Remittance.
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Name of Subject: Tax Procedure & Practice I

Subject Code: 115C

Sr.No.	CO Number	Contents
1	CO1	Defining the concept of Tax and understanding the objectives, Importance of taxation. the Direct and Indirect taxes of central and state Government
2	CO2	Understanding constitutional background the Canons of taxation.
3	CO3	Determining the Administrative set up of Indian tax system
4	CO4	Distinguishing the Direct and Indirect tax.
5	CO5	Structuring the Taxes between central and state Government.
6	CO6	Reviewing the Direct and Indirect taxes of central and state Government

Name of Subject: Marketing and Salesmanship (SEM-I)

Subject Code: 116C

Sr.No.	CO Number	Contents
1	CO1	Basic knowledge of Market and Marketing will be developed amongst students.
2	CO2	It help the insight of the basic knowledge of Market Segmentation and Marketing Mix.
3	CO3	To impart knowledge on Product and Price Mix.
4	CO4	Students will be able understand the segmentation of markets and Marketing Mix.

5	CO5	To understand recent trends in marketing
6	CO6	

Name of Subject: Tax Procedure & Practices II

Subject Code: 116C

Sr.No.	CO Number	Contents
1	CO1	Define & understand Constitutional Background of GST Laws
2	CO2	Students will be able Provide the knowledge CGST Act, 2017
3	CO3	Review the various Types of GST
4	CO4	Students will be able Applicability & Registration under GST
5	CO5	understand the Exemption under GST
6	CO6	Students will be able the understand Administration of GST

Name of Subject: Consumer Protection & Business Ethics

Subject Code:116

Sr.No.	CO Number	Contents
1	CO1	Define consumer, Consumerism & consumer movement and its nature and scope.
2	CO2	Discuss the concept of voluntary consumer organizations and their role in the interest of consumer protection.
3	CO3	understand the role of United Nations in consumer protection & Consumer protection guidelines
4	CO4	Identify the legal provisions of Consumer protection act 1986 and study of Mechanism for Redressal agencies

5	CO5	Discuss of various law relating to consumer protection like The Bureau of Indian Standards Act, 1986, The Competition Act, 2002, Right to Information Act, 2005, and Food Safety and Standards Act, 2006.
6	CO6	Interpret standard form of contract and Legislative Reforms.

Name of Subject: Marathi(SEM-I)

Subject Code: 117B

Sr. No.	CO Number	Contents
1	CO1	विविध क्षेत्रातील मराठीचा अभ्यास करण्यासाठी प्रसारमाध्यमाचे स्वरूप व त्यातील भाषण व्यवहार समजावून देणे
2	CO2	प्रसारमाध्यमातील विविध लेखन प्रकारांचा अभ्यास वा प्रत्यक्ष लेखन अभिरुचीचा विकास करणे.
3	CO3	वाणिज्यशाखा व मराठी भाषा यातील परस्परसंबंधाचे मूल्यमापन करणे
4	CO4	साहित्याच्या अभ्यासातून जीवनविषयक समज विकसित करणे.
5	CO5	मराठी साहित्यातील भिन्न भिन्न प्रवाह आणि प्रकार ओळख करून देणे.
6	CO6	

Name of Subject: Organizational Skill Development

Subject Code: 115

Sr. No.	CO Number	Contents
1	CO1	Define modern office, Office organization, communication and time management
2	CO2	Explain records, Classification of files, Different types of forms and digitization of records.

3	CO3	DiscussroleofPublicRelation Officerinmodernoffice.
4	CO4	Demonstrate office automation using computerization through actual visits.
5	CO5	Discussmoderncommunicationtechniqueswhichareused inmodernoffice
6	CO6	Describeconceptof goalsettingandidentifyingSMARTgoals &applicabilityofnewknowledgeandskillinmodernofficeandtheirproblems.

Name of Subject: VA05Value Education(AcademicCreditSem. I)

Subject Code: 12019

Sr.No.	CO Number	Contents
1	CO1	Conceptual understandtheofvalue-basedliving
2	CO2	Develop the Values for excellence in real life . Developing Values, Personal Values, Family Values, Professional Values
3	CO3	Students will be able understand the skills required become a good citizen or leader.
4	CO4	The startapplyingtheessentialEnvironmental Awarenessstobecomegoodleaders
5	CO5	Studentswillknowthe purposeoftheirlife.
6	CO6	provide the Spiritual Education of changing the behaviour modification

Name of Subject: HINDI(Sem. I)

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	विद्यार्थियोंकोहिंदीकाव्यसाहित्यसेपरिचितकराना।
2	CO2	हिंदीकहानीसाहित्यसेअवगतकराना।
3	CO3	हदाभाषाद्वारालखनकाआररूझानबढ़ाना।

4	CO4	हिंदीभाषाद्वारासवादकशल्याविकासतकराना।
5	CO5	विज्ञापनलेखनकौशल्यविकसितकराना।
6	CO6	हिंदीकंप्यूटिंगकापरिचयदेना।

Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.
Name of Programme: BCOM
Name of Department: Department of Commerce & Research Centre
Class: FYBCOM (Semester-II)
Name of Subject: Compulsory English (SEM-II)
Subject Code : 121

Sr.No.	CO Number	Contents
1	CO1	Student achievement: (Prose section) They can understand basic concepts in the prescribed textbook. They come to know about various personalities all over the world and gain a broader view and understanding. Students realize the beauty and power of communicative English.
2	CO2	Basic language skills: Students can formulate ideas and And deeply understand human nature and its complexities and nuances.
3	CO3	Use of language: Students can summarize and paraphrase the prescribed poems.
4	CO4	Students understand the importance and utility of the language. They can write Reports, blogs as well as other official letters like apology, request, Leave applications, Applications for jobs etc. Thus, Their employability enhances and English becomes the medium of their livelihood and personality.
5	CO5	Writing skills: They can write Resume' and Emails.

6	CO6	Non -Verbal Communication: students can also understand body language, gestures and other aspects of non-verbal communication. They can be highly creative by understanding non-verbal clues.
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Name of Subject: Financial Accounting(SEM-II)
Subject Code:122

Sr.No.	CO Number	Contents
1	CO1	Define understand the various software used in accounting & its application & utility.
2	CO2	Students will be able knowledge about final accounts of charitable trusts.
3	CO3	It helps to acquire the knowledge about intangible assets & the methods of their valuation.
4	CO4	understanding the process and methods of accounting for lease

Name of Subject: Business Economics(Micro)(SEM-II)

Subject Code:123

Sr.No.	CO Number	Contents
1	CO1	Students will be able to interpret the short run and long run cost concepts
2	CO2	Students will be able to understand the concept of pure and perfect competition
3	CO3	Students will be able to analyse equilibrium of firm and industry in short and long run.
4	CO4	Students will be able to examine various market structures under imperfect competition
5	CO5	Students will be able to compare perfect and imperfect competition

6	CO6	Students will be able to understand the concept and theories in factor pricing
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Name of Subject: Business Mathematics and Statistics (SEM-II)

Subject Code: 124

Sr. No.	CO Number	Contents
1	CO 1	Define & understand the application of Matrices and Determinants in business and economics.
2	CO 2	Students will be able to understand the concept of Linear programming problems and solution of it by graphical method to solve business optimization problems with two variables.
3	CO 3	understand the student to use correlation for knowing the relationship between two variables
4	CO 4	Differentiate various types and methods of calculating correlation and regression for the bivariate data
5	CO 5	Differentiate various types and methods of calculating index numbers
6	CO 6	Connect acquired knowledge and skills with practical problems in real life economic practices.

Name of Subject: Banking and Finance (SEM-II)

Subject Code: 125B

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand the working of Banking Business and practices.
2	CO2	Students will be able to understand the principles of lending.
3	CO3	Students will be able to analyse the working of Balance sheet of a bank.
4	CO4	Students will be able to summarize the characteristics of Negotiable instruments.
5	CO5	Students will be able to analyse the Effects of Endorsement
6	CO6	Students will be able to examine the modern technology of banking.

Name of Subject: Tax Procedure & Practice(SEM-II)

Subject Code: 125C

Sr.No.	CO Number	Contents
1	CO1	Defining the various concepts & definitions under Income Tax Act, 1961 the problems on Income under the Head House Propert
2	CO2	Understanding Classification of Income under various heads
3	CO3	Determining procedure for computation of Residential Status
4	CO4	Explaining Exempt Income under Income Tax
5	CO5	Calculating the Computation of Income under the Head Salary
6	CO6	Solving the problems on Income under the Head House Property

Name of Subject: Consumer Protection & Business Ethics

Subject Code:126

Sr.No.	CO Number	Contents
1	CO1	Identify the legal provisions of Consumer protection act 1986.
2	CO2	Discuss of various law relating to consumer protection like The Bureau of Indian Standards Act, 1986, The Competition Act, 2002, Right to Information Act, 2005, and Food Safety and Standards Act, 2006.
3	CO3	Interpret standard form of contract and Legislative Reforms.
4	CO4	discuss the concept of business ethics and its importance, types of business ethics
5	CO5	Describe business ethics modern times with reference to CSR
6	CO6	Students will be able to identify the Mechanism for Redressal agencies

Name of Subject: Tax Procedure & Practice (SEM-II)

Subject Code: 126C

Sr.No.	CO Number	Contents
1	CO1	To understand the concept of IGST Act, 2017
2	CO2	To understand Important definitions IGST Act, 2017
3	CO3	Interpret the concept Reverse Charge Mechanism under GST
4	CO4	Understand procedure of filling Returns under GST
5	CO5	Applicability of Audit under GST
6	CO6	understand procedure to generate E-Way Bill

Name of Subject: Organizational Skill Development

Subject Code: 126

Sr.No.	CO Number	Contents
1	CO1	Define modern office, Office organization, communication and time management.
2	CO2	Explain records, Classification of files, Different types of forms and digitization of records.
3	CO3	Discuss role of Public Relation Officer in modern office.
4	CO4	Demonstrate office automation using computerization through actual visits
5	CO5	Study the applicability of new knowledge and skill in modern office and their problems.
6	CO6	Describe concept of goal setting and identifying SMART goals.

Name of Subject: Intellectual Property Laws (SEM-II)

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	The student provide the information about Intellectual Property Rights in India
2	CO2	Discuss the various concepts & element regarding IPR,
3	CO3	Students will be able the Basic knowledge on the various branches of Intellectual Property Law
4	CO4	Provide updated Contemporary issues in Intellectual Property Laws
5	CO5	Understand the procedure Filings for Intellectual Property registration
6	CO6	Describe the Steps of development of Intellectual Property

Name of Subject: HINDI (Sem. II)

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	छात्रोंकोहिंदीकाव्यसाहित्यसेपरिचितकराना।
2	CO2	।हदाकहानासा।।हत्यसअवगतकराना।
3	CO3	हिंदीभाषाद्वारासंवादकौशल्यविकसितकराना।
4	CO4	विज्ञापनलेखनकेप्रकारोंकोअवगतकराना।
5	CO5	अनुवादकेस्वरूपसेअवगतकराना।
6	CO6	पारिभाषिकशब्दावलीसेअवगतकराना।

Name of Subject: MarketingandSalesmanship(SEM-II)

Subject Code:126C

Sr.No.	CO Number	Contents
1	CO1	StudentswillgettheknowledgeofSalesmanshipandvariousapproaches .
2	CO2	Techniquesofsalesmanshipskillswillbedeveloped.
3	CO3	Students will be able knowaboutRuralMarketingwhichisanimportantsectorinmoderncompetitiv eIndianScenario.
4	CO4	Students will be able educateaboutthesourcesandrelevance ofrecenttrendsinMarketing.
5	CO5	To understand recent trends in Marketing i.e. Email, Content marketing
6	CO6	Students will be able present status of E marketing in India.

Name of Subject: Marathi(SEM-II)

Subject Code:

Sr. No.	CO Number	Contents
1	CO1	विद्यार्थ्यांस शुद्धलेखनविषयक नियमांचा परिचय करून देणे
2	CO2	व्यक्तिमत्त्व विकासात भाषेचे स्थान स्पष्ट करणे.
3	CO3	विद्यार्थ्यांना पारिभाषिक संज्ञांचा परिचय देणे .
4	CO4	जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे
5	CO5	भाषिक कौशल्ये विकास करणे.

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Name of Programme: BCOM

Name of Department: Department of Commerce & Research Centre

Class: SYBCOM (Semester-III)

Name of Subject: BusinessCommunication(Sem-III)

Subject Code:231

Sr.No.	CO Number	Contents
1	CO1	Helping students in creating awareness of basic communication skills, process and importance of communication.
2	CO2	Helping students in learning layout, essentials and physical appearance of business letter.
3	CO3	Students are able to learn soft skills and its application.
4	CO4	Developing resume writing skills and drafting of job application letter skills among students
5	CO5	Understand various etiquettes and manners in their day to day life.
6	CO6	Understand various forms of Business Letters.

Name of Subject: Corporate Accounting(Sem-III)

Subject Code:232

Sr. No.	CO Number	Contents
1	CO1	Define & develop the conceptual understanding about various accounting standards and its applicability in corporate accounting.
2	CO2	Students will be able to develop the conceptual understanding about pre and post incorporation period. and
3	CO3	Analytical skills regarding allocation of various income and expenses for pre and post period.
4	CO4	preparation of financial statements as per provisions schedule III of the companies act 2013.
5	CO5	Understand the various skills for adjustments and their Treatment..
6	CO6	Students will be able to understand various concepts and the need for valuation of shares. and to study the various methods of valuation of shares

Name of Subject: Business Economics(Macro)(Sem-III)**Subject Code:233**

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand basic concepts of macroeconomics
2	CO2	Students will be able to analyse various concepts of national income.
3	CO3	Students will be able to understand the methods of calculation of national income and precautions involved there in
4	CO4	Students will be able to interpret the process of income, output and employment generation- classical and Keynesian theory
5	CO5	Students will be able to analyse the concept of Consumption ,Saving and investment.
6	CO6	Students will be able to interpret the effect of multiplier and acceleration in the economy.

Name of Subject: Principle of Management (Sem-III)

Subject Code: 234

Sr. No.	CO Number	Contents
1	CO1	Students understood the basic concept, principles and functions of management.
2	CO2	Students are aware about recent trends in management.
3	CO3	Students understood the different levels of management and organizational structure.
4	CO4	Students are aware of the social responsibility of business and business ethics.
5	CO5	Students after learning this subject, get knowledge of various aspects of marketing management through practical approach and E-commerce.
6	CO6	It helps the students to learn the concept of consumer behavior and impact of marketing trends on consumer behavior.

Name of Subject: Elements of Company Law (Sem-III)

Subject Code: 235

Sr.No.	CO Number	Contents
1	CO1	It helps to students for understanding the new company law 2013 . various new provisions regarding new company law.
2	CO2	It helps to students for existing law & formation of new company in India
3	CO3	Students will be able Types of Companies based on various criteria
4	CO4	Discuss the stages of new company formation and incorporation.
5	CO5	It also helps to students for principle document preparation

6	CO6	It understands the students for various modes of capital of the company.
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Name of Subject: Cost and Works Accounting - Special Paper-I (Sem-III)

Subject Code: 236E

Sr. No.	CO Number	Contents
1	CO1	Define & understand the basic concept of cost accounting and the role of cost accountant in an organization.
2	CO2	To understand different elements of cost and preparation of cost sheet.
3	CO3	To understand the purchase procedure and its documentation.
4	CO4	To understand the different methods of inventory control and calculation of FIFO, Stock levels and Inventory ratio.

Name of Subject: Business Administration - Special Paper-I (Sem-III)

Subject Code:

Sr. No.	CO Number	Contents
1	CO1	Define Basic Concept of Business Administration and identify the Functions of Business Administration
2	CO2	Outline and Discuss the various Forms of Business Organization.
3	CO3	Summarize Business Environment Factors and its Implications
4	CO4	Understand and Design the proposal for promotion of Business Units.
5	CO5	Understand and Demonstrate the Legal Aspect and required Documents for Establishment of Business unit.
6	CO6	Recognize the Problems of Industrial Sickness and Find out and determine the Solutions for Industrial Sickness.

Name of Subject: Tax Procedure and Practice Paper III

Subject Code:235 c

Sr.No.	CO Number	Contents
1	CO1	To understand computation of income under the head Business or Profession
2	CO2	To apply the calculation computation of income under the head Capital Gain/Loss
3	CO3	To understand computation of income under the head Other Sources and deduction under chapter VI A
4	CO4	To understand computation of deduction under chapter VI A Sec 80C to 80u
5	CO5	To understand Computation of Gross Total Income, Net Taxable Income & Income Tax Liability for Individual Assessee
6	CO6	To know the Computation Clubbing of In come

Name of Subject: Tax Procedure and Practice Paper IV

Subject Code:236 c

Sr.No.	CO Number	Contents
1	CO1	Identifying the Goods and Services under GST law
2	CO2	Developing skill for solve the practical Problems on valuation of supply.
3	CO3	Determining the Time and Value of supply
4	CO4	Understanding the provisions in respect of Composition levy scheme
5	CO5	Explaining the levy, payment and refund of profession tax.
6	CO6	Reviewing the Maharashtra Profession tax Act 1975

Name of Subject: 1 Environmental Awareness(Academic Credit Sem.III)

Subject Code:239AECC

Sr.No.	CO Number	Contents
1	CO1	To know the content of Environmental Awareness and to gather the approaches and importance of Env. Awareness
2	CO2	To determine the term and function of ecosystem and acquire the knowledge of ecosystem
3	CO3	To group the ecosystems on the earth and examine the different ecosystems around us.
4	CO4	To Learn the concept of biodiversity, its types, areas in India and co relate the biodiversity and economic potential
5	CO5	To learn the types of pollution and find the causes and effects of pollution
6	CO6	To know the causes of air pollution and identify effects of it

Name of Subject: Scientific Survey,Societal Survey(Extra Credit Sem.III)

Subject Code:GR7

Sr.No.	CO Number	Contents
1	CO1	Students will be able to apply critical, creative and evidence-based thinking to future challenges.
2	CO2	Aware that the student's survey tends to focus on quantitative methods in future all areas.
3	CO3	Students are understanding the term of social survey as a means for collection of data or information.

4	CO4	Surveyexperiences exposestudentstomultipleaspectsofsurveyoperations.
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Name of Subject: FieldVisits;Study Tours;IndustrialVisits(Extra CreditSem.III)

Subject Code:GR8

Sr.No.	CO Number	Contents
1	CO1	Improvessocialrelations.
2	CO2	Awareaboutreal-worldexperience.
3	CO3	Increasesthequalityofeducation.
4	CO4	Studentshavetheopportunitytoseenewthingsandlearnaboutthemina moreunstructured way.

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Name of Programme: BCOM

Name of Department: Department of Commerce & Research Centre

Class: SYBCOM (Semester-IV)

Name of Subject: Business Communication(Sem-IV)

Subject Code:241

Sr.No.	CO Number	Contents
1	CO1	To understand various forms of report writing and internal correspondence
2	CO2	To understand various recent trends in communications such as zoom, go ogle meet etc. and use of social media for it.
3	CO3	To develop drafting skills of various business letters among students.
4	CO4	To understand the elements and writing Formal mail and blog writing.
5	CO5	Students will be able to write various Business Letters.
6	CO6	Developing skills in writing E-mail and Business Blog.

Name of Subject: Corporate Accounting(Sem-IV)

Subject Code:242

Sr. No.	CO Number	Contents
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1	CO1	Define the various concept, and prepare of consolidation balance sheet of holding co. with subsidiary company.
2	CO2	Students will be able get the knowledge among the students about consolidation of financial statements with the process of holding and its subsidiary
3	CO3	It help to students knowledge of corporate policies of investment for expansion and growth through absorption of smaller units.
4	CO4	Students will be able update the students with knowledge of the process of liquidation of a company and practical applications skill.
5	CO5	It help the student regarding liquidation process and statement of affairs.
6	CO6	Introduce the students with the recent knowledge about Forensic Accounting and its simplification.

Name of Subject: Business Economics (Macro) (Sem-IV)

Subject Code: 243

Sr.No.	CO Number	Contents
1	CO1	Students will be able to interpret the tools to understand the role of money and the reasons we demand money.
2	CO2	Students will be able to summarize the Money Measure of RBI.
3	CO3	Students will be able to understand the concept of Inflation.
4	CO4	Students will be able to interpret the stagflation and Phillips curve.
5	CO5	Students will be able to examine the role of trade cycles and why they occur.
6	CO6	Students will be able to understand to understand the concepts of Public Finance.

Name of Subject: Principle of Management (Sem-IV)

Subject Code: 244

Sr. No.	CO Num	Contents
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	ber	
1	CO1	Students will get an idea about the basic motivational tools used in the field of management.
2	CO2	Students will get an idea about how leadership influences organizational success.
3	CO3	Students will understand the significance of coordination and control in modern business management.
4	CO4	Students will come across various emerging trends in management.

Name of Subject: Elements of Company Law (Sem-IV)

Subject Code: 245

Sr.No.	CO Number	Contents
1	CO1	Students will be able to develop general awareness among the students about management of company.
2	CO2	Comprehensive understanding about Key Managerial Personnel of company and their role in Company administration.
3	CO3	Students will be able to understand the students about E-Governance and E-Filing under the Companies Act, 2013.
4	CO4	It helps the students about the various meetings of Companies and their importance.
5	CO5	Students will be able to develop the awareness about the Indian Companies Act.
6	CO6	Students will be able to read information about the mode of winding up of the companies.

Name of Subject: Cost and Works Accounting - Special Paper - I (Sem-IV)

Subject Code: 246E

Sr. No.	CO Number	Contents
1	CO1	Define concept of cost, Costing, Cost Accounting and Cost Accountancy.
2	CO2	To understand the basic concept of cost accounting and the role of cost accountant in an organization.

3	CO3	To understand different elements of cost and preparation of cost sheet.
4	CO4	To understand the purchase procedure and its documentation.
5	CO5	To understand the different methods of inventory control and calculation of EOQ, Stock levels and Inventory ratio.
6	CO6	Illustrate the practical problem on Direct cost.

Name of Subject: Business Administration -Special Paper-I(Sem-IV)

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	Define & understand basic knowledge about various forms of business organizations
2	CO2	Understand the Definition of the Terms Administration, Management and Organization & its Functions of Administration.
3	CO3	Students will be able about business environment and its implications thereon
4	CO4	Concept of Entrepreneurship skills and qualities required of an entrepreneur.
5	CO5	Students will be able make them aware about the recent trends in business
6	CO6	The student get the information Impact of New Policies on Business Administration

Name of Subject: Tax Procedure and Practice Paper III (Sem-IV)

Subject Code:245C

Sr.No.	CO Number	Contents
1	CO1	Understand filing of income tax return and other compliance under Income Tax law.
2	CO2	Understand provisions in respect of Assessment & Audit
3	CO3	Understand Computation of Total Income & Tax Liability for Partnership Firm/ Limited Liability Partnership
4	CO4	Interest and Remuneration to the partners
5	CO5	Understand Computation of Total Income & Tax Liability for Company
6	CO6	Dividend Distribution Tax

Name of Subject: Tax Procedure and Practice Paper IV (Sem-IV)

Subject Code:

Sr.No.	CO Number	Contents
1	CO1	Definig the Computation of GST Liabilit
2	CO2	Understanding the Payment of GST , Input Tax Credit under GST , Refund of GST , Electronic Credit Ledger and Cash Credit Ledger
3	CO3	Comparing the various returns under GST
4	CO4	Determining the provisions in respect of TDS, TCS, Eway bill and invoicing under GST law
5	CO5	Explaining the Assessment and Audit under GST law
6	CO6	Reviewing the Turnover based GST Audit u/s 35(5) and Audit by tax authorities

Name of Subject: Environmental Awareness(AcademicCreditSem.IV)

Subject Code:249AECC-2

Sr.No.	CO Number	Contents
1	CO1	To gain the Knowledge of types of disaster
2	CO2	To identify the impact of biological disaster
3	CO3	Students will get aware about the use of chemical fertilizers, pesticides and insecticides and its impact on environment.
4	CO4	Students will acquaint with need of environmental planning and management in India.
5	CO5	To know the concept of environmental impact assessment
6	CO6	To acquire the knowledge about the existence of environmental in India.

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Name of Programme: BCOM

Name of Department: Department of Commerce & Research Centre

Class: TYBCOM (Semester-V)

Name of Subject: BusinessRegulatoryFramework:(Sem-V)

Subject Code:351

Sr.No.	CO Number	Contents
1	CO1	Understand the concept of Contract and its contents. Equip the students with knowledge of nature and performance and breach of Contracts.
2	CO2	Understand the nature of partnership ,Rights and duties of Partner Handling the registration and dissolution of the partnership.
3	CO3	Concept Formation of the contract of sale , Concept and Essentials. Sale and agreement to sale.
4	CO4	Acquaint knowledge about Compressive understanding about the sale of Goods Act & ownership and delivery of goods
5	CO5	Definition & Concept of Arbitration & Conciliation.
6	CO6	Comprehensive insight about the emerging trend of Arbitration and conciliation and its regulatory mechanism

Name of Subject: AdvancedAccounting:(Sem-V)

Subject Code:352

Sr.No.	CO Number	Contents
1	CO1	conceptual understanding about various Accounting Standards and its applicability and also introduce the students about IFRS – Fair Value Accounting.
2	CO2	Students will be able conceptual understanding about accounting for capital restructuring in the form of internal reconstruction
3	CO3	To develop the skill & upgrade the knowledge regarding reorganization of venture capital and it's recording.
4	CO4	understand the various legal provisions regarding banking companies
5	CO5	Students will be able understand the procedure regarding preparation of final accounts of banking companies
6	CO6	

Name of Subject:InternationalEconomics:(Sem-V)**Subject Code:353**

Sr.No.	CO Number	Contents
1	CO1	Students will able to understand the concepts of International economics.
2	CO2	Students will be able to analyse the theories of international trade.
3	CO3	Students will able to evaluate the trade policies in international economics.
4	CO4	Students will be able to understand the working of tools of protection
5	CO5	Students will able to understand the concept of Terms of trade.
6	CO6	Students will be able to analyse the favourable and unfavourable terms of trade to developing nations

Name of Subject: AuditingandTaxation:(Sem-V)

Subject Code:354

Sr.No.	CO Number	Contents
1	CO1	Understanding the concept of Auditing, Various type of Audit & Help to Find out Errors frauds and help to improve Internal control system in business organization.
2	CO2	Explain the procedure of Vouching, Verification, Checking and Valuation of items of financial statement, Auditing and Assurance Standards like AAS 1, 2, 3, 4, and 5.
3	CO3	To understand audit report and audit certificate.
4	CO4	Discuss Qualification, Disqualification, Appointment, Removal, Rights, Duties and Liabilities of Company Auditor, and various provisions of Tax Audit under Income Tax Act, 1961.
5	CO5	To asquint the various valuations of assets and liabilities in business firm and company.
6	CO6	To able to understand auditing in EDP environment and the process of forensic audit and audit techniques

Name of Subject: Cost and Works Accounting-III:(Sem-V)
Subject Code:356E

Sr.No.	CO Number	Contents
1	CO1	Students will be able prepare learners, application of Cost Accounting techniques in cost control and decision making.
2	CO2	Students will be able provide knowledge about preparing various types of Budgets
3	CO3	To enable the learner the basic concept of Uniform Costing and Inter-firm comparison.
4	CO4	Students will be able prepare learners, application of Cost Accounting techniques in cost control and decision making.

Name of Subject: Cost and Works Accounting-II:(Sem-V)

Subject Code:355E

Sr. No.	CO Number	Contents
1	CO1	Ability to understand the concept of overheads and its Classification.
2	CO2	Students will be able to relate cost accounting standard with respective overheads
3	CO3	Students will be able to calculate total departmental overheads after implementing primary & secondary Distribution.
4	CO4	Conceptual understanding of under & over Absorption, enable the learner with accounting treatment for under & over absorption.
5	CO5	Students will be able to identify overheads as per various activity.
6	CO6	

Name of Subject: Business Administration. Special Paper II (Sem.V)

Subject Code:355 (a)

Sr.No.	CO Number	Contents
1	CO1	Students will be able to with knowledge about various Concepts , Objectives of the Human Resource Function ,
2	CO2	identify the difference between Human Resource Management and Human Resource Development.
3	CO3	provide the information about Sources Of To update the students on the emerging trends in the area of Human Resource Management
4	CO4	understanding among the students the process of Recruitment and Selection, understanding the various means and methods associated with the Recruitment and Selection function
5	CO5	students on the importance of Training and Development and its impact on Career Planning and Development
6	CO6	Students will be able on the concept of Performance Appraisal ,d the process for effective Performance appraisal and imbibe the values of Ethical Performance appraisal among the students

Name of Subject: Business Administration. Special Paper III (Sem.V)

Subject Code:356 (a)

Sr.No.	CO Number	Contents
1	CO1	Students will be able with knowledge about Corporate Finance
2	CO2	Understand the structure of the Indian Financial Market
3	CO3	Students will be able the Financial Planning Skills among the Students
4	CO4	Introducing the process of efficient Financial Planning
5	CO5	Students will be able on the importance of Capitalization and the importance to maintaining an optimum capital structure
6	CO6	create awareness among the students in the various sources of Finance available for raising corporate capital

Name of Subject: Tax Procedure and Practices-VI (Sem.V)

Subject Code: 355 c

Sr.No.	CO Number	Contents
1	CO1	Understand the concept of Custom Duties & Legal Structure of Custom Duties
2	CO2	Comprehensive understanding about the types of Custom Duties
3	CO3	Acquaint knowledge and application of types of Custom Duties
4	CO4	Conceptual Clarity and Practical understanding of classification and valuation of goods
5	CO5	Practical knowledge about Import Procedures & Export Procedures
6	CO6	Disposal of Prohibited Goods

Name of Subject: Tax Procedure and Practices-VI (Sem.V)

Subject Code: 366 c

Sr.No.	CO Number	Contents
1	CO1	Defining the the basic concept of Research and to be aware of need and significance of research in today's era
2	CO2	Understanding the Process and Techniques of Research
3	CO3	Determining the methods of data collection.
4	CO4	Choosing Sources of data collection
5	CO5	Explaining the need and importance of data analysis and interpretation
6	CO6	Analyzing the data analysis

Name of Subject: ScientificSurvey,SocietalSurvey(ExtraCreditSem.V)

Subject Code:GR7

Sr.No.	CO Number	Contents
1	CO1	Studentswillbeabletoapplycritical,creativeandevidence-basedthinkingtofuturechallenges.
2	CO2	awarethatthestudent'ssurveytendstofocus onquantitativemethodsinfutureallareas.
3	CO3	studentsareunderstandingthetermsofsocialSurveyasameansforcollectionofdataorinformation.
4	CO4	Surveyexperiences exposestudentstomultipleaspectsofsurveyoperations.

Name of Subject: FieldVisits;Study Tours;IndustrialVisits(Extra CreditSem.V)

Subject Code:GR8

Sr.No.	CO Number	Contents
1	CO1	Awareaboutreal-worldexperience.
2	CO2	Improvessocialrelations.
3	CO3	Increaseshequalityofeducation.
4	CO4	Studentshavetheopportunitytoseenewthingsandlearnaboutthemina moreunstructured way.

Poona District Education Association's
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Name of Programme: BCOM

Name of Department: Department of Commerce & Research Centre

Class: TYBCOM (Semester-VI)

Name of Subject: Business Regulatory Framework:(Sem-VI)

Subject Code:361

Sr. No.	CO Number	Contents
1	CO1	Students will be able with procedure and practices about negotiable instruments and liabilities of parties in case of dishonor of negotiable instruments.
2	CO2	Comprehensive understanding about the E Contracts, E-Commerce and their legal aspects
3	CO3	Students will be able about regulatory mechanism of Consumer Protection and Procedural aspects of Re-dressal of Consumers' grievances.
4	CO4	Students will be able appreciate the emerging developments in the area of intellectual property
5	CO5	Students will be able updated Contemporary issues in Intellectual Property Laws
6	CO6	Understand the procedure Filings for Intellectual Property registration

Name of Subject: AdvancedAccounting:(Sem-VI)

Subject Code:362

Sr.No.	CO Number	Contents
1	CO1	Students will be able upgrade regarding legal provisions of co-operative accounting.
2	CO2	Students will be able the skill regarding preparation & presentation of final accounts of Credit Co-op. Societies & Consumer Co-op. Societies
3	CO3	conceptual understanding about accounting for different branches & ascertain whether the branch should be expanded or closed, to ascertain the requirement of cash and stock for each branch
4	CO4	Students will be able the skill & upgrade the knowledge regarding methods of charging goods to branches.
5	CO5	Students will be able conceptual understanding about forensic accounting, corporate social responsibility, derivative contracts and artificial intelligence in accounting
6	CO6	understand the conceptual knowledge, objectives, methods & tools of analysis of financial statements.

Name of Subject:InternationalEconomics:(Sem-VI)

Subject Code:363

Sr.No.	CO Number	Contents
1	CO1	Students will be able to understand the concept of balance of payments and balance of trade
2	CO2	Students will be able to analyse the causes of disequilibrium in balance of payments
3	CO3	Students will be able to evaluate foreign exchange Market, foreign exchange rate, euro market.
4	CO4	Students will be able determine the Foreign Exchange Rate- Fixed and Flexible foreign exchange rate

5	CO5	Students will be able to assess the concept of international factor mobility and its effects on economy.
6	CO6	Students will be able to analyse the working of different organizations for international finance and trade Development.

Name of Subject: Auditing and Taxation: (Sem-VI) Income Tax

Subject Code: 364

Sr.No.	CO Number	Contents
1	CO1	Define various concepts under Income Tax act 1961 like Income, Person, Assesse, Assessment year, Previous year, Agricultural Income, Exempted Income, Residential Status of an Assesse, PAN, TAN
2	CO2	Calculate Taxable Income under Head of Income like Income from Salary, Income from House Property, Profits and Gains of Business and Professions, Capital Gains and Income from other sources.
3	CO3	Calculate total taxable Income and tax liability of an individual under chapter VIA ie deductions u/s-80C to 80 U
4	CO4	Explain procedure of individual income tax filing and Income Tax Return Filing and Structure, Functions and powers of various Income Tax Authorities
5	CO5	Define concept of refund of tax and various tax penalties, types of income tax assessment.
6	CO6	To understand TDS and their calculation procedure of TDS.

Name of Subject: Cost and Works Accounting-II: (Sem-VI)

Subject Code: 365E

Sr.No.	CO Number	Contents
1	CO1	Students will understand the various methods of costing.
2	CO2	Develop the ability to prepare a job cost sheet
3	CO3	It will help the learner to understand the concept of contract costing

4	CO4	learners will understand the process of calculation of profit on incomplete contracts
5	CO5	Students will get an idea of how to prepare process accounts & understand the basic concept of CAS 19: Joint cost
6	CO6	The student will be enabled to understand the concept of service costing & will be able to prepare a cost sheet for different services industries.

Name of Subject: Cost and Works Accounting-III: (Sem-VI)

Subject Code: 366E

Sr.No.	CO Number	Contents
1	CO1	The student will develop the ability to understand the basic concepts of Standard Costing
2	CO2	Students will be able to understand the Principles of product Pricing and Pricing Policy.
3	CO3	Students will learn to calculate the Selling price under different pricing methods.
4	CO4	Students will be able to understand the application of Cost Accounting Standards.
5	CO5	Learners will be able to understand Cost Management practices in the Agricultural and IT sectors
6	CO6	Learners will be able to understand the compliance about the preparation of Cost Accounting records U/S 148 of Companies Act 2013.

Name of Subject: Business Administration. II (Marketing) Special Paper II (Sem.VI)

Subject Code: PR- 365 (a)

Sr.No.	CO Number	Contents
1	CO1	Students will be able with knowledge about Marketing, Marketing Concepts identification on various types of markets

2	CO2	understanding among the students on the various elements of Marketing Mix and Market Segmentation
3	CO3	Students will be able update the students with knowledge on varied dimensions.
4	CO4	Students will be able the knowledge on various aspects of Promotion and Distribution
5	CO5	Discuss Product Management , Branding and Pricing Management
6	CO6	Students will be able on the recent trends in the field of Marketing

Name of Subject: Business Administration. (Production and Operations Management) Special Paper III (Sem.VI)

Subject Code:PR- 366 (a)

Sr.No.	CO Number	Contents
1	CO1	Students will be able with knowledge of Production Management and Production Functions
2	CO2	Review the knowledge for efficient Inventory Management
3	CO3	Students will be able the concept of Quality Management and to motivate to adopt quality management even inthe regular lifestyle
4	CO4	Students will be able update the students with the knowledge of Logistics Management
5	CO5	Students will be able the information Recent trends in Inventory Management
6	CO6	Understand the procedure of production and operation management.

Name of Subject: Tax Procedure and Practices-VI
Subject Code:366 C

Sr.No.	CO Number	Contents
1	CO1	Defining the concept of Entrepreneurship and study the Types, Importance, Need and characteristics of entrepreneurship.

