MARATHA VIDYA PRASARAK SAMAJ'S
KARMAVEER PUNJABABA GOVARDHANE ARTS, COMMERCE AND SCIENCE COLLEGE, IGATPURI
TAL. IGATPURI, DIST. NASHIK – 422403
Affiliated to Savitribai Phule Pune University, Pune

ATTAINMENTS: 2023 – 24

DEPARTMENT OF MARATHI

SN	Class	Sem	Subject With Code	CO	Attainments
1.	F.Y.B.A.	I	समकालीन मराठी कथा आणि भाषिक कौशल्यविकास 11021 A	1. साहित्य व समाजजीवनाची ओळख करून देणे. 2. समकालीन मराठी कथांचा अभ्यास करणे. 3. व्यक्तिमत्त्व विकासात भाषेचे स्थान स्पष्ट करणे. 4. जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे.	हा अभ्यास पूर्ण केल्याने विद्यार्थ्यांना साहित्य व समाजजीवनाची ओळख झाली. समकालीन मराठी कथांचा अभ्यास करता आला. व्यक्तिमत्त्व विकासात भाषेचे स्थान समजले. जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित झाली.
2.	F.Y.B.A.	II	मराठी साहित्य: एकांकिका आणि भाषिक कौशल्य विकास 11022A	1. एकांकिका या साहित्य प्रकाराची ओळख करून देणे. 2. एकांकिका या साहित्य प्रकाराचे स्वरूप, घटक आणि प्रकार यांची ओळख करून देणे. 3. मराठी साहित्यातील निवडक एकांकिका विठ्ठल तो आला व हंडाभर चांदण्या या एकांकिकाचे अध्ययन करणे. 4. विठ्ठल तो आला व हंडाभर चांदण्या	या अभ्यासक्रमात विद्यार्थ्यांना एकांकिका या साहित्य प्रकाराची ओळख झाली. एकांकिका या साहित्य प्रकाराचे स्वरूप, घटक आणि प्रकार यांची ओळख झाली. मराठी साहित्यातील निवडक एकांकिका विठ्ठल तो आला व हंडाभर चांदण्या या एकांकिकाचे अध्ययन करता आले. विठ्ठल तो आला व हंडाभर चांदण्या या एकांकिकाचे समकालीन

				याएकांकिकाचे समकालीन महत्त्व तपासून भाषिक कौशल्यांचा विकास करणे.	महत्त्व तपासून भाषिक कौशल्यांचा विकास झाला.
3.	S.Y.B.A.	**III**	भाषिक कौशल्य विकास आणि आधुनिक मराठी साहित्यप्रकार : कांदबरी 23023	1. कांदबरी या साहित्यप्रकाराचे स्वरूप, घटक, प्रकार आणि वाटचाल यांची ओळख करून देणे. 2. नेमेलेल्या कांदबरीचा आस्वाद घेऊन आकलन करणे. 3. नवतंत्रज्ञानाचा अभ्यास करणे. 4. प्रभाकर पेंढारकर लिखित 'रारंगढांग' या कादंबरीचे विश्लेषण मूल्यमापन करणे.	या अभ्यासक्रमात विद्यार्थ्यांना कांदबरी या साहित्यप्रकाराचे स्वरूप, घटक, प्रकार आणि वाटचाल यांची ओळख झाली. नेमेलेल्या कांदबरीचा आस्वाद घेऊन आकलन करता आले. नवतंत्रज्ञानाचा अभ्यास करता आला. प्रभाकर पेंढारकर लिखित 'रारंगढांग' या कादंबरीचे विश्लेषण मूल्यमापन करता आले.
4.	S.Y.B.A.	**III**	आधुनिक मराठी साहित्यः प्रकाशवाटा 23021	1. मराठीतील आत्मचरित्र या संकल्पनेची ओळख करून देणे. 2. साहित्यकृतीचे आस्वाद व आकलन करण्याची दृष्टी निर्माण करणे. 3. ललितगद्य 4. मराठी भाषिक संज्ञापन कौशल्यांचे व्यवहारिक जीवनात उपयोजन करणे.	या अभ्यासक्रमात विद्यार्थ्यांना मराठीतील आत्मचरित्र या संकल्पनेची ओळख झाली. साहित्यकृतीचे आस्वाद व आकलन करण्याची दृष्टी निर्माण झाली. मराठी भाषिक संज्ञापन कौशल्यांचे व्यवहारिक जीवनात उपयोजन करता आले.
4.	S.Y.B.A.	**III**	साहित्यविचार 23022	1. भारतीय आणि पाश्चात्य साहित्याच्या आधारे साहित्याची संकल्पना, स्वरूप आणि प्रयोजन विचार समजून देणे. साहित्याची निर्मिती प्रक्रिया समजावून देणे. 2. साहित्याची निर्मिती प्रक्रिया समजावून देणे. 3. साहित्याची भाषा आणि शैलीविषयक विचार समजावून देणे.	या अभ्यासक्रमात विद्यार्थ्यांना भारतीय आणि पाश्चात्य साहित्याच्या आधारे साहित्याची संकल्पना, स्वरूप आणि प्रयोजन विचार समजून घेता आले. साहित्याची निर्मिती प्रक्रिया समजावून घेता आली.

				4. साहित्य व समाज यांचा सहसंबंध तपासणे.	
5.	S.Y.B.A.	**III**	प्रकाशन व्यवहार आणि संपादन 23025	1. प्रकाशन व्यवहार आणि संपादन यांची ओळख करून देणे. 2. ग्रंथनिर्मिती प्रक्रिया समजून देणे. 3. संहिता संपादन समजून देणे. 4. प्रकाशन संस्था व जाहिरात यांचे व्यवहारिक जीवनातील उपयोजन स्पष्ट करणे.	या अभ्यासक्रमात विद्यार्थ्यांना प्रकाशन व्यवहार आणि संपादन यांची ओळख झाली. ग्रंथनिर्मिती प्रक्रिया समजून घेता आली. संहिता संपादन समजून घेता आले. प्रकाशन संस्था व जाहिरात यांचे व्यवहारिक जीवनातील उपयोजन स्पष्ट करता आले.
6.	S.Y.B.A.	**III**	मराठी भाषिक संज्ञापन कौशल्ये 23011	1. भाषा व व्यक्तिमत्त्व विकास यांची ओळख करून देणे. 2. प्रसार माध्यमांसाठी आवश्यक संज्ञापन कौशल्ये समजून देणे. 3. मुद्रितशोधनाची संकल्पना समजून सांगणे. 4. मराठी भाषिक संज्ञापन कौशल्यांचे व्यवहारिक जीवनात उपयोजन करणे.	या अभ्यासक्रमात विद्यार्थ्यांना भाषा व व्यक्तिमत्त्व विकास यांची ओळख झाली. प्रसार माध्यमांसाठी आवश्यक संज्ञापन कौशल्ये समजून घेता आले. मुद्रितशोधनाची संकल्पना समजून घेता आली. मराठी भाषिक संज्ञापन कौशल्यांचे व्यवहारिक जीवनात उपयोजन करता आले.
7.	S.Y.B.A.	**IV**	भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्य प्रकार ललितगद्य 24023	1. ललितगद्य, या साहित्य प्रकाराचे स्वरूप घटक प्रकार आणि वाटचाल समजून देणे. 2. नेमलेल्या अभ्यास पुस्तकातील ललितगद्याचे आस्वाद आणि आकलन करणे. 3. गुगल साधनांचा अध्ययन व व्यावहारिक जीवनात प्रभावीपणे वापर करणे. 4. 'साहित्यरंग' या पुस्तकाचे विश्लेषण आणि मूल्यमापन करणे.	या अभ्यासक्रमात विद्यार्थ्यांना ललितगद्य, या साहित्य प्रकाराचे स्वरूप घटक प्रकार आणि वाटचाल समजून घेता आली. नेमलेल्या अभ्यास पुस्तकातील ललितगद्याचे आस्वाद आणि आकलन करता आले. गुगल साधनांचा अध्ययन व व्यावहारिक जीवनात प्रभावीपणे वापर करता आला. 'साहित्यरंग' या पुस्तकाचे विश्लेषण आणि मूल्यमापन करता आले.
8.	S.Y.B.A.	**IV**	मध्ययुगीन मराठी साहित्य:	1. मध्ययुगीन गद्य-पद्य साहित्यप्रकारांची ओळख करून देणे.	या अभ्यासक्रमात विद्यार्थ्यांना मध्ययुगीन गद्य-पद्य साहित्यप्रकारांची ओळख झाली.