2	CO2	Understanding the Importance ,Types and limitations of startups and self help groups .
3	CO3	Determining the various Government schemes for entrepreneurship development.
4	CO4	Developing the entrepreneurial competencies.
5	CO5	Explaining the Recent trends in taxation and the provisions of Factory Act and payment of wages Act.
6	CO6	Evaluating the challenges of Entrepreneurship Development

Name of Subject: Tax Procedure and Practices-VI

Subject Code: 365

Sr.No.	CO Number	Contents
1	CO1	Practical knowledge about Baggage Rules & Import and Export by post or courier
2	CO2	Practical knowledge about various exemptions & benefits under Custom Duties
3	CO3	Understanding Administration & Assessment under Custom Duties
4	CO4	Offences; Penalties; Confiscation and Prosecution
5	CO5	Conceptual Clarity and Practical understanding of Foreign Trade Policy. Knowing procedure for registration of Import Export Code.
6	CO6	Import Export Code Applicability & Registration

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Name of Programme: M.Com

Name of Department: Department Of commerce and research centre

Class: M.Com –I Sem-I

Name of Subject: Management Accounting

Subject Code: 101

Sr.No.	CO Number	Contents
1	CO1	understand the concept of Financial Accounting and its limitations, emergence of Management Accounting and Cost Accounting, its advantages and distinction between Management Accounting and Cost Accounting.
2	CO2	understand the concept of Marginal Costing, its applications, different techniques of managerial cost accounting and Fixed and Variable Cost Analysis in decision making process.
3	CO3	Evaluate practical problems on marginal costing which correlate to BEP and P/V analysis.
4	CO4	Distinguish concept of budget and budgetary control.
5	CO5	Assess minimum working capital required for running organization.
6	CO6	understand the concept of Working Capital Management, determination of working capital, components of working capital and accounts receivable and inventory management

Class: M.Com –I Sem-I

Name of Subject: Strategic Management

Subject Code: 102

Sr.No.	CO Number	Contents
1	CO1	Understanding of the concept of Strategic management
2	CO2	understand the process of Strategic Management
3	CO3	Understanding the External and Internal Business Environment for effective Strategy
4	CO4	Development of Applicability skills for effective plan implementation

5	CO5	Developing Technical skills for evaluation of alternatives and analytical skills for choice among alternatives
6	CO6	Development of Analytical and Managerial Abilities for critical evaluation

Class: M.Com –I Sem-I

Name of Subject:Advanced Accounting

Subject Code:103

Sr.No.	CO Number	Contents
1	CO1	Describe conceptual framework of accounting in business.
2	CO2	Estimate the consolidated financial statements of holding and subsidiary types of companies.
3	CO3	Prepare statement of affairs for liquidation of company.
4	CO4	Explain the different methods of valuation of shares of company.
5	CO5	Differentiate different methods of valuation of goodwill of organization.
6	CO6	Interpret the concept of national and international branch account.

Class: M.Com –I Sem-I

Name of Subject:Income Tax

Subject Code: 104

Sr.No.	CO Number	Contents
1	CO1	Describe Income Tax structure in India.
2	CO2	Compute the Income for salary of individual person from different background
3	CO3	Demonstrate the problems on Income from House Property.
4	CO4	Illustrate income from various types of business and profession.
5	CO5	Demonstrate the problems on Income from Capital gain.
6	CO6	o Compute the taxable income of an Individual , Hindu Undivided Family and Companies.

Class: M.Com –I Sem-I

Name of Subject:Advanced Cost Accounting

Subject Code:107

Sr.No.	CO Number	Contents
1	CO1	understand the classification of costs and will be able to trace the cost to cost centers
2	CO2	prepare cost sheet in various situations and understand the inventory related treatments in cost accounting.
3	CO3	understand the concept of employee cost and its relevance in the total cost of product or service
4	CO4	acquire the understanding of CAS 3 & CAS 7.
5	CO5	develop ability to ascertain cost in different industries.
6	CO6	enable students to learn application of different methods of costing in Manufacturing and Service industries.

Class: M.Com –I Sem-I

Name of Subject: Costing Techniques and Responsibility Accounting

Subject Code: 108

Sr.No.	CO Number	Contents
1	CO1	understand the role of Budget in the process of Cost Control and Decision Making.
2	CO2	develop Skills in computation and analysis of various variances.
3	CO3	Understand Material, Labour, Overhead, Sales and Profit Variances.
4	CO4	Understand the concepts of Uniform Costing and Inter firm Comparison.
5	CO5	Describe concept and types of responsibility centre accounting for management controlling.
6	CO6	Understand the relevance of Cost Accounting Data as a part of monitoring various segments of business.

Class: M.Com –I Sem-II

Name of Subject:- Financial Analysis & Control

Subject Code: 201

Sr.No.	CO Number	Contents
1	CO1	Understanding basics of financial analysis.
2	CO2	To gain knowledge of practically comparing financial results of different years and different companies
3	CO3	understand the importance of cash liquidity in an organization.
4	CO4	understand the computation of cash and fund flows under operating, investing and financing categories
5	CO5	Estimate the cash flow of liquidity capacity of firm.

6	CO6	develop the skill of appropriate use of different ratios to evaluate the financial performance of entities.
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Class: M.Com –I Sem-II

Name of Subject:Specialized Areas in Accounting

Subject Code: 203

Sr.No.	CO Number	Contents
1	CO1	Explain contract accounting for government constructions of business.
2	CO2	Interpret preparation of contract accounts.
3	CO3	understand the accounting for construction contracts and various terms used in contract accounting and principles to be followed while computing profit on incomplete contracts and valuation and disclosure of WIP and escalation clause
4	CO4	understand the concept of corporate restructuring, its accounting methods, processes as per accounting standard 14
5	CO5	acquaint with hotel accounting, Hospital accounting, Transport undertakings accounting fund based accounting to create an avenue for employment in the academics and also to benefit Industry
6	CO6	understand that every registered person to keep and maintain, at his principal place of business (as mentioned in the certificate of registration), a true and correct account along with relevant documents

Class: M.Com –I Sem-II

Name of Subject:Business Tax assessment and planning

Subject Code: 204

Sr.No.	CO Number	Contents
1	CO1	understand the provision for computation of income of various entities.
2	CO2	understand the provisions of returns, assessment and procedure of assessment.
3	CO3	Solve problems on Tax Deducted at Source.
4	CO4	Explain concept of tax planning and management.
5	CO5	understand need and importance of Tax Planning and Management
6	CO6	understand the Basic concept and framework under GST Act & Customs Act.

Class: M.Com –I Sem-II

Name of Subject:Application of Cost Accounting

Subject Code: 207

Sr.No.	CO Number	Contents
1	CO1	To conceptualize the need to integrate financial and Cost Accounts.
2	CO2	To explain the concept of integral and non-integral cost accounting.
3	CO3	Understand the concepts of Product Life Cycle Costing (PLC) and Value Chain Analysis (VCA).
4	CO4	understand the mechanism of Activity Based Cost Management
5	CO5	understand the logic behind ABC technique and to prepare the Cost formats under ABC & to compare such results with the Traditional Overhead Accounting
6	CO6	Understand the concept of Transfer Pricing & Target Costing.

Class: M.Com –I Sem-II

Name of Subject:Cost Control and Cost Systems

Subject Code: 208

Sr.No.	CO Number	Contents
1	CO1	understand the role of Marginal Costing in short term decision making.
2	CO2	To be able to solve problems on Marginal Costing.
3	CO3	Understand pricing mechanism under global competitive environment.
4	CO4	Skills to differentiate between Cost Reduction and Cost Control techniques.
5	CO5	understand the process of installation of Costing System
6	CO6	understand the relationship between cost and productivity.

Name of Programme: M.Com

Name of Department: Department Of commerce and research centre

Class: M.Com –II Sem-III

Name of Subject:BUSINESS FINANCE

Subject Code: 301

Sr.No.	CO Number	Contents
1	CO1	The students will be able to understand the role and importance of corporate finance, and learn the calculation value of money.
2	CO2	To acquaint the students with corporate finance required for Indian Industries.
3	CO3	The students will acquaint the financial planning, theories of capitalization and estimation of finance need of firm.
4	CO4	To make the students aware about the latest developments in the field of corporate finance.
5	CO5	The students will be able to learn the sources of finance to be tapped for running business successfully.
6	CO6	The students will be able to apply best practice in working capital management.

Class: M.Com –II Sem-III

Name of Subject: RESEARCH METHODOLOGY FOR BUSINESS

Subject Code: 302

Sr.No.	CO Number	Contents
1	CO1	Define concepts of Research in business.
2	CO2	understand the nature, scope and Types of Research
3	CO3	understand various ethical issues and modern practices in research
4	CO4	understand various aspects and methods of testing of Hypotheses
5	CO5	To study the nature of Research design and Sampling
6	CO6	To study various aspects of mode of citation and bibliography

Class: M.Com –II Sem-III

Name of Subject: ADVANCED AUDITING

Subject Code: 303

Sr.No.	CO Number	Contents
1	CO1	To provide basic knowledge of auditing
2	CO2	Create awareness of Auditing and assurance standard
3	CO3	To provide basics of audit of limited company
4	CO4	Conceptual Understanding of Corporate Governance
5	CO5	Conceptual Understanding CIS
6	CO6	Use of computer in audit program

Class: M.Com –II Sem-III

Name of Subject:SPECIALIZED AUDITING

Subject Code:304

Sr.No.	CO Number	Contents
1	CO1	understand need and importance of audit .
2	CO2	understand various concepts of Audit under GST
3	CO3	understand need and importance of internal audit in an organisation
4	CO4	To know the need and importance of the audit in banks.
5	CO5	To understand Process of audit in banks
6	CO6	To understand need and Importance of Auditing in co- operative sector.

Class: M.Com –II Sem-III

Name of Subject:Cost Audit

Subject Code:307

Sr.No.	CO Number	Contents
1	CO1	To provide adequate knowledge to the student on Cost Audit Practices.
2	CO2	In depth Understanding of basic concepts of cost audit and its applicability in various areas
3	CO3	To acquaint student to understand the role and responsibilities of Cost Auditor
4	CO4	To understand how to Conduct The Cost Audit Traditionally And Electronically
5	CO5	Knowledge to Conduct The Cost Audit Traditionally And Electronically
6	CO6	Knowledge On Preparation Of Cost Audit Report.

Class: M.Com –II Sem-III

Name of Subject:Management Audit

Subject Code: 308

Sr.No.	CO Number	Contents
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1	CO1	To acquaint the students with the knowledge of the techniques and methods of planning and execution of Management Audit.
2	CO2	In depth Understanding of fundamentals of Management audit
3	CO3	To familiarize the students with the knowledge of corporate image.
4	CO4	Knowledge on Management Audit procedures
5	CO5	Knowledge on different areas of Management audit
6	CO6	Detailed Understanding of operational Audit

Class: M.Com –II Sem-III

Name of Subject: Skill Development (Assistant Stores Manger)

Subject Code: 394

Sr.No.	CO Number	Contents
1	CO1	Define the Inventory management
2	CO2	Understand the techniques of inventory management
3	CO3	Applying the techniques of Inventory management
4	CO4	Analysing the inventories
5	CO5	Evaluating the materials in store department
6	CO6	Improving the efficiency of inventories

Class: M.Com –II Sem-IV

Name of Subject: Capital Market and Financial Services

Subject Code: 401

Sr.No.	CO Number	Contents
1	CO1	To acquaint the students with working of capital market.
2	CO2	To make the students aware about the latest developments in the field of capital market in India.
3	CO3	Students will be able to learn the importance and working of capital market.
4	CO4	Student will be able to understand the working of BSE and NSE, and OTCEI in detail.
5	CO5	The students will be able to know the role of inter-mediators, Mutual funds, Portfolio management.
6	CO6	The students will be able to know the role of SEBI in regulating stock exchanges and investors' education, financial advisors.

Class: M. Com –II Sem-IV

Name of Subject:Recent Advances in Accounting, Taxation & Auditing.

Subject Code: 403

Sr.No.	CO Number	Contents
1	CO1	To gain the knowledge of use of technology for accounting by accountants and accounting firms. To realise the importance of Remote Electronic Accounting.
2	CO2	Enumerate corporate governance
3	CO3	To impart the knowledge of the latest reforms established in the field of accounting, auditing and taxation.
4	CO4	understand the need for adopting new branches of accounting among the corporates
5	CO5	Describe forensic accounting.
6	CO6	To acquaint students with the future accounting concepts, those of which, may become statutory for certain industries

Class: M. Com –II Sem-IV

Name of Subject:PROJECT WORK (ADVANCED ACCOUNTING & TAXATION)

Subject Code: 404

Sr.No.	CO Number	Contents
1	CO1	To develop research attitude in the minds of students.
2	CO2	To enrich the ability of research work among students.
3	CO3	To develop problem finding and problem solving skills through research process
4	CO4	understand the data collection
5	CO5	Knowledge on finding and conclusion
6	CO6	To develop project preparation skills among students

Class: M. Com –II Sem-IV

Name of Subject:Recent Advance in cost audit & cost system

Subject Code: 407

Sr.No.	CO Number	Contents
1	CO1	To aware the students with the recent trends in Cost Accounting and Cost Systems
2	CO2	To acquaint the students with Standards and applications Of Cost Accounting
3	CO3	Detail understanding of GST and Productive Audit
4	CO4	Introduction, Meaning, Features, Benefits & Limitations Of ERP Benefits of Implementation of ERP
5	CO5	Introduction to Various techniques & tools of Manufacturing and its impact On Costing

6	CO6	To acquaint the students with recent trends in Cost Accounting.
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Class: M. Com –II Sem-IV

Name of Subject:PROJECT WORK (Advanced Cost Accounting & Cost system)

Subject Code: 408

Sr.No.	CO Number	Contents
1	CO1	Describe concepts of Research in business.
2	CO2	Understanding sampling methods.
3	CO3	Selecting the methods of data collection
4	CO4	analyzing and interpretation of data.
5	CO5	Rewrite report in different areas.
6	CO6	Summarize modes of citation & bibliography.



PDEA's
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Hadapsar Pune - 411028.



BBA (CA)

P.D.E.A'S
Annasaheb Magar Mahavidyalaya, Hadapsar,Pune-28
B.B.A. (Computer Applications)
Program Outcomes (Pos)

1. The objectives of the Program shall be to provide sound academic base from which a career in Computer applications can be developed.
2. To develop skills of the students so that they can design and develop the applications using programming Languages.
3. Conceptual grounding in computer usage as well as its practical business applications will be provided.
4. To inculcate quality software development practices. To create awareness about process and product Standards.
5. To train students in professional skills related to Software Industry.
6. To prepare necessary knowledge base for research and development in Computer Technology.
7. To help students build a successful career in Computer Application / Information Technology.

Sr. No.	PO Number	Contents
1	Po1	Develop the career in Computer Application.
2	Po2	Demonstrate Conceptual grounding in computer usage as well as its practical business application will be provided.
3	Po3	Develop the programs in different languages and applications.
4	Po4	Use the knowledge of Software Testing apply it to validate system
5	Po5	Use the knowledge of Networking and apply to hardware configuration
6	Po6	Using different technologies like JAVA, VB, PHP, Dot Net etc and develop applications
7	Po7	To import practical skills and manage database, arrange database using relational Database.
8	Po8	To make industry ready resource.
9	Po9	Design and develop Web and Mobile based computer applications
10	Po10	An ability to gain knowledge on design and control strategy; techniques to secure information and adapt to the fast changing world of information technology needs.
11	Po11	Apply software engineering practices and strategies in software project and development using open source programming environment to deliver a quality product for business success.
12	Po12	Students should be able to apply modern practices and strategies in software project Development using open-ended programming environments to deliver quality product for business success in context with societal needs.

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B.B.A. (Computer Applications)

Name of Programme: BBA(CA)

Name of Department: BBA(CA)

Class:- FYBBA(CA)

Name of the Subject: Business Communication. Subject code: CA-101

Course Outcomes (COs)

On completion of this course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Become adopt to communicate and write effectively.
2	Co2	Developing and delivering effective presentations.
3	Co3	Create awareness among students about Methods and Media of communication.
4	Co4	To understand system and communication and their utility.
5	Co5	Make students familiar with information technology and improve job seeking skills.
6	Co6	To develop proficiency in how to write business letters and other communications in required.

Name of Programme: BBA(CA)

Name of Department: BBA(CA)

Class:- FYBBA(CA)

Name of the Subject: Principles of Management Subject code: CA-102

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Practice the process of management's four functions: planning, organizing, leading, and controlling.
2	Co2	Evaluate leadership styles to anticipate the consequences of each leadership style.
3	Co3	Understand the working of business organization.
4	Co4	Describe the contributions of Frederick W. Taylor, Mayo and Ducker.
5	Co5	Interpret and design the different forms of organization
6	Co6	Apply the managerial functions in different business setup

Name of Programme: BBA(CA)

Name of Department: BBA(CA)

Class:- FYBBA(CA)

Name of the Subject: C programming Subject code: CA-103

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Improve upon a solution to a problem.
2	Co2	Use different data types in a computer program.
3	Co3	To understand the concept of Procedural Programming. Use the 'C' language constructs in the right way
4	Co4	Understand the dynamics of memory by the use of pointers and Structures.
5	Co5	Design programs involving decision structures, loops and Functions. Design, develop and test programs written in 'C'
6	Co6	Analyze a given problem and develop an algorithm to solve the problem

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Name of Programme: BBA(CA)
Name of Department: BBA(CA)
Class:- FYBBA(CA)
Name of the Subject: DBMS Subject code: CA-104

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	To understand role and importance File Structures and Organization
2	Co2	To develop skills related with Database basic Concepts
3	Co3	To Develop right understanding of various Data models
4	Co4	To Understand the Programming in SQL and Implementation
5	Co5	To Learn about Relational Database Designing.
6	Co6	Understand the concept of data anomalies of un-normalized database, Normalization, normal form etc.

Name of Programme: BBA(CA)
Name of Department: BBA(CA)
Class:- FYBBA(CA)
Name of the Subject: Statistics Subject code: CA-105

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	To identify the power of excel spreadsheet in computing summary statistics.
2	Co2	To understand the concept of various measures of central tendency and variation and their importance in business.
3	Co3	To discuss the concept and applications of probability, probability distributions in real life situations.
4	Co4	To understand simulations in business world and decision making.
5	Co5	To develop skills related with basic statistical technique
6	Co6	Develop right understanding regarding regression, correlation and data interpretation

Name of Programme: BBA(CA)
Name of Department: BBA(CA)
Class:- FYBBA(CA)
Name of the Subject: Lab Course based on 103 &104 Subject code: CA-106

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Understanding foundation concepts of information and information processing in computer systems: a matter of information, data Representation, coding systems.
2	Co2	Devise pseudo codes and flowchart for computational problems.
3	Co3	Write, debug and execute simple programs in 'C'.
4	Co4	To develop an ability/skill for creations, manipulation of data in databases through queries
5	Co5	Create database tables in PostgreSQL.
6	Co6	Write and execute simple, nested queries.

Name of Programme: BBA(CA)

Name of Department: BBA(CA)

Class:- FYBBA(CA)

Name of the Subject: Add-on(PPA) Subject code: CA-107

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Understanding of an algorithm and its definition. Understanding foundation concepts of information and information. Processing in computer systems: a matter of information, data Representation, and coding systems.
2	Co2	Ability to write simple programs in C language by using basic Control structures (conditional, statements, loops, switches, branching, etc.).
3	Co3	Ability to create a programmable model for a problem given. Understanding a function concept and how to deal with function Arguments and parameters.
4	Co4	Ability to use pointers and pointer arithmetic in the simple cases. Basic knowledge of working with Arrays in C language.
5	Co5	Understanding a defensive programming concept. Ability to handle Possible errors during program Execution.
6	Co6	Elementary knowledge of programming code style.

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Name of Programme: BBA(CA)
Name of Department: BBA(CA)
Class:- SYBBA(CA)
Name of the Subject: Digital Marketing Subject code: CA-301

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Understanding basic concepts of E-commerce related to digital Marketing
2	Co2	Identify SWOT analysis and use of various digital marketing tools
3	Co3	To understand Case study and Exercise on various terms
4	Co4	To understand Digital marketing for business purpose
5	Co5	Explaining the SEO optimization
6	Co6	Applying the different models of social marketing to solve the real world problems

Name of Programme: BBA(CA)
Name of Department: BBA(CA)
Class:- SYBBA(CA)
Name of the Subject: Data Structure Subject code: CA-302

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Understand the concept of dynamic memory allocation, data types, algorithms, asymptotic notation, ADTs.
2	Co2	To learn linear data structures – lists, stacks, and queues
3	Co3	To understand sorting, searching
4	Co4	Student should be able to apply Tree and Graph structures
5	Co5	Student should be able to efficiently implement different data structure
6	Co6	To apply Tree and Graph structures

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class - SYBBA (CA)
Name of the Subject: Software Engineering Subject code: CA-303

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	To understand system concepts.
2	Co2	To identify the quality factor of McCall's for Software
3	Co3	To apply the concepts of Software Engineering to design & Development of Software
4	Co4	Distinguish between SDLC & Spiral Model to solve problems
5	Co5	Describe the use of modules and system testing in solving the real world problems
6	Co6	Students can apply the knowledge, techniques, and skills in the development of a software product.

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class: - SYBBA (CA)
Name of the Subject: PHP Subject code: CA-304

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Understand how server-side programming works on the web.
2	Co2	Identify the PHP Basic Syntax and able to do programming
3	Co3	Understanding POST and GET in form submission. How to receive and Process form submission data.
4	Co4	Reading and writing cookies.
5	Co5	Creating conditional structures and sorting data in arrays
6	Co6	Create a database in phpMyAdmin, Read and process data in a MySQL Database.

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- SYBBA(CA)
Name of the Subject: Big Data Subject code: CA-305

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	CO1	The students will be able to identify Big data and its Business Implications
2	CO2	Student understand and able to develop analytical skills in current and developing areas of analysis statistics and machine learning.
3	CO3	Student can be able to identify, develop and apply detailed analytical creative, problem solving skills.
4	CO4	Course provides a comprehensive platform for career development and innovation to the student.
5	CO5	Student able to understand concepts of Regression Analysis with its types
6	CO6	Student able to understand Data manipulation and data visualization

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- SYBBA(CA)
Name of the Subject: Lab Course based on 301,304,305 Subject code: CA-306

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	CO1	Identify different sorting technique on different types of data.
2	CO2	Distinguish between linear and non-linear data structures using linked list
3	CO3	Implement various kinds of searching and sorting technique and decide when to choose which technique.
4	CO4	write PHP scripts to handle HTML forms
5	CO5	Create PHP programs that use various PHP library functions and that manipulate file and directories
6	CO6	Able to understand R programming, Decision making and loop control structures
7	CO7	Apply the Vector, list, Array and Matrices in R programming
8	CO8	The students will learn practical application for how to implement different data structures to solve the problems.

Name of Programme: BBA (CA)

Name of Department: BBA (CA)

Class:- SYBBA(CA)

Name of the Subject: Environment Awareness

Subject code: CA-307

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	CO1	Provide an opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment
2	CO2	To develop conscious towards a cleaner and better managed environment
3	CO3	To reduce dependency on chemicals
4	CO4	To built the models to sustain the environment

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Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- TYBBA(CA)
Name of the Subject: Cyber Security Subject code: CA-501

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Interpret and forensically investigate security incidents. Develop and implement an incident response strategy.
2	Co2	Implement identity and access management controls
3	Co3	Develop policies and procedures to manage enterprise security risks.
4	Co4	Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training.
5	Co5	Design, develop, test and evaluate secure software.
6	Co6	Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure.

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- TYBBA(CA)
Name of the Subject: Object oriented Software Engineering Subject code: CA-502

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Compare Different Process Models
2	Co2	Formulate Concepts of Requirements Engineering and Analysis Modeling
3	Co3	To Understand The Fundamental of Objects Oriented Design
4	Co4	Apply Systematic Procedure For Software Design
5	Co5	Find Error with Various Testing Techniques
6	Co6	Evaluate Project Schedule Estimate Project Cost and Effort Required

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- TYBBA(CA)
Name of the Subject: Core Java Subject code: CA-503

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Define the concepts of Object oriented programming in java
2	Co2	Able to write programs using Java collection API as well as the java standard class library.
3	Co3	Solve the inter-disciplinary applications using concept of inheritance
4	Co4	Apply JDBC to provide a program level interface for communicating with DB using java programming
5	Co5	Develop applets for web applications.
6	Co6	Design GUI based applications

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- TYBBA(CA)
Name of the Subject: Python Subject code: CA-504

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Define Python Syntax and semantics and use of Python Flow control
2	Co2	Express proficiency in the handling of strings and function.
3	Co3	Determine the methods to create and manipulate Python program by utilizing the data structure like list, dictionaries, tuple and sets.
4	Co4	Identify the commonly used operation involving file system and regular expression.
5	Co5	Explain the object oriented programming concept such as encapsulation, Inheritance and Polymorphism as used in Python.
6	Co6	Develop application using built-in data structures “lists” and “dictionary”.

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- TYBBA(CA)
Name of the Subject: Project Subject code: CA-505

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	Co1	Students can express their ideas clearly and effectively, both verbally and in written form
2	Co2	Students can work as a team to achieve common goals.
3	Co3	Students are able to make links across different areas of knowledge to generate and develop
4	Co4	Students are able to learn on their own, reflect on their learning and improve upon it.
5	Co5	Evaluate ideas and Information related to the project.
6	Co6	Apply the techniques to solve real world problems

Name of Programme: BBA (CA)
Name of Department: BBA (CA)
Class:- TYBBA(CA)
Name of the Subject: lab course based on 503,504 Subject code: CA-506

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	CO1	Write Test and Debug Python Programs.
2	CO2	Implement conditionals and loops for python program.
3	CO3	Use functions and repeat compound data using Lists, Tuples and Dictionaries.
4	CO4	List and use object oriented programming concept for problem solving.
5	CO5	Write programs using java collection API as well as the Java standard class library.
6	CO6	Solve the inter disciplinary application using the concept of Inheritance.
7	CO7	Apply JDBC to provide a program level interface for communication with database using Java program.
8	CO8	To create and manage Applications using Java Programming, Python

Name of Programme: BBA (CA)

Name of Department: BBA (CA)

Class:- TYBBA(CA)

Name of the Subject: IOT (Add-On) Subject code: CA-507

Course Outcomes (COs)

On completion of the course, the students will be able to:

Sr. No.	CO Number	Contents
1	CO1	To understand Technical aspects of Internet of things.
2	CO2	To describe smart objects and IOT Architecture.
3	CO3	To study and compare different Application protocols of IOT.
4	CO4	To understand IOT platform using Arduino Uno.



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BBA

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Department of B.B.A

Programme Outcomes

Sr. No.	P.O. No.	Contents
1.	PO 1	Understand basic Management concepts and theories as they are applicable in various Business scenarios
2.	PO 2	Develop analytical skills to understand the problem correctly and develop solutions
3.	PO 3	Awareness of law and legislation related to business and their implementations.
4.	PO 4	Understand the Business environment through knowledge of Economics, Business Demography, International Business and Financial Services
5.	PO 5	Develop entrepreneurship through knowledge of idea generation, business planning, activity, product development awareness of intellectual property rights and media
6.	PO 6	Ability to effectively communicate in oral and written form.
7.	PO 7	Ability to use conceptual skills in day to day life.
8.	PO 8	To collect total information and then take decision accordingly
9.	PO 9	Analyze the tools and techniques of data
10.	PO 10	Understand the nature and type of customer and consumer

Name of Department: BBA Department

Course Outcome (CC)

Class: F.Y.BBA

Semester-I

Name of Subject: Principles of Management 3 CC

Credits: 03

Subject Code: 101

Sr. No.	CO Number	Contents
1	CO 1	To learn and understand the basic aspects of management thinking, how management works.
2	CO 2	Developing thought Process as manager. Understand the role of Management Thinker in development of the modern management process.
3	CO 3	How to plan various management activities, programmes and events. Developing of decision making skills to evaluate various alternatives and situations. Understanding the concept of forecasting, importance of process of organization .
4	CO 4	To Develop Understanding regarding new systems of management
5	CO 5	To understand the role, challenges and opportunities of management in contributing to the successful operations and performance of organizations.
6	CO 6	To analyze the new developments in management

Name of Subject: Business Communication Skills 4 CCT

Credits: 04

Subject Code: 102

Sr. No.	CO Number	Contents
1.	CO 1	To know the values of communication.
2.	CO 2	To implement channels of communication.
3.	CO 3	To improve skills sets to cope up with corporate challenges.
4.	CO 4	To understand system and medias of communication.
5.	CO 5	To understand the needs and functions of business correspondence.
6.	CO 6	To understand types, components and layouts of business letters.

Name of Subject: Business Accounting 3 CC

Credits: 03

Subject Code: 103

Sr. No.	CO Number	Contents
1	CO 1	To Understand role and importance of accounting in Business and how accounting concept can be implemented in business and Computation ability in business ability to distinguish between various accounting concepts and practices.
2	CO 2	To understand how to record different financial and their financial implications and ability to write different accounting transactions and prepare basic financial statements.
3	CO 3	To understand the kind of accounting relationship between customer and bank ability to write necessary set of entries in books of accounts and in cash book and compare them with bank statements to understand their implications and effect.
4	CO 4	Ability to understand growing importance of software and to know how to use software and to write books of accounts and ability to use software like tally for writing of accounts.
5	CO 5	To analyze finalization of accounting records, Income Statements and Balance sheet.
6	CO 6	To apply knowledge regarding accounting software Tally, ERP 9.

Name of Subject: Business Economics (Micro) 3 CC

Credits: 03

Subject Code: 104

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept of Business Economics.
2.	CO 2	To analyze the dynamics of market forces.
3.	CO 3	To discuss the concept of costs & Revenue.
4.	CO 4	To examine various aspects concerning price output determination under different market structures.
5.	CO 5	To apply Micro economic concepts and tools for analyzing business problems.
6.	CO 6	To make accurate decisions pertaining to the business firms.

Name of Subject: Business Mathematics 3 CC

Credits: 03

Subject Code: 105

Sr. No.	CO Number	Contents
1.	CO 1	Ability to understand the concepts of number system, fraction, indices, ratio proportion and percentage and their use in commercial activities.
2.	CO 2	Student's able to understand how to solve the problems of time work and distance, the difference between effective and nominal rate of interest. To enable to calculate EMI.
3.	CO 3	To discuss the concept of costs & Revenue.
4.	CO 4	To examine various aspects concerning price output determination under different market structures.
5.	CO 5	To learn to calculate the profit and loss.
6.	CO 6	To introduce with various basic mathematical concept and formulae.

Name of Subject: Business Demography 4 CCT

Credits: 04

Subject Code: 106

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept of Business Economics.
2.	CO 2	To analyze the dynamics of market forces.
3.	CO 3	To discuss the concept of Literacy and its importance in Modern Society.
4.	CO 4	To create an approach the population of the nation as a Resources and importance of human resources as Development of the Nation.
5.	CO 5	Students will be able to understand the concept of Sex ratio, Age and Sex pyramid and to read the various graphs such as Age and sex graph.
6.	CO 6	To understand the concept of Urbanization and its implications.

Name of Subject: Business Organization and System 4 CCT**Credits: 4****Subject Code: 201**

Sr. No.	CO Number	Contents
1.	CO 1	To learn how a business unit works and serves the society, historical progress of business as an economic entity, socio economic changes have led to economic development
2.	CO 2	To understand the significance of different forms of business organizations their types, function, merits and limitations.
3.	CO 3	To know how to search business ideas, how to pre business feasibility report, how to identify ideal business location and deciding optimal size for a new business unit, identification of capital sources for new business unit and basic documentation required for business enterprise
4.	CO 4	To learn about how a retail trade works in business system, different forms of retail trade and their contribution in the economy To give a brief introduction to stages of internationalization.
5.	CO 5	To understand the objectives, ethics and culture of Business organization.
6.	CO 6	To understand the effects of FDI on retail trades.

Name of Subject: Principles of Marketing 3 CC**Credits: 03****Subject Code: 202**

Sr. No.	CO Number	Contents
1.	CO 1	To understand the Indian and International Marketing Management and various tasks performed by the marketing managers in different environments.
2.	CO 2	To learn various factors that affect the marketing system and market segmentation.
3.	CO 3	To get acquainted with the concept of marketing mix that affects the success of the market.
4.	CO 4	To know the types and role of the market and its contribution in developing the economy and society.
5.	CO 5	To discuss the various approaches to marketing
6.	CO 6	To understand Digital marketing, green marketing, virtual marketing and hybrid marketing.

Name of Subject: Principles of Finance 3 CC**Credits: 03****Subject Code: 203**

Sr. No.	CO Number	Contents
1.	CO 1	Ability to understand role and importance in business and implication of finance on business.
2.	CO 2	To understand role and need of source of finance. How different determinants of size and type of business Sources of business finance.
3.	CO 3	To Understand how basic financial structure is designed .
4.	CO 4	To understand new and emerging trends in business finance Ability to understand about current issues related with new trends in business finance.
5.	CO 5	To know what are the constituents a financially sound business units Analytical ability to understand implications of various constituents of capital units.
6.	CO 6	To learn about imp features and their applications considering their requirements in business.

Name of Subject: Basics of Cost Accounting 3 CC

Credits: 03

Subject Code: 204

Sr. No.	CO Number	Contents
1.	CO 1	To understand importance of costing in decision making Ability to understand the importance of costing and role of costing.
2.	CO 2	To understand how to prepare a cost statement and analyze implication of elements of cost on total cost .
3.	CO 3	To understand concept of overhead as it contributes to total cost of a product or service
4.	CO 4	Development of reasonable working knowledge of methods of ascertainment of cost of a contract or process.
5.	CO 5	To understand the elements of cost material, labor and other expenses.
6.	CO 6	To represent the contract cost and process cost.

Name of Subject: Business Statistics 3CC

Credits: 03

Subject Code: 205

Sr. No.	CO Number	Contents
1.	CO 1	To represent the data by using appropriate graphs or diagrams.
2.	CO 2	To compute suitable measure of central tendency for different data sets.
3.	CO 3	To compute the various measures of dispersion to compare two or more data sets.
4.	CO 4	To identify and compute the correlation between two variables.
5.	CO 5	To fit the equation of line of regression.
6.	CO 6	To understand the uses of index numbers.
7.	CO 7	To compute Laspeyres and Paasche price and volume indices.

Name of Subject: Fundamentals of Computers 4 CCT

Credits: 04

Subject Code: 206

Sr. No.	CO Number	Contents
1.	CO 1	To understand the Need, role and importance of computers in business processes
2.	CO 2	To develop understanding regarding usage, functionality and services provided by operating systems in business processes.
3.	CO 3	To learn the process for usage of different computer applications in business processes & develops skills and ability to handle different applications in business processes.
4.	CO 4	To understand cautions and steps to be taken and net based services & Ability to handle various software and programmes with due cautions and care.
5.	CO 5	To understand MS Excel and its various functions.
6.	CO 6	To introduce to internet and cyber security.

Class: S.Y.B.B.A.

Semester-III

Name of Subject: Principles of Human Resource Management 4CC

Credits: 04

Subject Code: 301

Sr. No.	CO Number	Contents
1.	CO 1	Ability to get knowledge about functions and roles of HR Manager and challenges faced in HRM.
2.	CO 2	To learn the Job analysis importance, HR planning in Organization and to develop decision making skills.
3.	CO 3	To understand how to increase employee morale and job satisfaction among employees.
4.	CO 4	To develop the understanding among employees about the changing environment in HRM and its recent trends.
5.	CO 5	To learn various trends in HRM.
6.	CO 6	To learn about training and development for HRM.

Name of Subject: Supply Chain Management 3 CC

Credits: 03

Subject Code: 302

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept of supply chain management
2.	CO 2	To describe what is Manufacturing & Warehousing
3.	CO 3	To discuss logistics management & application of IT to supply chain management
4.	CO 4	To analyze key operational aspects of Supply chain management
5.	CO 5	To introduce with the Global Supply Chain Management.
6.	CO 6	To learn the supply chain network design.

Name of Subject: Global Competencies and Personality Development

Credits: 03

Subject Code: 303

Sr. No.	CO Number	Contents
1.	CO 1	To understand various factors affecting personality development of an individual
2.	CO 2	To understand the concept of Global Competence and to develop self- esteem and self-confidence of the students.
3.	CO 3	To understand the structure of the team and to develop the ability to work under pressure and flexibility at the workplace.
4.	CO 4	To study various social and international etiquettes and table manners.
5.	CO 5	To learn and to give self introduction.
6.	CO 6	To learn about self esteem.

Name of Subject: Fundamentals of Rural Development**Credits: 03****Subject Code: 304**

Sr. No.	CO Number	Contents
1.	CO 1	To provide and understand the sound knowledge about rural development. Describes the importance of rural development .
2.	CO 2	Describes determinants of rural Development Planning. Develop the knowledge and ability of the students about the concepts of NGO's and Rural Development
3.	CO 3	Describes determinants of agropreneurship. Understanding of problems associated with rural entrepreneurship. Understanding the implementation of marketing initiatives
4.	CO 4	Understanding role of the internet in rural development. Develop the knowledge and ability of the students about the concepts of ICT and e- development in villages .
5.	CO 5	To Better understand the need of rural development
6.	CO 6	Understanding challenges of rural Development. Students should be willing for further research work, also suitable for the project.

Name of Subject: Consumer Behavior & Sales Management**Credits: 03****Subject Code: 305 A**

Sr. No.	CO Number	Contents
1.	CO 1	To have an adequate understanding of consumer behavior, its scope, objectives, opportunities and its challenges.
2.	CO 2	To help students develop an understanding towards Strategy building & its effectiveness.
3.	CO 3	To find out alternatives for Dynamic organization to ensure their success in a highly competitive sales environment.
4.	CO 4	Developing Design Thinking approach to explore opportunities while combating challenges in highly competitive Sales environments.
5.	CO 5	To learn about consumer decision making process.
6.	CO 6	To learn about training , motivating and managing the sales force.

Name of Subject: Management Accounting**Credits: 04****Subject Code: 305 B**

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept and meaning of management accounting.
2.	CO 2	To understand different methods of financial statement analysis and classification of various ratios and its application.
3.	CO 3	To Calculate contribution and break-even point to reach profitability level of any business.
4.	CO 4	To learn how to make various types of budgets as per need and requirement of business.
5.	CO 5	To introduce with the schedule III as per Company Act 2013. (statement of Profit and Loss Account and Statement of Balance Sheet)
6.	CO 6	Students can be distinguish between Cost Accounting and Management Accounting and also Financial Accounting and Management Accounting.

Name of Subject: Retail Management

Credits: 04

Subject Code: 306 A

Sr. No.	CO Number	Contents
1.	CO 1	To have a clear understanding of the retail concepts, its scope, objectives, opportunities and challenges.
2.	CO 2	To help students understand the planning process behind a retail business
3.	CO 3	Giving insights to the challenges while implementing a plan, in context of retail management.
4.	CO 4	Developing critical thinking ability to explore various angles while facing challenges in the retail sector.
5.	CO 5	To introduce recent trends and technological advancement.
6.	CO 6	To understand various types of retailers.

Name of Subject: Banking & Finance

Credits: 04

Subject Code: 306 B

Sr. No.	CO Number	Contents
1.	CO 1	To introduce with the meaning and concept of bank and origin of Bank.
2.	CO 2	To understand the functions of Banks i.e. Primary Functions and Secondary Functions.
3.	CO 3	To introduce with RBI, roles and functions of RBI.
4.	CO 4	To understand the needs and importance of technology in Banking.
5.	CO 5	To understand the functions and advantages of ATM, Debit Card, Credit Card, Tele banking, Net Banking, Mobile Banking, RTGS, NEFT, SWIFT.
6.	CO 6	To understand the structure of Banking System in India.

Name of Subject: Entrepreneurship and Small Business Management

Credits:

Subject Code: 401

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept and process of Entrepreneurship
2.	CO 2	To Acquire Entrepreneurial spirit and resourcefulness.
3.	CO 3	To get acquainted with the concept of Small Business Management.
4.	CO 4	To understand the role and contribution of Entrepreneurs and Small Businesses in the growth and development of individuals and the nation.
5.	CO 5	To introduce entrepreneurship development.
6.	CO 6	To understand the process of Small Business Management.

Name of Subject: Production and Operations Management

Credits:

Subject Code: 402

Sr. No.	CO Number	Contents
1.	CO 1	To understand the various methods of manufacturing and layouts and safety consideration in management.
2.	CO 2	To know the product development, planning and controlling while manufacturing the product
3.	CO 3	To get acquainted with the productivity and quality management and know regarding the ergonomics and safety measures.
4.	CO 4	To understand the changing environment, production and operation maintenance methods.
5.	CO 5	To learn about plant layout and its types.
6.	CO 6	To learn about classification of production system.

Name of Subject: - Decision Making and Risk Management

Credits: 03

Subject Code: 403

Sr. No.	CO Number	Contents
1.	CO 1	To learn the key topics in decision making and risk management so that they can improve decision making and reduce risk in their management activities and organization.
2.	CO 2	To study various models and tools of decision making and its applicability
3.	CO 3	To understand the role and importance of organizational values in Decision making and Risk management.
4.	CO 4	To understand the role of leadership while making decisions
5.	CO 5	To learn about decision making process.
6.	CO 6	To understand the concept of risk management.

Name of Subject: International Business Management 3 CC

Credits: 03

Subject Code: 404

Sr. No.	CO Number	Contents
1.	CO 1	To understand the basics of International Business concept and its role.
2.	CO 2	To understand the various International trade theories' use and experiments on the world trade
3.	CO 3	To understand how a country can gain through International trade practices
4.	CO 4	Understand the Regional Integration and Regional groups' concept in International trade.
5.	CO 5	To introduce with the International business managerial skills.
6.	CO 6	To learn about Balance of Trade, balance of payments.

Name of Subject: Advertising and Promotion Management 3 CC

Credits: 03

Subject Code: 405 A

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept and process of Entrepreneurship
2.	CO 2	To Acquire Entrepreneurial spirit and resourcefulness.
3.	CO 3	To get acquainted with the concept of Small Business Management.
4.	CO 4	To understand the role and contribution of Entrepreneurs and Small Businesses in the growth and development of individuals and the nation.
5.	CO 5	To learn about current trends in advertising.
6.	CO 6	To learn about the digital marketing management.

Name of Subject: Business Taxation 3 CC

Credits: 03

Subject Code: 405 B

Sr. No.	CO Number	Contents
1.	CO 1	To understand different concepts and definitions under Income Tax Act,1961.
2.	CO 2	To get understanding of computation of Income of an Individual under Five Heads of Income.
3.	CO 3	To acquire knowledge about the submission of Income Tax Return
4.	CO 4	To prepare students competent enough to take up to employment in tax planning.
5.	CO 5	To understand the concept of direct tax and indirect tax.
6.	CO 6	To learn about VAT and GST.

Name of Subject: Digital Marketing

Credits: 04

Subject Code: 406 A

Sr. No.	CO Number	Contents
1.	CO 1	To understand the role & Importance of Digital Marketing.
2.	CO 2	-To learn how Digital Marketing impacts the Sales of an organization & to develop digital strategy to influence consumer behavior
3.	CO 3	To understand the role of Facebook, Google Ad words, YouTube and Email in digital marketing.
4.	CO 4	To understand the importance of Digital Platforms & its impact upon the performance of the organizations in complex & varied environments.
5.	CO 5	To learn about social media marketing.
6.	CO 6	To learn about Search Engine Optimization (SEO)

Name of Subject: Financial Services

Credits: 04

Subject Code: 406 B

Sr. No.	CO Number	Contents
1.	CO 1	To study & understand the basic concepts of Indian Financial system & to take an overview of Financial structure of the nation.
2.	CO 2	To understand the functioning of primary & secondary market and to study the role of stock exchanges in India.
3.	CO 3	To Study & examine various financial services provided by various financial institutions in India.
4.	CO 4	To understand various types of financial services.
5.	CO 5	To learn about various financial Instruments.
6.	CO 6	To learn about the various financial services

T.Y B.B.A.

Sem: V

Name of Subject: Research Methodology 3 GC

Credits: 03

Subject Code: 501

Sr. No.	CO Number	Contents
1.	CO 1	To develop an understanding of the right approach of Research Methodology and its role in Business.
2.	CO 2	To develop an understanding of the basic framework of the identification of various sources of information for data collection.
3.	CO 3	To develop an understanding of various Designs, Tools and Techniques of Research Study.
4.	CO 4	To enable the students in conducting Research work and write Research Paper and Research Project Report.
5.	CO 5	To understand Research methodology.
6.	CO 6	To learn sources of collection of Data.

Name of Subject: Database Administration and Data Mining 3GC

Credits: 03

Subject Code: 502

Sr. No.	CO Number	Contents
1.	CO 1	To understand the Database Management System
2.	CO 2	To understand the Data Mining Concepts
3.	CO 3	To understand the current trends in Data Management
4.	CO 4	To understand purpose and concepts of Data base Administration.
5.	CO 5	To learn the basic concept of data warehouse.
6.	CO 6	To understand the difference between data analytics and data mining.

Name of Subject: - Business Ethics 3 GC

Credits: 03

Subject Code: 503

Sr. No.	CO Number	Contents
1.	CO 1	To provide a comprehensive understanding of the concepts of Business Ethics
2.	CO 2	To develop theoretical tools to understand current ethical issues and their impacts on business.
3.	CO 3	To analyze the role of Ethics in business, Government and Society.
4.	CO 4	To analyze the Ethical scenario concerning to Environment and consumer protection.
5.	CO 5	To learn about Whistleblower Act and Employee Rights.
6.	CO 6	To learn Environmental and consumer ethical issues.

Name of Subject: Management of Corporate Social Responsibility 3 GC

Credits: 03

Subject Code: 504

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept and process of CSR
2.	CO 2	To Understand the industrial contribution for CSR Policy
3.	CO 3	To Understand the context of CSR of present-day Management
4.	CO 4	To Understand the contribution of CSR for the development of Society
5.	CO 5	To understand the various Modules of Corporate Social Responsibility.
6.	CO 6	To understand the Key Stakeholders and their roles and recent trends and opportunities in CSR.

Name of Subject: Marketing Environment Analysis and Strategies 4 CC

Credits: 04

Subject Code: 505 A

Sr. No.	CO Number	Contents
1.	CO 1	To develop students' understanding of the factors shaping Marketing Environment
2.	CO 2	To develop students' ability to analyze the Business Environment
3.	CO 3	To develop students' understanding of the strategies for sustaining the forces in Marketing Environment
4.	CO 4	To understand the market Segmentation and Targeting Strategies.
5.	CO 5	To understand the various steps in Marketing Research Process.
6.	CO 6	To learn about the Key performance Indicators (KPI) in Business Analysis.

Name of Subject: Analysis of Financial Statements 4 CC

Credits: 04

Subject Code: 505 B

Sr. No.	CO Number	Contents
1.	CO 1	To develop the conceptual framework of financial analysis and provide practical exposure to apply various tools of Financial Statement Analysis.
2.	CO 2	To enable to use of various types of ratios for financial and investment decisions.
3.	CO 3	To impart knowledge about Cash Flow and Fund Flow Statements and their importance in financial analysis.
4.	CO 4	To understand various types of financial statements.
5.	CO 5	To learn the budget and budgetary control.
6.	CO 6	Case study/Project Work

Name of Subject: Legal Aspects in Marketing Management + Project and Viva 6 CC

Credits: 06

Subject Code: 506 A

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concept of door step selling.
2.	CO 2	To understand the concept of telesales and direct mail.
3.	CO 3	To get familiar with legal aspects of marketing management.
4.	CO 4	To understand the concept of consumer relationship management.
5.	CO 5	To understand the concept of online marketing.
6.	CO 6	Case study/Project Work

Name of Subject: Legal Aspects of Finance & Security Law

Credits: 06

Subject Code: 506 B

Sr. No.	CO Number	Contents
1.	CO 1	To understand the Legal Aspects of Finance & Security Laws.
2.	CO 2	To know the legal provisions to obtain finance from various source of finance.
3.	CO 3	To explore various finance & securities-related laws in India.
4.	CO 4	To understand the basic Derivatives, Commercial Banking and Money Market
5.	CO 5	To understand the process, features, benefits and disadvantages of GST.
6.	CO 6	To understand the procedure for issue of Various types of shares and Debentures.

Sem: VI

Name of Subject: Essentials of E-Commerce 3 GC

Credits: 03

Subject Code: 601

Sr. No.	CO Number	Contents
1.	CO 1	To understand the importance, role, and activities of E-Commerce.
2.	CO 2	To understand various E-Money and E-Payment systems used in Ecommerce.
3.	CO 3	To understand the concept of E-Marketing and its tools in E-Commerce.
4.	CO 4	To Understand the concept of Cyber Space and Cyber Security in Ecommerce
5.	CO 5	To learn use of E-Commerce trends.
6.	CO 6	To understand various types of E-commerce.

Name of Subject: - Management Information System 3 GC

Credits: 03

Subject Code: 602

Sr. No.	CO Number	Contents
1.	CO 1	To describe the basic concept of Information Technology and Management Information System.
2.	CO 2	To describe the role of information technology and information systems in business.
3.	CO 3	To contrast and compare how MIS support business processes.
4.	CO 4	To introduce the fundamental knowledge of Structured System Analysis and Design
5.	CO 5	To learn about the decision making and Information.
6.	CO 6	To understand attribute of Information and its relevance to decision making.

Name of Subject: -Business Project Management 3 GC

Credits: 03

Subject Code: 603

Sr. No.	CO Number	Contents
1.	CO 1	To develop a significant understanding of Project Management
2.	CO 2	To develop a concept based approach towards management of business projects
3.	CO 3	To develop the relation between the significance of businesses and their management.

Name of Subject: - Management of Innovations and Sustainability 3 GC

Credits: 03

Subject Code: 604

Sr. No.	CO Number	Contents
1.	CO 1	To understand the concepts of Innovation and Sustainability in practical sense.
2.	CO 2	To better know the significance of organizational sustainability development and the economic implications of sustainable development.
3.	CO 3	To learn about the most common errors made when handling sustainable growth.
4.	CO 4	To understand the concept of sustainability Innovation.
5.	CO 5	To better know the economic implications of sustainable development.
6.	CO 6	To Understand Socia-political aspect of sustainable development-social responsibility aspect.

Name of Subject: - : International Brand Management 4 CC

Credits: 04

Subject Code: 605 A

Sr. No.	CO Number	Contents
1.	CO 1	To develop students' understanding of the concept of developing brands.
2.	CO 2	To develop students' understanding of the concept of brand equity.
3.	CO 3	To develop students' understanding of the strategies in managing brand portfolios.
4.	CO 4	To evaluate the process and methods of measuring brand performance.
5.	CO 5	To understand the characteristics of strong brand and purpose of Brand.
6.	CO 6	To develop design marketing and marketing communication programs that build brand equity in the International market.

Name of Subject: - Financial Management

Credits: 03

Subject Code: 605 B

Sr. No.	CO Number	Contents
1.	CO 1	To learn about the various Sources of Finance.
2.	CO 2	To understand the meaning and concept of Capital Structure of firm.
3.	CO 3	To analyze Problems Associated with Capital Structure.
4.	CO 4	To know about the shares, Debentures, Term Loan, Lease Finance, Hire Financing, Bank Overdraft, Cash Credit, Bill Discounting as Sources of Finance.
5.	CO 5	To understand the concept of Capitalization, to study the causes and effects of over and under capitalization.
6.	CO 6	To understand the concept and Importance of Capital Budgeting Decisions. Understand the tools techniques of Evaluation of Capital Budgeting Decisions.

Name of Subject: - Cases in Marketing Management + Project 6 CC

Credits: 06

Subject Code: 606 A

Sr. No.	CO Number	Contents
1.	CO 1	To Study & understand the core areas of Marketing.
2.	CO 2	To study the practical applications of Marketing.
3.	CO 3	To prepare project reports based on the internship & understanding of core areas of Marketing
4.	CO 4	To understand the characteristics, importance and Guidelines of Case studies.
5.	CO 5	To understand the market segmentations.

Name of Subject: - Cases in Finance + Project Viva + Internship 6 CC

Credits: 06

Subject Code: 606 B

Sr. No.	CO Number	Contents
1.	CO 1	To Study & understand the core areas of finance.
2.	CO 2	To study the practical applications of finance.
3.	CO 3	To prepare project reports based on the internship & understanding of core areas of finance



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



Mathematics

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: **Mathematics(B.Sc)**

At the end of this program the students are expected to be able to

Sr.No.	PO Number	Contents
1	PO1	Find numerical differentiation, integration, real roots and Define a vector space, linear transformation also Determine Eigen values and Eigenvectors
2	PO2	Learn sequences, series and Illustrate convergence ,divergence of the limit function with respect to continuity, differentiability, and integrability
3	PO3	Explain the significance of Groups, Rings, Integral Domains subgroups and factor groups with the Division Algorithm and Unique Factorization in $F[x]$
4	PO4	Grasp the concepts and methods of Ordinary Differential Equations and Partial Differential Equations, Study Surfaces, Geometry of Planes, Line, Sphere
5	PO5	Understand the relationships between the primal and dual problems of LPP, to transportation, assignment problem ,CPM,PERT and Time-cost optimization
6	PO6	Introduce with the basic concepts and techniques of Machine Learning , Python and Apply Supervised Algorithms like Random Forest , K Nearest Neighbors
7	PO7	Know LaTeX syntax and Write a simple LaTeX input document based on the article class also Acquaint with typesetting basic Mathematics in LaTeX
8	PO8	Appreciate the concepts such as open balls, closed balls, completeness, continuity, compactness and connectedness also Correlate Elementary complex functions as Exponential, Logarithmic functions ,Cauchy-Riemann equations, Cauchy integral formula

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: F.Y.B.Sc

Name of Subject: Algebra

Subject Code: MT-111

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Prove that every Partition is an equivalence relation and vice-versa
2	CO2	Prove the statement $P(n)$ using the Principle of mathematical induction (Strong form)
3	CO3	Solve examples of Divisibility on Z using Division Algorithm and Euclidean Algorithm
4	CO4	Define Congruence, Residue Classes, Addition Modulo n and Multiplication Modulo n .
5	CO5	Study De-Moivre's theorem with exponential form of complex number
6	CO6	Find the n th roots of unity and solve examples on complex numbers.

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics(B.Sc)

Class: F.Y.B.Sc

Name of Subject: Calculus-I

Subject Code: MT-112

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Describe Algebraic and Order properties of \mathbb{R} with the Completeness property of \mathbb{R}
2	CO2	Understand types of sequences and subsequences with their limit
3	CO3	Check bounded, monotone sequence and understand divergence criterion
4	CO4	Find limit of functions with some extensions of limit concepts and draw graphs of functions
5	CO5	Verify Boundedness theorem, Min-Max theorem, continuity by different criteria
6	CO6	Discuss the Continuous function at a point and in the intervals with location of root theorem

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: F.Y.B.Sc

Name of Subject: **Mathematics practical**

Subject Code: MT-113

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Solve (in written) all practical based on the applications of articles in PAPER I : MT 111
2	CO2	Develop theoretical, applied, computational skills
3	CO3	Solve (in written) all practical based on the applications of articles in PAPER II : MT 112
4	CO4	Apply and translate information in mathematical form to derive the conclusion
5	CO5	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER I : MT 111
6	CO6	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER II : MT 112

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: F.Y.B.Sc

Name of Subject: Analytical Geometry

Subject Code: MT-121

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Solve examples on change of axes using translation and rotation
2	CO2	Reduce conic into standard form with its center
3	CO3	Find equations of planes and understand concepts related planes
4	CO4	Calculate distance of a point from the plane and distance between two parallel planes
5	CO5	Find equations of lines in three dimension in different forms
6	CO6	Describe equations of sphere in different forms with tangent planes

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: F.Y.B.Sc

Name of Subject: Calculus-II

Subject Code: MT-122

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Know the derivatives of a functions with interpretations
2	CO2	Describe Mean Value Theorems and extreme values using first derivative test
3	CO3	Evaluate limit by L-Hospital's rule ,use Leibnitz Theorem for successive differentiation
4	CO4	Find series of functions using Taylor's and Maclaurin's Theorem
5	CO5	Solve Ordinary Differential equations of first order and first degree by various methods
6	CO6	Solve exact differential equations with integrating factors

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics(B.Sc)

Class: F.Y.B.Sc

Name of Subject: Mathematics Practical-III

Subject Code: MT-123

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Solve (in written) all practical based on the applications of articles in PAPER I : MT 121
2	CO2	Display and recognize basic geometrical figures and graphs with mathematical facts
3	CO3	Solve (in written) all practical based on the applications of articles in PAPER II : MT 122
4	CO4	Feel confident in proving mathematical ideas and solving problems
5	CO5	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER I : MT 121
6	CO6	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER II : MT 122

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: S.Y.B.Sc

Name of Subject: Calculus of Several Variables

Subject Code: MT- 231

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Know functions of several variables, Sketch the level curves and solve examples of limit continuity
2	CO2	Find partial derivatives, use chain rule, apply Euler's theorem for homogeneous functions
3	CO3	Verify Clairaut's theorem, Laplace's equation and Wave equation
4	CO4	Find the extreme values of functions of two variables, use Lagrange's Multiplier method
5	CO5	Evaluate the double integral over rectangle, in polar form and the triple integral using spherical coordinates .
6	CO6	Use change of variables in multiple integrals with help of Jacobian

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: S.Y.B.Sc

Name of Subject: **NUMERICAL METHODS AND ITS APPLICATIONS**

Subject Code: MT-232(A)

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Find different types of errors and Find solution of algebraic and transcendental equations by different numerical methods
2	CO2	Find relation between finite difference operators and differences of polynomials
3	CO3	State and prove Newton's and Lagrange's Interpolation formulae
4	CO4	Find numerical differentiation using Newton's forward difference formula
5	CO5	Apply numerical integration using Trapezoidal, Simpson's 1/3 rd and 3/8 th rule
6	CO6	Find numerical solution of first order Ordinary Differential equations by different methods

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Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: S.Y.B.Sc

Name of Subject: **Mathematical Practical**

Subject Code: MT-233

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Solve (in written) all practical based on the applications of articles in PAPER I : MT 231
2	CO2	Solve (in written) all practical based on the applications of articles in PAPER II : MT- 232(A)
3	CO3	Develop theoretical, applied and computational skills
4	CO4	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER- I : MT -231
5	CO5	Visualize three dimensional views of different mathematical objects
6	CO6	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER II : MT 232(A)

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Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: S.Y.B.Sc

Name of Subject: Linear Algebra

Subject Code: MT-241

At the end of this course the students are expected to be able to

Sr.No.	CO.No.	Contents
1	CO1	Solve Homogeneous and non-homogeneous system by Gauss elimination and
2	CO2	Define a Vector Space and a subspace and give examples of it
3	CO3	Understand the concept of linear dependence, basis and dimension
4	CO4	Find rank and nullity of a matrix and linear transformation
5	CO5	Describe the linear transformation and its properties
6	CO6	Find a matrix of linear transformation and determine linear isomorphism

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: S.Y.B.Sc

Name of Subject: Dynamical Systems

Subject Code: MT-242(B)

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Determine Eigen values and Eigenvectors
2	CO2	Understand the Logistic Population Model
3	CO3	Solve Planer Linear Systems
4	CO4	Identify Phase Portraits for Planer systems
5	CO5	Classify Planer Systems, the Trace-Determinant plane
6	CO6	Find Exponential of a matrix

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: S.Y. B.Sc

Name of Subject: Mathematics Practical

Subject Code: MT-243

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Solve (in written) all practical based on the applications of articles in PAPER I : MT- 241
2	CO2	Develop theoretical, applied and computational skills
3	CO3	Solve (in written) all practical based on the applications of articles in PAPER II : MT- 242(B)
4	CO4	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER- I : MT -241
5	CO5	Solve (using MAXIMA software) all practical based on the applications of articles in PAPER IIB : MT -242(B)
6	CO6	Develop maturity and confidence in current and future courses

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: **Metric Spaces**

Subject Code: **DSE-1(A) :MT-351**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Understand the introductory concepts of metric spaces like open balls, closed balls, with definitions and examples
2	CO2	Define Cauchy sequence, completeness, Limit Points
3	CO3	Learn to analyze mappings between spaces
4	CO4	Attain background for advanced courses in real analysis, functional analysis, and topology
5	CO5	Verify continuity and uniform continuity of metric spaces
6	CO6	Appreciate the abstractness of the concepts such as open balls, closed balls, compactness, connectedness etc. beyond their geometrical imaginations

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Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: Real Analysis-I

Subject Code: DSE-1(B):MT-352

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Learn the basic facts in logic and set theory
2	CO2	Differentiate into countable and uncountable sets
3	CO3	Learn to define sequence in terms of functions from \mathbb{N} to a subset of \mathbb{R} and to understand several properties of the real line
4	CO4	Learn to define sequence in terms of functions from \mathbb{N} to a subset of \mathbb{R} and to understand several properties of the real line
5	CO5	Calculate their limit superior, limit inferior, and the limit of a bounded sequence
6	CO6	Use the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real number

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: Group Theory

Subject Code: DSE-2(A):MT-353

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Recognize the mathematical objects that are groups
2	CO2	Classify the objects as abelian, cyclic and permutation groups
3	CO3	Analyze consequences of Lagrange's theorem
4	CO4	Learn about structure preserving maps between groups and their consequences
5	CO5	Explain the significance of the notion of cosets, normal subgroups
6	CO6	Study the concept in real life of Homomorphism

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Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: **Ordinary Differential Equations**

Subject Code: DSE-2(B):MT-354

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Understand the genesis of ordinary differential equations
2	CO2	Learn various techniques of getting exact solutions of solvable first order differential equations and linear differential equations of higher order
3	CO3	Grasp the concept of a general solution of a linear differential equation of an arbitrary order and also learn a few methods to obtain the general solution of such equations
4	CO4	Use methods of undetermined coefficient and method of reduction of order for solving differential equation
5	CO5	Know the properties of power series, regular singular points
6	CO6	Introduce the system of differential equations

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: Operations Research

Subject Code: DSE-3(A): MT-355(A)

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Analyze and solve linear programming models of real-life situations
2	CO2	Find the graphical solution of LPP with only two variables
3	CO3	Illustrate the concept of convex set and extreme points
4	CO4	Understand the theory of simplex method in real life
5	CO5	Know the relationships between the primal and dual problems and their solutions with applications to transportation, assignment problem
6	CO6	Solve Assignment problem where such problems arise in manufacturing resource planning and financial sectors

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics(B.Sc)

Class: T.Y.B.Sc

Name of Subject: Machine Learning-I

Subject Code: DSE-3(B):MT-356(A)

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Introduce with the basic concepts and techniques of Machine Learning and Python
2	CO2	Familiar with introduction to NumPy Array and Matrices
3	CO3	Familiar with discover and visualize data to gain insights
4	CO4	Familiar with Fine-tuning the model - Grid Search, Randomized Search
5	CO5	Develop the ability to write database applications in Python
6	CO6	Handle the missing data

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: Programming in Python

Subject Code: : SEC-I: MT- 3510

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Know basics of Python as values, variables, operators, math function
2	CO2	Use and apply Strings, Lists, Tuples on various examples
3	CO3	Use conditional, alternative statements, Loop using while, for statements
4	CO4	Apply Python on Linear Algebra examples for matrices, systems, eigen values
5	CO5	Apply Python on Numerical methods to find roots, integration
6	CO6	Install numpy, matplotlib packages and use 2D and 3D graphs Introduce with the basic concepts and techniques of Machine Learning and Python

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject: LaTeX for Scientific Writing

Subject Code: SEC-II: MT- 3511

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Know LaTeX syntax and Write a simple LaTeX input document based on the article class
2	CO2	Format Words, Lines, and Paragraphs
3	CO3	Produce Dashes within texts and Use TEXT and Math Fonts
4	CO4	Use Listing and tabbing texts
5	CO5	Prepare Table through the tabularx Environment
6	CO6	Adjust column width, Merge rows columns of Tables

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject : **Practical Course Lab –I**

(Metric Spaces and Real Analysis-I)(2021 Pattern)

Subject Code: : **DSE-1: MT: 357**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Solve examples of Metric Spaces, Open and Closed Sets
2	CO2	Illustrate examples of Convergences and Continuity
3	CO3	Solve examples of Compactness and Connectedness
4	CO4	Solve examples of Logic, Functions, Convergent and Divergent sequences of Real numbers
5	CO5	Explain Monotone Sequences, \limsup , \liminf of Cauchy Sequences
6	CO6	Predict Conditional/Absolute Convergence, Convergent and Divergent Series of Real numbers

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject : **Practical Course Lab –II**

(Group Theory and Ordinary Differential Equations)

Subject Code: : **DSE-2: MT: 358**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Recognize Isomorphic Binary Structures and Groups, Subgroups and Cyclic Groups
2	CO2	Solve examples of Groups of Permutations, Orbits and Cycles, Alternating Groups, Cosets and the Theorem of Lagrange
3	CO3	Compute Direct Products and Homomorphisms, Factor Groups, Factor Group Computations and Simple Group
4	CO4	Solve Linear differential equations with constant coefficients, Inverse differential operators
5	CO5	Solve Non homogeneous linear equations
6	CO6	Find Series solution of linear second order equations and Solve System of equations

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject : **Practical Course Lab –III**

(Operational Research and Machine Learning-I)

Subject Code: : **DSE-3: MT: 359**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Do the Model with Linear Programming and Solve by Simplex Method
2	CO2	Solve LPP using graphical method
3	CO3	Solve Transportation Model and The Assignment Model
4	CO4	Write simple programs using Python Data Types, Control statements
5	CO5	Write simple programs using Python collection type - List Data handling with Panda ,Data handling with Panda , Data visualization with Matplotlib
6	CO6	Work on scikit-learn and Do End to end model implementation

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject: Complex Analysis

Subject Code: DSE-4A: MT- 361

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Understand the significance of differentiability of complex functions leading to the understanding of Cauchy-Riemann equations
2	CO2	Correlate Elementary functions as Exponential and Logarithmic functions
3	CO3	Evaluate the contour integrals and understand the role of Cauchy- Goursat theorem and the Cauchy integral formula
4	CO4	Expand some simple functions using Taylor and Laurent series
5	CO5	Classify the nature of singularities, Find residues and Apply Cauchy Residue theorem to evaluate integrals
6	CO6	Examine zeroes of analytic functions and poles

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject: **Real Analysis-II**

Subject Code: **DSE-4B: MT- 362**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Explain some of the families and properties of Riemann integrable functions
2	CO2	Link the fundamental theorem of Calculus
3	CO3	Know the Applications of fundamental theorems of integration
4	CO4	Distinguish beta and gamma functions and their properties
5	CO5	Recognize the difference between point wise and uniform convergence of a sequence of functions
6	CO6	Illustrate the effect of uniform convergence on the limit function with respect to continuity, differentiability, and integrability

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject: Ring Theory

Subject Code: DSE-5A: MT- 363

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Correlate the fundamental concepts of Rings, Fields, subrings, integral domains
2	CO2	Learn in detail about Irreducible polynomials, Divisors of zero
3	CO3	Explain the Division Algorithm in $F[x]$ and Unique Factorization in $F[x]$
4	CO4	Appreciate the significance of Maximal Ideal, Prime Ideal
5	CO5	Study Factorization, Gauss Lemma, Gaussian integers
6	CO6	Express the concept of Euclidean norm, Euclidean domain, Unique Factorization Domain

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc:

Name of Subject: Partial Differential Equations

Subject Code: DSE-5B: MT- 364

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Introduce Ordinary and Partial differential equations and Pfaffian Differential forms
2	CO2	Solve simultaneous Differential equations of the first order and first degree in three variables
3	CO3	Formulate, classify and transform partial differential equations into canonical form
4	CO4	Solve linear partial differential equations using various methods and apply these methods in solving some physical problems
5	CO5	Know the rules of complementary solutions and particular integrals
6	CO6	Get solution of Laplace, Periodic, wave equation by separation variables method

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics(B.Sc)

Class: T.Y.B.Sc:

Name of Subject: Optimization Techniques

Subject Code: DSE-6A: MT- 365(A)

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Get an idea about Network Models and basic components
2	CO2	Determine critical path by Critical Path Method(CPM), Project Evaluation and Review Techniques(PERT), Time-cost optimization Algorithm
3	CO3	Predict Graphical solution of mixed strategy games
4	CO4	Study Replacement and Maintenance Models
5	CO5	Solve a sequencing Problem for various jobs and machines
6	CO6	Explain Unconstrained, constrained problems

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics(B.Sc)

Class: T.Y.B.Sc

Name of Subject: Machine Learning-II

Subject Code: DSE-6B: MT- 366(A)

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Do the Classification of MNIST dataset
2	CO2	Learn Cross Validation ,Confusion Matrix
3	CO3	Perform Linear, Polynomial Regression
4	CO4	Understand various Gradient Descent as Batch , Stochastic Gradient
5	CO5	Estimate Probabilities for Logistic Regression
6	CO6	Apply Supervised Algorithms like Random Forest , K Nearest Neighbors

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: : Programming in Python-II

Subject Code: SEC-III: MT- 3610

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Study Turtle Graphics and design and implement a program to solve a real world problem
2	CO2	Visualize data with seaborn, Matplotlib, Plotly, MayaVI
3	CO3	Study operations on Dictionary and Sorting Minimum and Maximum
4	CO4	Apply Python to visualize Concepts of Computational Geometry
5	CO5	Draw 2-D, 3-D reflection, rotation and Generate Bezier curve
6	CO6	Study Linear Programming Problem in Python

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: Mathematics into LaTeX

Subject Code: SEC-IV: MT- 3611

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Acquaint students with typesetting basic Mathematics in LaTeX
2	CO2	Type mathematical formulas, use nested list, tabular and array environments
3	CO3	Import figures and pictures that are stored in external files
4	CO4	Write array of equations, Left Aligning, sub-numbering of set of equations
5	CO5	Write Conditional Expressions, Vector and Matrix
6	CO6	Apply User Defined Macros and Use in paper printing, novels

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: **Practical Course Lab – I**

(Complex Analysis and Real Analysis-II)

Subject Code: **MT: 367**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Solve examples on Analytic Functions and Elementary Functions
2	CO2	Evaluate Integrals, Anti-derivatives, and Integrals by Cauchy-Goursat's theorem
3	CO3	Expand Series and Find Residues and Poles
4	CO4	Define and Find Existence of Riemann Integral, its Properties and Applications
5	CO5	Evaluate Improper Integrals and Check Pointwise Convergence of Sequences of Functions
6	CO6	Solve examples on Uniform Convergence of Sequences of Functions and Describe Series of Functions with Convergence and Divergence

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: **Practical Course Lab –II**

(Ring Theory and Partial Differential Equations)

Subject Code: **MT: 368**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Identify and Solve examples of Rings and Fields, Rings of Polynomials Integral surfaces
2	CO2	Determine Homomorphism , Factor Ring and Ideals in a Ring
3	CO3	Use and Find Unique Factorization Domain , Euclidean Domain and Gaussian Integers
4	CO4	Solve Simultaneous Differential Equations of the First Order and First Degree in Three Variables , Solution of Pfaffian Differential Equations
5	CO5	Find Solution of First order Partial Differential Equations and Solve Linear Equations of First order and Describe Integral surfaces
6	CO6	Find Solution of Second order Partial Differential Equations by Separation Variables Method, Canonical Forms

Poona District Education Association's

Annasaheb Magar College, Hadapsar Pune-28

Name of Programme: B.Sc

Name of Department: Mathematics (B.Sc)

Class: T.Y.B.Sc

Name of Subject: **Practical Course Lab –III**

(Optimization Techniques and Machine Learning-II)

Subject Code: **MT: 369**

At the end of this course the students are expected to be able to

SR.NO	CO.NO.	CONTENT
1	CO1	Explain Network Models and Solve Game Theory
2	CO2	Describe Applications of Network Models , Game Theory , Replacement Theory
3	CO3	Define Sequencing and Classical Optimization Theory
4	CO4	Revise concepts of Python and scikit learn , Use MNIST classification with python and Apply Linear Regression Implementation
5	CO5	Perform Logistic Regression Implementation and Deal with Data
6	CO6	Use KNN Implementation, Decision Tree Implementation, Random Forest Implementation and Support Vector Machine Implementation



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



Statistics

P.D.E.A's
Annasaheb Magar Mahavidyalaya,
Hadapsar, Pune – 28.

Name of Programme: B.Sc.

Name of Department: Statistics

Program Outcomes:

After successfully completing B.Sc.Statistics, students will be able to:

Sr. No.	PO number	Contents
1	PO1	Explain the importance of statistics and investigate the real world problems and learn to how to apply mathematical ideas and models to those problems
2	PO2	Describe a data set including both qualitative and quantitative variables
3	PO3	Apply different measures and laws of probability to given problem
4	PO4	Perform statistical inference to the given data set and interpret the results
5	PO5	Apply statistical software package for data analysis
6	PO6	Apply different mathematical tools to study probability and mathematical statistics
7	PO7	Communicate concepts of probability and statistics in technical and non-technical language
8	PO8	Analyse data set, precisely define the key terms, and draw clear and reasonable conclusions

P.D.E.A's
Annasaheb Magar Mahavidyalaya,
Hadapsar, Pune – 28.

Name of Programme: B.Sc.
Name of Department: Statistics

Course outcomes

Class: F.Y.B.Sc.
Name of Subject: Descriptive Statistics-I.
Subject Code: ST – 111

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Recall the definitions and formulae of terms related to Descriptive statistics
2	CO2	Describe the concepts by giving example
3	CO3	Solve simple problems in Descriptive Statistics and Theory of attributes
4	CO4	Solve tricky computational problems
5	CO5	Compare and apply the concepts in real life problems
6	CO6	Apply all the above statistical methods for data analysis

Class: F.Y.B.Sc.
Name of Subject: Discrete Probability.
Subject Code: ST – 112

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Define probability, probability distributions, mathematical expectation for probability distributions
2	CO2	Recall some standard discrete distributions
3	CO3	Describe probability, probability distribution, mathematical expectation for probability distributions
4	CO4	Describe some standard discrete distributions
5	CO5	Calculate different probabilities, mathematical expectation for univariate, distributions
6	CO6	Differentiate and apply appropriate distribution to find the probability

Class: F.Y.B.Sc.

Name of Subject: Statistics Practical Paper-I.

Subject Code: ST – 113

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Recall formulae and computation of various sampling methods, measures of central tendency and dispersions, skewness, kurtosis for numerical computations in Statistics
2	CO2	Construct appropriate diagrams and/or graphs for the given data
3	CO3	Solve simple problems in Descriptive Statistics and Theory of attributes for given data set
4	CO4	Solve tricky computational problems
5	CO5	Solve all the above statistical methods for data analysis using MS-Excel
6	CO6	Apply all the above statistical methods for data analysis

Class: F.Y.B.Sc.

Name of Subject: Descriptive Statistics-II.