			निवडक मध्ययुगीन गद्य, पद्य 24021	2. नेमलेल्या अभ्यासपुस्तकातील मध्ययुगीन गद्य पद्य साहित्याचा आस्वाद आणि आकलन करणे. 3. मध्ययुगीन कालखंडातील प्रेरणा व प्रवृत्तींचा अभ्यास करणे. 4. मध्ययुगीन कालखंडातील साहित्याचे व भाषेचे विश्लेषण करणे.	नेमलेल्या अभ्यासपुस्तकातील मध्ययुगीन गद्य पद्य साहित्याचा आस्वाद आणि आकलन करता आले. मध्ययुगीन कालखंडातील प्रेरणा व प्रवृत्तींचा अभ्यास करता आला. मध्ययुगीन कालखंडातील साहित्याचे व भाषेचे विश्लेषण करता आले.
9.	S.Y.B.A.	**IV**	साहित्यसमीक्षा 24024	1. साहित्य समीक्षेची संकल्पना, स्वरूप यांचा परिचय करून देणे. 2. साहित्य आणि समीक्षा यांचे परस्परसंबंध समजावून देणे. 3. साहित्यप्रकारानुसार समीक्षेचे स्वरूप समजावून देणे. 4. विविध समीक्षापद्धतीच्या आधारे विद्यार्थीमध्ये समीक्षात्मक दृष्टिकोन निर्माण करणे.	या अभ्यासक्रमात विद्यार्थ्यांना साहित्य समीक्षेची संकल्पना, स्वरूप यांचा परिचय झाला. साहित्य आणि समीक्षा यांचे परस्परसंबंध समजले. साहित्यप्रकारानुसार समीक्षेचे स्वरूप समजले. विविध समीक्षापद्धतीच्या आधारे विद्यार्थीमध्ये समीक्षात्मक दृष्टिकोन निर्माण झाला.
10.	S.Y.B.A.	**IV**	उपयोजित लेखन कौशल्ये 24025	1. जाहिरात, मुलाखतलेखन आणि संपादन यांचा अभ्यास करणे. 2. दृकश्राव्य माध्यमासाठी मुलाखत कौशल्याची ओळख करून देणे. 3. माहितीपर नोंदींची ओळख करून देणे. 4. जाहिरात, मुलाखतलेखन आणि संपादन या उपयोजित कौशल्याचे दैनंदिन व्यवहारात उपयोजन करणे.	या अभ्यासक्रमात विद्यार्थ्यांना जाहिरात, मुलाखतलेखन आणि संपादन यांचा अभ्यास करता आला. दृकश्राव्य माध्यमासाठी मुलाखत कौशल्याची ओळख झाली. माहितीपर नोंदींची ओळख झाली. जाहिरात, मुलाखतलेखन आणि संपादन या उपयोजित कौशल्याचे दैनंदिन व्यवहारात उपयोजन करता आले.

11.	**S.Y.B.A.**	**IV**	नवसमाजमाध्यमे आणि समाजमाध्यमासाठी मराठी 24011	1. भाषा व जीवनव्यवहार यांचा सहसंबंध समजून देणे. 2. नवसमाजमाध्यमांविषयी जागरूकता निर्माण करणे. 3. व्यावसायिक पत्रव्यवहाराची ओळख करून देणे. 4. समाजमाध्यमांचे महत्त्व आणि परिणामाचे विश्लेषण करणे.	या अभ्यासक्रमात विद्यार्थ्यांना भाषा व जीवनव्यवहार यांचा सहसंबंध समजला. नवसमाजमाध्यमांविषयी जागरूकता निर्माण झाली. व्यावसायिक पत्रव्यवहाराची ओळख झाली. समाजमाध्यमांचे महत्त्व आणि परिणामाचे विश्लेषण करता आले.
12.	**T.Y.B.A.**	**V**	भाषिक कौशल्य विकास आणि आधुनिक मराठी साहित्यप्रकार: प्रवासवर्णन 35023	1. मुद्रित माध्यमांसाठी लेखन कौशल्य आत्मसात करणे. 2. प्रवासवर्णन या साहित्यप्रकाराचे स्वरूप, प्रेरणा, प्रयोजन आणि वैशिष्ट्ये समजून देणे. 3. तीन मुलांचे चार दिवस या पुस्तकाचे आधुनिक काळातील महत्त्व समजून सांगणे. 4. तीन मुलांचे चार दिवस या प्रवासवर्णनाचे आकलन, आस्वाद, आकलन आणि विश्लेषण करणे.	या अभ्यासक्रमात विद्यार्थ्यांना मुद्रितमाध्यमांसाठी लेखन कौशल्य आत्मसात करता आले. प्रवासवर्णन या साहित्यप्रकाराचे स्वरूप, प्रेरणा, प्रयोजन आणि वैशिष्ट्ये समजली. तीन मुलांचे चार दिवस या पुस्तकाचे आधुनिक काळातील महत्त्व समजले. तीन मुलांचे चार दिवस या प्रवासवर्णनाचे आकलन, आस्वाद, आकलन आणि विश्लेषण करता आले.
13.	**T.Y.B.A.**	**V**	मध्ययुगीन मराठी वाङ्मयाचा स्थूल इतिहास प्रारंभ ते इ.स. 1600 35021	1. साहित्य इतिहासाची संकल्पना, स्वरूप, प्रेरणा, प्रवृत्ती समजावून सांगणे. 2. मध्ययुगीन कालखंडाची सामाजिक, सांस्कृतिक पार्श्वभूमी समजून देणे. 3. मराठी भाषा साहित्याची कालखंडानुसार विभागणी करणे व इतिहास समजून देणे. 4. मध्ययुगीन कालखंडातील विविध साहित्यप्रकारांचा अभ्यास व विश्लेषण करणे.	या अभ्यासक्रमात विद्यार्थ्यांना साहित्य इतिहासाची संकल्पना, स्वरूप, प्रेरणा, प्रवृत्ती ज्ञात झाल्या. मध्ययुगीन कालखंडाची सामाजिक, सांस्कृतिक पार्श्वभूमी समजली. मध्ययुगीन कालखंडातील विविध साहित्यप्रकारांचा अभ्यास व विश्लेषण करता आले.

14.	**T.Y.B.A.**	**V**	वर्णनात्मक भाषाविज्ञान 35022	1. भाषा, स्वरूप, वैशिष्ट्य व कार्य समजावून सांगणे. 2. भाषा अभ्यासाच्या शाखा आणि विविध पद्धतींचा थोडक्यात परिचय करून देणे. 3. वागिइंद्रियांची रचना, कार्य आणि स्वननिर्मितीची प्रक्रिया समजावून सांगणे. 4. भाषाअभ्यासाची आवश्यकता स्पष्ट करणे.	या अभ्यासक्रमात विद्यार्थ्यांना भाषा अभ्यासाच्या शाखा आणि विविध पद्धतींचा थोडक्यात परिचय झाला. वागिइंद्रियांचीरचना, कार्य आणि स्वननिर्मितीची प्रक्रिया कळली. भाषाअभ्यासाची आवश्यकता समजली.
15.	**T.Y.B.A.**	**V**	कार्यक्रम संयोजनातील भाषिक कौशल्ये 35025	1. कार्यक्रमाचे स्वरूप व प्रकार समजून सांगणे. 2. कार्यक्रम संयोजनातील भाषिक कौशल्ये अवगत करणे. 3. कार्यक्रमनियोजन, सूत्रसंचालन यांची कौशल्ये प्राप्त करणे. 4. आयोजक, प्रायोजक, जाहिरातदार, निवेदक यांचे कार्य व महत्त्व समजून सांगणे.	या अभ्यासक्रमात विद्यार्थ्यांना कार्यक्रमाचे स्वरूप व प्रकार अवगत झाले. कार्यक्रम संयोजनातील भाषिक कौशल्ये अवगत झाली. कार्यक्रमनियोजन, सूत्रसंचालन यांची कौशल्ये प्राप्त झाली. आयोजक, प्रायोजक, जाहिरातदार, निवेदक यांचे कार्य व महत्त्व समजले.
16.	**T.Y.B.A.**	**VI**	मराठी भाषिक कौशल्यविकास आणि आधुनिक मराठी साहित्य प्रकार: कविता 36023	1. मराठी साहित्य, कौशल्यविकास आणि शासनव्यवहार यांची ओळख करून देणे. 2. राज्यघटनेतील भाषा विषयक तरतुदीचा परिचय करून देणे. 3. रूप कवितेचे या नेमलेल्या अभ्यासपुस्तकातील निवडक कवितांचे आस्वाद, आकलन आणि मूल्यमापन करणे. 4. मराठी कवितेच्या प्रेरणा, प्रवृत्ती, स्वरूप व वाटचाल समजून देणे.	या अभ्यासक्रमात विद्यार्थ्यांना मराठी साहित्य, कौशल्यविकास आणि शासनव्यवहार यांची ओळख झाली. राज्यघटनेतील भाषा विषयक तरतुदीचा परिचय झाला. रूप कवितेचे या नेमलेल्या अभ्यासपुस्तकातील निवडक कवितांचे आस्वाद, आकलन आणि मूल्यमापन करता आले. मराठी कवितेच्या प्रेरणा, प्रवृत्ती, स्वरूप व वाटचाल समजली.
17.	**T.Y.B.A.**	**VI**		1. शिवकाल आणि पेशवेकालातील वाङ्मयीन	या अभ्यासक्रमात विद्यार्थ्यांना शिवकाल