Subject Code: ST – 121

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Recall the definitions and formulae of terms related to Descriptive statistics
2	CO2	Describe the concepts by giving suitable example
3	CO3	Solve simple problems in Descriptive Statistics, Correlation, Regression and Index numbers
4	CO4	Solve tricky computational problems
5	CO5	Apply the concepts in real life problems
6	CO6	Apply all the above statistical methods for data analysis

Class: F.Y.B.Sc.

Name of Subject: Discrete Probability Distributions..

Subject Code: ST – 122

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Define probability, probability distributions, mathematical expectation for probability distributions
2	CO2	Recall marginal and conditional distributions, some standard discrete distributions
3	CO3	Describe probability, probability distribution, mathematical expectation for probability distributions
4	CO4	Describe marginal and conditional distributions, some standard discrete distributions
5	CO5	Calculate different probabilities, mathematical expectation for bivariate and conditional distributions
6	CO6	Apply appropriate distribution to find the probability

Class: F.Y.B.Sc.

Name of Subject: Statistics Practical Paper -II.

Subject Code: ST – 123

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Recall formulae and computation of measures of central tendency and dispersions
2	CO2	Construct appropriate diagrams and/or graphs for the given data
3	CO3	Fit appropriate linear or non-linear regression models, Poisson distributions for given data set
4	CO4	Compute index numbers, correlation, rank correlation values, model sampling from Poisson distribution
5	CO5	Apply appropriate distribution to find the probability
6	CO6	Apply all the above statistical methods for data analysis using MS-Excel

Class: S.Y.B.Sc.

Name of Subject: Discrete Probability Distributions and Time Series.

Subject Code: ST – 231

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Define some standard distributions, its mathematical expectation and Time series
2	CO2	Recall truncated distributions
3	CO3	Describe some standard distributions, its mathematical expectation and Time series
4	CO4	Describe truncated distributions
5	CO5	Calculate probability from different discrete distributions , trend values, seasonal indices
6	CO6	Apply appropriate distribution to find the probability

Class: S.Y.B.Sc.

Name of Subject: Continuous Probability Distributions.

Subject Code: ST – 232

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Recall the definitions, pdfs, cdfs of all continuous distributions
2	CO2	Describe mean, mode, median, variance, moments, quartiles, MGFs, CGFs and additive property of all continuous distributions
3	CO3	Solve simple problems and examples in all univariate and bivariate distributions
4	CO4	Calculate probabilities of all univariate and bivariate distributions
5	CO5	Simplify the transformation of random variables of all distributions
6	CO6	Apply the concepts of subsequent distributions in real life problems

Class: S.Y.B.Sc.

Name of Subject: Statistics Practical.

Subject Code: ST – 233

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Fit the appropriate probability distributions
2	CO2	Apply appropriate probability distributions to find the probabilities of real life problems
3	CO3	Find Trend values and Seasonal Indices
4	CO4	Drawing model sample from normal and exponential distributions
5	CO5	Apply Computer software to find trend values by Exponential smoothing
6	CO6	Apply Computer software to find the best fit using R^2 of real life time series data

Class: S.Y.B.Sc.

Name of Subject: Tests of significance and Statistical Methods.

Subject Code: ST – 241

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Define multiple correlation, regression, different terms related to test of hypothesis, vital events, vital statistics, M/M/1 model
2	CO2	Describe multiple correlation, regression, vital events, vital statistics, M/M/1 model
3	CO3	Describe different terms related to test of hypothesis
4	CO4	Describe test for population mean and population proportion
5	CO5	Calculate different vital statistics, different tests using Rand based on normal distribution and multiple correlation & regression, average waiting time in queue and in system
6	CO6	Differentiate the proper test and take the decision about hypothesis

Class: S.Y.B.Sc.

Name of Subject: Sampling Distributions And Exact Tests.

Subject Code: ST – 242

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Recall the definitions of Gamma, Ch-square, t and F distributions
2	CO2	Describe theorems and various results of chi-square, t and F distributions
3	CO3	Explain mean, mode, variance, moments, MGFs, CGFs, additive property and interrelations of all distributions
4	CO4	Calculate probabilities of all distributions and simplify the transformation of random variables
5	CO5	Solve problems in all distributions and exact tests
6	CO6	Differentiate the proper test and take the decision about hypothesis

Class: S.Y.B.Sc.

Name of Subject: Statistics Practical.

Subject Code: ST – 243

After successfully completing this course, students will be able to:

Sr. No.	CO number	Contents
1	CO1	Find GRR and NRR
2	CO2	Apply appropriate probability distributions to find the probabilities of real life problems using R software
3	CO3	Apply appropriate test for the given real life data
4	CO4	Apply R software to find different measures of statistics
5	CO5	Apply R software to fit multiple regression plane
6	CO6	Apply R software for testing of hypothesis



PDEA's
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Hadapsar Pune - 411028.



Physics

PDEA's AnnasahebMagarMahavidyalaya, Hadpasar, Pune – 411028.
DEPARTMENT OF PHYSICS
B. Sc. Physics

Programme Outcomes :

Programme Outcomes :B. Sc. Physics	
	Knowledge outcome
PO1:	Transfer and apply the acquired fundamental knowledge of physics, including basic concepts and principles of 1) classical mechanics, electrodynamics, quantum mechanics, Statistical Mechanics and thermodynamics; (2) mathematical (analytic and numerical) methods and experimental methods for physics to study different branches of physics
PO2:	Demonstrate the ability to translate a physical description to a mathematical equation, and conversely, explain the physical meaning of the mathematics, represent key aspects of physics through graphs and diagrams, and use geometric arguments in problem-solving.
	Professional Skill Outcomes
PO3:	Apply and demonstrate knowledge of concepts of physics, to analyze a variety of physical phenomena
PO4:	Demonstrate the learned laboratory skills, enabling them to take measurements in a physics laboratory and analyse the measurements to draw valid conclusions
PO5:	Capable of oral and written scientific communication, and will prove that they can think critically and work independently.
PO6:	Communicate effectively using graphical techniques, reports and presentations within a scientific environment.
PO7:	Use and apply professional software for scientific data analysis and presentation
PO8:	Respond effectively to unfamiliar problems in scientific contexts
PO9:	Plan, execute and report the results of a complex extended experiment or investigation, using appropriate methods to analyze data and to evaluate the level of its uncertainty
PO10:	Integrate and apply these skills to study different branches of physics.
	Abilities
PO11:	Work comfortably with numbers and analysing an issue quantitatively, acquire knowledge effectively by self-study and work independently, present information in a clear, concise and logical manner and apply appropriate analytical and approximation methods.
	Value/Attitude Outcomes
PO12:	Willingness to take up responsibility in study and work, Confidence in his/her capabilities, Capacity to work effectively in a team, Motivation for learning and experimentation

Course Outcomes:
F.Y.B.Sc. Physics
Sem.- I

(PHY-111)	Course: Mechanics
CO1:	Understanding the concept of Newton's Laws and equations of motion
CO2:	Analyzing forces on object and applying these forces for problem solving of the motion of simple systems using the free body diagrams.
CO3:	Solving problems on conservation of energy or conservation of momentum
CO4:	Correlating the concepts of elasticity with real world problems.
CO5:	Identifying fundamental forces in nature and study on its applications and also evaluating factors affecting surface tension.
CO6:	Defining various laws of fluid mechanics and examining steady flow, turbulent flow.
CO7:	Experimenting laws of elasticity and surface tension.

(PHY-112)	Course: Physics Principles & Applications.
CO1:	Understanding atomic structure, study on various atomic models. Defining absorption, spontaneous emission and stimulated emission process to understand Laser action
CO2:	Categorizing different types of bonding and their properties.
CO3:	Charting electromagnetic spectrum and their different regions Analyzing vibrational and rotational spectra of diatomic molecule.
CO4:	Explaining properties of Laser and its applications.
CO5:	Describing operation of radar system and solving problems for a given frequency.
CO6:	Summarizing principle and construction of solar cell and calculating efficiency and fill factor of solar cell.

	Course PHY-113: Physics Laboratory 1A (Credit -2)
CO1:	Conceptual experimenting Physics practical and apply them for day to day life.
CO2:	Understand the concepts of LASER, moment of inertia, Surface tension and Spectrometer.
CO3:	Inculcating problem solving skills in all the topics covered.
CO4:	Developing practical skill for industrial application.

Sem.- II

Course PHY-121: Heat and Thermodynamics (Credit -2)	
CO1:	Defining laws of thermodynamics, thermodynamic processes, entropy.
CO2:	Understanding the concept of entropy, Andrew's experiment, Amagat's experiment, Carnot engine.
CO3:	Evaluating expression for efficiency of heat engine (Otto cycle, Diesel cycle, Carnot cycle), latent heat equation, adiabatic relations for perfect gas, work done during isothermal and adiabatic change
CO4:	Determining critical constants using Vander Waal's gas equation, Reduced equation of state
CO5:	Correlating reversible and irreversible processes and also adiabatic and isothermal process,
CO6:	Categorizing thermometers and state its applications

Course: PHY-122: Electricity and Magnetism (Credit -2)	
CO1:	Define the basic terms such as electric field, electric potential, magnetic intensity, magnetic induction, magnetic susceptibility and electric and magnetic flux.
CO2:	State and conceptualise basic laws in electromagnetic.
CO3:	Explain the superposition principle, Gauss's law in dielectrics and relation between three electric vectors.
CO4:	Solve numerical problems using Coulombs Law, Gauss's law, Biot-Savart's law, Ampere circuital law and principle of superposition.
CO5:	Determine the electric field and potential due to an electric dipole and different types of charge distribution.
CO6:	Derive the relation between three magnetic vectors and compare different types of magnetic material.

Course PHY-113: Physics Laboratory 1B (Credit -2)	
CO1:	Understanding the basic concepts of interpretation of Isothermal and Adiabatic curve on P-V diagram and theoretical study of Carnot's cycle by drawing graphs of Isothermal and Adiabatic curves
CO2:	Inculcate the practical knowledge for various applications of Physics
CO3:	Improve students hands on training of practical's for aspirants
CO4:	Inculcate the practical knowledge and apply for industrial purpose

S.Y.B.Sc. Physics

Sem.- III

	Course PHY-231: Mathematical Methods In Physics(Credit -2)
CO1:	Define the basic operations in complex numbers;
CO2:	Explain graphical representation of complex numbers and calculate roots of complex numbers;
CO3:	Solve partial differential equations in Physics;
CO4:	Discuss vector algebra required in Physics;
CO5:	Define order, degree and homogeneity of ordinary differential equation;
CO6:	Develop problem-solving skills of identifying strategies to solve unfamiliar problem

	Course PHY-232(A): Electronics(Credit -2)
CO1:	Define the relations of different circuit elements and Statements of different circuit theorems and laws to electrical circuits.
CO2:	Problem solutions for evaluation and analysis of different circuit theorems.
CO3:	Understanding of i) the parameters, characteristics and working of transistors, ii) the functions of operational amplifiers, iii) basic principles of Oscillator circuit.
CO4:	Design and explanation of circuits using transistors and operational amplifiers.
CO5:	Applications of circuits using transistors and operational amplifiers.
CO6:	Understanding the different number systems, codes, the Boolean algebra and logic circuits and their use.

	Course PHY - 233: Physics Laboratory-2A(Credit -2)
CO1:	Use various instruments and equipment.
CO2:	Design experiments to test a hypothesis and/or determine the value of an unknown quantity.
CO3:	Investigate the theoretical background of an experimen
CO4:	Setup experimental equipment to implement an experimental approach.

Sem.- IV

Course PHY - 241: Oscillations, Waves and Sound(Credit -2)	
CO1:	Define periodic and oscillatory motion;
CO2:	Setup and solve differential equations of motion for simple harmonic, damped, and forced oscillators;
CO3:	Discuss phenomenon of resonance and apply in different applications;
CO4:	set and solve differential equation for wave motion for longitudinal and transverse waves;
CO5:	Discuss the Doppler effect, and predict in qualitative terms the frequency change that will occur for relative motion between source and observer or listener;
CO6:	Explain in qualitative terms how frequency, amplitude, and wave shape affect the pitch, intensity, and quality of tones produced by musical instruments.

Course PHY- 242: Optics(Credit -2)	
CO1:	Acquire the basic concepts of wave optics, interference and diffraction of light
CO2:	Describe the geometrical formation of images by thin lenses, lens equation and lens makers formula using fundamental laws of geometrical optics.
CO3:	Use mathematical analysis to calculate properties of image, formed by combination of lenses and applies theory of optics to calculate the cardinal points of an optical system and design optical devices
CO4:	Describe the construction and operation of optical devices, including, eyepieces, compound microscope, grating, polarisers etc.
CO5:	Demonstrate an ability to solve problems using ‘paraxial’ optics-based formulae, numerical calculations and graphical drawings.
CO6:	Geometrical determination of polarization of light and concept and determine a polarisation state of light by interpreting polariser

Course PHY - 243: Physics Laboratory-2B(Credit -2)	
CO1:	Analyse data, plot appropriate graphs and reach conclusions from your data analysis.
CO2:	Work in a group to plan, implement and report on a project/experiment.
CO3:	Keep a well-maintained and instructive laboratory logbook.
CO4:	Express their knowledge and ideas through oral and written language.

T.Y. B.Sc .

Sem.- V

Course PHY-351 : Mathematical Methods in Physics- II (Credit-2)	
CO1:	Define and generate a general equation for gradient ,divergence ,curl &laplacian in an orthogonal curvilinear coordinate system & their applications in physics.
CO2:	Interpret relative motion, Galilean & Lorentz transformation equations.
CO3:	Define proper time ,minkowskis space ,Time dilation , length contraction
CO4:	Describe Michelson Morley experiment & its negative result
CO5:	Illustrate the problems on Frobenius method of series solution and to differentiate point of expansion of given differential equations.
CO6:	List the most important special functions in physics and to solve different properties related to special functions.

Course PHY-352: Electrodynamics (Credit-2)	
CO1:	Define the Coulombs law, Electric field, Gauss law, Electric susceptibility, Magnetic field, Biot-Savart law, Amperes law, Faradays law etc.
CO2:	Explain equation of continuity, Magnetic vector potential, B.H curve, Maxwell's equation & wave equations.
CO3:	Solve numerical problem on Coulombs force, Gauss law, magnetic induction, magnetic permeability and induced voltage, magnitude of electric & magnetic vectors.
CO4:	Determine work done by charges, total charge, force on the wire in different symmetry
CO5:	Apply Biot-Savart law in different symmetry problem and Summarize pointing vector, polarization, reflection & refraction
CO6:	List the applications of Amperes law, Biot-Savart law, Poynting theorem and Elaborate magnetic properties of the material.

Course PHY-353: Classical Mechanics (Credit-2)	
CO1:	Solve advanced problems involving the dynamic motion of classical mechanical systems with an intermediate knowledge of Newton's laws of motion
CO2:	Apply the concept of centre of mass and mechanics of system of particles and conservation of energy, linear and angular momentum to solve dynamics problems
CO3:	Demonstrate an intermediate knowledge of concept of laboratory frame and centre of mass frame and their use to calculate results of scattering experiments.

CO4:	Explain Differential cross section, impact parameter and total cross section and relation between cross section in centre of mass and laboratory system
CO5:	Explain limitations of Newtonian Mechanics, constraints, Degree of freedom, Generalized coordinates, configuration space
CO6:	Derive Lagrange and Hamilton's equations, and represent the equations of motion for simple mechanical systems such as: the Atwood's machine, Simple pendulum using these formulations of classical mechanics.

	Course PHY-354: Atomic and Molecular Physics (Credit-2)
CO1:	Derive the formulae for total energy of an atom so that energy level diagram can be drawn and also able to obtain the expression for spin orbit interaction energy
CO2:	State laws, postulates in atomic and molecular Physics and able to compare various models of atomic structure.
CO3:	Obtain formulae for Zeeman shift, wavelength of emitted X-ray s, Raman shift , rotational and vibrational energy for diatomic molecule and apply it.
CO4:	Explain origin of line spectra and able to compare continuous spectra, characteristic spectra and can differentiate between rotational, vibrational and electronic
CO5:	Draw and explain X-ray spectra, spectrum with and without magnetic field (Zeeman effect),Raman spectra and molecular spectra using quantum treatment
CO6:	Explain experimental arrangement to produce X-ray,, to observe Raman effect and Zeeman effect.

	Course PHY-355: Computational Physics (Credit-2)
CO1:	define types of programming languages and their uses;:
CO2:	gain basic competency with a widely used C-language for both general and scientific programming;
CO3:	define operators and expression in C-programming and navigate commands;
CO4:	explain control statements and loops as well as capable of writing C-program to solve problems;
CO5:	describe arrays and pointers and apply them in C program;
CO6:	implement numerical algorithms into C-program and visualize the results of the computations

	Course PHY-356(D): Renewable Energy Sources-I (Credit-2)
CO1:	Definition, Classifications of the different energy sources.
CO2:	Understanding of Structure, Characteristics and Composition of Sun and its radiations.
CO3:	Explanation of working principles, design of Photothermal devices and Photovoltaic

	effect, Photovoltaic Conversion basic photovoltaic system for power generation.
CO4:	Applications of Photothermal devices and basic photovoltaic system for power generation.
CO5:	Definition, Characteristics and types of solar cell.
CO6:	Understanding of Importance and Needs of Photothermal devices and Energy storage and their various forms.

	Course PHY -357: Laboratory Course 3A
CO1:	Demonstrate the various classical methods for practical applications
CO2:	Understand the concept of atomic and molecular Physics by experimental set up such as Zeeman effect
CO3:	Verify statistical and Thermodynamics laws
CO4:	Understand the experiments on Nuclear and Quantum Mechanics like characteristics of G M tube, Determination of Planck's constant

	Course PHY -357: Laboratory Course 3B
CO1:	Acquire knowledge to handle laboratory instruments.
CO2:	Achieve an ability to perform electronics experiments and to understand physics behind particular electronics experiment.
CO3:	Understand the Computer Interfaced Physics Experiments.
CO4:	Understand the Numerical Based Computational Physics using C Programming

	Course PHY- 359: (Project-I)
CO1:	Develop skills pertaining to the laboratory work and understand the Physics concepts which brings out the creativity in the students
CO2:	Undertake problem identification, formulation and solution in Physics
CO3:	Demonstrate the knowledge, skills and attitudes towards research in Material Science and Physics
CO4:	Demonstrate a sound technical knowledge of their selected project topic

	Course PHY-3510(H): Python Programming (Credit-2)
CO1:	Define structure and components of python program.
CO2:	Use library matplotlib for plotting of graphs and its data visualisation.

CO3:	Utilize libraries like NumPy for numeric computation .
CO4:	Develop own functions for physics.
CO5:	Apply statistical database application in python.
CO6:	Acquire programming skills in python.

	Course PHY-3511(L): Physics Workshop Skill (Credit-2)
CO1:	Define basic terms of electronics/instruments.
CO2:	Draw block diagrams of digital/multimeter electronic voltmeter, CRO,signal generator and bridges.
CO3:	Explain their working, principle of various instruments.
CO4:	Utilize specification and significance of instruments.
CO5:	Experimenting electronic voltmeter, digital/multimeter, electronic voltmeter, CRO, signal generator and bridges.
CO6:	Building various aspects of instruments and their usage through hands on mode.

Sem.- VI

	Course PHY-361: Solid State Physics (Credit-2)
CO1:	Define crystal structure to develop it in 2D as well as 3D and to determine Indices for 'Directions' and 'Planes' in a crystal structure.
CO2:	Illustrate crystal structures and to analyze them with packing fraction, coordination number, number of atoms per unit cell etc.
CO3:	Derive Bragg Diffraction condition in direct lattice and to relate it in reciprocal lattice using Ewald construction.
CO4:	Illustrate various experimental techniques for characterisation of material.
CO5:	Apply free electron theory to restate thermal and electrical properties
CO6:	Explain superconductivity and Meissner effect

	Course PHY-362: Quantum Mechanics (Credit-2)
CO1:	Outline the historical aspects of development of quantum mechanics.
CO2:	Explain the differences between classical and quantum mechanics.
CO3:	Describe Schrodinger's equation and its steady state form.
CO4:	Solve Schrodinger's steady state equation for simple potentials to obtain eigen functions and eigen values.
CO5:	Apply Schrodinger's steady state equation for spherically symmetric potentials obtain eigen functions and eigen values;
CO6:	Deal with operator algebra in quantum mechanics.

	Course PHY-363: Thermodynamics and Statistical Physics (Credit-2)
CO1:	Describe transport phenomena and compute coefficient of thermal conductivity, viscosity and diffusion in terms of mean free path
CO2:	Define and discuss the concepts and roles of thermodynamic functions from the view point of statistical mechanics
CO3:	Derive Binomial distribution and Gaussian probability distribution using random walk problem and calculate mean values for a statistical system
CO4:	Discuss the concepts of microstate and macro state, basic postulates and behaviour of density of states for model system and calculate the number of microstates for different statistical systems
CO5:	Derive and compare Maxwell Boltzmann, Bose-Einstein and Fermi-Dirac distributions; state where they are applicable and explain the connection between classical
CO6:	Derive probability distribution formula for micro canonical, canonical ensemble and calculate mean values in canonical ensemble

	Course PHY-364: Nuclear Physics (Credit-2)
CO1:	Define threshold voltage, dead time and recovery time in GM counter, threshold energy, nuclear fission, nuclear fusion, critical size, critical mass.
CO2:	Determine the basic properties of nucleus
CO3:	Classify nuclear radiations, elementary particles and nuclear states, nuclear detectors.
CO4:	Derive expression for energy of ions and frequency of RF signal in cyclotron, Q-value equation, threshold energy, decay constant.
CO5:	Estimate binding energy from fission. Justify nuclear reactions using conservation laws
CO6:	Explain the different processes by which energetic particles interact with matter, kinematics of various reactors and decay processes.

	Course PHY365:Electronics-II (Credit-2)
CO1:	Definition and understanding of characteristics, working principles of various semiconductor devices like LED, Photodiode, Optocoupler, BJT and FET and their various types.
CO2:	Definition and the meaning of terms such as amplification, voltage gain, line and load regulation, modulation, demodulation, flip-flop, counters, register, distortion, multiplexer, de-multiplexer, etc.
CO3:	Explanation of i) different applications of semiconductor devices as three pin

	regulators, switching regulators, ii) concept of modulation and demodulation and their methods.
CO4:	Explanation of Integrated Circuits and their uses with reference to OPAMP applications and IC555 Timer as astable, monostable and bistable multivibrator.
CO5:	Understanding of i) POS and SOP expression on K-map and design of half adder, full adder, half subtractor, full subtractor using K-map, ii) various types of flip-flops and their use as registers and counters.
CO6:	Applications of LED, photodiode, veractor, power amplifiers, FET, UJT, counters, registers and solve the problems such as write the output for given circuit, design the circuit from given data.

	Course PHY-366(R): Microcontrollers (Credit-2)
CO1:	Definition , Working Principles of Microprocessors and Microcontroller. Concept of assembly language programming and its directives.
CO2:	Architecture of 8051 microcontroller and their block functions and its pin functions, Memory organization in 8051 microcontroller, Meaning and functions of 8051 registers. Concept of Stack and Subroutine.
CO3:	Study of 8051 assembly language instructions groups, Understanding of assembly language instruction format and their addressing modes. Meaning of 8051 assembly language instructions and their use in programming.
CO4:	Concept of serial data communication and its interfacing in 8051 microcontroller
CO5:	Concept of Timer / Counters in 8051 microcontroller and their registers.
CO6:	Concept of Interrupts and their structure in 8051 microcontroller and their registers.

	Course PHY -357: Laboratory Course 4A
CO1:	Demonstrate the various classical methods for practical applications
CO2:	Understand the concept of atomic and molecular Physics by experimental set up such as Zeeman effect
CO3:	Perform experiments related electricity and Magnetism
CO4:	Demonstrate the optical concepts through experiments

	Course PHY -357: Laboratory Course 4B
CO1:	Acquire knowledge to handle laboratory instruments.
CO2:	Achieve an ability to perform electronics experiments.
CO3:	Gain knowledge of understanding concept of physics behind particular electronics experiment.

CO4:	Understand the experiments on Acoustics and LASERs.
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	Course PHY- 369: (Project-II)
CO1:	Develop skills pertaining to the laboratory work and understand the Physics concepts which brings out the creativity in the students
CO2:	Undertake problem identification, formulation and solution in Physics
CO3:	Demonstrate the knowledge, skills and attitudes towards research in Material Science and Physics
CO4:	Demonstrate a sound technical knowledge of their selected project topic

	Course PHY-3610(W): Scientific Data Analysis using Python (Credit-2)
CO1:	Understand the functions available in existing Python modules.
CO2:	Understand awareness with different types of basic charts and functions in matplotlib library
CO3:	Use basic notions and definitions in data analysis
CO4:	Describe the visualization techniques from seaborn library
CO5:	Apply some of machine Learning algorithms to build smart models and make cool predictions.
CO6:	Translate a real-world problem into mathematical terms.

	Course PHY- 3611(AC):Radiation Physics(Credit-2)
CO1:	Use the knowledge in the applications of Radiation Physics in the fields like radio carbon Dating, medical diagnostic tools.
CO2:	Acquire skill in operating different types of radiation detectors to detect and measure radiation Levels in different places.
CO3:	Understand the mechanism of interaction of various types of radiations with matter
CO4:	Apply their skills to develop applications of radio activity in the fields like Agriculture, industry, hospitals etc.
CO5:	Explain principles of Measurement radiation levels, design principles And actual implementation of variety of radiation detectors.
CO6:	Applications and Problems on different types of radiation detectors.

M.Sc. Physics

Programme Outcomes

Programme Outcomes : M. Sc. Physics	
	Knowledge outcome
PO1:	Students will get substantial knowledge in physics, basic knowledge in mathematics, and understanding of the inter connectedness of different disciplines;
PO2:	Students will get ability to apply knowledge of physics to the real world problems;
PO3:	Students will be familiar with contemporary research within various fields of physics;
PO4:	Students will use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
PO5:	Students will get some research experience within a specific field of physics, through a project work;
	Skills
PO6:	Students will have the background and experience required to model, analyse, and solve advanced problems in physics;
PO7:	Students will use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
PO8:	Students will be able to employ up-to-date and relevant knowledge and skills in several disciplines.
PO9:	Students will able to enter new problem areas that require an analytic and innovative approach
	General competence
PO10:	The student will be able to understand the role of physics in society and has the background to consider ethical problems.
PO11:	The student will know the historical development of physics, its possibilities and limitations, and understands the value of lifelong learning.
PO12:	The student will get an ability to participate in constructive discussions and debates.

Course Outcomes:-

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-I)
Name of Subject: Mathematical Methods in Physics (Credit- 4) (2020 Pattern)
Subject Code: PHCT-111

Course PHCT-111: Mathematical Methods in Physics (Credit- 4) (2020 Pattern)	
CO1:	Understand basics of complex analysis of complex functions and their applications in Physics
CO2:	Illustrate the examples of vector spaces, linear dependence and linear independence by using different methods, applicability to Eigen values and Eigen vectors
CO3:	Explain various special functions Explain orthogonality of Legendre, Hermite, Laguerre polynomials and Bessel functions of first kind.
CO4:	Solve problems on Fourier series, Fourier transform , Laplace Transform and Fourier integral.
CO5:	Explain orthogonality of Legendre, Hermite, Laguerre polynomials and Bessel functions of first kind.
CO:6	Solve problems on linear dependence and linear independence by using different methods.

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-I)
Name of Subject: Classical Mechanics (Credit- 4) (2020 Pattern)
Subject Code: PHCT-112

Course PHCT-112: Classical Mechanics (Credit- 4) (2020 Pattern)	
CO1:	Understand the Symmetry and conservation laws and Define generalized momenta and cyclic coordinates.
CO2:	Solve Poisson's and Lagrange identities.
CO3:	Apply variational principle to real physical problem
CO4:	Able to understand the rigid body motion in Euler angles, Classify and handle the problem related to motion in non-inertial and inertial frames
CO5:	Relate the concept of central forces to Keplers Planetary motion
CO:6	Formulate the Lagrange's and Hamilton's equation of motion for different systems, Solve problems on poisons brackets and canonical transformations.

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-I)
Name of Subject: Electronics (Credit- 4) (2020 Pattern)
Subject Code: PHCT-113

Course PHCT-113: Electronics (Credit- 4) (2020 Pattern)	
CO1:	Understand the semiconductor devices (SCR, DIAC, TRIAC) and its applications
CO2:	Study the Concept of DC – DC converter and SMPS
CO3:	Discuss IC 555, types of voltage regulators, types of counters and shift registers and types of ADC and DAC
CO4:	Perform working of ICs (IC 555 in astable and monostable mode, IC78xx/IC79xx and ICLM317 of 3 pin regulators, IC 7490, IC 7495, VCO IC 566, PLL IC 565)
CO5:	Apply the working of according to their applications.
CO6:	Study the difference between Combinational and sequential circuit

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-I)
Name of Subject: Lasers and Applications (Credit- 2) (2020 Pattern)
Subject Code: PHOT-114C2

Course PHOT-114C2: Lasers and Applications (Credit- 2) (2020 Pattern)	
CO1:	Understand the difference between ordinary light source and laser source.
CO2:	Understand difference between spontaneous emission and stimulated emission and how it leads to the amplification of light.
CO3:	Define Einstein's coefficients and gives the relation so as to have stimulated emission probability to be more.
CO4:	Understand the different pumping mechanisms and their applications.
CO5:	List the characteristics of laser light. Categorise the different types of lasers.
CO6:	Discuss the applications of lasers in various fields

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Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-I)
Name of Subject: Lasers and Applications (Credit- 2) (2020 Pattern)
Subject Code: PHOP-114C2

Course PHOP-114C2: Lasers and Applications (Credit- 2) (2020 Pattern)	
CO1:	To determine the wavelength of He Ne laser using grating and measuring scale, thus learning the measurement of small dimensions.
CO2:	To determine divergence, spot size , energy and power of laser beam, thus understanding the characteristics of Laser
CO3:	To determine the diameter of thin wire using laser, thus learning the measurement of small dimensions.
CO4 :	To understand the applications of Lasers using optical fibers.

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Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-I)
Name of Subject: Physics Laboratory-I (Electronics) (Credit- 4) (2020 Pattern)
Subject Code: PHCP-115

Course PHCP-115: Physics Laboratory-I (Electronics) (Credit- 4) (2020 Pattern)	
CO1:	Designing and mounting circuits of OPamp applications.
CO2:	Study special purpose ICs for electronics applications.
CO3:	Use digital electronics applications.
CO4:	Design and fabricate different types of power supplies.
CO5:	Design various types of electronic circuits professionally and mounting of electronic components on bread board and PC – cum – soldering method.
CO6:	Experiment with CRO to find the amplitude, peak. time interval.

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Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-II)
Name of Subject: Electrodynamics (Credit- 4) (2020 Pattern)
Subject Code: PHCT-121

Course PHCT-121: Electrodynamics (Credit- 4) (2020 Pattern)	
CO1:	Learn the basic laws of electromagnetism and understand the differential and integral forms of Maxwell's equation
CO2:	Learn about the energy stored in electric and magnetic fields and the phenomenon of reflection and refraction of electromagnetic waves
CO3:	Understand the gauge transformation, concept of electromagnetic potential and its use in computation of radiation physics
CO4:	Get the idea of relativistic mechanics and introduces the four vector formalism for electric vector potential
CO5:	Solve multipole expansions of electrostatic fields.
CO6:	Analyze propagation, reflection and transmission of plane waves

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-II)
Name of Subject: Atoms and Molecules (Credit- 4) (2020 Pattern)
Subject Code: PHCT-122

Course PHCT-122: Atoms and Molecules (Credit- 4) (2020 Pattern)	
CO1:	Recite atomic structure, quantum number Calculate the ground state, apply Hund's rule. Diagram the fine and hyperfine structure, Explain Zeeman effect Solve problems on Zeeman effect for different materials in Zeeman effect
CO2:	Classify different molecular spectra & analyse band structure
CO3:	Determine dissociation energy and dissociation product for explanation of ESR & NMR,
CO4:	Explain different modes of vibration. Simplify atomic scattering factor. Relate Acoustic & optical modes of vibration
CO5:	Define X-ray diffraction, Explain SC, FCC, BCC HCP structure and calculate atomic structure factor of SC, FCC, BCC, HCP and diamond structure.
CO6:	Explain different modes of vibration. Simplify atomic scattering factor. Relate Acoustic & optical modes of vibration

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-II)
Name of Subject: Quantum Mechanics (Credit- 4) (2020 Pattern)
Subject Code: PHCT-123

Course PHCT-123: Quantum Mechanics (Credit- 4) (2020 Pattern)	
CO1:	understand the various fundamental concepts of quantum mechanics, Analyze the different experimental outcomes quantum mechanically, Postulates of Quantum Mechanics, Eigen values, Eigen functions
CO2:	Represent the states ,Dirac Notation, various operators, matrix representation, operator method
CO3:	Find Angular momentum operator, computation of C G coefficient
CO4:	Study approximation methods like dependent perturbation, independent perturbation, V.P & W.K.B & its applications, Fermi Golden Rule
CO5:	Solve Schrodinger equation using various approximation methods.
CO6:	Develop an understanding of both analytic and numerical methods and solution are important in quantum mechanics.

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-II)
Name of Subject: Physics of Nanomaterial (Credit-2) (2020 Pattern)
Subject Code: PHOT-124B2

Course PHOT-124B2: Physics of Nanomaterial (Credit-2) (2020 Pattern)	
CO1:	Synthesize and characterize the nanomaterials by different techniques.
CO2:	To differentiate between different techniques for research purpose.
CO3:	Understand the different Properties of nanomaterials.
CO4:	Understand mechanical, optoelectronic and Bio-medical applications.

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Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-II)
Name of Subject: Physics of Nanomaterial (Credit-2) (2020 Pattern)
Subject Code: PHOP-124B2

Course PHOP-124B2: Physics of Nanomaterial (Credit-2) (2020 Pattern)	
CO1:	Synthesize the nanomaterial by different methods.
CO2:	Synthesize the metal nanoparticles like CdS and TiO ₂ and Synthesize the microwave assisted nonmaterial
CO3:	Calculate the average size of the crystal using XRD techniques
CO4:	Understand the applications of nano materials.

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Name of Programme: M.Sc
Name of Department: Physics
Class: Ist Year (SEM-II)
Name of Subject: Physics Laboratory-II (General Lab) (Credit-4) (2020 Pattern)
Subject Code: PHCP-125

Course PHCP-125: Physics Laboratory-II (General Lab) (Credit-4) (2020 Pattern)	
CO1:	Study the discrete nature of the atomic energy levels.
CO2:	Learn making small measurements like wavelength of laser using the interference principle
CO3:	Study the nuclear detectors and measure the properties of nuclear radiations.
CO4:	Study Temperature variation of semiconductors and black body radiation.
CO5:	study the discrete energy levels using Frank-Hertz experiment
CO6:	Understand the Skin depth in Al using electromagnetic radiation

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-III)
Name of Subject: Statistical Mechanics (Credit- 4) (2020 Pattern)
Subject Code: PHCT-231

Course PHCT-231: Statistical Mechanics (Credit- 4) (2020 Pattern)	
CO1:	Understand the need to go to systems of large number of particles where the probabilities are more appropriate to be calculated than finding the exact values, understand the specifications of state of systems, understand various spaces
CO2:	Understand various ensembles and its use to calculate various thermodynamic functions , understand basic Thermodynamics laws
CO3:	Understand the classical & quantum mechanics behind applications in statistical mechanics , Understand difference between Classical and Quantum Statistics
CO4:	Understand concept of partition function , understand difference between MB, FD and BE statistics
CO5:	Develop some problems dealing with statistical ensemble and Fermi energy, to solve some examples on particles by using particle distribution statistics.
CO6:	Demonstrate understanding of various aspects of statistical mechanics

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-III)
Name of Subject: Solid State Physics (Credit-4) (2020 Pattern)
Subject Code: PHCT-232

Course PHCT-232: Solid State Physics (Credit-4) (2020 Pattern)	
CO1:	Identify crystal structure, structure of atomic form factor, geometrical structure factor
CO2:	Understand the band structure, band theory, tight binding approximation
CO3:	Understand magnetism , types of magnetism, theories of magnetism
CO4:	Understand the concept of superconductivity and applications of superconductors
CO5:	Understand the anti-ferromagnetism, Neel temperature & susceptibility.
CO6:	Show how the London equations and Maxwell's equations lead to the prediction of the Meissner effect.

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-III)
Name of Subject: Experimental Techniques in Physics I (Credit-4) (2020 Pattern)
Subject Code: PHCT-233

Course PHCT-233: Experimental Techniques in Physics I (Credit-4) (2020 Pattern)	
CO1:	Introduce to various signals , their analysis and sensors
CO2:	Identify of importance , basic terms of vacuum , properties of vacuum and field applications of vacuum
CO3:	Understand the principle of pumping concept, types of vacuum pumps and vacuum techniques
CO4:	Introduce various vacuum gauges , Identify of leak detection in vacuum pump
CO5:	Convert vacuum measurement units from one unit to another unit.
CO6:	Describe different vacuum gauges and vacuum pumps with their working principle, range of measurement, advantages and drawbacks.

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Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-III)
Name of Subject: Material Science - I (Credit-2) (2020 Pattern)
Subject Code: PHCT-244M2

Course PHCT-244M2: Material Science - I (Credit-2) (2020 Pattern)	
CO1:	Define Mechanical, electrical, magnetic, thermal and optical properties
CO2:	Discuss Point defects - Vacancies, interstitials, non-stoichiometry, substitution, Schottky and Frenkel defects with proofs
CO3:	Explain Line defects - Edge and screw dislocations, properties of dislocations – force on dislocation, energy of dislocation, pinned dislocation
CO4:	Solve problems on Solid solubility with few examples, Types of solid solutions – Substitutional and Interstitial, Factors governing solid solubility
CO5:	Mechanism of Diffusion, Fick’s first and second laws of diffusion, solution to Fick’s second law
CO6:	Applications of diffusion: Corrosion resistance of duralumin, Carburization of steel, Decarburization of steel, Doping of semiconductors

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Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-III)
Name of Subject: Material Science - I (Credit-2) (2020 Pattern)
Subject Code: PHCT-244M2

Course PHCT-244M2: Material Science - I (Credit-2) (2020 Pattern)	
CO1:	Study of creep behaviour for binary Sn-Pb alloy
CO2:	Determine Density of ceramic material using XRD
CO3:	Analysis Humidity measurement
CO4:	Determine Average grain size by SEM
CO5:	To determine the dipole moment of a given liquid
CO6:	To determine the magnetic susceptibility of FeCl ₃

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Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-III)
Name of Subject: Physics Laboratory III (Computer Lab) (Credit -4)
Subject Code: PHCP-235

Course PHCP-235 : Physics Laboratory III (Computer Lab) (Credit -4)	
CO1:	Learn the special functions of Mathematical Methods in Physics using C programming.
CO2:	Solving the computational Physics problems.
CO3:	Use of Graphics for various Physics applications.
CO4:	Graphical display of outputs in electronic circuits.
CO5:	Interpret the value obtained on turbo C and manually.
CO6:	Diagram the results of program using graphics in C

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Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-IV)
Name of Subject: Nuclear Physics (Credit-4) (2020 Pattern)
Subject Code: PHCT-241

Course PHCT-241 : Nuclear Physics (Credit-4) (2020 Pattern)	
CO1:	Atomic and nuclear structure, importance of binding energy , electric and magnetic properties of nucleus
CO2:	Radioactivity and disintegration through alpha, beta and gamma decay, Construction and working of different radiation detectors
CO3:	Pros and cons of different nuclear models, Types of nuclear reactions and the ways to harness the nuclear energy, and nuclear reactors
CO4:	Principle of different particles accelerators, nucleon interactions and a glimpse of elementary particles (Leptons, Hadrons and quarks)
CO5:	Analyse production and decay reactions for fundamental particles by applying conservation principles.
CO6:	Evaluating: Evaluate radiation energy losses by passage through the matter.

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-IV)
Name of Subject: Experimental Techniques in Physics II (Credit-4) (2020 Pattern)
Subject Code: PHCT-242

Course PHCT-242: Experimental Techniques in Physics II (Credit-4) (2020 Pattern)	
CO1:	Introduce sources of electromagnetic radiation and different types of radiations, detectors and sensors
CO2:	Understand the concept of X ray and its use in diffraction, Identify the different structural characterization and thermal analysis
CO3:	Identify various morphological and magnetic characterization
CO4:	Identify different spectroscopic analysis
CO5:	Study morphology, topography of any material by using SEM, TEM, and FESEM
CO6:	Apply the knowledge of characterization techniques for research.

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Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-IV)
Name of Subject: Physics of Thin Films (Credit-4) (2020 Pattern)
Subject Code: PHCT-243A4

Course PHCT-243A4: Physics of Thin Films (Credit-4) (2020 Pattern)	
CO1:	Recognize the various aspects of different thin film deposition, fundamental properties and various measurement techniques
CO2:	Relate effect of various deposition parameters to growth of thin films and their typical uses for applications.
CO3:	Discuss the differences and similarities between techniques and fundamental properties of thin film deposition.
CO4:	Asses the relation between deposition technique, film structure and film properties.
CO5:	Analyse effect of film growth on properties.
CO6:	Design novel thin film material synthesis by modified growth technique

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-IV)
Name of Subject: Material Science - II (Credit-2) (2020 Pattern)
Subject Code: PHCT-244M2

Course PHCT-244M2: Material Science - II (Credit-2) (2020 Pattern)	
CO1:	Study Revision of laws of thermodynamics,
CO2:	measurement of changes in enthalpy and entropy, Richard's rule, Trouton's rule, Phase equilibrium in a one component system, Chemical reaction equilibrium, Thermodynamic properties of solutions
CO3:	Study Gibb's phase rule: proof, explanation and application to single component (H ₂ O) and binary phase diagram
CO4:	Study Thermodynamic origin of phase diagrams, Lever rule,
CO5:	Explain Type I (Cu-Ni) phasediagram, Type II (explanation only) phase diagram, Type III (Pb-Sn) phase diagram,
CO6:	Maxima and minima in two phase regions, Miscibility gaps, Limited mutual solid solubility, Topology of binary phase diagrams

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-IV)
Name of Subject: Material Science - II (Credit-2) (2020 Pattern)
Subject Code: PHCP-244M2

Course PHCP-244M2: Material Science - II (Credit-2) (2020 Pattern)	
CO1:	Preparation of particles of different sizes by chemical method.
CO2:	Study of the particles (e.g. CdS, ZnS, Au, Ag etc.) using UV/VIS spectroscopy for the particle size, colour, (Luminiscence/Fluorescence) and gap energy.
CO3:	Determination of Band gap of given material by UV-Visible-IR spectroscopy.
CO4:	Determination of interatomic bond length in diatomic molecules by studying Rotational vibrational IR spectra.
CO5:	Study of Beer and Lamberts law in absorption spectroscopy by using UV-Vis spectroscopy.
CO6:	Study of Hystersis of hard and soft ferrites

Annasaheb Magar College, Hadapsar, Pune - 28.

Name of Programme: M.Sc
Name of Department: Physics
Class: IInd Year (SEM-IV)
Name of Subject: Physics Laboratory IV (Project) (Credit -2) (2020 Pattern)
Subject Code: PHCP 245

Course PHCP 245 : Physics Laboratory IV (Project) (Credit -2) (2020 Pattern)	
CO1:	Analyze and solve various physics problems using reasoning skill based on the concepts of modern Physics and Learn to operate various research instruments
CO2:	Describe relation between Medical Physics and another branches of Physics
CO3:	Demonstrate specialized analytical skills and techniques necessary to carry out research in advance Physics topics
CO4:	Undertake independent research in an area of advance Physics
CO5:	Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from project work, orally or in a written laboratory report
CO6:	Write a project report with literature review.

M.Sc. Physics Part I & II

Additional Credits

M.Sc.Physics Part I	
Human Rights I	
Introduction to Human Rights and Duties SEM-I: (Credit -1)	
CO1:	To help the students to understand the conceptual General Introduction Life and Works, Ruling through Virtue, Rituals and Filial Piety.
CO2:	To understand and Discuss the fares, Perspectives & Interrelationship of Rights and Duties.
CO3:	To learn and evaluate the Knowledge of the course to Introduced to Nature, Types of Instruments Covenant-Charter, Declaration, Treaty Convention-Protocol Executive Orders and Statutes.
CO4:	To help understanding of the principles of Study of Human Rights International & National Perspectives, Provision of the charters of United Nations, Universal Declaration of Human Rights.

M.Sc.Physics Part I	
Human Rights II	
Human rights of vulnerable and disadvantaged groups SEM-II (Credit -1)	
CO1:	To understand and comprehend the General Introduction of Vulnerable and Disadvantage, Groups, Customary, Socio-Economic and Cultural Problems, Vulnerable and Disadvantaged Groups.
CO2:	To study the Social status of women and children in International and national perspective.
CO3:	To introduce the Status of Social and Economically Disadvantaged people.
CO4:	To enable the students to Introduce of Human rights of valuable groups-Stateless Persons, Sex Workers, Migrant Workers, HIV/AIDS Victims.

M.Sc.Physics Part I	
Introduction To Cyber Security I	
Pre-requisites in Information and Network Security SEM-I (Credit -1)	
CO1:	Understand the conceptual foundation of information security Awareness
CO2:	To protect computers, networks, and software program from cyber attacks
CO3:	To learn and evaluate best practices in security concepts to maintain confidentiality, integrity and availability of computer systems

M.Sc.Physics Part I	
Security Management SEM-II (Credit -1)	
Introduction To Cyber Security II	
CO1:	To understand and comprehend how to manage risks in the real world.
CO2:	To develop an ability for security management and its application to protecting assets, infrastructure and people.

M.Sc.Physics Part II	
Introduction To Cyber Security III	
Information and Network Security SEM-I (Credit -1)	
CO1:	To understand basics of Cryptography and Network Security.
CO2:	To learn issues of security management and its application to protecting assets, infrastructure and people.
CO3:	To adapt risk management methods and skills to their current area of expertise in cyber security

M.Sc.Physics Part II	
Introduction To Cyber Security IV	
System and Application Security SEM-II (Credit -1)	
CO1:	To understand and learn various methods for securing a message over internet.
CO2:	To learn about how to maintain the Confidentiality, Integrity and availability of data.
CO3:	To understand various protocols for network security to protect against the threats in the networks.

M.Sc.Physics Part II	
(30095) Introduction to Constitution SEM-II (Credit -2)	
CO1:	Students will understand the historical background of the Indian Constitution. They will get the knowledge of the Preamble of India.
CO2:	Students will aware of all fundamental rights which are given by the constitution to all Indians.
CO3:	Students will understand Directive Principles of the state policy.
CO4:	Students will aware of their fundamental duties for the nation.



PDEA's
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Hadapsar Pune - 411028.



Chemistry

Department of Chemistry

B. Sc. Chemistry

General

1. The students are expected to understand the fundamentals, principles, and recent developments in the subject area.
2. It is expected to inspire and boost interest of the students towards chemistry as the main subject.
3. To impart practical skills and learn basics behind experiments.
4. To prepare background for advanced and applied studies in chemistry.
5. To inculcate the scientific temperament in the students and outside the scientific community.
6. To inculcate the scientific temperament in the students and outside the scientific community.
7. Use modern techniques, decent equipments and Chemistry softwares.

CH-101:PhysicalChemistry [2Credit,36L]	
After successful completion of the course, students will acquire	
CO1	Understand basic concept of Thermodynamics, Chemical Equilibrium and Ionic equilibrium
CO2	Understand established theories and principles and concepts
CO3	Ability of reasoning and Critical thinking: Able to explain, discuss and describe concepts
CO4	Explain 3 rd law of thermodynamics, Van't Hoff's Equation and its applications
CO5	Understand the concepts of common ion effect, hydrolysis constant, solubility product
CO6	Problem solving: To knowledge of Thermodynamics, Chemical equilibrium and Ionic equilibrium to solve Problems

CH-102: Organic Chemistry [2 credit,36 L]	
After successful completion of the course, students will acquire	
CO1	To understand the fundamentals, Principle and recent developments in the subject area.
CO2	To inspire and boost interest of the students towards Organic chemistry as the main subject.
CO3	To familiarize with current and recent developments in Chemistry.
CO4	To create foundation for research and developments in Chemistry
CO5	Learn functional group approach for aliphatic hydrocarbons
CO6	Aware and able to apply the fundamentals of stereochemistry

CH-103: Chemistry Practical-I [1.5 Credit, 54L]	
After successful completion of the course, students will acquire	
CO1	To know the importance of Chemical safety and lab safety in laboratory
CO2	Experimental verification and understanding concepts in thermochemistry, Chemical equilibrium
CO3	Experimental techniques of pH measurements and preparation of buffer solutions.
CO4	To understand elemental analysis and Identification technique- Chromatographic techniques of organic chemistry
CO5	Use of paper chromatography as a technique for separation of mixture constituents.
CO6	Perform elemental analysis of organic compounds by non – instrumental methods

CH-201: Inorganic Chemistry
[2 Credit, 36 L]

After successful completion of the course, students will acquire	
CO1	History of quantum mechanics, different experiments and theories like blackbody radiation, photoelectric effect, Bohr's theory, Heisenberg Uncertainty principle.
CO2	What is periodicity of elements, writing correct electronic configuration of atoms by following different rules.
CO3	Long form of periodic table, different properties like ionization energies, effective nuclear charge, atomic radii in case of s and p block elements.
CO4	Different types of bonds, Born-Landé equation and Born-Haber cycle, Fajan's rule
CO5	Understand periodicity of elements
CO6	Understand various theories of chemical bonding

CH-202: Analytical Chemistry
[2 Credit, 36 L]

After successful completion of the course, students will acquire	
CO1	To understand the perspective of analytical Chemistry, preparation of solutions and its calculation.
CO2	To understand the Concept of molecular formula, empirical formula and stoichiometric calculation, Organic qualitative Analysis, Chromatography, pH meter and its working and application
CO3	Critical Thinking and ability of reasoning – able to apply thought to stoichiometric calculations, chromatographic techniques and pHmetry
CO4	Problem Solving: able to solve problems based on stoichiometry, chromatography and pHmetry.
CO5	Understand the theoretical background of paper and thin layer chromatography.
CO6	Acquire knowledge of analytical techniques of analysis.

CH-203: Chemistry Practical-II [1.5 Credit,54 L]	
After successful completion of the course, students will acquire	
CO1	Practical Skills and understanding of concepts in chemistry
CO2	Quantitative Analysis technique– Volumetric analysis
CO3	Preparation of Organic compounds and purification techniques
CO4	Synthesis of Inorganic compounds
CO5	Analyse commercial products from the market.
CO6	Quantitative techniques of organic and inorganic compounds.

S.Y.B.Sc. Chemistry (Semester-III)

CH-301: Physical and Analytical Chemistry [2 Credit, 36L]	
After successful completion of the course, students will acquire	
CO1	Understand Basic concepts of chemical kinetics, surface chemistry, errors in quantitative analysis and volumetric analysis
CO2	Principle, Laws, assumptions and derivations related to chemical kinetics, surface chemistry, errors in quantitative analysis and volumetric analysis
CO3	Critical thinking ability – explanation and reasoning ability on topic learn
CO4	Apply volumetric methods of analysis to real problems in analytical chemistry
CO5	Define and explain concepts of accuracy, precision and other such terms.
CO6	Problem solving skills

CH-302: Inorganic and Organic Chemistry [2 Credit, 36 L]	
After successful completion of the course, students will acquire	
CO1	Understand Basic concepts of Molecular Orbital Theory, coordination chemistry, Aromatic Hydrocarbon and Alcohol, Phenols and Ethers
CO2	Laws, Principles and theories related to Molecular Orbital Theory, coordination chemistry, Aromatic Hydrocarbon and Alcohol, Phenols and Ethers
CO3	Explain Werner's theory of co-ordination compounds
CO4	Understand the concept of EAN Rule
CO5	Critical Thinking and ability of reasoning related to topic learn
CO6	Problem solving – problem related to analytical Chemistry

CH-303: Practical Chemistry [2 Credit, 72 L]	
After successful completion of the course, students will acquire	
CO1	Systematic working skills in laboratory will be imparted to the students
CO2	Set of experiments and preparation of solutions for the experiments
CO3	Perform organic and inorganic synthesis and confirm the outcome by suitable techniques.
CO4	Understand the systematic methods of identification of substances by chemical methods
CO5	Co- relate theory to experiments
CO6	Writing of laboratory reports and calculations.

S.Y.B.Sc.Chemistry(Semester-IV)
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CH-401: Physical and Analytical Chemistry [2 Credit,36 L]
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After successful completion of the course, students will acquire	
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CO1	Define the terms and types in Phase Equilibrium, Ideal/Real Solutions, Conductometry, Colorimetry and Column Chromatography
CO2	Correlate different terms with each other and derive the equations related to Phase Equilibrium, Ideal and Real Solutions, Conductometry, Colorimetry and Column Chromatography
CO3	Apply the knowledge of important equations to solve the problems
CO4	Explain the logical behavior of solution based on appropriate concepts
CO5	Apply Colorimetric method in the chemical analysis
CO6	Define various terms in conductometry

CH-402: Inorganic and Chemistry [2 Credit,36 L]
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After successful completion of the course, students will acquire	
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CO1	Define the terms and types in Phase Equilibrium, Ideal/Real Solutions, Conductometry, Colorimetry and Column Chromatography
CO2	Correlate different terms with each other and derive the equations related to Phase Equilibrium, Ideal and Real Solutions, Conductometry, Colorimetry and Column Chromatography

CO3	Apply the knowledge of important equations to solve the problems
CO4	Explain the logical behavior of solution based on appropriate concepts
CO5	Explain different types of isomerism in coordination compounds
CO6	Principles of various theories of CFT, VBT

CH-403: Chemistry Practical-IV [2 Credit, 72 L]	
After successful completion of the course, students will acquire	
CO1	Systematic working skills in laboratory will be imparted to the students
CO2	Experimental verification of theoretical principles and Laws
CO3	Skill of handling instruments - Conductometer, Colorimeter.
CO4	Analytical Skill for data treatment, interpretation and conclusion.
CO5	Non - Instrumental techniques for analysis, Synthesis of compounds
CO6	Perform the quantitative chemical analysis of substances and explain principles behind it

T.Y.B.Sc. Chemistry (Semester- V)
C B C S - 2019 Pattern

CH-501: Physical Chemistry
[Credit -2, 36 L]

After successful completion of the course, students will acquire

CO1	Historical of development of quantum mechanics, differences between classical and quantum mechanics, Various developments in quantum mechanics. Laws of Quantum mechanics. Comparison of classical and quantum mechanics
CO2	Schrodinger equation for 1D, 2D and 3D model Nature of wave and its characteristics such as wavelength, wave number, frequency and velocity, Energy level diagram, Rotational spectra of rigid diatomic molecules, selection rules, nature of spectral lines, Born-Oppenheimer approximation factors affecting the quantum yield, Experimental method for the determination of quantum yield
CO3	Physical interpretation of the ψ and ψ^2 and sketching the wave function Difference between Rayleigh, Stokes and anti-Stokes lines in a Raman spectrum. Various photochemical phenomena like fluorescence and phosphorescence, Chemiluminescence
CO4	Understanding the operators: Position, momentum and energy Draw the Stokes and anti-Stokes lines in a Raman spectrum Pure rotational Raman spectra of diatomic molecules, Energy Expression, Selection rule, Rotational energy level diagram, Rotational Raman spectrum
CO5	Applications to conjugated systems, zero-point energy Rotational energy level diagram, Rotational Raman spectrum photocatalysis, photosensitization
CO6	Evaluating various Numerical.

CH-502: Analytical Chemistry- I
[Credit -2, 36 L]

After successful completion of the course, students will acquire

CO1	Define basic terms in gravimetry, spectrophotometry, qualitative analysis and parameters in instrumental analysis
CO2	Beers law, absorbance, transmittance, molar absorptivity, monochromator, wavelength of maximum absorbance, metal ligand ration, qualitative analysis.
CO3	Explain different principles involved in the gravimetry, spectrophotometry, parameters in instrumental analysis, qualitative analysis.
CO4	Perform quantitative calculations depending upon equations student has studied in the theory. Select particular method of analysis of analyte sample
CO5	Apply whatever theoretical principles he has studied in theory during practical session in laboratory.
CO6	Evaluating various Numerical.

CH-503: Physical Chemistry Practical - I **[Credit -2, 73 L]**

After successful completion of the course, students will acquire	
CO1	To develop the practical skill and knowledge of instrumental method like refractometry, conductometry, photo-fluorometry etc
CO2	To develop the practical skill and knowledge of non-instrumental analysis.
CO3	Understanding of non-instrumental techniques like Chemical kinetics, viscosity, adsorption
CO4	Handling of instruments like refractometry, conductometry, photo-fluorometry etc
CO5	Calculations and findings of molecular weight using viscometry.
CO6	Finding of relative strength of acids using conductometric titrations.

CH-504: Inorganic Chemistry- I **[Credit -2, 36 L]**

After successful completion of the course, students will acquire	
CO1	Understand the terms related to MOT, Co – ordination Chemistry
CO2	Understanding of Chemistry of F - Block and D block elements
CO3	Understanding the metals, semiconductors and superconductors
CO4	Understanding nephelauxetic Effect, electroneutrality principle and Charge transfer Spectra
CO5	Understand separation methods of lanthanides
CO6	Classification of the reactions of Co – ordination compounds

CH-505: Industrial Chemistry

[Credit -2, 36 L]	
After successful completion of the course, students will acquire	
CO1	Familiarize with chemical industries such as sugar, soap, dyes and pigments
CO2	Knowledge of sugar, fermentation, soap, detergent, dyes, paints
CO3	Manufacturing processes of sugar, soap, detergents
CO4	Understanding of basic chemicals, manufacturing process.
CO5	Synthesis, structure, properties and applications of Dyes
CO6	To know the various industrial aspects

CH-506: Inorganic Chemistry Practical - I	
[Credit -2, 73 L]	
After successful completion of the course, students will acquire	
CO1	Systematic working skill in laboratory will be imparted in students.
CO2	To understand the concepts of volumetric, gravimetric analysis.
CO3	To understand various separation techniques.
CO4	To understand and perform purification and identification techniques.
CO5	To prepare inorganic complexes and spot tests for metal ions and ligands.
CO6	Qualitative and confirmatory tests of inorganic toxicants

CH-507: Organic Chemistry	
[Credit -2, 36 L]	
The student who successfully completes this course will acquire:	
CO1	Understanding of classification, synthesis.
CO2	Understanding of reactions and functions of hetero nuclear compounds
CO3	To know and understand the methylene group.
CO4	Reactivity of methylene group
CO5	Understanding the nucleophilic substitution and elimination reactions
CO6	Familiarization with organic reagents and rearrangement

CH-508: Chemistry of Biomolecules	
[Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	Understanding the molecular logic of life.
CO2	Familiarize with biochemistry and molecular biology
CO3	Understanding biomolecules such as proteins, carbohydrates
CO4	Understanding the bio molecules such as lipids, vitamins and hormones
CO5	Familiarize with enzymes, and biochemical techniques

CO6	Understanding the Mechanistic action of various bio molecules
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CH-509: Organic Chemistry Practical - I	
[Credit -2, 73 L]	
After successful completion of the course, students will acquire:	
CO1	Systematic working skill in laboratory will be imparted in students
CO2	To know and understand the concepts qualitative analysis.
CO3	To know and understand the concepts qualitative analysis.
CO4	To know the separation purification by making derivative techniques
CO5	To know the separation purification techniques for binary mixture.
CO6	To understand the importance of Green Chemistry

CH-510 (B): Polymer Chemistry	
[Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	History of polymers,
CO2	Understanding the difference between natural, synthetic, organic and inorganic polymers.
CO3	Understanding of various terms in polymers, classification.
CO4	Understanding various processes of polymerization.
CO5	Advantages of polymers.
CO6	Role of polymer industry in economics.

CH-511(A): Environmental Chemistry	
[Credit -2, 36 L]	
The student who successfully completes this course will acquire:	
CO1	Understanding concepts and scope of Environmental Chemistry.
CO2	Understanding the various terms involved in environmental chemistry.
CO3	Analysis of Water
CO4	Water pollution and various treatment methods
CO5	Important bio – geo chemical cycles
CO6	Importance of conservation of environment

T.Y.B.Sc.Chemistry(Semester-VI)2019 Pattern**T.Y.B.Sc.Chemistry(Semester-VI)2019 Pattern****CH-601:PhysicalChemistry - II****[Credit -2, 36 L]**

After successful completion of the course, students will acquire:

CO1	Understanding the various electrochemical cells, Reversible and irreversible cells, Nerst Equation, various types of electrodes.
CO2	Applications of emf measurement, study of redox reactions, potentiometric titrations, primary and secondary cells and the use of secondary cell as battery, Fuel cells, types of fuel cells, advantages and disadvantages of fuel cells
CO3	Crystalline and amorphous solids, laws of crystallography, Weiss and Miller indices, Bravais lattice, Cubic lattice and its types
CO4	Crystal structure analysis, Bragg's equation, NaCl by Bragg's method, X ray analysis of NaCl and calculation of d and λ for a system.
CO5	Understand the concept of radioactivity, types of decay and type of radiations
CO6	Applications of radioactivity and numerical solving

CH-602: Physical Chemistry – III**[Credit -2, 36 L]**

After successful completion of the course, students will acquire:

CO1	To know the colligative properties of dilute solutions and their applications.
CO2	To study the solid-state reactions, their chemical kinetics and rate law
CO3	Electronic Structure of solids, cohesive energy of solids
CO4	Electronic Structure of metals, conductors, semi – conductors and insulators
CO5	To know the history, classifications and physical properties of polymers
CO6	Evaluating various Numericals

CH-603: Physical Chemistry Practical - II**[Credit -2, 73 L]**

After successful completion of the course, students will acquire:

CO1	To develop the practical skill and knowledge of instrumental and non – instrumental Techniques.
CO2	Develop skills in chemical kinetics, viscosity adsorption..

CO3	Potentiometric titration, redox reaction and estimations.
CO4	Understand the use of pH – metry.
CO5	Understand and of turbidometry.
CO6	Calculations and graph drawing.
CH-604: Inorganic Chemistry- II [Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	Understanding of synthesis, reactivity and properties of organometallic compounds
CO2	Understanding the basics of catalysis
CO3	Familiarize with homogenous and heterogeneous catalysis
CO4	Understanding of basic concepts in Bioinorganic chemistry
CO5	Familiarization with the types of inorganic polymers, their synthesis, reactivity and properties.
CO6	Understand preparation of solids by various methods

CH-605: Inorganic Chemistry- III [Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	Concept of acid base and their theories, properties.
CO2	To know the nature of solids, crystal structures of solids
CO3	Understanding of zeolites, types of zeolites and classification
CO4	Synthesis and structure of zeolites.
CO5	Basics of Nano particles, their properties
CO6	Applications of nano particles

CH-606: Inorganic Chemistry Practical – II [Credit -2, 73 L]	
After successful completion of the course, students will acquire:	
CO1	To develop the practical skill and knowledge of instrumental and non-instrumental Techniques.
CO2	Familiarize with volumetric analysis
CO3	Synthesis of nano particles
CO4	Understanding the various chromatographic techniques
CO5	Understanding Flame photometry and its use

CO6	Explain UV /Vis spectra
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CH-607: Organic Chemistry –II [Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	Introduction to Spectroscopic techniques.
CO2	Understanding Ultra violet/ Visible spectroscopy.
CO3	Understanding Infrared spectroscopy.
CO4	Understanding Nuclear Magnetic Resonance spectroscopy.
CO5	Solving combined problems on UV/Vis, IR, NMR Spectroscopy.
CO6	Understanding the concepts of stereochemistry.

CH-608: Organic Chemistry - III [Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	Understanding of retrosynthesis, basic concepts and terminology.
CO2	Understanding of reaction mechanism in synthetic organic chemistry
CO3	Understanding the mechanism of Various rearrangements in organic chemistry.
CO4	To know and understand various synthetic reagents.
CO5	Understanding the Chemistry of naturally occurring compounds
CO6	Familiarization with alkaloids and terpenoids.

CH-610 (A): Chemistry of Soil and Agrochemicals [Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	Understanding the molecular logic of life.
CO2	Familiarize with biochemistry and molecular biology
CO3	Understanding biomolecules such as proteins, carbohydrates
CO4	Understanding the bio molecules such as lipids, vitamins and hormones
CO5	Familiarize with enzymes, and biochemical techniques
CO6	Understanding the Mechanistic action of various bio molecules

CH-611 (A): Analytical Chemistry - II [Credit -2, 36 L]	
After successful completion of the course, students will acquire:	
CO1	Solvent extraction terms,
CO2	Instrumental methods of chromatography, Van Deemter Equation

CO3	Introduction to HPLC, various terms and instrumental parts, analysis of Aspirin
CO4	Introduction to Gas Chromatography, Instrumentation and parts, Analysis using GC
CO5	Introduction to Atomic Absorption spectroscopy, various parts of instrument, Estimation of Ca and Mg from water.
CO6	Introduction to Flame Photometry, calibration Curve method, Trace analysis.

Program Outcomes (PO's)

After completing B.Sc. Chemistry Program students will acquire:

PO1: Transfer and apply the acquired fundamental knowledge of chemistry, including basic concepts and principles of (1) organic chemistry, Inorganic chemistry, Physical and Analytical Chemistry; (2) analytic techniques and experimental methods for chemistry to study different branches of chemistry;

PO2: Demonstrate the ability to explain the importance of the Periodic Table of the Elements and represent key aspects of it and its role in organizing chemical information.

PO3: apply and demonstrate knowledge of essential facts, concepts, laws, principles and theories related to chemistry;

PO4: demonstrate the learned laboratory skills, enabling them to perform qualitative and quantitative analysis of given samples and able to make conclusions on it;

PO5: set procedure and synthesize simple compounds of commercial importance;

PO6: engage in oral and written scientific communication, and will prove that they can think critically and work independently.

PO7: Communicate effectively using graphical techniques, reports and presentations within a scientific environment.

PO8: to recognize problems in chemical science and make strategies to solve it

PO9: Respond effectively to unfamiliar problems in scientific contexts

PO10: Plan, execute of design experiment, make documentation of it, interpret data at entry level of chemical industry and report the results;

PO11: Integrate and apply these skills to study different branches of chemistry.

PO12: The student will acquire knowledge effectively by self-study and work independently, present information in a clear, concise and logical manner and apply appropriate analytical and approximation methods

Program Specific Outcomes

T. Y. B. Sc. Chemistry

After completing B.Sc. Chemistry, students will acquire

PSO 1	Understand the nature and basic concepts of Physical, Organic and Inorganic, Analytical Chemistry.
PSO 2	Analyze Organic and Inorganic compounds qualitatively and quantitatively.
PSO 3	Understand the applications of Physical, Organic, Inorganic and Analytical Chemistry in pharmaceutical, agriculture and allied chemical industries.
PSO 4	Able to perform experimental procedures as per laboratory requirements in the area of Physical, Inorganic and Organic Chemistry.
PSO 5	Interpretation and Synthesis of chemical information and data obtained from chemical and instrumental analysis.
PSO 6	Students will learn professionalism, including the ability to work in groups and in society, and apply basic ethical principles.



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Botany

Department of Botany
Programme Outcomes:

Knowledge outcomes:

After completing B.Sc. Botany Programme students will be able to:

- PO1: Demonstrate and apply the fundamental knowledge of the basic principles of major fields of biology
- PO2: Application of the knowledge to solve the issues related to plant sciences with the help of computer technology
- PO3: Conservation of endemic and endangered plant species by applying the knowledge.

Skill outcomes:

After completing B.Sc. Botany Programme students will be able to:

- PO4 Disseminate knowledge by effective collaboration on team-oriented projects in the field of life sciences.
- PO5 For creating the scientific temperament, communication of scientific information in a clear and concise manner both orally and in writing
- PO6 By explaining the exact role of individual in Biodiversity conservation, climate change and plant pathology, inspire individuals to do some efforts in the same direction.
- PO7 Improve the understanding of the individuals by applying the knowledge of Biotechnology, Ecology, Genetics and Plant breeding techniques in plant sciences
- PO8 Create interest in individuals by applying the knowledge of Medicinal and Economic botany in to their day to day life.
- PO9 For the conservation of nature apply the knowledge to develop the sustainable and eco-friendly technology in Industrial Botany

Generic outcomes:

Students will

- PO10 Developed the various soft skills in the students by their critical reasoning, judgment and communication skills.
- PO11: Created awareness about the recent developments in the field of Molecular and cell Biology, Biotechnology, Computational Botany and relevant

fields of research and development.

- PO12 Inspired students from scientific for developing a research culture and Implementation the policies to tackle the burning issues at global and local level.

Programme Specific Outcomes

- PSO1: Understanding about the plant structures in the context of morphology, physiological and biochemical functions of plants.
Student get's conceptual knowledge of entrepreneurships in mushroom cultivation, Biofertilizers and Bio pesticides production, plant tissue culture laboratories, Enzyme production, Fermentation, Single cell proteins etc.
- PSO2
- PSO3 Students will be well versed with various mechanisms of GMOs, morphological taxonomy molecular techniques
- PSO4 Students get acquainted with techniques which are used recently in the industrially important plant products.
- PSO5 Understand the diversity of the flowering and non-flowering plants and structural organization of plants like monocots and Dicot.

Poona District Education Association'

Course Outcomes F. Y. B.Sc. Botany

Course 111: Plant Life and Utilization - I

After successfully completing this course, students will be able to:

Sr. no.	CO Number	Content
1	CO1:	Outlining and defining of general characters of cryptogams and phanerogams. cryptogams (Lower and Higher) and phanerogams (Gymnosperms and Angiosperms)
2	CO2:	Defining the general characters of Algae , Classification of group algae and their utilization w.r.t. Biofuel Industry, Agriculture, Pharmaceuticals, food and fodder.
3	CO3:	Describing and sketching the Life cycle of plant forms Algae: <i>Spirogyra</i>
4	CO4:	Defining the general characters of lichens, lichen forms and their utilization
5	CO5:	Defining the general characters of Fungi, Classification of group fungi and their utilization w.r.t. Industry, Agriculture, food and Pharmaceuticals.
6	CO6:	Describing the Life cycle of plant forms– Fungi : <i>Agaricus bisporous</i>
7	CO7:	Defining the general characters of Bryophytes, Classification of group Bryophytes and their utilization w.r.t. Ecological indicators, fuel Industry, Agriculture and medicine.
8	CO8:	Describing the Life cycle of plant forms– Bryophytes : <i>Riccia</i>

Course 112: Plant Morphology and Anatomy

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Defining Morphology and its type, importance w.r.t. Identification, nomenclature, classification, phylogeny and Plant breeding.
2	CO2:	Discussing the morphology of reproductive parts of plants w.r.t. inflorescence : its types and significance
3	CO3:	Discussing morphology of reproductive parts of plants w.r.t. Flower: Floral whorls - Calyx, Corolla and Perianth
4	CO4:	Discussing morphology of reproductive parts of plants w.r.t. Flower: Floral whorls - Androecium and Gynoecium.

5	CO5:	Discussing definition and different types of Fruits
6	CO6:	Defining Anatomy and its importance in different branches of botany.
7	CO7:	Explaining the plant tissues w.r.t. Types structure and functions.
8	CO8:	Describing anatomy of Monocot and dicot plants w.r.t. root, stem and leaf

Course 113: PRACTICALS BASED ON BO 111 & BO 112

After successfully completing this course, students will be able to:

Sr.no.	Co Number	Content
1	CO1	Categorizing the living forms of Cryptogamic and Phanerogamic plants.
2	CO2	Explaining the Life Cycle of <i>Spirogyra</i>
3	CO3	Explaining the Life Cycle of <i>Agaricus</i>
4	CO4	Explaining the Life Cycle of <i>Riccia</i>
5	CO5	Demonstrating the methods of cultivation of mushrooms
6	CO6	Recognizing type of inflorescence
7	CO7	Elucidating the floral parts and recognize types of fruits
8	CO8	Categorizing the plants into Monocot and Dicot on the basis of anatomical characters of Root, Stem and Leaf.