			मध्ययुगीन मराठी वाड्मयाचा स्थूल इतिहास इ.स. १६०१ते१८१७ 36021	प्रेरणा, प्रवृत्ती, स्वरूप समजून देणे. 2. संत तुकाराम, रामदास, अनंतफंदी, मोरोपंत, रामजोशी, प्रभाकर इ. संत, पंडित व शाहिर कवींचे मराठी साहित्यातील योगदान अभ्यासणे. 3. बखरवाड्मयप्रेरणा, प्रवृत्ती, स्वरूप समजून देणे. 4. सभासद बखर, शिवछत्रपतीचे सप्तप्रकरणात्मक चरित्र, भाऊसाहेबांची बखर पानिपत बखर आज्ञापत्र अभ्यासणे व विश्लेषण करणे.	आणि पेशवेकालातील वाड्मयीन प्रेरणा, प्रवृत्ती, स्वरूप ज्ञात झाले. संत तुकाराम, रामदास, अनंतफंदी, मोरोपंत, रामजोशी, प्रभाकर इ. संत, पंडित व शाहिर कवींचे मराठी साहित्यातील योगदान अभ्यासता आले. बखरवाड्मयप्रेरणा, प्रवृत्ती, स्वरूप कळले. सभासद बखर, शिवछत्रपतीचे सप्तप्रकरणात्मक चरित्र, भाऊसाहेबांची बखर पानिपत बखर आज्ञापत्र अभ्यासणे व विश्लेषण करता आले.
18.	**T.Y.B.A.**	**VI**	वर्णनात्मक भाषाविज्ञान 36022	1. रुपविन्यास आणि मराठीची रूपव्यवस्था समजावून घेणे. 2. वाक्यविन्यास आणि मराठी भाषेसंदर्भात वाक्यव्यवस्थेचा परिचय करून देणे. 3. अर्थविन्यास या संकल्पनेचा भाषाविज्ञानाच्या अंगाने परिचय करून देणे. 4. क्षेत्रभेट व संशोधन प्रकल्प यांचे महत्त्व सांगून प्रत्यक्ष क्षेत्रभेट.	या अभ्यासक्रमात विद्यार्थ्यांना रुपविन्यास आणि मराठीची रूपव्यवस्था ज्ञात झाली. वाक्यविन्यास आणि मराठी भाषेसंदर्भात वाक्यव्यवस्थेचा परिचय झाला. अर्थविन्यास या संकल्पनेचा भाषाविज्ञानाच्या अंगाने परिचय झाला. क्षेत्रभेट व संशोधन प्रकल्प यांचे महत्त्व समजले.
19.	**T.Y.B.A.**	**VI**	कार्यक्रम संयोजनातील भाषिक कौशल्ये 36025	1. विषयाशी अनिवार्य कार्यक्रम संयोजनातील लेखनकौशल्ये समजावून सांगणे. 2. आभासी कार्यक्रम संयोजनाचा परिचय करून देणे. 3. निमंत्रणपत्रिका, मानपत्रलेखन, अहवाललेखन इ. कौशल्ये समजावून सांगणे.	या अभ्यासक्रमात विद्यार्थ्यांना विषयाशी अनिवार्य कार्यक्रम संयोजनातील लेखनकौशल्ये समजली. आभासी कार्यक्रम संयोजनाचा परिचय झाला. निमंत्रणपत्रिका, मानपत्रलेखन, अहवाललेखन इ. कौशल्ये ज्ञात झाली. कविसमेलन, मराठीभाषादिन.

				4. कविसमेलन, मराठीभाषादिन. पुस्तकप्रदर्शन इ. कार्यक्रमांचे यशस्वी संयोजन करणे.	पुस्तकप्रदर्शन इ. कार्यक्रमांचे यशस्वी संयोजन करता आले.
20.	**F.Y.B.Com**	**I**	Add. Marathi भाषा, साहित्य आणि कौशल्य विकास 117	1. विविध क्षेत्रातील कर्तृत्ववान व्यक्तींच्या विचारांची व कार्याची ओळख करून देणे. 2. मराठी साहित्यातील भिन्न भिन्न प्रवाह आणि प्रकार ओळख करुन देणे. 3. साहित्याभ्यासातून जीवन विषयक समज विकसित करणे. 4. वाणिज्य शाखा व मराठी साहित्ययातील परस्परसंबंधाचे मूल्यमापन करणे.	या अभ्यासक्रमात विद्यार्थ्यांना विविध क्षेत्रातील कर्तृत्ववान व्यक्तींच्या विचारांची व कार्याची ओळख झाली. मराठी साहित्यातील भिन्न भिन्न प्रवाह आणि प्रकार ओळख झाली. साहित्याभ्यासातून जीवन विषयक समज विकसित झाली. वाणिज्य शाखा व मराठी साहित्ययातील परस्परसंबंधाचे मूल्यमापन करता आले.
21.	**F.Y.B.Com**	**II**	भाषा आणि कौशल्यविकास 127	1. भाषिक कौशल्ये विकास करणे. 2. विद्यार्थ्यांना पारिभाषिक संज्ञांचा परिचय करून देणे. 3. व्यक्तिमत्त्व विकासात मराठी भाषेचे स्थान स्पष्ट करणे. 4. जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे.	या अभ्यासक्रमात विद्यार्थ्यांना भाषिक कौशल्ये ज्ञात झाली. विद्यार्थ्यांना पारिभाषिक संज्ञांचा परिचय झाला. व्यक्तिमत्त्व विकासात मराठी भाषेचे स्थान स्पष्ट झाले. जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित झाली.
22.	**S.Y.B.Sc.**	**III**	उपयोजित मराठी 83111	1. मराठी भाषा आणि जीवनव्यवहार यांची ओळख करून देणे. 2. प्रसारमाध्यमातील विविध लेखनप्रकारांचा अभ्यास व प्रत्यक्ष लेखन अभिरुचीचा विकास करणे. 3. नवसमाजमाध्यमे व प्रशासकीय लेखन यामधील विविध संधीची माहिती देणे.	या अभ्यासक्रमात विद्यार्थ्यांना मराठी भाषा आणि जीवनव्यवहार यांची ओळख झाली. प्रसारमाध्यमातील विविध लेखनप्रकारांचा अभ्यास व प्रत्यक्ष लेखन अभिरुचीचा विकास झाला. नवसमाजमाध्यमे व प्रशासकीय लेखन यामधील विविध संधीची माहिती मिळाली. जागतिकीकरणात विविध क्षेत्रांना सामोरे