Course 121: Plant Life and Utilization - II

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Illustrating plant diversity with reference to vascular plants
2	CO2:	Defining general characters of Pteridophytes and explain Classification of group Pteridophytes
3	CO3:	Describing the Life cycle of plant forms Pteridophytes - <i>Nephrolepis</i>
4	CO4:	Defining general characters of gymnosperms, Classification of group gymnosperms
5	CO5:	Describing the Life cycle of plant forms– gymnosperms : <i>Cycas</i>
6	CO6:	Defining general characters of Angiosperms and explain Outline of classification of Bentham and Hooker's system
7	CO7:	Annotating comparative account of monocotyledons and dicotyledons.
8	CO8:	Explaining Utilization and economic importance of Pteridophytes , Gymnosperms and Angiosperms

Course 122: Principles of Plant Science

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Defining the plant physiology and molecular biology and its scope of
2	CO2:	Defining the different physiological phenomenon viz. Diffusion, osmosis, Plasmolysis and Explain its type and significance
3	CO3:	Examining the Plant growth w.r.t. phases of growth, factors affecting growth
4	CO4:	Discussing plant cell and differences between prokaryotic and eukaryotic cell.
5	CO5:	Discussing plant cell wall and chloroplast structure and function.
6	CO6:	Describing Cell cycle in plants and Illustrate different stages of mitosis and meiosis.
7	CO7:	Explaining the structure of DNA and RNA and its type
8	CO8:	Explaining the types of chromosomes and process of DNA replication

Course 123: Practicals Based on BO 121 & BO 122

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Finding the living forms of Cryptogamic and Phanerogamic plants.
2	CO2:	Explaining the life Cycle of Nephrolepis and prepare slides
3	CO3:	Explain Life Cycle of Cycas and prepare slides
4	CO4:	Categorizing Dicotyledonous and Monocotyledonous plants on the basis of external morphological characters.
5	CO5:	Differentiating usage of Angiospermic plants for food, fodder, fibers, horticulture and medicines
6	CO6:	Commenting prokaryotic and eukaryotic plant cell
7	CO7:	Diagnosing the different stages of mitosis and meiosis
8	CO8:	Demonstrating physiology experiments like Chlorophyll estimation, DPD , Osmosis, Plasmolysis

Course Outcomes
S. Y. B.Sc. Botany (Semester - III)
CourseBO 231: Taxonomy of Angiosperms and Plant Ecology

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Defining plant taxonomy and highlighting the taxonomic related concepts w.r.t scope, objectives and importance of taxonomy, historical background, Exploration, Description, Identification, Nomenclature and classification,
2	CO2:	Explaining different classification systems of angiosperms like Artificial system (by Carl Linnaeus), Natural system- (by Bentham and Hooker), Phylogenetic system (by Engler and Prantl) and APG system (brief review)
3	CO3:	Explaining plant families with examples.
4	CO4:	Preparing Floral formula and floral diagram
5	CO5:	Determining Botanical Nomenclature of angiosperm plants.
6	CO6:	Defining ecology and different concepts
7	CO7:	Explaining hotspots and diversity concept with types
8	CO8:	Categorizing the ecological plant groups with examples

CourseBO 232: Plant Physiology

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Defining and explain Scope and applications of plant physiology
2	CO2:	Explaining processes of absorption of water in plants.
3	CO3:	Explaining processes of ascent of sap in plants.
4	CO4:	Defining and explaining transpiration in plants
5	CO5:	Explaining Nitrogen metabolism process, types and role; Importance and production technique of BGA
6	CO6:	Explaining concept of Denitrification, ammonification and nitrification; Reductive amination and transamination
7	CO7:	Defining and explain Seed dormancy and germination
8	CO8:	Explaining Physiology of flowering w.r.t. photoperiodism mechanisms and application ; Phytochrome theory and its role; Mechanism of Vernalization

CourseBO 233: Practical based on BO 231 & BO 232

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Annotating different tools of taxonomy and ecological instruments and explain its use
2	CO2:	Defining the botanical terms to identify the plant families.
3	CO3:	Explaining and Identify the plant families
4	CO4:	Sketching the floral diagram of plants belonging to specific families.
5	CO5:	Explaining and locating ecological adaptations in Hydrophytes and Xerophytes
6	CO6:	Determining frequency, abundance and density of Vegetation by list count quadrat method
7	CO7:	Experimenting physiological experiments viz. LPC, DPD, rate of transpiration
8	CO8:	Estimating phytochemical test for starch and protein

S. Y. B.Sc. Botany (Semester - IV)

CourseBO 241: Plant Anatomy and Embryology

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Defining terms associated to plant Anatomy, Embryology
2	CO2:	Explaining various tissue systems in plants viz. epidermal, mechanical and vascular.
3	CO3:	Commenting the Principles involved in distribution of mechanical tissues
4	CO4:	Explaining the process of normal and abnormal secondary growth in plants.
5	CO5:	Defining embryology and its scope
6	CO6:	Elucidating the Structure and development process of Microsporangium and male gametophyte
7	CO7:	Elucidating the Structure and development process of Megasporangium and female gametophyte
8	CO8:	Finding process of Pollination and Fertilization; types of Endosperm and embryo

CourseBO 242: Plant Biotechnology

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Defining the terminologies related to plant biotechnology and recognize Scope importance and Current status of plant biotechnology
2	CO2:	Defining Plant Tissue Culture and describe Concept, Basic techniques
3	CO3:	Elucidating applications of Plant Tissue Culture
4	CO4:	Structuring the production and importance of Single cell proteins.
5	CO5:	Annotating Application of plant genetic engineering and its Applications in crop improvement.
6	CO6:	Interpreting the concept of Genomics, Proteomics and Bioinformatics
7	CO7:	Summarizing the concept of Bioremediation
8	CO8:	Defining Biofuel technology and explain Concept and types

CourseBO 243: Practical based on BO 241 & BO 242

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1:	Identifying epidermal tissues in plants and explain its function and structure
2	CO2:	Categorizing mechanical tissues and their distribution in root, stem and leaves
3	CO3:	Interpreting the normal / anomalous secondary growth in plant and developed slide preparation skill
4	CO4:	Identifying and explaining structure of gamete producing organs and differentiate types of embryo
5	CO5:	Identifying Instruments/equipment used in plant tissue culture laboratory and explain its uses
6	CO6:	Demonstrating media preparation and its sterilization for tissue culture
7	CO7:	Demonstrating various culture procedure for tissue culture
8	CO8:	Demonstrating cultivation of <i>Spirulina</i> and practical on transgenic crops

T.Y.B.Sc. Botany Course Outcome 2022-2023

T.Y.B.Sc. Botany CBCS Pattern (Semester V, Paper I) 2020-2021

BO 351: Cryptogamic Botany (Algae and Fungi)- 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining Lower Cryptogams. Describe Thallus Organization of Cryptogams.
2	CO2	Explaining Algae And Its General Characters, Distribution, Thallus Organization, Habit And Habitat Reproduction
3	CO3	Discussing The Study Of Life Cycle of Algae With Reference To Taxonomic Position.
4	CO4	Commenting on Economic Importance of Algae and Its Role In Industry, Agriculture, Fodder And Medicine.
5	CO5	Describing Fungi and Its General Characters, Habit and Habitats, Thallus Organization, Cell Wall Composition And Classification.
6	CO6	Studying Of Life Cycle Of Fungi With Reference To Taxonomic Position
7	CO7	Defining Symbiotic Associations
8	CO8	Commenting on Lichens, Mycorrhiza And Their Significance

T.Y.B.Sc. Botany CBCS Pattern (Semester V, Paper II) 2020-2021

BO 352: Archegoniate- 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining Archegoniate
2	CO2	Categorizing general characters, distribution of Bryophytes to land habit, classification of Bryophytes according to G.M. Smith (1955) up to classes with reasons
3	CO3	Discussing range of thallus organization, origin of Bryophytes - Pteridophytes and Algal hypothesis, evolution of sporophyte.
4	CO4	Explaining Study of Life Cycle of Bryophytes
5	CO5	Defining Vascular Cryptogams, General characteristics, Classification. Explain Ecological and Economical Importance of Pteridophytes
6	CO6	Defining resemblances of Pteridophytes with Bryophytes, Differences between Pteridophytes and Bryophytes Algal and Bryophytes, Evolution of Pteridophytes- with Telome and Enation Theory.
7	CO7	Discussing Study of Life Cycle of Pteridophytes
8	CO8	Enlisting Ecological and Economical Importance of Pteridophytes

**T.Y.B.Sc. Botany CBCS Pattern
(Semester V, Paper III) 2020-2021**

BO 353: Spermatophyta and Palaeobotany - 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining Origin of angiosperms with reference to time, place and ancestry
2	CO2	Explaining Speciation & Endemism Species Concept
3	CO3	Discussing Classification with its Outline, Merit and Demerits of Cronquist's System and Study of families.
4	CO4	Defining Herbaria and Botanical Gardens
5	CO5	Categorizing Introduction, general characters, economic importance and classification According to Chamberlain (1934).
6	CO6	Discussing Study of life cycle of <i>Pinus</i> and <i>Gnetum</i>
7	CO7	Defining Fossil and process of fossil formation
8	CO8	Explaining types of fossils.

**T.Y.B.Sc. Botany CBCS Pattern
(Semester V, Paper IV) 2020-2021**

BO 354: Plant Ecology - 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining Ecology and interrelationship between the living world and the Environment, levels, concept.
2	CO2	Explaining Biogeography and its type.
3	CO3	Discussing Population ecology: Definition, characteristics, population growth form, r and k selection.
4	CO4	Estimating the Community ecology: Introduction and Definition, community structure, physiognomy, Raunkiaer's life form classification, keystone species, edge and ecotone.
5	CO5	Illustrating various Biogeochemical cycles
6	CO6	Applying Environmental Impact Assessment in ecology.
7	CO7	Evaluating the Environmental Audit.
8	CO8	Explaining data analysis of remote sensing technique.

**T.Y.B.Sc. Botany CBCS Pattern
(Semester V, Paper V) 2020-2021**

BO 355: Cell and Molecular Biology - 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining terminologies related to cell and molecular biology.
2	CO2	Discussing the dynamics of plant cell structure and function
3	CO3	Describing Nucleus and chromosomes.
4	CO4	Describing DNA replication, Transcription and Translation.
5	CO5	Explaining the concepts as well as mechanisms of damage and repair.
6	CO6	Explaining gene action and regulation (concept of operon, its structure and regulation).
7	CO7	Interpreting the genomic organization and its role in gene expression
8	CO8	Analyzing Translation Definition, concept and properties of genetic code, molecular mechanism of translation.

**T.Y.B.Sc. Botany CBCS Pattern
(Semester V, Paper VI) 2020-2021**

BO 356: Genetics - 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining the terminologies of Genetics and its applications.
2	CO2	Describing the concept of Mendelism
3	CO3	Discussing the Interactions of genes.
4	CO4	Explaining the Concept, Characters and Examples of multiple alleles.
5	CO5	Determining Linkage, Recombination and Crossing Over
6	CO6	Defining Mutation: Concept, definition and types
7	CO7	Describing the Euploidy, Aneuploidy and chromosomal aberrations.
8	CO8	Summarizing Structural alterations of chromosomes.

**T.Y.B.Sc. Botany CBCS Pattern
Practical 1 (Semester V Paper VII) 2020-2021**

BO 357: Practical based on BO351 and BO352 (2 Credits)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Recognizing Algae and Fungi with respect to systematic position, thallus structure and reproduction with suitable examples..
2	CO2	Recognizing Bryophytes with respect to systematic position, structure of gametophyte, anatomy of thallus, structure of Sporophytes, reproduction
3	CO3	Performing the Study of Sporophyte evolution in Bryophytes with the help of permanent slides.
4	CO4	Demonstrating the Study of <i>Psilotum</i> with respect to Taxonomic position, Morphology of sporophyte, anatomy and reproductive structure
5	CO5	Performing Study of <i>Selaginella</i> with respect to Taxonomic position, Morphology of sporophyte, Anatomy and reproductive structures.

6	CO6	Demonstrating the Study of <i>Equisetum</i> with respect to taxonomic position, Morphology of Sporophyte, anatomy and reproductive structure
7	CO7	Demonstrating Study of Stelar evolution in Pteridophytes with the help of permanent slides
8	CO8	Botanical Excursion and submission of Tour Report with Photographs is compulsory.

T.Y.B.Sc. Botany CBCS Pattern
Practical 2 (Semester V Paper VIII) 2020-2021
BO 358: Practical based on BO353 and BO354 (2 Credits)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Identifying the plant families.
2	CO2	Demonstrating Botanical keys by using vegetative and reproductive characters
3	CO3	Illustrating gymnosperms - <i>Gnetum</i> and <i>Pinus</i> .
4	CO4	Recognizing the fossil forms with help of slides and specimens.
5	CO5	Performing Calculate polluted water body with ref. to BOD
6	CO6	Demonstrating the physicochemical properties of water body by using Sacchi disc, pH meter and electric conductivity meter.
7	CO7	Judging Acquisition of ecological data of particular locality by using GPS/ altimeter/geographical maps etc
8	CO8	Explaining Study of suitable ecosystem by line/belt transect method/ nested quadrature Method

T.Y.B.Sc. Botany CBCS Pattern
Practical 3 (Semester V Paper IX) 2020-2021
BO 359: Practical based on BO355 and BO356 (2 Credits)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Demonstrating cytological techniques like mitosis and meiosis as well as plant physiology practical
2	CO2	Performing Study of various stages of mitosis and meiosis 01 4 Induction of C metaphase in suitable plant material
3	CO3	Demonstrating Isolation of plant genomic DNA by suitable method. Estimation of Plant DNA by DPA method
4	CO4	Calculating the monohybrid and dihybrid crosses with suitable data and its Analysis by Chi-Square test.
5	CO5	Testing the monohybrid and dihybrid crosses with suitable data and its Analysis by Chi-Square test. Induction of tetraploidy in onion root cells and preparation of squash for observation of tetraploid cells
6	CO6	Estimating the Preparation of salivary gland chromosomes in Chironomous larvae. Study of human genetic traits viz. PTC taste sensitivity, earlobe and rolling tongue, height, Skin colour, Hair colour, Eye colour in known population
7	CO7	Testing Genetic problems on gene mapping using three point test cross data. Study of structural heterozygotes in <i>Rhoeo</i> .

- 8 CO8 Calculating the Problems on quantitative inheritance. Problems on Multiple Alleles.

**T.Y.B.Sc. Botany CBCS Pattern
(Semester V, Paper X) 2020-2021**

BO 3510: Medicinal Botany - 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining concept of Medicinal Plants: History, Scope and Importance
2	CO2	Defining Definition and Scope of Indigenous Medicinal Sciences;
3	CO3	Explaining concept of Ayurvedic Pharmacy.
4	CO4	Recognizing drug adulteration, methods of extraction and evaluation.
5	CO5	Discussing the process of Conservation of endangered and endemic medicinal plants
6	CO6	Recognizing medicinally important drugs.
7	CO7	Explaining principles and scope of ethnic societies in India.
8	CO8	Describing the methods in Analytical Medicinal Botany.

**T.Y.B.Sc. Botany CBCS Pattern
(Semester V, Paper XI) 2020-2021**

BO 3511: Plant Diversity and Human Health - 2 Credits (30 Lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining plant diversity and its scope
2	CO2	Discussing Agro-biodiversity
3	CO3	Evaluating the loss of Biodiversity
4	CO4	Discussing management of plant diversity
5	CO5	Discuss methodology for IUCN, UNEP, UNESCO, WWF, NBGR
6	CO6	Summarizing conservation of biodiversity
7	CO7	Summarizing Role of plants in relation to Human Welfare.
8	CO8	Discussing Important fruitcrops their commercial importance. Wood and its uses

**T.Y.B.Sc. Botany CBCS Pattern
Semester VI Paper I 2020-2021**

BO 361 Plant Physiology and metabolism-2 Credit

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining mineral nutrition and its elements.
2	CO2	Classifying different photosynthetic pathways and their significance

3	CO3	Explaining respiration and its mechanism.
4	CO4	Discussing stomatal biology
5	CO5	Explaining the role of resolving power of photosynthesis
6	CO6	Explaining mechanism of translocation in phloem
7	CO7	Summarizing plant growth regulators
8	CO8	Evaluating the term of Photomorphogenesis

**T.Y.B.Sc. Botany CBCS Pattern
Semester VI Paper II 2020-2021**

BO 362: Biochemistry – 2 Credits (30 lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Explaining Description foundation of Biochemistry and classification of biomolecules.
2	CO2	Discussing term Water- The solvent of life
3	CO3	Summarizing the Amino acids and proteins and Commercial applications.
4	CO4	Defining Enzyme and its properties and mechanism
5	CO5	Contrasting factors affecting enzyme activity.
6	CO6	Distinguishing Carbohydrate and its Classification, function and uses.
7	CO7	Elaborate Lipids and its Classification, function and uses.
8	CO8	Elaborating Vitamins and its Classification, function and uses.

**T.Y.B.Sc. Botany CBCS Pattern
Semester VI Paper III 2020-2021**

BO 363 Plant Pathology- 2 Credits (30 lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining terminologies related plant diseases.
2	CO2	Discussing Disease Development Concept of disease cycle and
3	CO3	Defining Defense mechanism concept
4	CO4	Summarizing Methods of Studying Plant Diseases.
5	CO5	Evaluating the disease cycle of diseases caused by fungi, Bacteria, nematode, viruses
6	CO6	Evaluating brief study of Mycoplasma and non- parasitic Disease
7	CO7	Applying wide spectrum control measures for plant diseases
8	CO8	Justifying molecular techniques to control the plant diseases

**T.Y.B.Sc. Botany CBCS Pattern
Semester VI Paper VI 2020-2021**

BO 364 Evaluation and Population genetics- 2 Credits (30 lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining terminologies related to Evolution.
2	CO2	Discussing various Theories of Evolution,
3	CO3	Justifying Evidences of Evolution w.r.t. various aspect.
4	CO4	Summarizing Evolution Through Fossils and fossilization

5	CO5	Discussing Geological Time scale
6	CO6	Elaborating Population Genetics and Evolution
7	CO7	Defining Speciation in detail
8	CO8	Programming various Isolating Mechanisms

**T.Y.B.Sc. Botany CBCS Pattern
Semester VI Paper V 2020-2021**

BO 365 Advanced Plant Biotechnology- 2 Credits (30 lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Commenting biotechnology Traditional and modern Impact on Health care, Agriculture, and Environment
2	CO2	Experimenting Plant Tissue Culture techniques.
3	CO3	Explaining the concept and technique of Genetic Engineering
4	CO4	Describing the concept of gene transfer in Plants
5	CO5	Explaining application of cryopreservation and Germplasm Conservation
6	CO6	Presenting the method of Microbial Biotechnology
7	CO7	Describing the concept of Transgenic Plants as Bioreactors.
8	CO8	Defining concept of Nano- Biotechnology and its application.

**T.Y.B.Sc. Botany CBCS Pattern
Semester VI Paper VI 2020-2021**

BO 366 Plant Breeding and seed technology- 2 Credits (30 lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining plant breeding and hybridization
2	CO2	Describing conventional techniques, methods and practices of breeding.
3	CO3	Defining concept of Seed technology and seed legislation
4	CO4	Summarizing the mechanisms of Seed sampling, storage and packaging.
5	CO5	Analyzing general procedure of seed certification
6	CO6	Explaining the seed Testing and Seed marketing.
7	CO7	Defining the term seed pathology and seed entomology
8	CO8	Summarizing the mechanisms of storage and packaging.

**T.Y.B.Sc. Botany CBCS Pattern
Practical 1 (Semester VI Paper VII) 2020-2021**

BO 367: Practical based on BO361 and BO362 (2 Credits)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Determining of osmotic potential of plant cell sap by plasmolysis method
2	CO2	Calculating of stomatal index and stomatal frequency of a mesophyte and a Xerophyte. Demonstrate the activity of catalase and study the effect of pH and enzyme concentration
3	CO3	Evaluating study the effect of light intensity and bicarbonate concentration on O ₂ Evolution in photosynthesis.

4	CO4	Performing Comparison of the rate of respiration in any two parts of a plant. Separation of amino acids by paper chromatography.
5	CO5	Estimating of total free amino acids by spectrophotometry
6	CO6	Separating of amino acids by paper chromatography.
7	CO7	Estimating of soluble proteins by Lowery et. al. method.
8	CO8	Demonstrating of Enzyme activity: Amylase /invertase /catalase

T.Y.B.Sc. Botany CBCS Pattern
Practical 2 (Semester VI Paper VIII) 2020-2021
BO 368: Practical based on BO363 and BO364 (2 Credits)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Performing Preparation of any one culture media for isolation of plant pathogens. Culture technique- Streak plate methods, pour plate methods, Spread plate methods.
2	CO2	Demonstrating Study of any two of fungal bacterial and mycoplasma, viral and non-parasitic diseases
3	CO3	Examining Preparation of 1% Bordeaux mixture and Bordeaux paste 10%. Jivamruta
4	CO4	Explaining Study of Koch's Postulates. Study of Fungicides and Microbial pesticides
5	CO5	Detecting Study of Geological time scale and Study of types of Fossils
6	CO6	Calculating Numerical Problems based on Allele frequency and Genotype frequency Numerical Problem based on Hardy-Weinberg Equilibrium
7	CO7	Predicting Study of Sympatric and Allopatric speciation with suitable example. Study of Isolation mechanism
8	CO8	Submission of Report on Visit to Paleobotany Laboratory/Museum/Fossil Garden

T.Y.B.Sc. Botany CBCS Pattern
Practical 3 (Semester V Paper IX) 2020-2021
BO 369: Practical based on BO365 and BO366 (2 Credits)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Performing Preparation and sterilization of MS Medium and Callus Induction using leaf primordial. Production of secondary metabolites in any suitable plant material
2	CO2	Executing Demonstration to equipments used in genetic engineering Study of Transgenic plants
3	CO3	Annotating Effect of chemical mutagens on seed germination and seedling growth. Study of pollen viability and floral morphology of crops
4	CO4	Solving To test seed moisture by hot air oven method. To study germination methods
5	CO5	Demonstrating to Fermentation of fruit juice and wine production from grapes/pomegranate/jamun/ apple/ber

6	CO6	Calculating Problems on genetic engineering Demonstration of Hybridization Techniques
7	CO7	Judging Physical purity analysis of seed sample. Visual examination of dry seeds for disease symptoms To study any one common seed insect pest w.r.t to their life cycle, way of infestation/damage, symptoms and control measures
8	CO8	Visit to a Plant Breeding Research Centre/ Seed Industry and reports submission

**T.Y.B.Sc. Botany CBCS Pattern
Skill Enhancement Course
Semester VI Paper X 2020-2021**

BO 3610 Nursery and Gardening Management 2 Credits (30 lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining Nursery: definition, objectives and scope
2	CO2	Elaborating building up of infrastructure for nursery
3	CO3	Defining Seed Structure and types
4	CO4	Discussing Seed dormancy, Seed storage Seed banks, factors affecting seed viability
5	CO5	Elaborating method of vegetative propagation
6	CO6	Defining concept gardening and its types
7	CO7	Discussing various gardening operations
8	CO8	Explaining different vegetables cultivation, storage and marketing procedure.

**T.Y.B.Sc. Botany CBCS Pattern
Semester VI Paper X 2020-2021**

BO 3611 Biofertilizers 2 Credits (30 lectures)

After successfully completing this course, students will be able to:

Sr.no.	CO Number	Content
1	CO1	Defining Biofertilizers, Scope and importance
2	CO2	Discussing General account of the microbes used as Biofertilizers
3	CO3	Explaining bacterial Biofertilizers
4	CO4	Explaining Algal Biofertilizers
5	CO5	Criticizing application of Blue green algae(BGA)
6	CO6	Explaining fungal Biofertilizers
7	CO7	Defining Compost and Manure
8	CO8	Discussing Bio compost making methods and its Types



PDEA's
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Zoology

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc Zoology

Name of Department: Zoology

Sr.No.	PO Number	Contents
1	PO1	Understand and be aware of relevant theories, paradigms, concepts and principles of Zoology.
2	PO2	Acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.
3	PO3	Compare and contrast the characteristics of animals that differentiate them from other forms of life.
4	PO4	Apply the knowledge of Zoology to understand the complex life Processes and phenomena.
5	PO5	Explain the role of various biomolecules in living systems
6	PO6	Communicate scientific information through effective formal and informal methods generally used in sciences.
7	PO7	Understand the structure and functions of cell types
8	PO8	Acquire time management and self-management skills.
9	PO9	Relate the various abiotic factors with health of living forms and ecosystems.
10	PO10	Conduct basic scientific research and provide inputs for societal benefits.
11	PO11	Develop competence in basic sciences and in the content of the specific courses that constitute the principal knowledge of their degree.
12	PO12	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: F. Y. B. Sc. Sem-I

Name of Subject: Animal Diversity I

Subject Code: ZO-111

Sr.No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Understand the importance of diverse group of animals.
2	CO2	Understands the importance of classification of animals and classifies them effectively using the six levels of classification.
3	CO3	Study of morphology, habit and habitat, and detail study of <i>Paramecium</i> .
4	CO4	Demonstrate anatomical and physiological attributes of each animal group and why these have led to their success.
5	CO5	Knows his crucial role in nature as a protector, preserver and promoter of life, which he has achieved by learning, observing and understanding life.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: F. Y. B. Sc. Sem-I

Name of Subject: Animal Ecology

Subject Code: ZO-112

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Identify and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.
2	CO2	Understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community.
3	CO3	To link the details of food chains, food webs and links it with human life for its betterment and for non-exploitation of the biotic and abiotic components.
4	CO4	Working in nature to save environment will help development of leadership skills to promote betterment of environment.
5	CO5	To Identify and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: F. Y. B. Sc. Sem-I

Name of Subject: Zoology Practical Paper

Subject Code: ZO-113

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Understands the importance of classification of animals and classifies them effectively using the six levels of classification
2	CO2	To understand the differences and similarities in the various aspects of classification.
3	CO3	Explain various modifications in Invertebrate groups.
4	CO4	The study of relationship between living organisms and their environment.
5	CO5	To understand and evaluate natural resource issues and act on a lifestyle that conserves nature.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: F. Y. B. Sc. Sem-II

Name of Subject: Animal Diversity II

Subject Code: ZO-121

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	State the outline of animal classification of non-chordates
2	CO2	Categorize the diversity found in the invertebrate groups of animals like Arthropoda, Mollusca and Echinodermata.
3	CO3	Explain various adaptations in insects including mimicry and metamorphosis
4	CO4	Describe the morphology, habit and habitat, systematic position and various systems in Star fish.
5	CO5	Classify the higher invertebrate groups.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: F. Y. B. Sc. Sem-II

Name of Subject: Cell Biology

Subject Code: ZO-122

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Differentiate prokaryotic and Eukaryotic cells.
2	CO2	Describe the structure and functions of cell organelles.
3	CO3	Explain the principles of staining.
4	CO4	Explain the cell division process and its significance.
5	CO5	The cellular mechanisms and its functioning depend on endo-membranes and structures. They are best studied with microscopy.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: F. Y. B. Sc. Sem-II

Name of Subject: Zoology Practical Paper

Subject Code: ZO-123

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Identify various animals based on morphological features.
2	CO2	Prepare stained slides of mitosis and identify the cell division phases
3	CO3	Detect human blood group
4	CO4	Understand economic importance of vermicomposting unit
5	CO5	Experience the field visit and insect pest collection

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: S. Y. B. Sc. Sem-III

Name of Subject: Animal Systematics and Diversity III

Subject Code: ZO-231

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	List the various animals in a given phylum and state the outline of animal classification of non-chordates and higher invertebrate groups.
2	CO2	The students will be able to understand the complexity and understand different life functions of higher vertebrates
3	CO3	Explain various modifications in these groups and the need of the modification for survival.
4	CO4	The students will be able to understand the linkage among different groups of higher vertebrates.
5	CO5	Categorize the diversity found in the invertebrate groups of animals like Arthropoda, Mollusca and Echinodermata.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: S. Y. B. Sc. Sem-III

Name of Subject: Applied Zoology I

Subject Code: ZO-232

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define the concepts of the applied subjects like Agricultural pest and Sericulture.
2	CO2	Identify different species of pests and species of silkworm.
3	CO3	Explain the tools and techniques used in Agricultural pest control and sericulture.
4	CO4	Explain the importance of Agricultural pest, their control and sericulture.
5	CO5	Describe the economic importance of silkworm.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: S. Y. B. Sc. Sem-III

Name of Subject: Zoology Practical Paper

Subject Code: ZO-233

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	The students will be able to understand, classify and identify the diversity and the complexity of higher vertebrates.
2	CO2	The students will be able to understand the linkage among different groups of higher vertebrates.
3	CO3	Identify different species of silkworm and types of agricultural pests, Major insect pests of agricultural importance and Pest control practices.
4	CO4	Understand sericulture management and economically important species of silkworms.
5	CO5	Describe the common agricultural pests from nearby area.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: S. Y. B. Sc. Sem-IV

Name of Subject: Animal Diversity IV

Subject Code: ZO-241

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	List the various vertebrate animals in a given class and the outline of chordate classification.
2	CO2	Identify poisonous and non-poisonous snakes.
3	CO3	Explain various modifications in the given group of animals and in avian group as well as migration and flight in birds.
4	CO4	Describe the morphology, habit and habitat. Systematic position and various systems in Scoliodon.
5	CO5	Categorize the diversity found in the vertebrate groups of animals like reptiles, birds and mammals.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: S. Y. B. Sc. Sem-IV

Name of Subject: Applied Zoology II

Subject Code: ZO-242

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define the concepts of the applied subjects like Apiculture and Fisheries.
2	CO2	Explain the tools and techniques used in aquaculture and agricultural practices.
3	CO3	Describe the economic importance of honeybee and fish species commonly used in Apiculture, fishery business.
4	CO4	Select economically important species of <i>Apis</i> for honey production.
5	CO5	Illustrate management of the apiary and fisheries units.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: S. Y. B. Sc. Sem-IV

Name of Subject: Zoology Practical Paper

Subject Code: ZO-243

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Identify animals of higher groups in Invertebrates and Vertebrates.
2	CO2	Distinguish between poisonous and non-poisonous snakes
3	CO3	Explain the modifications and adaptations in animals.
4	CO4	Observe the various tools, crafts and gears used in Apiary and Fishery.
5	CO5	Illustrate management of the apiary and fisheries units
6	CO6	Describe External features and economic importance of freshwater and Marine water fishes and other aquaculture organisms
7	CO7	Experience the field visit at Fishery centre

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Pest Management

Subject Code: ZO-351

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define pest management and describe the economic, ecological, and sociological benefits of IPM.
2	CO2	Understand problems resulting from misuse, overuse, and abuse of chemical pesticides and describe pesticide resistance and how it develops.
3	CO3	Identify ecological and biological characteristics important in development of pest populations.
4	CO4	Analyses and compare management tactics to determine the best approach to reducing pest populations, weeds, and disease presence.
5	CO5	Locate appropriate, scientifically valid sources of information on specific tactics to manage insect pests and diseases.
6	CO6	Describe different groups of pests and compare them to weeds and plant pathogens and know and how to develop an IPM program

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Histology

Subject Code: ZO-352

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define the basic terms in histology.
2	CO2	List the various types of tissues.
3	CO3	Identify the histological peculiarities in various organs.
4	CO4	Explain the location, structure and functions of various organs.
5	CO5	Illustrate the histology of endocrine glands.
6	CO6	Diagrammatically represent the various organs.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Biological Chemistry

Subject Code: ZO-353

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define the basic terms in biochemistry.
2	CO2	Basic concepts pH and Buffers and basic terms solution preparation.
3	CO3	To understand the chemical structures of carbohydrate, proteins, lipids and their biological and clinical significance.
4	CO4	Able to understand, interpret structure and importance of proteins, carbohydrates and lipids
5	CO5	Able to comprehend variations in enzyme activity and kinetics.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Genetics

Subject Code: ZO-354

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define the terminologies in genetics.
2	CO2	Explain the concept of mutation.
3	CO3	Explain Mendel's principle, its extension and chromosomal basis and determination of gene action from genotype to phenotype and concepts of inheritance.
4	CO4	Basic Concepts in population genetics Mandolin population, gene pool, gene / allele, Frequency, chance mating (Panmictic mating). Hardy Weinberg law and its equilibrium.
5	CO5	Know Sex linked inheritance in human Colour – blindness. Hemophilia. Hypertrichosis.
6	CO6	Describe the chromosome anomalies and associated disorders

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Developmental Biology

Subject Code: ZO-355

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Identify the developmental stages
2	CO2	Describe the key events in early and systematic embryological development.
3	CO3	Describe the process of gametogenesis and chick development up to 96 hours of incubation and extra embryonic membranes.
4	CO4	Explain the theories of reformation, and concepts like growth, differentiation and reproduction.
5	CO5	Explain the principles and process of fertilization and cleavage.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Parasitology

Subject Code: ZO-356

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	The students will be able to learn about basics and scope of parasitology.
2	CO2	The students will be able to learn the types of host and parasite with examples.
3	CO3	The students will be able to learn about the morphology, life cycle, pathogenicity and treatment of common parasites (Protists and Platyhelminthes).
4	CO4	The students will be able to learn about host -parasite relationships and their effects on host body.
5	CO5	The students will be able to learn about the arthropod parasites and their role as vector.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Practicals in Zoology

Subject Code: ZO-357

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Describe different groups of pests and plant pathogens.
2	CO2	Describe different pests and diseases of honeybees. Detection of damage caused by pests.
3	CO3	Describe the beneficial insects, detection of damage caused by pests, plant disease and its intensity.
4	CO4	Explain and identify the histological peculiarities in various organs.
5	CO5	Explain the location, structure and functions of various organs.
6	CO6	Explain and illustrate the histology of endocrine and exocrine glands.
7	CO7	Illustrate the toxic effects of chemicals in the environment on human and his livestock.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Zoology Practical Paper 2

Subject Code: ZO-358

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Explain the enzyme activity and specific activity of an enzyme.
2	CO2	Detection of carbohydrates (monosaccharide's, disaccharides and polysaccharides) with the help of suitable tests.
3	CO3	The students will be able to understand, interpret structure and importance of proteins, carbohydrates and lipids.
4	CO4	Explain Mendel's principle, its extension and chromosomal basis of inheritance. Determination of gene action from genotype to phenotype and concepts of inheritance.
5	CO5	Detect human blood group and identify the human genetic traits.
6	CO6	Genetic disorders, structural & numerical alterations of chromosomes (chromosomal aneuploidy - Down, Patau, Edward, Turner and Klinefelter syndromes).

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Zoology Practical Paper – III

Subject Code: ZO-359

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Understands the basics about growth, differentiation, dedifferentiation, cell determination, cell communication, morphogenesis, induction and regeneration.
2	CO2	Describe the key events in early and systematic embryological development.
3	CO3	Describe the chick development up to 96 hours of incubation and extra embryonic membranes.
4	CO4	Describe the life cycle, pathogenicity, diagnosis and treatment of <i>Entamoeba histolytica</i> and <i>Plasmodium vivax</i> through permanent slides or microphotographs.
5	CO5	Describe the life cycle, pathogenicity, diagnosis and treatment of <i>Ascaris lumbricoides</i> and <i>Taenia solium</i> through specimen, permanent slides or microphotographs.
6	CO6	Convince the importance of hygiene with respect to epidemic diseases.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Aquarium Management

Subject Code: ZO-3510

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Explain exotic and endemic species of Aquarium Fishes and nutritional value of fish.
2	CO2	Describe characters and sexual dimorphism of Aquarium fishes - Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish, Butterfly fish and Fighter fish.
3	CO3	Describe Maintenance of Aquarium, common diseases of Aquarium fish and budget for setting up an Aquarium
4	CO4	Understand Physico-chemical parameters of water for fish culture, Fish preservation and Fish breeding techniques
5	CO5	The potential scope of Aquarium Fish Industry as a Cottage Industry.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-V

Name of Subject: Poultry Management

Subject Code: ZO-3511

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Explain exotic and endemic species of pultry and its nutritional value.
2	CO2	To understand the poultry breeding techniques.
3	CO3	To understand poultry rearing techniques
4	CO4	To understand feeding requirement and food ingredients.
5	CO5	To understand the poultry disease and their pathogens.
6	CO6	To understand market value of poultry products.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Medical & Forensic Zoology

Subject Code: ZO-361

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	To understand the basics principles of Medical and Forensic Zoology.
2	CO2	To understand the advancements in the field of Medical and Forensic Zoology.
3	CO3	To understand scientific methods in crime detection.
4	CO4	To understand modern tools, techniques and skills in forensic investigations.
5	CO5	To describe the fundamental principles and functions of forensic science and its significance to human society.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Animal Physiology

Subject Code: ZO-362

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	To describe various physiological organ-systems and their importance to the integrative functions of the human body.
2	CO2	Understand Concept of energy requirements and various aspects of digestive physiology.
3	CO3	Explain circulatory system with medical conditions
4	CO4	Understand Respiratory mechanism and gases transport and eliminations of waste materials from the body.
5	CO5	Understand structure, functions of muscles, formation of gametes and function of endocrine glands.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Molecular Biology

Subject Code: ZO-363

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Understand the Structure of DNA and RNA, as genetic material
2	CO2	Understand the Central Dogma of Molecular Biology
3	CO3	Explain the concept of gene regulation
4	CO4	Understand the DNA Damage and Repair
5	CO5	Develop basic understanding of structure-function relationships of nucleic acids and proteins.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Entomology

Subject Code: ZO-364

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Understand basic concepts in Entomology and its scope.
2	CO2	Learn morphology and anatomy and development process of Insects.
3	CO3	Explain various adaptations in insects including mimicry and metamorphosis
4	CO4	Identify disease causing insect vectors.
5	CO5	Know economically important insects and Pest management of harmful insects, design and implement pest controlling methods against pests.

**Poona District Education Association's
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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Techniques in Biology

Subject Code: ZO-365

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define the basic terms solution preparation
2	CO2	List the separation techniques.
3	CO3	Describe the techniques used in hematology.
4	CO4	Explain the principle of separation techniques.
5	CO5	Explain the procedure of preparing permanent histological slides.
6	CO6	Illustrate the working of microscopes.
7	CO7	Analyze the dimensions of the biological samples.
8	CO8	Justify the selection of fixatives for histological procedures.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Evolutionary Biology

Subject Code: ZO-366

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Define organic evolution and evolution of man.
2	CO2	Explain the theories of organic evolution.
3	CO3	Describe the concept of origin of life and theories of origin of life
4	CO4	Describe evolution of man.
5	CO5	Illustrate the presence of organisms at various geological time scales.
6	CO6	Apply the knowledge in relevant experimentations.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Zoology Practical Paper – I

Subject Code: ZO-367

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	To understand modern tools, techniques and skills in forensic investigations.
2	CO2	To describe the fundamental principles and functions of forensic science and its significance to human society.
3	CO3	Carry out routine analysis of given urine sample, determine serum urea, uric acid calcium
4	CO4	To examine hair morphology and determine the species to which the hair belongs and prepare slides of scale pattern of human hair.
5	CO5	Estimate haemoglobin, blood glucose level, differential count of blood.
6	CO6	Estimation of bleeding and clotting time.

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Zoology Practical Paper – II

Subject Code: ZO-368

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Isolation of DNA from Bacteria / liver / Onion and staining of DNA and RNA
2	CO2	Able to study absorption spectra of isolated DNA
3	CO3	Describe principle & application of Spectrophotometer & PCR.
4	CO4	Illustrate the role of household insects in relation to human health.
5	CO5	Estimate hemoglobin, blood glucose level, differential count of blood cells.
6	CO6	Classify medically important insects.
7	CO7	Justify the significance of social organization in insects and choose the control measures of medically important insects.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Zoology Practical Paper – II

Subject Code: ZO-369

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Use techniques like chromatography, spectrophotometry in biological experiments.
2	CO2	Observe different kind of cells under compound microscope and its measurement using micrometer scale or by image analysis software.
3	CO3	Tissue collection, fixation & block preparation
4	CO4	Sectioning, staining & mounting of animal tissues. Submission of any three permanent slides from three different organs
5	CO5	Identify the fossil types/ adaptations in animals, explain the stages of human evolution.
6	CO6	Elucidate the difference between ape and man.
7	CO7	Explain the evidences of evolution

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Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Environmental Impact Assessment.

Subject Code: ZO-3610

Sr. No.	CO Number	Contents
After successfully completing this course, students will be able to:		
1	CO1	Understand Importance of environment and explain definition and divisions of environment.
2	CO2	Describe types pollution and its impact on wildlife, natural resources, development.
3	CO3	Explain sustainable development, exploitation of natural resources, Concept of carrying capacity, Three pillars of Sustainability, UN 17 Sustainable Development Goals (SDGs)
4	CO4	Create awareness of Environmental Protection acts.
5	CO5	Understand Environmental Impact Assessment (EIA) and Stakeholders in EIA process.
6	CO6	Knows Overview of Scheme for Accreditation of EIA Consultant Organizations (NABET / QCI)

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B. Sc. (Zoology)

Name of Department: Zoology

Class: T. Y. B. Sc. Sem-VI

Name of Subject: Project

Subject Code: ZO-3611

Sr. No.	CO Number	Contents
Students should be encouraged to take up laboratory work, hands-on practical investigation and design experimental setup. Field work to be carried out under proper supervision and permissions from the concerned authorities.		
Possible key aspects of the project work -		
1.		Planning the project.
2.		Selecting a suitable title.
3.		Significance of the work.
4.		Hypothesis, Objectives.
5.		Reviewing the available literature.
6.		Methodology to be used and Outcomes of the Project work.
7.		Conclusion and Discussion and Future plans.
8.		Conclusion and Discussion and Future plans.
Students should be made aware of plagiarism and research ethics.		



PDEA's
Annasaheb Magar Mahavidyalaya
Hadapsar Pune - 411028.



Microbiology

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.Sc.

Name of Department: Microbiology

Program Outcomes (POs) for B.Sc. Programme	
PO1	Disciplinary Knowledge: Demonstrate Extensive knowledge of the disciplines that form a part of a graduate programme. Execute compensatory theoretical and practical understanding generated from the specific graduate programme in the area of work.
PO2	Deliberative Thinking and Problem solving: Exhibit the skills of analysis, inference, interpretation and problem-solving by observing the situation closely and design the solutions.
PO3	Social competence: Display the understanding, behavioural skills needed for successful social adaptation ,work in groups, exhibit thoughts and ideas effectively in writing and orally.
PO4	Research-related skills and Scientific temper : Develop the working knowledge and applications of instrumentation and laboratory techniques. Able to apply skills to design and conduct independent experiments, interpret, establish hypothesis and inquisitiveness towards research.
PO5	Trans-disciplinary knowledge: Integrate different disciplines to uplift the domains of cognitive abilities and transcend beyond discipline-specific approaches to address a common problem.
PO6	Personal and professional competence: Performing dependently and also collaboratively as a part of a team to meet defined objectives and carry out work across interdisciplinary fields. Execute interpersonal relationships, self-motivation and adaptability skills and commit to professional ethics.
PO7	Effective Citizenship and Ethics: Demonstrate empathetic social concern and equity centered national development, and ability to act with an informed awareness of moral and ethical issues and commit to professional ethics and responsibility.
PO8	Environment and Sustainability: Understand the impact of the scientific solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development
PO9	Self-directed and Life-long learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: F.Y. B.Sc. (SEM I)

Name of Subject: Introduction to Microbial World

Subject Code: MB 111

Sr.No.	CO Number	Contents
1	CO1	Students will Acquire knowledge of different Eras of Microbiology and become acquainted with Nobel laureates in Life Sciences of 21st Century
2	CO2	Students will be able to identify, classify fungi into 6 classes based on morphological characterization.
3	CO3	Students will be able to conceptualize, understand and use bacteria
4	CO4	Gain knowledge about different types of Microorganism with their differentiating characters
5	CO5	Students will be able to understand Neo-Darwinism and its importance in prokaryote evolution
6	CO6	Understand beneficial and harmful effects of microorganisms in different fields of Microbiology

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: F.Y. B.Sc.(SEM I)

Name of Subject: Basic Techniques in Microbiology

Subject Code: MB 112

Sr.No.	CO Number	Contents
1	CO1	Students will Get knowledge of Modern SI units
2	CO2	Students will Understand Principles and Working of different types of Microscopes
3	CO3	Students will Gain knowledge of different types of staining techniques and role of fixatives, mordants, decolourisers and accentuators in staining
4	CO4	Students will Understand the concept of sterilization and disinfection
5	CO5	Students will learn the operations of Electron microscopic techniques
6	CO6	Students will Understand Principles and Working of different electron types of Microscopes

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: F.Y. B.Sc. (SEM I)

Name of Subject: Practical Course based on theory paper I (MB 111) and Paper II (MB 112)

Subject Code: MB 113

Sr.No.	CO Number	Contents
1	CO1	Students gain the knowledge of Modern SI units
2	CO2	Students will Gain knowledge of different types of staining techniques and role of fixatives, mordants, decolourisers and accentuates in staining
3	CO3	Students will learn structure, organization and functions of carbohydrates, lipids, proteins & nucleic acids
4	CO4	Students will Understand Principles and Working of different electron types of Microscopes
5	CO5	Students will equipped with designing of different media
6	CO6	Students will acquire the counting of microbial

Name of Programme: B.Sc
Name of Department: Microbiology
Class: F.Y. B.Sc.(SEM II)
Name of Subject: Bacterial Cell and Biochemistry
Subject Code: MB 121

Sr.No.	CO Number	Contents
1	CO1	Students will learn to Classification of Carbohydrates
2	CO2	Students will learn Understand structure, chemical composition and functions of the components in bacterial cell
3	CO3	Students will learn Comprehend chemical basis of Microbiology
4	CO4	Students will learn Learn structure, organization and functions of carbohydrates, lipids, proteins & nucleic acids
5	CO5	Be familiar with classification of bacteria (Bergey's Manual and Systemic Bacteriology) and Viruses (ICTV Nomenclature)
6	CO6	Students will learn Comprehend chemical basis of Microbiology

Name of Programme: B.Sc
Name of Department: Microbiology
Class: F.Y. B.Sc.(SEM II)
Name of Subject: Microbial cultivation and growth
Subject Code: MB 122

Sr.No.	CO Number	Contents
1	CO1	Students will acquire various microbial cultivation methods
2	CO2	Gain knowledge of cultivation of microorganisms: Nutritional classification, Design and Preparation of media
3	CO3	Students will acquire Comprehend isolation and maintenance of bacteria, algae, fungi, actinomycetes and viruses
4	CO4	Students will acquire Understand the Role of National Biodiversity Authority for culture collection centres
5	CO5	Students will acquire Become acquainted with Bacterial growth kinetics, Growth curve, Generation time and Diauxic growth
6	CO6	Students will acquire Learn different methods of enumeration of bacterial growth with factors affecting bacterial growth

Name of Programme: B.Sc

Name of Department: Microbiology

Class: F.Y.B.Sc. (SEM II)

Name of Subject: Practical Course based on theory paper I (MB 121) and Paper II (MB 122)

Subject Code: MB 123

Sr.No.	CO Number	Contents
1	CO1	Students gain the knowledge of Modern Staining methods and units
2	CO2	Students will Gain knowledge of different types of staining techniques and role of fixatives, mordents, decolourisers and accentuates in staining
3	CO3	Students will learn structure, organization and functions of carbohydrates, lipids, proteins & nucleic acids
4	CO4	Students will Understand Principles and Working of different electron types of Microscopes
5	CO5	Students will equipped with designing of different media
6	CO6	Students will acquire the counting of microbial

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: S.Y. B.Sc. (SEM III)

Name of Subject: Medical Microbiology and Immunology

Subject Code: MB 231

Sr.No.	CO Number	Contents
1	CO1	Students will learn and acquire knowledge about the concept of epidemiology with respect to terms like incubation period, vability,susceptibility, pathogenicity, virulence, pathogenesis, lab diagnosis, epidemics, sporadic,endemic and pandemic.
2	CO2	Students will be able to acquainted with knowledge of human pathogens such as <i>Escherichia coli</i> , <i>Staphylococcus aureus</i> and Fungi likeYeast- Candida as well as Dermatophytes.
3	CO3	Students will be able to conceptualize, understand and use Principles of Chemotherapy based on Selective toxicity, Bioavailability, MIC,MBC, LD50. Accustomed with the terms Antagonism and synergism in drug administration., Antibiotic sensitivity, Antibiotic misuse/antibiotic overuse and Concept of drug resistance (e.g., MRSA, ESBL)
4	CO4	Students will be able to comprehend the term immunity and able to differentiate its types.
5	CO5	Students will be able to understand the haematopoiesis, Antigens and antibodies, Immunohematology, Inheritance of A,B,H antigens, Medico legal applications of blood groups
6	CO6	Students will be able to Understand the Active and Passive immunization and their examples.

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: S.Y. B.Sc. (SEM III)

Name of Subject: Bacterial Physiology and Fermentation Technology

Subject Code: MB 232

Sr.No.	CO Number	Contents
1	CO1	Students will be acquainted with the term Enzymes, its nomenclature and classification. They will understand models for catalysis.
2	CO2	Students will understand the effect of pH, temperature, substrate concentration, enzyme concentration, activators and inhibitors on enzymes.
3	CO3	Students will gain the concept of Bacterial Physiology with reference to metabolism, catabolism, anabolism, respiration and fermentation.
4	CO4	Students will understand the concept of the different metabolic pathways with structures
5	CO5	Students will learn the design of a fermenter, fermentation parameters, use of media for industrial fermentations
6	CO6	Students will come to know the sources of contamination during fermentations

Name of Programme: B.Sc. Microbiology

Name of Department: Department of Microbiology

Class: S.Y. B.Sc. (SEM IV)

Name of Subject: Practical Course based on MB-231: Diagnostic Microbiology and Immunology and MB-232: Bacterial Physiology and Fermentation Technology

Subject Code: MB-233

Sr.No.	CO Number	Contents
1	CO1	After completion of the course students will be able to, understand and appreciate microscopic nature of microorganisms and also measure cell dimensions
2	CO2	After completion of the course students will be able to, perform and explain mechanism of cell wall staining.
3	CO3	After completion of the course students will be able to, perform gram staining and motility of microorganisms.
4	CO4	After completion of the course students will be able to, understand and explain mechanisms and perform sugar utilization test, IMViC test, various enzyme detection test.
5	CO5	After completion of the course students will be able to, perform screening test for antibiotic producing and organic acid producing microorganism.

6	CO6	After completion of the course students will be able to, perform screening and isolation of industrially important enzymes.
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Name of Programme: B.Sc

Name of Department: Microbiology

Class: S.Y. B.Sc. (SEM IV)

Name of Subject: Bacterial Genetics

Subject Code: MB 241

Sr.No.	CO Number	Contents
1	CO1	Students will be acquainted with the different experimental evidence for nucleic acid as genetic material
2	CO2	Students will understand the different types of nucleic acids, Structure of DNA and Prokaryotic DNA replication.
3	CO3	Students will gain the concept of the different models and modes of DNA replication with its basic rules of DNA replication
4	CO4	Students will understand the concept of Gene expressions, Mutations and reversions
5	CO5	Students will learn the Plasmid genetics and will be able to understand Types of plasmids and its Properties, Plasmid replication, Plasmid incompatibility, Plasmid curing, Plasmid amplification Concept.

Name of Programme: B.Sc

Name of Department: Microbiology

Class: S.Y. B.Sc. (SEM IV)

Name of Subject: Air, Water and Soil Microbiology

Subject Code: MB 242

Sr.No.	CO Number	Contents
1	CO1	After Learning the course students will be acquainted with the knowledge of the Air Microbiology, methods of air sampling, different types of air samplers, air sanitation and airborne infections
2	CO2	Students will understand the Details of water microbiology including bacteriological analysis of water, methods of water purification, water borne infections and bacteriological standards of water quality
3	CO3	Students will gain the importance of Soil Microbiology, rhizosphere, composting and humus formation, biofertilizers, biocontrol agents and microbial interactions.
4	CO4	Students will understand and acquire knowledge of carbon and nitrogen cycles with role of microorganisms

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: S.Y. B.Sc. (SEM IV)

Name of Subject: Practical Course based on MB-241: Bacterial Genetics and MB-242: Air, Water and Soil Microbiology

Subject Code: MB-243

Sr.No.	CO Number	Contents
1	CO1	After completion of the course students will be able to, understand principle and perform following staining technique – 1)Flagella Staining and 2) Metachromatic Granules
2	CO2	After completion of the course students will be able to, perform air sampling and count bacterial and fungal count.
3	CO3	After completion of the course students will be able to, understand and appreciate diversity in air flora and understand Simpson index and settling velocity determination
4	CO4	After completion of the course students will be able to, understand and perform bacteriological test for potability of water
5	CO5	After completion of the course students will be able to, understand UV- survival curve, Mutation and perform replica plate.
6	CO6	After completion of the course students will be able to, understand how water treatment plant works.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.Sc.
Name of Department: Microbiology
Class: T.Y. B.Sc. (SEM V)
Name of Subject: Medical Microbiology- I
Subject Code: MB 351

Sr.No.	CO Number	Contents
1	CO1	Students will understand the human anatomy, pathogens associated with diseases.
2	CO2	Students acquire knowledge of principles underlying establishment of pathogens in human body.
3	CO3	Develop identification systems for microbial disease diagnosis, disease treatment and Prevention measures
4	CO4	Students will be equipped with comprehend of pathogenesis of specific pathogens causing microbial diseases.
5	CO5	Assess epidemiological patterns of microbial disease transmission as various modes, intensity at local and global level.
6	CO6	Students will gain Knowledge principles of chemotherapy of microbial diseases and development of drug resistance among pathogens and strategies to mitigate

Name of Programme: B.Sc.
Name of Department: Microbiology
Class: T.Y. B.Sc. (SEM V)
Name of Subject: Immunology- I
Subject Code: MB-352

Sr.No.	CO Number	Contents
1	CO1	Students will Understand immune system structure, composition, function and comparison of different types of immunity
2	CO2	Acquire knowledge about antigens, Recognition of pathogens; antigen processing and presentation; Immunity to infection and pathological consequences of immunodeficiencies.
3	CO3	Applications of Immunology in monoclonal antibodies, vaccines Production and Immunotherapy Acquired by students
4	CO4	Understand abnormal working of Immune system in hypersensitivity, auto immune diseases, immune tolerance and transplantation immunology.
5	CO5	To develop strategies for Diagnosis of diseases based on antigen and antibody reactions with emphasis on prevailing communicable diseases
6	CO6	Students will be familiar with various immune organs.

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM V)
Name of Subject: Enzymology
Subject Code: MB 353

Sr.No.	CO Number	Contents
1	CO1	Students will understand methods of active site determination, role of enzymes and its cofactors in microbial physiology
2	CO2	. Students will learn mechanisms of transport of solutes across the membrane
3	CO3	Students will learn to perform enzyme assay, purification and quantification of enzymes activity,
4	CO4	enzyme kinetics in terms of initial, final velocity, mathematical expression of enzyme kinetic parameters.
5	CO5	Students will correlate regulation of metabolism at enzymatic levels and apply, methodology for commercial applications of enzymes
6	CO6	Students will come to know applications of enzymes technology

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM V)
Name of Subject: Genetics
Subject Code: MB 354

Sr.No.	CO Number	Contents
1	CO1	Students will understand To exhibit a knowledge base in Genetics and Molecular Biology.
2	CO2	Students will learn To construct genetic map of bacteria and fungi.
3	CO3	Students will learn To understand the central dogma of Molecular Biology.
4	CO4	To get introduced to concept of recombination and bacteriophage Genetics.
5	CO5	Students will correlate To understand the concept cloning in bacteria.
6	CO6	Students will come to know To demonstrate the knowledge of common and advanced laboratory practices in Molecular Biology

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM V)

Name of Subject: Fermentation Technology– I

Subject Code: MB 355

Sr.No.	CO Number	Contents
1	CO1	Students will understand To acquaint fermentation economics, process patentability, process validation.
2	CO2	Students will learn To apply classical, advanced strain improvement and isolation techniques for fermentation processes.
3	CO3	Students will learn to perform and comprehend the large scale productions of commercially significant fermentation products classical and recent significance.
4	CO4	Students will learn to perform, optimize and sterilize media used in the fermentation industry for commercially economical and efficient fermentations.
5	CO5	Students will be capable using suitable methods an ensuring quality of the finished product by quality assurance tests.
6	CO6	Students will come to know technical understanding of commercial fermentations.

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM V)

Name of Subject: Agricultural Microbiology

Subject Code: MB 356

Sr.No.	CO Number	Contents
1	CO1	Students will understand the importance of microorganisms in sustainable agriculture, biotechnological application of bio films, edible vaccines.
2	CO2	Students will learn To understand plant growth improvement with respect to disease resistance, environment tolerance.
3	CO3	Students will learn to perform To correlate stages of plant disease development, epidemiology, symptom based classification, control methods.
4	CO4	To correlate Soil Microbiome and Role of microorganisms in soil health
5	CO5	Students will To determine the use of Microorganisms as tools in plant genetic engineering
6	CO6	Students will come to know applications of enzymes technology

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM V)

Name of Subject: Practical course I- based on Medical Microbiology 1 and Immunology 1

Subject Code: MB – 357

Sr.No.	CO Number	Contents
1	CO1	Students will understand methods Physical, Chemical and Microscopic examination of Clinical samples
2	CO2	Students will learn mechanisms Agglutination tests
3	CO3	Students will learn to perform Development of hypothesis, Data collection, organization, statistical Analysis, graphical representation using computers and interpretation.
4	CO4	Students will correlate Development of hypothesis, Data collection, organization, statistical analysis, graphical representation using computers and interpretation,
5	CO5	Students will Estimate of haemoglobin and ESR and PCV determination,
6	CO6	Students will correlate regulation for identification use of keys as well as Bergey's Manual is recommended

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM V)

Name of Subject: Practical Course – II-Enzymology and Genetics

Subject Code: MB 358

Sr.No.	CO Number	Contents
1	CO1	Students will understand methods of Determination of absorption spectra and molar extinction co-efficient of two different dyes (by colorimetry /spectrophotometry)
2	CO2	Students will learn mechanisms of Extraction and quantitative estimation of total carbohydrate /proteins from natural sample
3	CO3	Students will learn to perform Determination purity of DNA and its quantification: a. Estimation of DNA by UV-spectrophotometric method, 260/280 ratio b. Estimation of DNA by the diphenylamine
4	CO4	Students will understand Separation and Identification of amino acids from mixture by paper chromatography
5	CO5	Students will be able to do Chromosome Staining (G-banding) Giemsa staining of chromosome from eukaryotic cell extract
6	CO6	Students will be able to know Bacterial Conjugation concept

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM V)

Name of Subject: Practical course III- Fermentation Technology- I and Agricultural Microbiology

Subject Code: MB 359

Sr.No.	CO Number	Contents
1	CO1	Students will understand Sterility Testing of pharmaceuticals (non-biocidal injectables): Direct inoculation method, membrane filtration method, using control test cultures as per IP guidelines (availability at the centre).
2	CO2	Students will learn mechanisms, Minimum inhibitory concentration and minimum bactericidal concentration of antibacterial compounds (MIC and MBC)
3	CO3	Students will learn to perform Antibiotic and growth factor assay (agar gel diffusion technique)
4	CO4	Students will correlate Validation of commercial formulations of bio inoculants based on BIS standards, Pot studies to check effect of bio inoculants on plant growth.
5	CO5	Students will correlate Collection of plant disease specimens and study of symptoms/ Project based on digital record of plant diseases (Group Activity)
6	CO6	Students will correlate regulation of metabolism at enzymatic levels and apply, methodology for commercial applications of enzymes

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM V)

Name of Subject: Marine Microbiology

Subject Code: MB 3510

Sr.No.	CO Number	Contents
1	CO1	Students will be imparting the awareness of unseen and unexplored niche of marine ecosystem of microbes.
2	CO2	Students Isolation of extremophilic bacteria – halophiles, thermophiles, acidophilus, alkaliphiles, Psychrophiles, omophiles (any two of these)
3	CO3	Students will be acquire advances in the knowledge of marine microbes and marine ecology.
4	CO4	Students will be learn the field research on marine processes and laboratory research on microorganisms.
5	CO5	Students will perform Physiology of marine microorganisms metabolic diversity, marine loop, marine snow, Role of marine microorganisms in biogeochemical cycles, nutrient cycling and hydrocarbon degradation
6	CO6	Students will comprehend the role of marine microbes in bioremediation and bio prospecting.

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM V)
Name of Subject: Dairy Microbiology
Subject Code: MB 3511

Sr.No.	CO Number	Contents
1	CO1	Students will be understand prospects of dairying at commercial marketing.
2	CO2	Students will be acquire skills of processing of milk and dairy products.
3	CO3	Students will be assess quality control in dairy industry.
4	CO4	Students will be comprehend production of dairy products of commercial significance with emphasis to local and global market demand
5	CO5	Students will be assess sources of contamination of raw milk and relative importance in influencing quality of milk during production, collection, transportation, and storage, milk borne diseases
6	CO6	To understand prospects of dairying at commercial marketing.

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM VI)
Name of Subject:Medical Microbiology II
Subject Code:MB 361

Sr.No.	CO Number	Contents
1	CO1	Students will Acquire knowledge of Routes of drug administration, Mode of action of antimicrobial agents on Bacteria, Fungi, Viruses and Protozoa.
2	CO2	Students will be able to understand the mechanisms of drug resistance on a Genetic basis, Mechanisms of drug resistance by i. Limiting uptake of a drug. ii. Modification of a drug target. iii. Inactivation of a drug. iv. Active efflux of a drug
3	CO3	Students will be able to conceptualize, and understand Human and Animal Viruses, Fungal and Protozoal Pathogens (with respect to – Virion, Characteristics, Viability characteristics, Pathogenicity, Pathogenesis, Symptoms, Laboratory diagnosis including serological diagnosis, Epidemiology, Prophylaxis and Chemotherapy)
4	CO4	Gain knowledge about different types of parasites with respect to Classification, Lifecycle, Morphological characteristics, Viability characteristics, Pathogenicity, Pathogenesis, Symptoms,

		Laboratory diagnosis (Serological diagnosis wherever applicable), Epidemiology, Prophylaxis and Chemotherapy
5	CO5	Students will be able to understand yeast and fungal pathogens with respect to – Morphological and cultural characteristics, Classification, Pathogenicity, Pathogenesis, Symptoms, Laboratory diagnosis, Epidemiology, Prophylaxis and Chemotherapy.
6	CO6	Students will be able to conceptualize, and understand different types of Human and Animal Viruses, Fungal and Protozoal Pathogens

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: T.Y. B.Sc. (SEM VI)

Name of Subject: Immunology II

Subject Code: MB 362

Sr.No.	CO Number	Contents
1	CO1	Students will Get concept of Cytokines, Adaptive / Acquired Immunity, Hypersensitivity, Autoimmunity and Autoimmune diseases and Immunodeficiency
2	CO2	Students will Understand Properties, Attributes and biological functions of cytokines
3	CO3	Students will Gain knowledge of different types of Humoral Immune Response and Cell Mediated Immune Response
4	CO4	Students will Understand the concept and General principles of different types of hypersensitivity reactions
5	CO5	Students will learn the Autoimmunity and Autoimmune diseases
6	CO6	Students will Understand Principles and Introduction to congenital immunodeficiency disorders.

Name of Programme: B.Sc.

Name of Department: Microbiology

Class: T.Y. B.Sc. (SEM VI)

Name of Subject: Metabolism

Subject Code: MB 363

Sr.No.	CO Number	Contents
1	CO1	Students gain the knowledge of Membrane transport mechanisms.
2	CO2	Students will Gain knowledge of Bioenergetics.
3	CO3	Students will learn Laws of thermodynamics
4	CO4	Students will Understand Biosynthesis and Degradation
5	CO5	Students will learn Bacterial Photosynthesis: Photosynthetic bacteria with reference to photosynthetic apparatus, energy generation, and CO ₂ fixation
6	CO6	Students will acquire the Concept and one example, Iron oxidizing bacteria

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM VI)
Name of Subject: Molecular Biology
Subject Code: MB 364

Sr.No.	CO Number	Contents
1	CO1	Students will learn the gene linkage and crossing over
2	CO2	Students will Understand the Bacteriophage Genetics
3	CO3	Students will learn Comprehend DNA damage and Repair mechanisms
4	CO4	Students will learn Recombinant DNA Technology Tools and basics of recombinant DNA technology
5	CO5	Be familiar with Methods of screening recombinants using selective markers and BlueWhite screening
6	CO6	Students will learn Comprehend Molecular techniques used in RDT

Name of Programme: B.Sc
Name of Department: Microbiology
Class: B.Sc I (SEM II)
Name of Subject: Fermentation Technology II
Subject Code: MB 365

Sr.No.	CO Number	Contents
1	CO1	Students will acquire Introduction to Solid State Fermentation and Submerged Fermentation
2	CO2	Gain knowledge of Large scale production of (process with flow sheet, nature of the product, production pathway, applications, production strains, media, fermentation process, parameters, product recovery) of Primary Metabolites and Secondary metabolites
3	CO3	Students will acquire Large scale production of enzymes, steroids, biomass-based products, milk products, vaccines, immune sera and Modern trends in microbial production
4	CO4	Students will acquire Understand the Microbial transformation of steroids
5	CO5	Students will acquire Become acquainted with Biomass based products: i. Yeast: Baker's and Distiller's yeast, ii. Probiotics: Lactobacillus sporogenes
6	CO6	Students will acquire the production of Milk products: i. Cheese (Processed, soft, semi-hard, hard ripened types- bacterial and mold) ii. Yogurt (plain, flavoured, fruit, sundae style. Stirred type, set type, probiotic yoghurt)

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM VI)
Name of Subject: Food Microbiology
Subject Code: MB 366

Sr.No.	CO Number	Contents
1	CO1	Students gain the knowledge of Classification of food- Perishable, non-perishable, and stable
2	CO2	Students will Gain knowledge of Factors affecting Microbial growth in food
3	CO3	Students will learn Sources of food spoilage microorganisms
4	CO4	Students will Understand Principles of food preservation
5	CO5	Students will come to know Microbial food poisoning and food infection
6	CO6	Students will acquire the Concept of Prebiotic and Probiotic and fermented food and Food sanitation and regulatory authorities (ISO, FDA, WHO)

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM VI)
Name of Subject: Practical course I-based on Medical Microbiology II and Immunology II
Subject Code: MB 367

Sr.No.	CO Number	Contents
1	CO1	Students will Study the permanent slides/ of following microbial pathogens: a) Entamoeba histolytica b) Giardia spp. c) Plasmodium spp. d) Mycobacterium (tuberculosis and leprae) 1 e) Epidermophyton spp.
2	CO2	Students will be able to understand the Isolation and identification of Candida and Aspergillus niger, Total fungal spore count by Neubauer's chamber
3	CO3	Students will be able to perform Antibiotic sensitivity testing of the bacterial pathogens (for Gram negative and Gram Positive)
4	CO4	Gain knowledge and specify Cross-matching (Major and Minor) and Coomb's test (Direct and Indirect)
5	CO5	Students will be able to understand and comprehend Immunoprecipitation: Double diffusion (Ouchterlony) technique
6	CO6	Students will be able to Demonstrate- a. ELISA (Antigen/ Antibody detection) b. Egg inoculation technique

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM VI)

Name of Subject: Practical course II-based on Metabolism and Molecular biology

Subject Code: MB 368

Sr.No.	CO Number	Contents
1	CO1	Students will Get concept of Clinical Biochemistry and perform Estimations of Blood sugar, Blood urea, Serum cholesterol ,Serum proteins and albumin.
2	CO2	Students will Understand and can perform Enzyme production, purification, quantification and Immobilizationof Amylase using calcium alginate and Lab scale production of amylase using isolates
3	CO3	Students will Gain knowledge of Enrichment, Isolation and Enumeration of Bacteriophages (Principle, Methodology and Calculations of phage titer.)
4	CO4	Students will Understand the concept of Isolation of Plasmid DNA and Agarose Gel Electrophoresis
5	CO5	Students will learn the demonstration/hands on as per infrastructure availability.
6	CO6	Students will have hands on practice of Mitotic cell division from onion root tips

Name of Programme: B.Sc.

Name of Department: Microbiology

Class:T.Y. B.Sc. (SEM VI)

Name of Subject: Practical course III-based on Fermentation technology II and Food Microbiology

Subject Code: MB 369

Sr.No.	CO Number	Contents
1	CO1	Students will examine the Lab Scale production of the fermentation products like Ethanol and Citric acid
2	CO2	Students will perform Solid state fermentation for production of any one fermentation product (Trichoderma sp. / mushrooms / enzymes)
3	CO3	Students will act on isolation and identification of Probiotic microflora from natural sources or any commercial formulation.
4	CO4	Students will perform study of SOPs for pharmaceutical industrydisinfectant efficacy testing, Physical monitoring of microbiology section, Handling of biological indicators, Microbiological testing of vials
5	CO5	Students will learn Detection of aflatoxin
6	CO6	Students will acquire the Determination of TDP and TDT value

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM VI)
Name of Subject: Waste Management
Subject Code: MB 3610

Sr.No.	CO Number	Contents
1	CO1	Students gain the knowledge of Principles of Wastewater Treatment and The need for treatment of wastewater
2	CO2	Students will examine the role of microorganisms in wastewater treatment. Aerobic and Anaerobic digestion models; attached / anchored and suspended growth.
3	CO3	Students will learn unit operations in wastewater treatment plant. Collection system, Screen chamber, Grit chamber, Oil and grease removal. Stabilization pond, Aerated lagoon. Activated sludge process.
4	CO4	Students will Understand the Rotating biological contactors, anaerobic digestion processes, fluidized bed reactor.
5	CO5	Students will learn Solid Waste Management and hazardous waste Characterization of solid wastes Dairy and e-waste. Biomedical waste Definition, Types, Processing.
6	CO6	Students will acquire the Solid biodegradable waste processing: Composting, Vermicomposting, Biogas production.

Name of Programme: B.Sc.
Name of Department: Microbiology
Class:T.Y. B.Sc. (SEM VI)
Name of Subject: Nanobiotechnology
Subject Code: MB 3611

Sr.No.	CO Number	Contents
1	CO1	Students acquire the knowledge Introduction to nanoscale, nanomaterials, nanoscience and nanotechnology , Nanoscale bio assemblies
2	CO2	Students will perform the Microbial mediated metallic nanoparticles synthesis
3	CO3	Students will learn Characterization techniques for nanomaterials: UV-visual spectroscopy, Fourier transform infrared (FTIR), X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), Scanning electron microscopy (SEM), Transmission electron microscopy (TEM) and dynamic light scattering (DLS)
4	CO4	Students will Understand Applications of nanoparticles: Antibacterial agent, drug delivery, biosensor, animal industry and nanotechnology in wastewater treatment
5	CO5	Students will learn Microbial synthesis of metallic nanoparticle synthesis (any two): silver, chromium, cobalt)
6	CO6	Students will acquire the Detection and Characterization of metallic nanoparticles in colloidal solutions by: a. UV-Spectrophotometer b. FTIR analysis

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Sr.No.	PO Number	Contents
1	PO1	Disciplinary Knowledge: Demonstrate Extensive knowledge of the disciplines that form a part of a graduate programme. Execute compensatory theoretical and practical understanding generated from the specific graduate programme in the area of work.
2	PO2	Deliberative Thinking and Problem solving: Exhibit the skills of analysis, inference, interpretation and problem-solving by observing the situation closely and design the solutions.
3	PO3	Social competence: Display the understanding, behavioural skills needed for successful social adaptation, work in groups, exhibit thoughts and ideas effectively in writing and orally.
4	PO4	Research-related skills and Scientific temper: Develop the working knowledge and applications of instrumentation and laboratory techniques. Able to apply skills to design and conduct independent experiments, interpret, establish hypotheses inquisitiveness towards research.
5	PO5	Trans-disciplinary knowledge: Integrate different disciplines to uplift the domains of cognitive abilities and transcend beyond discipline-specific approaches to address a common problem.
6	PO6	Personal and professional competence: Performing dependently and also collaboratively as a part of a team to meet defined objectives and carry out work across interdisciplinary fields. Execute interpersonal relationships, self-motivation and adaptability skills and commit to professional ethics.
7	PO7	Effective Citizenship and Ethics: Demonstrate empathetic social concern and equity centered national development, and ability to act with an informed awareness of moral and ethical issues and commit to professional ethics and responsibility.
8	PO8	Environment and Sustainability: Understand the impact of the scientific solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development
9	PO9	Self-directed and Life-long learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM I)

Name of Subject: Microbial Systematics

Subject Code: MBCT 111

Sr.No.	CO Number	Contents
1	CO1	Students will be able to apply mathematical tools for estimation of the total number of species and for measuring indices of diversity.
2	CO2	Students will be able to identify, classify fungi into 6 classes based on morphological characterization.
3	CO3	Students will be able to conceptualize, understand and use molecular methods for identifying uncultivable bacteria
4	CO4	Students will be able to execute the methods of extraction of total bacterial DNA
5	CO5	Students will be able to understand Neo-Darwinism and its importance in prokaryote evolution
6	CO6	Students will be able to learn the spontaneous mutation controverts, know the types and levels of mutations and molecular clocks.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM I)

Name of Subject: Quantitative Biology

Subject Code: MBCT 112

Sr.No.	CO Number	Contents
1	CO1	Students will be able to determine Mean, mode, median, percentile and standard deviation.
2	CO2	Students will understand the concepts of null hypothesis, alternate hypothesis, significance level, type I and type II errors.
3	CO3	Students will learn to apply statistical tools for calculating degrees of freedom, two population means, t-tests and z test.
4	CO4	Students will be able to learn non-parametric tests (Run test, Sign test, Wilcoxon's signed rank test, Mann-Whitney test).
5	CO5	Students will be able to examine measures of skewness; measures of kurtosis and able to calculate regression and correlation.
6	CO6	Students will learn to implement and interpret F-test, ANOVA, Survey design, Factorial design (Plackett Burman method, DOE).

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM I)

Name of Subject: Biochemistry and Metabolism

Subject Code: MBCT 113

Sr.No.	CO Number	Contents
1	CO1	Students will be able to describe protein chemistry, structural features of amino acids and classify amino acids
2	CO2	Students will be able to demonstrate PCR and sequencing methods of DNA & RNA.
3	CO3	Students will recite the organization of Cytoskeleton, Endoplasmic reticulum, Golgi complex and other organelles with their functions.
4	CO4	Students will conceptualize principles of developmental biology, conserved nature of development, concepts of commitment and morphological gradient.
5	CO5	Students will learn life cycle of Drosophila, Arabidopsis and Xenopus to understand the Molecular mechanisms.
6	CO6	Students will be able to determine the mechanisms of protein trafficking in cell compartments.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM I)

Name of Subject: Biochemical Techniques Core Compulsory Practical Paper

Subject Code: MBCP 114

Sr.No.	CO Number	Contents
1	CO1	Students will learn the laboratory safety and hazards from chemicals, handling of chemicals and disposal of chemicals and cultures.
2	CO2	Students will be able to prepare buffers.
3	CO3	Students will be able to plot and interpret different graphs using Microsoft excel.
4	CO4	Students will isolate alkaliphiles, and thermophiles.
5	CO5	Students will examine the stages of mitosis from the growing tips of onion rootcells.
6	CO6	Students will be able to separate sugars and amino acids by paper and thin layer chromatography and estimate them.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM I)

Name of Subject: Fungal Systematics and Extremophiles. Choice-based Optional Theory Paper (Elective)

Paper Subject Code: MBET 115

Sr.No.	CO Number	Contents
1	CO1	Students will learn and recite the classes of fungi.
2	CO2	Students will learn enrichment techniques to isolate extremophiles.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM I)

Name of Subject: Fungal Systematics and Extremophiles. Choice-based Optional Practical Paper (Elective)

Paper Subject Code: MBEP 115

Sr.No.	CO Number	Contents
1	CO1	Students will be able to isolate and identify yeast and molds
2	CO2	Students will be able to isolate acidophiles and halophiles

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM II)

Name of Subject: Instrumentation and Molecular Biophysics

Subject Code: MBCT121

Sr.No.	CO Number	Contents
1	CO1	Students will understand the concepts of Instrumentation and Molecular Biophysics
2	CO2	Students will be able to understand both fundamentals and applications of the instruments that are routinely used for the characterization of biomolecules.
3	CO3	Students will understand the concept and applications of instruments
4	CO4	Students will be able to understand the concepts of instrumentation including FTIR, NMR and X-Rays
5	CO5	Students will be able to understand the techniques in detail of all the instruments used in researches.
6	CO6	Students will be able to learn the concepts of biophysics and instrumentation

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM II)

Name of Subject: Molecular Biology

Subject Code: MBCT 122

Sr.No.	CO Number	Contents
1	CO1	Students will learn RNA processing & Molecular Techniques
2	CO2	Students will understand the process of Eukaryotic RNA Processing, Nuclear export of mRNA, types of regulatory, non coding RNA and PiRNA
3	CO3	Students will be able to describe different tools for Genetic engineering
4	CO4	Students will understand the concept of Genome projects, deciphering genetic code, construction of genomes
5	CO5	Students will learn the Molecular diagnostics like protein arrays, microarrays, immunoassays and applications
6	CO6	To make them familiar with various techniques used for molecular diagnostics.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM II)

Name of Subject: Enzymology, Bioenergetics and Metabolism

Subject Code: MBCT 123

Sr.No	CO Number	Contents
1	CO1	Students will learn about the enzyme reactions with respect to purification methods and purification chart, kinetics and coupled reactions.
2	CO2	Students will be able to recite the Laws of thermodynamics, free energy, coupled reactions, high energy compounds and numerical problems.
3	CO3	Students will understand classification, structure of lipids with regulation in their metabolism
4	CO4	Students will know the synthesis of sugars, regulation of sugar metabolism, TCA cycle, Glyoxylate cycle with their regulation mechanisms
5	CO5	Students will learn the principles of enzyme reactions with respect to types, structure, and kinetics and coupled reactions.
6	CO6	Students will be able to solve the numerical problems based on the concept of Enzymology.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM II)

**Name of Subject: Molecular Biology, Enzymology and Instrumentation Techniques Core
Compulsory Practical**

Paper Subject Code: MBCP 124

Sr.No.	CO Number	Contents
1	CO1	Students will attain awareness about enzymology, molecular biology and instrumentation techniques
2	CO2	Students will learn through experiments about concept of lac-operon; Glucose Repression; Diauxic growth.
3	CO3	Students will be able to purify enzymes (Amylase/Invertase) by various methods and learn kinetics of enzymes.
4	CO4	Students will be acquainted with Aflatoxin, lipase/cellulase/chitinase extraction and estimation.
5	CO5	Students will study the methods of molecular techniques and gene annotation using bioinformatics tools.
6	CO6	Students will learn scientific communication modes like literature review. Experiment planning, experimentation and presenting the thesis. Use of reference management tools and data mining tools.