				4. जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे.	जाण्यासाठी भाषिक क्षमता विकसित झाली.
23.	**S.Y.B.Sc.**	**IV**	मराठी कथादर्शन 83112	1. साहित्यविषयक अभिरुची विकसित करणे. 2. साहित्यविषयक अभ्यासातून जीवनविषयक समज विकसित करणे. 3. विज्ञानसाहित्यविषयक आकलनक्षमता वाढवणे. 4. निवडक विज्ञानकथांचा आस्वाद घेऊन त्यांचे विश्लेषण करण्याची क्षमता विकसित करणे.	या अभ्यासक्रमात विद्यार्थ्यांना साहित्यविषयक अभिरुची विकसित झाली. साहित्यविषयक अभ्यासातून जीवनविषयक समज विकसित झाली. विज्ञानसाहित्यविषयक आकलनक्षमता वाढली. निवडक विज्ञानकथांचा आस्वाद घेऊन त्यांचे विश्लेषण करण्याची क्षमता विकसित झाली.
24.	**M.A. I**	**I**	अर्वाचीन मराठी वाड्मयाचा इतिहास (इ.स. १८१८ते१९२०) MAR 501 MJ	1. वाड्मयेतिहासाच्या स्वरूपाचा विद्यार्थ्यांना परिचय होईल. 2. अव्वल इंग्रजी कालखंडातील साहित्याच्या प्रेरणा, प्रवृत्ती, स्वरूप यांचे विवेचन करता येईल. 3. इ.स. १८१८ते१९२०या कालखंडातील साहित्याचे स्वरूप विशद करता येईल. 4. इ.स. १८१८ते१९२०या कालखंडातील साहित्याच्या प्रेरणा, प्रवृत्ती यांचे विश्लेषण करता येईल. 5. इ.स. १८१८ते१९२०या कालखंडातील साहित्याची कारणमीमांसा करता येईल. 6. इ.स. १८१८ते१९२०या कालखंडातील साहित्यनिर्मितीच्या प्रेरणा, प्रवृत्ती लक्षात येऊन विद्यार्थ्यांना साहित्यनिर्मिती आणि विश्लेषण करता येईल.	या अभ्यासक्रमात विद्यार्थ्यांना वाड्मयेतिहासाच्या स्वरूपाचा विद्यार्थ्यांना परिचय झाला. अव्वल इंग्रजी कालखंडातील साहित्याच्या प्रेरणा, प्रवृत्ती, स्वरूप यांचे विवेचन करता आले. इ.स. १८१८ते१९२०या कालखंडातील साहित्याचे स्वरूप विशद करता आले. इ.स. १८१८ते१९२०या कालखंडातील साहित्याच्या प्रेरणा, प्रवृत्ती यांचे विश्लेषण करता आले. इ.स. १८१८ते१९२०या कालखंडातील साहित्याची कारणमीमांसा करता आली. इ.स. १८१८ते१९२०या कालखंडातील साहित्यनिर्मितीच्या प्रेरणा, प्रवृत्ती लक्षात येऊन विद्यार्थ्यांना साहित्यनिर्मिती आणि विश्लेषण करता आले.

25.	**M.A. I**	**I**	ऐतिहासिक भाषाविज्ञान MAR 502	1. ऐतिहासिक भाषाविज्ञानाचे स्वरूप व संकल्पना स्पष्ट करता येईल. 2. ऐतिहासिक भाषाविज्ञानाचे सिद्धांत महत्त्व आणि मर्यादा विशद करता येतील. 3. ऐतिहासिक भाषाविज्ञानाच्या ज्ञानातून स्थानिक भाषांचा अभ्यास करता येईल. सिद्धांत महत्त्व आणि मर्यादा विशद करता येतील. 4. जागतिक व भारतीय भाषांचे अध्ययनाच्या दृष्टीकोनातून वर्गीकरण करता येईल. 5. जागतिक व भारतीय भाषांचा तौलनिक अभ्यास करता येईल. 6. विविध भारतीय भाषा आणि बोली भाषांवर आधारित प्रकल्प तयार करता येतील.	या अभ्यासक्रमात विद्यार्थ्यांना ऐतिहासिक भाषाविज्ञानाचे स्वरूप व संकल्पना माहित झाली. ऐतिहासिक भाषाविज्ञानाचे सिद्धांत महत्त्व आणि मर्यादा विशद करता आल्या. ऐतिहासिक भाषाविज्ञानाच्या ज्ञानातून स्थानिक भाषांचा अभ्यास करता येईल. सिद्धांत महत्त्व आणि मर्यादा विशद करता आल्या. जागतिक व भारतीय भाषांचे अध्ययनाच्या दृष्टीकोनातून वर्गीकरण करता आले. जागतिक व भारतीय भाषांचा तौलनिक अभ्यास करता आले. विविध भारतीय भाषा आणि बोली भाषांवर आधारित प्रकल्प तयार करता आले.
26.	**M.A. I**	**I**	प्रशासनिक लेखनकौशल्ये MAR 503 MJ	1. कार्यालयीन लेखनासंदर्भातील ज्ञान विकसित होईल. 2. कार्यालयीन लेखनपद्धतीची कौशल्य विकसित होतील. 3. दैनदिन जीवन आणि रोजगार यासाठी सदर कौशल्याचे उपयोजन करता येईल. 4. विद्यार्थ्यानमध्ये भाषिक कौशल्ये विकसित होतील. 5. विद्यार्थ्याना कार्यालयीन लेखनपद्धतीच्या कौशल्याची ओळख होईल.	या अभ्यासक्रमात विद्यार्थ्यांना कार्यालयीन लेखनासंदर्भातील ज्ञान विकसित झाले. कार्यालयीन लेखनपद्धतीची कौशल्य विकसित झाली. दैनदिन जीवन आणि रोजगार यासाठी सदर कौशल्याचे उपयोजन करता आले. विद्यार्थ्यानमध्ये भाषिक कौशल्ये विकसित झाली. विद्यार्थ्याना कार्यालयीन लेखनपद्धतीच्या कौशल्याची ओळख झाली. विद्यार्थ्यांना प्रमाणभाषा आणि कार्यालयीन भाषेचे स्वरूप अवगत झाल्याने रोजगाराच्या

				6. विद्यार्थ्यांना प्रमाणभाषा आणि कार्यालयीन भाषेचे स्वरूप अवगत झाल्याने रोजगाराच्या संधी उपलब्ध होतील.	संधी उपलब्ध झाल्या.
27.	**M.A. I**	**I**	प्रशासनिक लेखनकौशल्ये MAR 503 MJP	1. कार्यालयीन लेखनासंदर्भातील ज्ञान विकसित होईल. 2. कार्यालयीन लेखनपद्धतीची कौशल्य विकसित होतील. 3. दैनदिन जीवन आणि रोजगार यासाठी सदर कौशल्याचे उपयोजन करता येईल. 4. विद्यार्थ्यांमध्ये भाषिक कौशल्ये विकसित होतील. 5. विद्यार्थ्यांना कार्यालयीन लेखनपद्धतीच्या कौशल्याची ओळख होईल. 6. विद्यार्थ्यांना प्रमाणभाषा आणि कार्यालयीन भाषेचे स्वरूप अवगत झाल्याने रोजगाराच्या संधी उपलब्ध होतील.	या अभ्यासक्रमात विद्यार्थ्यांना कार्यालयीन लेखनासंदर्भातील ज्ञान विकसित झाले. कार्यालयीन लेखनपद्धतीची कौशल्य विकसित झाल्या. दैनदिन जीवन आणि रोजगार यासाठी सदर कौशल्याचे उपयोजन करता आले. विद्यार्थ्यांमध्ये भाषिक कौशल्ये विकसित झाली. विद्यार्थ्यांना कार्यालयीन लेखनपद्धतीच्या कौशल्याची ओळख झाली. विद्यार्थ्यांना प्रमाणभाषा आणि कार्यालयीन भाषेचे स्वरूप अवगत झाल्याने रोजगाराच्या संधी उपलब्ध झाल्या.
28.	**M.A. I**	**I**	प्रकाशनव्यवहार आणि ग्रंथनिर्मितीप्रक्रिया MAR 504 MJP	1. प्रकाशनव्यवहार आणि ग्रंथप्रक्रियायांचे स्वरूप सांगता येईल. 2. प्रकाशनव्यवहारासाठी आवश्यक कौशल्ये प्राप्त होतील. 3. ग्रंथनिर्मिती, ग्रंथाचे सम्पादन आणि प्रकाशन करता येईल. 4. प्रकाशनव्यवहार आणि ग्रंथनिर्मितीप्रक्रियायासाठी आवश्यक कौशल्ये अंगीकरता येतील.	या अभ्यासक्रमात विद्यार्थ्यांना प्रकाशनव्यवहार आणि ग्रंथप्रक्रियायांचे स्वरूप सांगता आले. प्रकाशनव्यवहारासाठी आवश्यक कौशल्ये प्राप्त झाली. ग्रंथनिर्मिती, ग्रंथाचे सम्पादन आणि प्रकाशन करता आले. प्रकाशनव्यवहार आणि ग्रंथनिर्मितीप्रक्रियायासाठी आवश्यक कौशल्ये अंगीकरता आली. प्रकाशनव्यवहार आणि ग्रंथनिर्मितीप्रक्रियासंबंधीत कौशल्यांचा