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM II)

**Name of Subject: Nitrogen Metabolism, respiration and Photosynthesis Theory Paper
(Elective)**

Paper Subject Code: MBET 127

Sr. No.	CO Number	Contents
1	CO1	Students will learn about the biochemistry of biological nitrogen fixation and regulation
2	CO2	Students will understand biosynthesis of amino acids, purines and pyrimidines
3	CO 3	Students will be able to describe the biochemistry of anaerobic respiration, methanogenesis and photosynthesis with various steps involved

**Pune District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: M.Sc.

Name of Department: Microbiology

Class: M.Sc. I (SEM II)

**Name of Subject: Nitrogen Metabolism, respiration and Photosynthesis Practical Paper
(Elective Paper)**

Subject Code: MBEP 127

Sr.No.	CO Number	Contents
1	CO1	Students will be able to isolate microorganisms for production of IAA and Siderophore.
2	CO2	Students will perform enrichment techniques for nitrogen fixing; lignin degrading; xyl and degrading microbes as well as methanogens; cyanobacteria and further isolate and characterize the isolated microorganisms.
3	CO 3	Students will be able to isolate and characterize the respective microorganisms from the enriched samples.
4	CO 4	Students will perform suitable method for Detection of chlorophyll-a activity of Cyanobacteria.

CBCS: 2019 Pattern
M. Sc. Microbiology
PDEA's Annasaheb Magar Mahavidyalaya
Learning Outcomes-Based Curriculum
M.Sc. II – Microbiology: Program Structure

Sr.No.	Program Outcomes (POs) for M. Sc. II Programme	
1.	PO1	Disciplinary Knowledge: Demonstrate Extensive knowledge of the disciplines that form a part of a graduate programme. Execute compensatory theoretical and practical understanding generated from the specific graduate programme in the area of work.
2.	PO2	Deliberative Thinking and Problem solving: Exhibit the skills of analysis, inference, interpretation and problem-solving by observing the situation closely and design the solutions.
3.	PO3	Social competence: Display the understanding, behavioural skills needed for successful social adaptation, work in groups, exhibit thoughts and ideas effectively in writing and orally.
4.	PO4	Research-related skills and Scientific temper: Develop the working knowledge and applications of instrumentation and laboratory techniques. Able to apply skills to design and conduct independent experiments, interpret, establish hypothesis and inquisitiveness towards research.
5.	PO5	Trans-disciplinary knowledge: Integrate different disciplines to uplift the domains of cognitive abilities and transcend beyond discipline-specific approaches to address a common problem.
6.	PO6	Personal and professional competence: Performing dependently and also collaboratively as a part of a team to meet defined objectives and carry out work across interdisciplinary fields. Execute interpersonal relationships, self-motivation and adaptability skills and commit to professional ethics.
7.	PO7	Effective Citizenship and Ethics: Demonstrate empathetic social concern and equity centered national development, and ability to act with an informed awareness of moral and ethical issues and commit to professional ethics and responsibility.
8.	PO8	Environment and Sustainability: Understand the impact of the scientific solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development
9.	PO9	Self-directed and Life-long learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes

Name of Programme: M.Sc. II(Semester III) Name of Department: Microbiology Name of Subject:Immunology -Core Compulsory Theory Paper Subject Code: MBCT 231 Number of Credits : 04	
Course Outcome (COs) On completion of the course, the students will be able to:	
CO1	Students will understand the concepts of Immunology
CO2	This course will elucidate the concepts of signal transduction pathways to students
CO3	They will be able to understand the different effector mechanisms of host immune response
CO4	To acquaint students with the cell surface receptors present on various cells for signal transduction pathways.
CO5	To aware students' about host immune response
CO6	To enrich students' knowledge related to basic concepts of Immunology

Name of Programme: M.Sc. II(Semester III) Name of Department: Microbiology Name of Subject:Molecular Biology: Core Compulsory Theory Paper Subject Code: MBCT -232 Number of Credits: 04	
Course Outcome (COs) On completion of the course, the students will be able to:	
CO1	The concepts of Molecular Biology will be familiar to students
CO2	Students will be able to understand the concept of Metabolomics.
CO3	Detail knowledge about the concept and applications of transgenic plants and transgenic animals will be gained.
CO4	To enrich students' knowledge related to Molecular Biology
CO5	To inculcate the concepts of cell and Molecular Biology of cancer
CO6	To make students well acquainted with the concepts of RNA interference and RNA splicing

Name of Programme: M.Sc. (Semester III) Name of Department: Microbiology Name of Subject: Clinical Microbiology Subject Code: MBCT 233 Number of Credits: 04	
Course Outcome (COs) On completion of the course, the students will be able to:	
CO1	The concepts of medical microbiology and medically important micro-organisms will add on to students knowledge.
CO2	Pupil will get to know about knowledge of morphology, cultural characteristics, biochemical tests, epidemiology, laboratory diagnosis etc of bacterial pathogens
CO3	They will also understand the basics and applications of various chemotherapeutic agents and their mode of action
CO4	The concepts of medical microbiology and medically important micro-organisms will add on to students' knowledge.
CO5	To enhance students' knowledge related to Clinical Biology
CO6	To aware and understand the details about bacterial, viral, fungal and protozoal pathogens related with infectious diseases in humans.
Name of Programme: M.Sc. (Semester III) Name of Department: Microbiology Name of Subject: Practical based on Immunology, Molecular Biology and Clinical Microbiology Subject Code: MBCP 234	
Course Outcome (COs) On completion of the course, the students will be able to:	
CO1	Familiarity about techniques Immunology will be increased among students
CO2	They will learn about Molecular Biology techniques
CO3	Students will be acquainted with techniques in Clinical Microbiology
CO4	To make students familiar to Techniques in Immunology
CO5	To make them aware about Molecular Biology techniques
CO6	To attain some expertise in techniques in Clinical Microbiology

Name of Programme: M.Sc. (Semester III)
Name of Department: Microbiology
Name of Subject: Bioremediation and Biomass Utilization
Choice Based Optional Theory Paper (Elective)
Subject Code:MBET: 236
Number of Credits: 02

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to:	
1.	CO1	Students will develop an interest in the field of bioremediation
2.	CO2	They understand the concepts of biomass utilization
3.	CO3	The ideology behind concepts and use of microbial degradation will be clear to them
4.	CO4	To introduce the concepts of bioremediation
5.	CO5	To get across students about the concepts of biomass utilization
6.	CO6	To set out the concepts of microbial degradation

Name of Programme: M.Sc. (Semester III)
Name of Department: Microbiology
Name of Subject:Practicals based on Bioremediation and Biomass Utilization
Choice Based Optional Practical Paper
Subject Code: MBEP: 236
Number of Credits : 02

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to:	
1.	CO1	Students will develop an interest in the field of bioremediation
2.	CO2	They understand the concepts of biomass utilization
3.	CO3	The ideology behind concepts and use of microbial degradation will be clear to them
4.	CO4	To introduce the concepts of bioremediation
5.	CO5	To get across students about the concepts of biomass utilization
6.	CO6	To set out the concepts of microbial degradation

Name of Programme: M.Sc. (Semester IV)
Name of Department: Microbiology
Name of Subject: Pharmaceutical Microbiology
Core Compulsory Theory Paper
Subject Code: MBCT 241
Number of Credits: 04

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to:	
1.	CO1	In addition to drug development students will also understand the concepts of drug discovery
2.	CO2	They will be able to know pharmacokinetics and pharmacodynamics
3.	CO3	Besides this students will know the recent trends for MDR therapy also
4.	CO4	To enrich students' knowledge related to basic concepts in drug discovery and drug development.
5.	CO5	To inculcate the knowledge regarding the drug designing , pharmacokinetics and pharmacodynamics
6.	CO6	To aware students with the concepts of pharmaceuticals.

Name of Programme: M.Sc. (Semester IV)
Name of Department: Microbiology
Name of Subject: Microbial Technology
Core Compulsory Theory Paper
Subject Code: MBCT 242
Number of Credits: 04

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to:	
1.	CO1	Students will learn about microbial technology and its applications
2.	CO2	They shall acquire knowledge about various process control methods in fermentation.
3.	CO3	Students will be acquainted with the applications. of microorganisms in different industries.

4.	CO4	To aware students about of microbial technology.
5.	CO5	To make them familiar with various techniques in fermentation.
6.	CO6	To teach them applications of microorganisms in various industries.

Name of Programme: M.Sc. (Semester IV)
Name of Department: Microbiology
Name of Subject: Dissertation (2019 Pattern)
Subject Code: MBCP: 243
Number of Credits: 04

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to:	
1.	CO1	To enable students to choose a dissertation topic of research or application orientation
2.	CO2	To apply the theoretical knowledge into practical dissertation work.
	CO3	To inculcate the knowledge of Research designs, tools and techniques of gathering data.
	CO4	They will get an experience for gathering literature survey and apply it into practical dissertation work
	CO5	Students will be able to choose a dissertation topic of research or application orientation
	CO6	They shall also be educated for use of statistical analysis and graphical presentations

Name of Programme: M.Sc. (Semester IV)
Name of Department: Microbiology
Name of Subject: Industrial waste water treatment and Industrial production of vaccines
Subject Code: MBET 246
Choice based Optional Theory Paper (Elective)
Number of Credits : 02

Course Outcome (COs) On completion of the course, the students will be able to:		
1.	CO1	To aware students about the concepts of Industrial Waste Water Treatment

2.	CO2	Students will get to know the concepts of Industrial Waste Water Treatment
3.	CO3	They will also learn about sludge treatment
4.	CO4	The concept of Industrial Production of Vaccines will also be clear to them
5.	CO5	Students will be Acquainted with various techniques in fermentation.
6.	CO6	Students will learn the applications of microorganisms in various industries.

Name of Programme: M.Sc. (Semester IV)
Name of Department: Microbiology
Name of Subject: Practicals based on Industrial Waste Water Treatment and Industrial Production of Vaccines
Subject Code: MBEP 246
Number of Credits: 02

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to	
1.	CO1	The concepts of Industrial Waste Water Treatment will be familiar to students
2.	CO2	Students get acquainted with the concepts of Industrial Production of Vaccines
3.	CO3	Students will be acquainted with the applications. of microorganisms in different waste water treatment.
4.	CO4	Students will be able to illustrate industrial production of vaccines
5.	CO5	To make them familiar with various techniques in vaccine preparation.
6.	CO6	To teach them applications of microorganisms in various waste treatments.

Name of Programme: M.Sc. (Semester IV)
Name of Department: Microbiology
Name of Subject: Bioethics, Biosafety, Quality Control and Quality Assurance
Choice based Optional Theory Paper (Elective)
Subject Code: MBET 247
Number of Credits : 02

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to:	
1.	CO1	students equipped about the concepts of Quality Assurance reviewing and approval of procedures, reviewing records and performing audits
2.	CO2	students will understand about ethical conflicts in microbiological and biotechnological research
3.	CO3	To learn about Biosafety Regulatory bodies (Role and functions)
4.	CO4	Students will learn about Quality Assurance reviewing and approval of procedures, reviewing records and performing audits
5.	CO5	They will also get an idea about Ethical conflicts in microbiological and biotechnological research
6.	CO6	Most importantly they will be acquainted with Biosafety Regulatory bodies (Role and functions)

Name of Programme: M.Sc. (Semester IV)

Name of Department: Microbiology

Name of Subject: Practicals based on Bioethics, Biosafety, Quality Control and Quality Assurance

Subject Code: MBEP 247

Number of Credits : 02

Sr.No.	Course Outcome (COs) On completion of the course, the students will be able to:	
1.	CO1	students equipped about the concepts of Quality Assurance reviewing and approval of procedures, reviewing records and performing audits
2.	CO2	students will understand about ethical conflicts in microbiological and biotechnological research
3.	CO3	The importance will be marked Biosafety Regulatory bodies (Role and functions)
4.	CO4	Their quince will be with Food Safety and Standards Authority of India (FSSAI) regulations test methods for water/butter/cheese/milk product for processed food industry and food industry
5.	CO5	Students will be educated about test methods for drinking water followed by the Food Safety and Standards Authority of India (FSSAI) regulations
6.	CO6	Students will learn NABL norms for Calibration of instruments



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Electronics

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme : B.Sc.(Comp.Sci.)

Name of Department : Electronics

Class : F.Y. B.Sc (Comp. Sci.)

Name of Subject : Semiconductor devices & basic electronic system.

Subject Code : ELC-111

After completion of the course a student will be able to

Sr.No.	CO Number	Contents
1	CO1	Understand, draw symbols & types of semiconductor devices & characteristics and formula of electronic device.
2	CO2	Define semiconductor devices. Give the relation between parameters of electronic device.
3	CO3	Solve problems on frequency, current & voltages.
4	CO4	Understand working, principles of semiconductor devices and electronic device.
5	CO5	Explain Characteristics, application & block diagram of semiconductor devices and electronic device.
6	CO6	Design different circuit on the basis of knowledge of analog electronics

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme: B.Sc.(Comp.Sci.)

Name of Department: Electronics

Class: F.Y. B.Sc (Comp. Sci.)

Name of Subject: Principles of digital electronics

Subject Code: ELC 112

After completion of the course a student will be able to

Sr.No.	CO Number	Contents
1	CO1	Define, state theorems, and draw symbols, Boolean equations.
2	CO2	Represent codes; understand different types of logic gates.
3	CO3	Draw block diagram, parameters of logic families, number system conversion.
4	CO4	Understand the general concept in digital logic design and their use in combinational circuit design and solve problems.
5	CO5	Integrate & combine ideas of digital electronics to design circuit.
6	CO6	On basis of knowledge of digital electronics create applications of digital circuit

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme : B.Sc.(Comp.Sci.)

Name of Department : Electronics

Class : S.Y. B.Sc (Comp. Sci.)

Name of Subject : Digital Communication & Networking

Subject Code : ELC 212

Sr. No.	CO Number	Contents
1	CO1	Define concepts, state theorems and formulae.
2	CO2	Learn types in digital communication system. Learn classification related to digital communication system, list frequency range.
3	CO3	Using formula& statement solve problems. Students will be able to know concept of computer networking. Networking based model.
4	CO4	Understand & explain different techniques their need in digital communication with block diagram.
5	CO5	Student can integrate & combine ideas of digital communication techniques by using knowledge of digital communication.
6	CO6	By using the knowledge of different digital communication techniques study and implement the effectiveness of different techniques.

**Poona District Education Association's
Annasaheb Magar College, Hadapsar, Pune - 28.**

Name of Programme : B.Sc.(Comp.Sci.)

Name of Department : Electronics

Class : S.Y. B.Sc (Comp. Sci.)

Name of Subject : Microcontroller Architecture & programming

Subject Code : ELC 211

After completion of the course a student will be able to

Sr.No.	CO Number	Contents
1	CO1	Define and learn instruction addressing mode, registers ,full form ,state formulae
2	CO2	How instructions can be used in program
3	CO3	Architecture at block diagram level,pin diagram,study of different compiler as well as language.
4	CO4	use and write 8051 program & execution with use of software. Explain concepts with diagram as well as mathematical calculations required for writing program.
5	CO5	Learn about I/O organization, different types of electronics devices, data transfer.
6	CO6	To Create different applications on the basis of complete knowledge of 8051 microcontroller.



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Environmental Science

**Pune District Education Association's
Annasaheb Magar Mahavidyalaya, Hadapsar, Pune 411028.**

Name of Programme: M.Sc. (2019 Pattern)

Name of Department: Environmental Sciences

Upon completion of this programme the student will be able to:

Sr. No.	PO Number	Contents
1	PO1	Academic competence: Understand fundamental concepts, principles and processes underlying the field of Environmental Science, its interdisciplinary nature and create and disseminate knowledge to the students about environmental problems at local, regional and global scale.
2	PO2	Demonstrate an understanding of a wide range of Environmental techniques (e.g. basic water and soil analysis, microbiological methods, spectrophotometry, GIS based analysis, Ecological data analysis, Bio- assays, statistical data analysis and its applications, mathematical modelling
3	PO3	Personal and Professional Competence: Carry out laboratory-orientated numerical calculations and be capable in data visualization and interpretation. Related to Environmental Science, atmospheric science, Climatology, GIS and Remote sensing.
4	PO4	Analyze Environmental data (e.g. in Natural Resource Management, Habitat analysis and biological databases, watershed Management, Environmental pollution and its control.
5	PO5	Formulate ideas, write scientific reports, and demonstrate effective presentation, communication skill and standard practices of environmental protection
6	PO6	Research Competence: Apply environmental data analysis methodology in order to conduct research and demonstrate appropriate skill to seek innovative solutions to problems that emerge in various fields of Ecology and Environmental Science and interdisciplinary fields like Green Technology, Biotechnology etc
7	PO7	Integrate informatics and statistical skills to explore and authenticate biological data for experimental and research purpose.
8	PO8	Entrepreneurial and Social competence: Employ skills in specific areas related to Environmental Science such as industrial pollution, Green technology development, Ecological, health, Agriculture and ensure multilevel commitment to health and well being of the society at large. Exhibit awareness of environmental and ethical issues: emphasizing on academic and research ethics, scientific misconduct, intellectual property rights and issues of plagiarism. Demonstrate capability for developing sustainable societies and understand national and international environmental policies and programmes and their implementation strategies.

**Pune District Education Association's
Annasaheb Magar Mahavidyalaya, Hadapsar, Pune -411028.**

Name of Programme: M.Sc. (2019 Pattern)
Name of Department: Environmental Sciences
Class: First Year M.Sc. Semester I and Semester II

On completion of the course, the students will be able to:

EVSUT-111		Environmental biology & biodiversity
Sr.No.	CO Number	Contents
1	CO1	Describe different types of theories of Ecology and its ecological processes. and Examine different biological processes in remediate measures and restoration.
2	CO2	Discuss the importance of different biotic, abiotic components of the ecosystem. Explain ecology of population and community describe different interactions among the interspecific and intraspecific species.
3	CO3	Introduce Plant and Animal behaviour and its mechanism.
4	CO4	Describe different types of terrestrial and aquatic biome . Explain ecological functions of wetland.
5	CO5	Review key challenges posed by developmental activities on natural processes and integrate modern day techniques to solve various problems at local, regional level to attain far-reaching goal of sustainability.
6	CO6	Specify the importance of life sustaining processes on Earth and integrate them in planning and development for innovative solutions. Design experiments to understand types of processes and different concepts.
EVSUT-112		Environmental physics & chemistry

Sr.No.	CO Number	Contents
1	CO1	Describe concepts, goals, principles, tools used in chemistry. Recall concept of ICPAES, Chromatography, Spectroscopy, X-ray diffraction, Flame photometry. Identify environmental issues associated with these contaminants with reference to their quality and quantity.
2	CO2	Classify saturated and unsaturated hydrocarbons , Describe Stoichiometry, Gibb's energy , chemical equilibrium, COD, BOD, DO and Redox potential. Discuss elemental cycles and their environmental significance.
3	CO3	Discuss concepts of fluids, waves and oscillations, optics and quantum physics.
4	CO4	Compare different instrumentation techniques to estimate environmental parameters and identify the better methods for analysis for environmental contaminants. Differentiate point, nonpoint sources of pollutants and discuss consequences of criteria Pollutants.
5	CO5	Explain Thermodynamics with laws and Describe concept of Fourier optics and Fresnel and Fraunhofer diffraction
6	CO6	Develop skills to aware the community for importance of environmental physics and chemistry based on scientific knowledge and specify applications of different analytical and nuclear methods used in the different study areas.
EVSUT-113		Earth, ocean and atmospheric sciences
Sr.No.	CO Number	Contents
1	CO1	Outline the concepts and key terms of Atmospheric sciences and environmental geology.
2	CO2	Explain the term Genesis of Soil and enlist properties of soil and soil classification with respect to genesis; fertility; lateralization; land capability classification and degradation of soil
3	CO3	Describe concept of Hydrology and Hydrogeology. Explain Hydrological Cycle and Vertical Distribution of Groundwater
4	CO4	Describes the Relationship between ocean basin, physical structure of ocean floor and oceanic environment
5	CO5	Determine the Earth resources with respect to Occurrence, exploitation, and Environmental impacts coal, Hydrocarbons and mineral resources
6	CO6	Specify concepts and write a report on different environmental atmospheric processes.

EVSUT-114		Environmental statistics
Sr.No.	CO Number	Contents
1	CO1	Describe concept of Statically inference and give Difference between simple random Sampling and Stratified random sampling
2	CO2	Classify data in the form of a frequency distribution table. Explain measures of a central tendency –mean, mode and median. Compute measures of dispersion with the help of suitable tools.
3	CO3	Give Summary of statistics for Multivariate and bivariate data – Mean, Standard Deviation, and covariance, Correlation Coefficient and Draw Scatter plot with interpretation.
4	CO4	Identify discrete, continuous distributions for probability assessment. Analyze probabilities with the help of different Distribution methods.
5	CO5	Evaluate Environmental datasets and calculate its central component.
6	CO6	Construct different indices by using Statistical models and quality control techniques in environmental science.
EVSUP-115		Practricals related to evsc- 111,112,113,114
Sr.No.	CO Number	Contents
1	CO1	Determine rate of photosynthesis in aquatic plants and Estimate chlorophyll content from given plant leaves. Explain wetland bird diversity, bacterial growth curve and analyze phytoplankton's and zooplanktons from fresh water sample and enzyme from soil sample
2	CO2	Preparation of samples using for analysis of titration, flamer photometer, and Spectrophotometer/UV Spectrophotometer. And Estimate Halides in Water samples by potentiometry
3	CO3	Apply the knowledge to study Physical Properties of Mineral and Rocks in hand Specimen and analysis of soil, ternary plots, slope, map aspects, and drainage
4	CO4	Estimate dry and wet deposition fluxes of gases and Aerosol pollutants. along with Preparation of climatic maps and diagrams.
5	CO5	Determine important geological and atmospheric processes used in environmental laboratories and conclude the results obtained by using different methods. Measure different parameters of geological and atmospheric processes based on toposheets and

		climographs.
6	CO6	Calculate mean, mode, median Variance, Standard deviation and coefficient of variation for grouped and ungrouped data and analysis of variance on one way classification and two way classifications. Study Statistical model of air pollution to data
Semester II		
EVSUT-121		Water and soil pollution: management and Mitigation
Sr.No.	CO Number	Contents
1	CO1	Describe basic concept on Freshwater Pollution and Pollutants responsible for water pollution and its Effect on health, biosphere and Economy. Derive case studied on freshwater remediation using traditional and modern technology.
2	CO2	Discuss the Ground water Sources, zones, remediation in situ and ex situ techniques and explain bioremediation strategies of groundwater using bio-venting, biosparging, bio-slurping, permeable reactive barriers; groundwater monitoring using Piezometer, slug and pumping tests.
3	CO3	State Environmental regulatory bodies preventing groundwater pollution with case studied based on groundwater remediation techniques.
4	CO4	Describe Sources, types and consequences, Ballast water pollution, Case studies based analysis of marine water pollution and prevention strategies
5	CO5	Explain Types, Effects and sources and consequences. Mechanism of interaction of waste with soil with Transport processes Specify disposal of sewage and effluent on land for irrigation and ground water recharge..
6	CO6	Illustrate methodology of wastewater disposal on land in India. Impacts of usage of land for solid waste disposal both municipal solid waste and industrial solid wastes
EVSUT-122		Air, noise and radiation pollution: Management and mitigation
Sr.No.	CO Number	Contents
1	CO1	Define - Composition of air, Classification of air pollution, Sources, Effect of gaseous and particulate pollutants on animals, plant and human health, Economic effects of air pollutants, Vehicular Pollution , Industrial Pollution
2	CO2	Explain the role of atmospheric stability, Dispersion of air pollutants. Chemical Principles and Troposphere and Stratospheric

		Ozone Chemistry
3	CO3	Analyze Air monitoring instruments and techniques SOX, NOX, O3, C6H6, Pb, CO, Particulate Matters.
4	CO4	Determine Basic Operating Principle of Air pollution control Technology and Examine Control of gaseous pollutants .Collaborate Policy and Institutional Framework Ambient Air Protection Policy.
5	CO5	Articulate Air Pollution Episodes along with Case Studies and Introduce to noise and vibrations, physics of sound and hearing, Noise Pollution, sources and effects
6	CO6	Classify of radio-active wastes and Control measures – treatment and disposal of various sources with AERB classification.
EVSUT-123		Environmental legislation, ethics and Policy
Sr.No.	CO Number	Contents
1	CO1	Introduce to Law and Policy- basic concept of Law and Policy
2	CO2	Implement International Conferences Indian legal system such as Stockholm conference, Rio conference, Rio+5, Rio+10.
3	CO3	Role of constitution in environment protection, Fundamental rights and duties, Article 48A
4	CO4	Explain Environmental Laws in India and rules and Regulations. Construct waste rules, and Give concept of Eco sensitive zone.
5	CO5	Determine National Environmental Policy, Ethical dilemma, Issues of Sustainable Development
6	CO6	Estimate International Environmental Laws and Policies.
EVSUT-124		Water & waste water technology
Sr.No.	CO Number	Contents
1	CO1	Analyze quality of water using Environmental parameters by different methods
2	CO2	Specify drinking water (physical, chemical & bacteriological) by Bureau of Indian Standards & World Health Organization. Packaged drinking water
3	CO3	Uses of Advanced treatment methods for Selection of appropriate unit operations for the treatment and flow chart of Industrial water treatment plant
4	CO4	Describe Principle and designing of Unit Operations in waste water treatment

5	CO5	Explain Water borne diseases, Importance of public health perspectives, socioeconomic impacts, Types of waterborne diseases
6	CO6	Specify treated wastewater for disposal into surface water, on land & in marine waters after treatment with Self-purification of water bodies.
EVSUT-125		Practicals related to evsc- 121, 122, 123 & 124
Sr.No.	CO Number	Contents
1	CO1	Determine DO, BOD, and COD from given water sample and Estimate amount of Nitrites, Sulfates and Phosphates.
2	CO2	Determine SOX,POX and PM in the given concentration of air and Heavy Metals from air sample
3	CO3	Measurement of sounds by DB meter / SLM in silent, industrial, residential and commercial zones.
4	CO4	Estimate Organic carbon, sodium adsorption ratio and TKN from given soil sample.
5	CO5	Select the field survey of legislation legal Ethics and policies with interpretation
6	CO6	Physico-chemical analysis of waste water to determine quality of sewage and effluent. Determine Jar test for coagulation.

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Name of Programme: M.Sc. (2019 Pattern)
Name of Department: Environmental Sciences
Class: Second Year M.Sc. Semester III and Semester IV

Semester III

EVSUT-231		EIA & Environmental audit
Sr.No.	CO Number	Contents
1	CO1	Describe concepts of the EIA with in framework of sustainable development.
2	CO2	Discuss the History,scope,importance, opportunities in Environmental Impact Assessment (EIA) Explain the benefits and flaws of EIA.
3	CO3	Outline Administrative requirements and policies as per government guidelines. Give the linkage between EIA and international conventions. methods for accurate prediction and interpretation of the future impacts due to ongoing developmental projects.
4	CO4	Identify the best practices, guidelines followed in EIA processes. Explain methods for accurate prediction and interpretation of the future impacts due to ongoing developmental projects (Baseline data).
5	CO5	Give details procedure for conducts for public hearing. Discuss the formats, techniques required to assess impacts and perform audits for protection of environment.
6	CO6	Calculate details about environmental impact assessment studies along with case studies for different developmental activities Prepare a report on the industry specific requirements for Environmental management system and environmental audit.
EVSUT-232		Remote sensing and GIS
Sr.No.	CO Number	Contents
1	CO1	Explain the basic concepts, History, principles and processes of Remote sensing and GIS.

		Differentiate between basics of Electromagnetic radiation and Spectrum.
2	CO2	Give types of remote sensing. Articulate satellites in space and their applications.
3	CO3	Demonstrate map projection methods to understand its importance and limitations.
4	CO4	Differentiate between Raster data, Vector data in GIS to recognize its role in generating information about different features on the earth and Compare spatial data and Non-spatial data and its characteristics.
5	CO5	Interpret satellite images visually and digitally judge the accuracy level of classified maps.
6	CO6	Develop spatial thinking in GIS by using geo-processes and Functions. Collect GIS data to study recent advances.
EVSUT-233		Restoration ecology and watershed Management
Sr.No.	CO Number	Contents
1	CO1	Explain the basic concepts of eco restoration along with its significance and guidelines. Discuss different types of theories of Restoration and its Application.
2	CO2	Study of environment protection and conservation issues through watershed management practice. Give its functions.
3	CO3	Articulate steps involved in restoration with suitable example. Examine different examples of restoration practices as well as watershed management projects and environmental issues associated with it.
4	CO4	Analyze cost benefit analysis of restoration projects. Explain watershed management features and its designing and layout.
5	CO5	Determine the study of water balance with respect to harvesting methods. Memorize the water harvesting projects in India.
6	CO6	Investigate hydrological survey's of ground water , surface springs and vertical distribution of ground water
EVSUP-234		Core compulsory practical paper: related to Compulsory theory papers
Sr.No.	CO Number	Contents
1	CO1	Collect the Baseline data of studied any one project. Give detailed case study of any one project.
2	CO2	Interpret aerial photo image, geometry, scale, and measurement of relief numerical.
3	CO3	Prepare map and map layout with the help of top sheet geo referencing and digitization.

		Give detailed classification supervised image and unsupervised image.
4	CO4	Interpret satellite image registration and enhancement and its correction tools.
5	CO5	Study restored sites through visit and present scientific report based on visit.
6	CO6	Give watershed planning exercises at mili level, location specific with required interventions. Mapping of watershed with its estimation of area and slope
EVSUT-236		Environmental resource monitoring (CBOP)
Sr.No.	CO Number	Contents
1	CO1	Introduce environmental monitoring; explain its basics of resources to be monitored.
2	CO2	Give Details about air quality parameters with broad significance of each parameter. Explain its monitoring tools and its working principle.
3	CO3	Explain monitoring techniques and tools or instruments used for analysis of ambient air as per OSHA guidelines.
4	CO4	Determine the need for noise mitigation . give national standards for noise. Explain basic techniques of odour monitoring.
5	CO5	Explain methods for monitoring and sampling of water and its analysis . Describe objectives of soil monitoring ,basic concepts of analysis ,
6	CO6	Explain basic concept of forest resource monitoring and its scope. Explain different methods of measurement of trees. Give guideline for handling and storage of samples and its safety practices
EVSUP-237		Practical related to elective paper (CBPP)
Sr.No.	CO Number	Contents
1	CO1	Monitoring of ambient air components such as PM 10 micron, PM-2.5 micro and less in size, oxides of sulfur and nitrogen.
2	CO2	Determine water quality monitoring –COD, BOD, DO,EC and Ph of given water samples.
3	CO3	Estimate N,P,K ratio from give soil samples
EVSUT-238		In plant training and internship
Sr.No.	CO Number	Contents
1	CO1	Outline the concepts, basic scientific principles of different environmental parameters. Identify and tabulate the tasks to be performed as part of summer training in an organization.

2	CO2	Explain techniques used in working for environmental management during training.
3	CO3	Prepare a project report. Propose an effective treatment method for better management of the environmental issues.
Semester IV		
EVSUT-241		Solid and hazardous waste management
Sr.No.	CO Number	Contents
1	CO1	Discuss solid waste management ,give its Definition, Historical development, Source and type based classification, chemical and physical composition, Environmental and health impacts due to solid waste and its handling of it. Explain Factors affecting solid waste management: Climate, financial, cultural constraint, quality and quantity of waste.
2	CO2	Assessment of existing situation & possible areas for improvement of municipal solid waste management in India
3	CO3	Explain Hazardous waste management: Identification and sources, characteristics and categorization, Collection, segregation, packaging, labelling, transportation, processing (3R).
4	CO4	Describe Radioactive waste management
5	CO5	Describe Electronic waste management: A growing problem, sources, segregation, collection, recovery of valuable materials, treatment
6	CO6	Give types of plastic, sources, the problem of plastic waste, degradation of plastics, recycling & alternatives to plastic, Discuss Maharashtra Plastic Ban notification 2018
EVSUT-242		Renewable and non renewable energy
Sr.No.	CO Number	Contents
1	CO1	Differentiate between renewable and non-renewable energy resources, its importance and limitations.
2	CO2	Describe the basic principles and technologies to harness various energy resources. the merits and demerits of energy Generation technologies.
3	CO3	Develop energy generation process using lab scale models of biogas plant, wind mills, solar devices.
4	CO4	Analyze advanced technologies available for energy harnessing by using different methods.

5	CO5	Evaluate energy harvesting techniques based on its availability, importance and technological and ecological and economical aspects.
6	CO6	Differentiate between geothermal and hydrothermal energy
EVSUT-243		Practicals related to 241,242
Sr.No.	CO Number	Contents
1	CO1	Study of solid and hazardous waste segregation and recycling .
2	CO2	Visit to landfill site/waste processing site
3	CO3	Estimation of out heat of combustion of given fuel sample
4	CO4	Study of carbonization processes (Charcoal making) by technique of wood pyrolysis
5	CO5	Estimation of calorific value of given wood sample /solid waste
EVSUT-244		Environmental toxicology health and safety CBOP-1
Sr.No.	CO Number	Contents
1	CO1	Explain basic concepts in Environmental Health, Toxicology and Safety.
2	CO2	Describe the role and responsibilities of an occupational health and safety practitioner. Describe concepts of Biological warfare and protective measures.
3	CO3	Determine Toxicity testing methods and interpret the toxicity of Industrial toxicants and hazardous materials.
4	CO4	Clarify the policies and legislation on safety in industries and workplace environments .
5	CO5	Evaluate the toxicity level of toxicants depending on the Interaction of toxicants in combination.
6	CO6	Describe concept of Mutagens, Teratogens and Carcinogen and identify the source and effects of these materials.
EVSUT-246		Practical paper based on CBPP-1
Sr.No.	CO Number	Contents
1	CO1	Study on effect of heavy metal toxicants on the germination of Ground nut.

2	CO2	Determination of LC 50 of any toxicant.
3	CO3	Give Safety Practices in scientific Laboratories.
EVSUT-248		Environmental policy, climate change and Sustainability CBOP-II
Sr.No.	CO Number	Contents
1	CO1	Identify, list environmental, social, and economic impacts of anthropogenic activities and required sustainability framework for mitigation.
2	CO2	Describe the scope, importance, and opportunities for climate change and sustainability studies.
3	CO3	Calculate environmental impact different development Projects by using common methodologies.
4	CO4	Analyze the impacts of climate change and compare with future goals of sustainability. Compare different policies and agreements regarding climate change and developmental goals.
5	CO5	Evaluate the impacts of climate change and sustainability by appropriate tools and techniques.
6	CO6	Compile the data and prepare reports by using different methods about climate change and sustainable practices.
EVSUP-249		Practical paper based on CBPP-II
Sr.No.	CO Number	Contents
1	CO1	Evaluate the impacts of climate change and sustainability by appropriate tools and techniques.
2	CO2	Compile the data and prepare reports by using different methods about climate change and sustainable practices.
EVSUT-250		Dissertation – Final assessment
Sr.No.	CO Number	Contents
1	CO1	Define the need for selection of project work in relation to the current environmental topics as per social aspects. Recall techniques, basic terms related to research topics and research work.
2	CO2	Classify the basic concepts in research to implement the dissertation. Associate the objectives as per topic of research in the environmental field.
3	CO3	Apply the objectives of the work to solve the issues of the society.

4	CO4	Analyze research-oriented approach to solve environmental issues and test it with the help of innovating solutions.
5	CO5	Design an experimental setup and develop lab scale model to generate data and interpret it for solving environmental problems. Give protocol to work on the selected dissertation topic for systematic research work.