				5. प्रकाशनव्यवहार आणि ग्रंथनिर्मितीप्रक्रियासंबंधीत कौशल्यांचा परिस्थितीनुरूप वापर करता येईल.	परिस्थितीनुरूप वापर करता आला. ग्रंथनिर्मितीप्रक्रियेमध्ये नाविन्यपूर्णता आणता आली.
				6. ग्रंथनिर्मितीप्रक्रियेमध्ये नाविन्यपूर्णता आणता येईल.	
29.	**M.A. I**	**I**	साहित्यप्रवाहांचा अभ्यास: दलित साहित्य आणि ग्रामीण साहित्य MAR 510 MJ	1. साठोत्तरी वाड्मयीन प्रवाहाविषयी ज्ञान प्राप्त होईल.	या अभ्यासक्रमात विद्यार्थ्यांना साठोत्तरी वाड्मयीन प्रवाहाविषयी ज्ञान प्राप्त झाले. साठोत्तरी वाड्मयीन प्रवाहांचा उगम आणि विकास स्पष्ट झाला. साठोत्तरी आणि त्यापूर्वीच्या साहित्याच्या तौलनिक अभ्यासाची क्षमता विकसित झाली. साहित्यकृतींचे साठोत्तरी वाड्मयीन प्रवाहामध्ये वर्गीकरणक्षमता विकसित झाली. साहित्यकृतींचे साठोत्तरी वाड्मयीन प्रवाहामध्ये मूल्यमापन करण्याची क्षमता विकसित झाली. या प्रवाहामध्ये लेखन करण्याचे कौशल्ये व त्या अनुषंगाने रोजगाराच्या संधी उपलब्ध होण्याच्या दृष्टीने क्षमता विकसित झाली.
				2. साठोत्तरी वाड्मयीन प्रवाहांचा उगम आणि विकास स्पष्ट होईल.	
				3. साठोत्तरी आणि त्यापूर्वीच्या साहित्याच्या तौलनिक अभ्यासाची क्षमता विकसित होईल.	
				4. साहित्यकृतींचे साठोत्तरी वाड्मयीन प्रवाहामध्ये वर्गीकरणक्षमता विकसित होईल.	
				5. साहित्यकृतींचे साठोत्तरी वाड्मयीन प्रवाहामध्ये मूल्यमापन करण्याची क्षमता विकसित होईल.	
				6. या प्रवाहामध्ये लेखन करण्याचे कौशल्ये व त्या अनुषंगाने रोजगाराच्या संधी उपलब्ध होण्याच्या दृष्टीने क्षमता विकसित होईल.	
30.	**M.A. I**	**I**	साहित्यप्रवाहांचा अभ्यास: दलित साहित्य आणि ग्रामीण साहित्य MAR 510 MJ P	1. साठोत्तरी वाङ्मयीन प्रवाहाविषयी ज्ञान प्राप्त होईल.	या अभ्यासक्रमात विद्यार्थ्यांना साठोत्तरी वाङ्मयीन प्रवाहाविषयी ज्ञान प्राप्त झाले. साठोत्तरी वाड्मयीन प्रवाहांचा उगम आणि विकास स्पष्ट झाला. साठोत्तरी आणि त्यापूर्वीच्या साहित्याच्या तौलनिक
				2. साठोत्तरी वाड्मयीन प्रवाहांचा उगम आणि विकास स्पष्ट होईल.	
				3. साठोत्तरी आणि त्यापूर्वीच्या साहित्याच्या	

				तौलनिक अभ्यासाची क्षमता विकसित होईल.	अभ्यासाची क्षमता विकसित झाली.
				4. साहित्यकृतींचे साठोत्तरी वाड्मयीन प्रवाहामध्ये वर्गीकरण क्षमता विकसित होईल.	
				5. साहित्यकृतींचे साठोत्तरी वाड्मयीन प्रवाहामध्ये मूल्यमापन करण्याची क्षमता विकसित होईल.	
				6. या प्रवाहामध्ये लेखन करण्याचे कौशल्ये व त्या अनुषंगाने रोजगाराच्या संधी उपलब्ध होण्याच्या दृष्टीने क्षमता विकसित होईल.	
31.	**M.A. I**	**I**	संशोधनपद्धती MAR 541 MN	1. संशोधनाचे स्वरूप कळण्यास मदत होईल.	या अभ्यासक्रमात विद्यार्थ्यांना संशोधनाचे स्वरूप कळण्यास मदत झाली. संशोधनाच्या विविध पद्धती ज्ञात झाल्या. प्रत्यक्ष संशोधन करताना या अभ्यासाचा आधार घेता आला. संशोधनाच्या विविध अभ्यास क्षेत्रांची माहिती मिळाली. संशोधनाचा आराखडा तयार करता आला. मूल्यमापनास पूरक पुरावे गोळा करता आले.
				2. संशोधनाच्या विविध पद्धती समजतील.	
				3. प्रत्यक्ष संशोधन करताना वरील अभ्यासाचा आधार घेता येईल.	
				4. संशोधनाच्या विविध अभ्यास क्षेत्रांची माहिती होईल.	
				5. संशोधनाचा आराखडा तयार करता येईल. संशोधनास पूरक पुरावे गोळा करता येतील.	
				6. संशोधन दृष्टी विकसित होईल तसेच चिकित्सक दृष्टी विकसित होईल.	
32.	**M.A. I**	**II**	अर्वाचीन मराठी वाड्मयाचा इतिहास (इ.स. 1920 ते 2010) MAR 551 MJ	1. इ.स. १९२०ते२०१०या कालखंडातील वाड्मयेतिहासाच्या स्वरूपाचा विद्यार्थ्यांना परिचय होईल	या अभ्यासक्रमात विद्यार्थ्यांना .स. १९२०ते२०१०या कालखंडातील वाड्मयेतिहासाच्या स्वरूपाचा विद्यार्थ्यांना परिचय झाला. अव्वल इंग्रजी कालखंडातील
				2. अव्वल इंग्रजी कालखंडातील साहित्याच्या	

				प्रेरणा, प्रवृत्ती, स्वरूप यांचे विवेचन करता येईल. 3. इ.स. १९२०ते२०१०या कालखंडातील साहित्याचे स्वरूप विशद करता येईल. 4. इ.स. १९२०ते२०१० या कालखंडातील साहित्याच्या प्रेरणा प्रवृत्ती यांचे विश्लेषण करता येईल. 5. इ.स. १९२०ते२०१०या कालखंडातील साहित्याची कारणमीमांसा करता येईल. 6. इ.स. १९२०ते २०१०या कालखंडातील साहित्यनिर्मितीच्या प्रेरणा, प्रवृत्ती लक्षात येऊन विद्यार्थ्यांना साहित्यनिर्मिती आणि विश्लेषण करता येईल.	साहित्याच्या प्रेरणा, प्रवृत्ती, स्वरूप यांचे विवेचन करता आले. इ.स. १९२०ते२०१०या कालखंडातील साहित्याचे स्वरूप विशद करता आले. इ.स. १९२०ते२०१० या कालखंडातील साहित्याच्या प्रेरणा प्रवृत्ती यांचे विश्लेषण करता आले. .स. १९२०ते२०१०या कालखंडातील साहित्याची कारणमीमांसा करता आली. इ.स. १९२०ते २०१०या कालखंडातील साहित्यनिर्मितीच्या प्रेरणा, प्रवृत्ती लक्षात येऊन विद्यार्थ्यांना साहित्यनिर्मिती आणि विश्लेषण करता आले.
33.	**M.A. I**	**II**	समाजभाषाविज्ञान MAR 552 MJ	1. समाजभाषाविज्ञानाचे स्वरूप व संकल्पना स्पष्ट करता येईल. 2. समाजभाषाविज्ञानाची व्याप्ती, स्वरूप, सिद्धांत, महत्त्व व मर्यादा विशद करता येतील. 3. समाजभाषाविज्ञानाच्या ज्ञानातून स्थानिक भाषांचा अभ्यास करता येईल. 4. भारतीय भाषांचे समाजभाषाविज्ञानाच्या अध्ययनाच्या दृष्टीकोनातून वर्गीकरण करता येईल. 5. स्त्रिया, पुरुष, मुले, युवक व वृद्धाच्या भाषेचे मूल्यमापन करता येईल. 6. विविध भारतीय भाषा व बोलीभाषावर	या अभ्यासक्रमात विद्यार्थ्यांना समाजभाषाविज्ञानाचे स्वरूप व संकल्पना स्पष्ट करता आले. समाजभाषाविज्ञानाची व्याप्ती, स्वरूप, सिद्धांत, महत्त्व व मर्यादा विशद करता आल्या. समाजभाषाविज्ञानाच्या ज्ञानातून स्थानिक भाषांचा अभ्यास करता आला. भारतीय भाषांचे समाजभाषाविज्ञानाच्या अध्ययनाच्या दृष्टीकोनातून वर्गीकरण करता आले. स्त्रिया, पुरुष, मुले, युवक व वृद्धाच्या भाषेचे मूल्यमापन करता आले. विविध भारतीय भाषा व बोलीभाषावर आधारित प्रकल्प तयार करता आले.

				आधारित प्रकल्प तयार करता येतील.	
34.	**M.A. I**	**II**	प्रसारमाध्यमासाठी लेखन कौशल्ये MAR 553 MJ	1. प्रसारमाध्यमासाठी लेखन कौशल्याचा परिचय होईल. 2. मराठीचे प्रसारमाध्यमांसाठी लेखन या क्षेत्रातील उपयोजन ज्ञात होईल. 3. विविध माध्यमासाठी उपयुक्त लेखनतंत्र अवगत होईल. त्याचे उपयोजन करता येईल. 4. विविध माध्यमातील आकृतिबंधाचे स्वरूप अवगत होईल. 5. विद्यार्थ्यांना प्रसारमाध्यमांसाठी लेखन या क्षेत्राचा परिचय होईल. 6. विद्यार्थी प्रसारमाध्यमांसाठी लेखनकौशल्ये आत्मसात करतील.	या अभ्यासक्रमात विद्यार्थ्यांना प्रसारमाध्यमासाठी लेखन कौशल्याचा परिचय झाला. मराठीचे प्रसारमाध्यमांसाठी लेखन या क्षेत्रातील उपयोजन ज्ञात झाले. विविध माध्यमासाठी उपयुक्त लेखनतंत्र अवगत झाले. विद्यार्थ्यांना प्रसारमाध्यमांसाठी लेखन या क्षेत्राचा परिचय झाला.
35.	**M.A. I**	**II**	प्रसारमाध्यमासाठी लेखनकौशल्ये MAR 553 MJP	1. प्रसारमाध्यमासाठी लेखनकौशल्यांचा परिचय होईल. 2. मराठीचे प्रसारमाध्यमांसाठी लेखन या क्षेत्रातील उपयोजन ज्ञात होईल. 3. विविध माध्यामासाठी उपयुक्त लेखनतंत्र अवगत होईल. त्याचे उपयोजन करता येईल. 4. विविध माध्यामातील आकृतिबंधाचे स्वरूप अवगत होईल. 5. विद्यार्थ्यांना प्रसारमाध्यमांसाठी लेखन या क्षेत्राचा परिचय होईल. 6. विद्यार्थी प्रसारमाध्यमांसाठी लेखन कौशल्ये	या अभ्यासक्रमात विद्यार्थ्यांना प्रसारमाध्यमासाठी लेखनकौशल्यांचा परिचय झाला. मराठीचे प्रसारमाध्यमांसाठी लेखन या क्षेत्रातील उपयोजन ज्ञात झाले. विविध माध्यामासाठी उपयुक्त लेखनतंत्र अवगत झाले. विविध माध्यामातील आकृतिबंधाचे स्वरूप अवगत झाले. विद्यार्थ्यांना प्रसारमाध्यमांसाठी लेखन या क्षेत्राचा परिचय झाला.

				आत्मसात करतील.	
36.	**M.A. I**	**II**	नियतकालिकांचे स्वरूप आणि संपादन MAR 554 MJP	1. नियतकालिकांचे स्वरूप आणि संपादन यांची माहिती होईल. 2. नियतकालिकांच्या संपादनासाठी आवश्यक असलेली कौशल्ये प्राप्त होतील. 3. नियतकालिकांचे संपादन करता येईल. 4. नियतकालिकांच्या संपादनासाठी आवश्यक असलेली कौशल्ये अंगीकारता येतील. 5. नियतकालिकांच्या संपाद नप्रक्रियेत आवश्यक कौशल्याचा परिस्थितीनुरूप वापर करता येईल. 6. नियतकालिकांच्या संपादन प्रक्रियेत नाविन्यपूर्णता आणता येईल.	या अभ्यासक्रमात विद्यार्थ्यांना नियतकालिकांचे स्वरूप आणि संपादन यांची माहिती मिळाली. नियतकालिकांच्या संपादनासाठी आवश्यक असलेली कौशल्ये प्राप्त झाली. नियतकालिकांचे संपादन करता आले. नियतकालिकांच्या संपादनासाठी आवश्यक असलेली कौशल्ये अंगीकारता आली. नियतकालिकांच्या संपाद नप्रक्रियेत आवश्यक कौशल्याचा परिस्थितीनुरूप वापर करता आला. नियतकालिकांच्या संपादन प्रक्रियेत नाविन्यपूर्णता आणता आली.
37.	**M.A. I**	**II**	साहित्यप्रवाहांचा अभ्यास: आदिवासी साहित्य आणि स्त्रीवादी साहित्य MAR 560 MJ	1. साठोत्तरी वाङ्मयीन प्रवाहाविषयी ज्ञान प्राप्त होईल. 2. साठोत्तरी वाडमयीन प्रवाहांचा उगम आणि विकास स्पष्ट होईल. 3. साठोत्तरी आणि त्यापूर्वीच्या साहित्याच्या तौलनिक अभ्यासाची क्षमता विकसित होईल. 4. साहित्यकृतींचे साठोत्तरी वाङ्मयीन प्रवाहामध्ये वर्गीकरण क्षमता विकसित होईल. 5. साहित्यकृतींचे साठोत्तरी वाङ्मयीन प्रवाहामध्ये मूल्यमापन करण्याची क्षमता	या अभ्यासक्रमात विद्यार्थ्यांना साठोत्तरी वाङ्मयीन प्रवाहाविषयी ज्ञान प्राप्त झाले. साठोत्तरी वाडमयीन प्रवाहांचा उगम आणि विकास स्पष्ट झाला. साठोत्तरी आणि त्यापूर्वीच्या साहित्याच्या तौलनिक अभ्यासाची क्षमता विकसित झाली. साहित्यकृतींचे साठोत्तरी वाङ्मयीन प्रवाहामध्ये वर्गीकरण क्षमता विकसित झाली. या प्रवाहामध्ये लेखन करण्याचे कौशल्ये व त्या अनुषंगाने रोजगाराच्या संधी उपलब्ध होण्याच्या दृष्टीने क्षमता विकसित झाली.

				विकसित होईल.	
				6. या प्रवाहामध्ये लेखन करण्याचे कौशल्ये व त्या अनुषंगाने रोजगाराच्या संधी उपलब्ध होण्याच्या दृष्टीने क्षमता विकसित होईल.	
38.	**M.A. I**	**II**	व्यावसायिक प्रशिक्षण क्षेत्रभेट MAR 560 MJ	1. प्रकाशन संस्थेची कार्यप्रक्रिया माहिती होईल. 2. छपाईतंत्र प्रक्रिया माहिती होईल. 3. बांधणीतंत्राची माहिती होईल. 4. साहित्यसंस्थांचे कार्य प्रत्यक्ष अनुभवता येईल. 5. विविध प्रसारमाध्यामामध्ये रोजगारक्षमता विकसित होईल. 6. ग्रंथविक्रीची माहिती व त्या अनुषंगाने रोजगारक्षमता विकसित होईल.	या अभ्यासक्रमात विद्यार्थ्यांना प्रकाशन संस्थेची कार्यप्रक्रिया माहिती झाली. छपाईतंत्र प्रक्रिया, बांधणीतंत्राची माहिती झाली. साहित्यसंस्थांचे कार्य प्रत्यक्ष अनुभवता आले. विविध प्रसारमाध्यामामध्ये रोजगारक्षमता विकसित झाल्या. ग्रंथविक्रीची माहिती व त्या अनुषंगाने रोजगारक्षमता विकसित झाल्या.
39.	**M.A. II**	**III**	प्रसारमाध्यमांसाठी लेखनकौशल्ये 40491	1. माहितीपटासाठी लेखनकौशल्यांची ओळख करून देणे. 2. चित्रपटमाध्यमासाठी आवश्यक कौशल्ये विकसित करणे. 3. लिखित स्वरूपातील नवमध्यामासाठी लेखनकौशल्ये विकसित करणे. 4. दृकश्राव्य स्वरूपाच्या नवसमाजमाध्यमासाठी लेखनकौशल्ये विकसित करणे.	या अभ्यासक्रमात विद्यार्थ्यांना माहितीपटासाठी लेखनकौशल्यांची ओळख झाली. चित्रपटमाध्यमासाठी आवश्यक कौशल्ये विकसित झाली. लिखित स्वरूपातील नवमध्यामासाठी लेखनकौशल्ये विकसित झाली. दृकश्राव्य स्वरूपाच्या नवसमाजमाध्यमासाठी लेखनकौशल्ये विकसित झाली.
40.	**M.A. II**	**III**	साहित्य संशोधन 40492	1. संशोधनाची संकल्पना, प्रयोजने आणि विविध संशोधनपद्धतीचा मागोवा घेणे. 2. वाडमयीन संशोधनाच्या विविध	या अभ्यासक्रमात विद्यार्थ्यांना संशोधनाची संकल्पना, प्रयोजने आणि विविध संशोधनपद्धतीचा मागोवा घेता आला.

				अभ्यासक्षेत्रांचा परिचय करून देणे. 3. आंतरविद्याक्षेत्रीय संशोधनाचे स्वरूप आणि महत्त्व समजावून सांगणे. 4. मराठी साहित्य संशोधकांच्या परंपराचा वेध घेणे.	वाडमयीन संशोधनाच्या विविध अभ्यासक्षेत्रांचा परिचय झाला. आंतरविद्याक्षेत्रीय संशोधनाचे स्वरूप आणि महत्त्व समजले. मराठी साहित्य संशोधकांच्या परंपराचा वेध घेता आला.
41.	**M.A. II**	**IV**	नेमलेल्या अर्वाचीन साहित्यकृतीचा अभ्यास 40493	अर्वाचीन कालखंडातील साहित्य प्रकार संकल्पना व स्वरूप समजावून सांगणे. अर्वाचीन कालखंडातील नेमलेल्या साहित्यकृतीचा परिचय करून देणे. नेमलेल्या साहित्यकृतीमधील वाङमयीन मूल्ये आणि जीवनमूल्ये यांचा शोध घेणे. नेमलेल्या साहित्यकृतींचे विश्लेषण आणि मूल्यमापन करणे.	या अभ्यासक्रमात विद्यार्थ्यांना अर्वाचीन कालखंडातील साहित्य प्रकार संकल्पना व स्वरूप समजले. अर्वाचीन कालखंडातील नेमलेल्या साहित्यकृतीचा परिचय झाला. नेमलेल्या साहित्यकृतीमधील वाङमयीन मूल्ये आणि जीवनमूल्ये यांचा शोध घेता आला. नेमलेल्या साहित्यकृतींचे विश्लेषण आणि मूल्यमापन करता आले.
42.	**M.A. II**	**IV**	लोकसाहित्याची मूलतत्वे आणि मराठी लोकसाहित्य 40494	लोकसाहित्यातील विविध प्रकार समजावून सांगणे. लोकसाहित्याचे विविध कलाविष्कार अभ्यासणे. मराठी लोकसाहित्याचे कलात्मक सौदर्य अभ्यासणे. लोकसाहित्यातील सामाजिक, धार्मिक, सांस्कृतिक जाणीवा स्पष्ट करणे.	या अभ्यासक्रमात विद्यार्थ्यांना लोकसाहित्यातील विविध प्रकार समजावून सांगता आले. लोकसाहित्याचे विविध कलाविष्कार अभ्यासता आले. मराठी लोकसाहित्याचे कलात्मक सौदर्य अभ्यासता आले. लोकसाहित्यातील सामाजिक, धार्मिक, सांस्कृतिक जाणीवा स्पष्ट करता आल्या.

DEPARTMENT OF HINDI

Sr. No.	Class	Sem.	Subject With Code	CO	Attainments
1	FYBA	I	Vaikalpik Hindi Prashnapatra-IA (11092)	CO-1 साहित्य एवं सामाजिक गतिविधियों के माध्यम से छात्रो की बौद्धिक क्षमता को विकसित करना I CO-2 हिंदी कथा साहित्य का अध्ययन एवं अवलोकन हुआ I	1.साहित्य की कतिपय विधओं से छात्र परिचित हुए I
2	FYBA	II	Vaikalpik Hindi Prashnapatra-IB (12092)	CO-3 व्यक्तिमत्व विकास की दृष्टि से भाषा साहित्य का अध्ययन किया I. CO-4 हिंदी साहित्य के प्रमुख साहित्यकारों की जानकारी देते हुए उनके व्यक्तित्व से छात्रों को प्रेरणा हुई I	2.साहित्य और समाज के दृष्टिकोण को समझा गया I 3.हिंदी के प्रमुख रचनाकारों से छात्र भलीभाति परिचित हुए I
3	SYBA (G-2)	III	Aadhunik Kavya Tatha Vyangya Sahitya (23093)	CO-1 हिंदी कहानी के तत्वों का अध्ययन करते हुए कथा के विविध आयाम अवगत हुए I. CO-2 हिंदी उपन्यास साहित्य का परिचय हुआ उपन्यास के तत्वों को समझकर उपन्यास को समझा I	1.हिंदी कहानी विधा से छात्र परिचित हुए I 2. कहानी के प्रमुख तत्वों को समझा गया I 3.हिंदी उपन्यास का विकासक्रम तथा प्रमुख चर्चित उपन्यासों का अध्ययन किया गया I

4.	SYBA (G-2)	IV	Aadhunik Kavya Tatha Natak (24093)	CO-3 हिंदी नाटक की विकास यात्रा I CO-4 हिंदी नाटक साहित्य का परिचय हुआ नाटक के तत्वों को समझा I CO-5 हिंदी नाटक के विविध आयामों का सामान्य परिचय-नुक्कड़ नाटक आदि	4.हिंदी नाटकों का विकासक्रम तथा प्रमुख चर्चित नाटकों का अध्ययन किया गया I 5. नाटक की कथावस्तु एवं प्रमुख नाटककारो का परिचय दिया गया I
5 6	SYBA (S-1) SYBA (S-1)	III IV	Kavyashastra (23091) Kavyashastra (24091)	CO-1 काव्य के तत्वों को समझा गया CO-2 काव्य के हेतु एवं प्रयोजन का आकलन हुआ I CO-3 भारतीय काव्यशास्त्र के विद्वानों को समझने का प्रयास किया I CO-4 काव्य के विभिन्न गुणों की चर्चा I	1.भारतीय तथा पाश्चात्य काव्य शास्त्र के विद्वानों की परिभाषा का अवलोकन किया I 2.काव्य के हेतु,काव्य के तत्वों को समझा गया I 3. काव्य के विभिन्न गुणों की चर्चा I
7	SYBA (S-2)	III IV	Madhyayugin Hindi Kavya tatha Upanyas (23092) Madhyayugin Hindi Kavya tatha Natak	CO-1 मध्ययुगीन हिंदी साहित्य के कवियों का सामान्य परिचय अवगत हुआ I CO-2 संत काव्य परंपरा का अनुसरण I CO-3 भक्ति आन्दोलन एवं प्रमुख संत I	1.मध्ययुगीन काव्य का परिचय I 2. भक्ति आन्दोलन का अध्ययन I 3.प्रमुख भक्त कवि-सूरदास,तुलसीदास,मीराबाई का विशेष परिचय I

8	SYBA (S-2)		(24092)	CO-4 कवियों का योगदान को समझा I कबीर,सूरदास,मीराबाई,बिहारी आदि के साहित्य का अध्ययन I	4.कवि बिहारी,रहीम,आदि रीतिकालीन संत कवियों का साहित्यिक परिचय से अवगत I
9	SYBA (SEC)	III	Anuvad Svarup evam Vyavhar (23096)	CO-1 अनुवाद का स्वरूप एवं व्याप्ति का अध्ययन किया I CO-2 अनुवादक के गुणों को समझने का प्रयास किया I	1.अनुवाद की परिभाषा एवं स्वरूप का अध्ययन किया गया I 2..अनुवाद के गुणों का अध्ययन I
10	SYBA (SEC)	IV	Madhyamlekhan (24096)	CO-3 माध्यम लेखन का स्वरूप समझते हुए उसकी उपयोगिता का अध्ययन किया CO-4 ब्लॉग लेखन,संवाद लेखन की कला का अध्ययन किया I	3.माध्यम का स्वरूप एवं परिचय I 4. ब्लॉग लेखन,संवाद लेखन की कला के कतिपय स्वरूप को समझा गया I
11	SYBA (MIL)	III	Hindi Bhasha Shikshan (23012)	CO-1 भाषा एवं व्यवहार के कौशल्य को समझागया I CO-2 हिंदी वर्णमाला का अध्ययन हुआ	1.हिंदी भाषा शिक्षण के विविध कौशल्य का अध्ययन किया I 2.हिंदी व्याकरण के प्रमुख नियमो का अध्ययन किया गया I
12	SYBA (MIL)	IV	Hindi Bhasha Shikshan (24012)	CO-3 प्रमुख लघुकथा के माध्यम से गीत लेखन के लिए छात्रों को प्रेरित किया I CO-4 लघुकथा द्वारा श्रवण,संवाद,वाचन,लेखन आदि कौशल को विकसित किया गया I	3. प्रमुख लघुकथा के माध्यम से गीत लेखन के लिए छात्रों को प्रेरित किया I 4. श्रवण,संवाद,वाचन,लेखन आदि कौशल को विकसित किया गया I
13	TYBA	V	KathetarVidhaye	CO-1 संस्मरण विधा को समझा गया I	1.संस्मरण का सामान्य परिचय I

	(G-3)		(35093)	CO-2 रेखाचित्र की परिभाषा,स्वरूप का आकलन किया I CO-3 छात्रों में सभा,इतिवृत्त आदि लेखन कौशल्य को विकसित करने का प्रयास हुआ	2. हिदी के मुख संस्मरणों का अध्ययन I 3. छात्रों में सभा,इतिवृत्त आदि लेखन कौशल्य को विकसित करने का प्रयास हुआ I
14	TYBA (G-3)	VI	Gazal Vidha (36093)	CO-4 छात्रों में वार्ता-लेखन कौशल्य दृष्टि निर्माण करने का प्रयास हुआ I	4. छात्रों में वार्ता-लेखन कौशल्य दृष्टि निर्माण करने का प्रयास हुआ I
15	TYBA (S-3)	V	Hindi Sahitya Ka Itihas (35091)	CO-1 साहित्य का काल विभाजन एवं नामकरण की प्रक्रिया को समझा I CO-2 आदिकाल,भक्तिकाल,रीतिकाल की प्रवृत्तियों का सामान्य परिचय I	1.साहित्य और समाज के दृष्टिकोण को समझा गया I 2. आदिकाल,भक्तिकाल,रीतिकाल की प्रवृत्तियों का सामान्य परिचय I 3.आदि,भक्ति तथा रीतिकाल की परिस्थितियों का सामान्य अध्ययन I
16	TYBA (S-3)	VI	Aadhunik Kaal (36091)	CO-3 संत काव्य परंपरा का अनुसरण I CO-4 आधुनिक काल के प्रमुख कवि एवं साहित्यकरों के व्यक्तित्व का अध्ययन किया I CO-5 छायावादी काव्यधारा का सामान्य परिचय	4.आधुनिक काल का सामान्य परिचय 5. आधिक काल में नीहित भारतेंदु का परिचय I 6.द्विवेदी युग,छायावादी काव्यधारा I

17 18	TYBA (S-4) TYBA (S-4)	V VI	BhashaVigyan (35092) BhashaVigyan (36092)	CO-1 भाषा का स्वरूप एवं परिभाषा का अध्ययन किया CO-2 भाषा के विविध रूप का अध्ययन किया CO-3 स्वन विज्ञान का अध्ययन I CO-4 रूप विज्ञान,रूपिम के भेद I CO-5 वाकय,विज्ञान,अर्थ विज्ञान का अध्ययन I	1.भाषा के विविध रूपों का अध्ययन विभिन्न विद्वानों द्वारा भाषा की परिभाषा का अध्ययन I 2.भाषा विज्ञान की विभिन्न शाखाओ का अध्ययन हुआ I 3.स्वान विज्ञान,रूप विज्ञान के स्वरूप तथा भाषिक संरचना का अध्ययन I 4.वाकय विज्ञान में वाकय का स्वरूप,अर्थ,परिभाषाएं आदि का अध्ययन किया गया I 5.रूपिम के भेदों की चर्चा एवं अध्ययन किया गया I

DEPARTMENT OF ENGLISH

SN	Class	Sem	Subject with Code	CO	Attainments
1	F.Y.B.A.	**I**	Compulsory English 11001	After studying the paper successfully, the learners will be able to- • CO1. Expose to the best examples of prose and poetry in English so that they realize the beauty and communicative power of English. • CO2. Realize the beauty and communicative power of English by learning the prescribed prose and poetry. • CO3. Instill human values. • CO4. Develop the character building. • C04. Prepare to be responsible citizens of the world.	Having completed this course, students can identify vocabulary types, recognize lesson themes, recite poems, summarize them, describe characters in short stories, and use language effectively in everyday conversations.
2	F.Y.B.A.	**II**	Compulsory English 12001	• After studying the paper successfully, the learners will be able to- • CO1. Develop the abilities to appreciate ideas and think critically. • CO2. Enhance employability by developing linguistic competence and communicative skills. • CO3. Revise and reinforce the structures already learnt in the previous stages of learning.	

				• CO4. Acquire the skills of understanding and using English language correctly by learning grammar. • CO4. Communicate in English in different situations.	
3	F.Y.B.A.	**I**	Optional English 11331	• After studying the paper successfully, the learners will be able to- • CO1. Expose to the basics of literature and language. • CO2. Expose to develop an integrated view about language and literature in them. • CO3. Acquaint with minor forms of literature in English especially short stories, essay and poetry. • CO4. Appreciate the creative use of language in literature.	Having completed this course, students can identify literature genres, interpret poems, evaluate short stories, analyze prose, understand language functions, and examine the English sound system.
4	F.Y.B.A.	II	Optional English 12331	• CO1. Learn the basics of phonology of English. • CO2. Do the English pronunciation and speak English correctly. • CO3. Prepare for the detailed study and understanding of literature and language. • CO4. Enhance the job potential by improving their language skills.	

5	S.Y.B.A.	III	Compulsory English 23001	• After studying the paper successfully, the learners will be able to- • CO1. Expose to the best examples of literature in English and to contribute to their emotional quotient as well as independent thinking. • CO2. Instill universal human values through best pieces of literature in English. • CO3. Develop effective communication skills by developing ability to use right words in the right context. • CO4. Enhance the employability of the students. • CO5. Revise and reinforce the learning of some important areas of grammar for better linguistic competence.	Having completed this course, students can describe various types of characters, situations, and values, summarize prose and poetry, and use language effectively in daily life. They can classify and transform sentences, apply vocabulary in communication, and compose letters, paragraphs, and reports.
6	S.Y.B.A.	IV	Compulsory English 24001	• CO1. Expose to the best examples of literature in English and to contribute to their emotional quotient as well as independent thinking. • CO2. Instill universal human values through best pieces of literature in English. • CO3. Develop effective communication skills by developing ability to use right words in the right context.	

				• CO4. Enhance the employability of the students. • CO5. Revise and reinforce the learning of some important areas of grammar for better linguistic competence. •	
7	S.Y.B.A.	III	Skill Enhancement Course-SEC-1A Old General English (G-2) 23333	• After studying the paper successfully, the learners will be able to- • CO1. Familiarize with the various components of language. • CO2. Develop overall linguistic competence of the students. • CO3. Introduce to some advanced areas of language study. • • CO4. Prepare to go for detailed study and understanding of language. •	Having completed this course, students can identify and explain key language components, such as phonology, morphology, and syntax. They have enhanced their linguistic competence, can analyze advanced topics like semantics and pragmatics, and are prepared for in-depth studies in linguistics and language theory.
8	S.Y.B.A.	IV	Skill Enhancement Course-SEC-1A Old General English (G-2) 24333	• After studying the paper successfully, the learners will be able to- • CO1. Familiarize with the various components of language. • CO2. Develop overall linguistic competence of the students. • CO3. Introduce to some advanced areas of language study. • CO4. Prepare to go for detailed study and understanding of language.	

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9	S.Y.B.A.	III	Discipline Specific Course (DSC-1A) (Old Special Paper-I) Appreciating Drama 23331	• After studying the paper successfully, the learners will be able to- • CO1. Introduce to Drama as a major form of literature. • CO2. Introduce minor forms of Drama. • CO3. Acquaint and enlighten regarding the literary and the performing dimensions of drama. • CO4. Acquaint and familiarize with the elements and the types of Drama. • CO5. Encourage to make a detailed study of a few sample masterpieces of English Drama from different parts of the world. •	Having completed this course, students can recognize the significance of drama, identify minor forms like one-act plays and skits, and analyze both literary and performative aspects of dramatic works. They understand and classify key elements of drama, such as tragedy and

10	S.Y.B.A.	IV	Discipline Specific Course (DSC-1A) (Old Special Paper-I) Appreciating Drama 24331	• After studying the paper successfully, the learners will be able to- • CO1. Encourage to make a detailed study of a few sample masterpieces of English Drama from different parts of the world. • CO2. Develop interest to appreciate and analyze drama independently. • CO3. Enhance awareness regarding aesthetics of Drama and to empower them to evaluate drama independently.	comedy, and can critically evaluate and compare masterpieces from various global traditions.
11	S.Y.B.A.	III	Discipline Specific Course (DSC-2A) (Old Special Paper-II) Appreciating Poetry 23332	• After studying the paper successfully, the learners will be able to- • CO1. Acquaint with the terminology in poetry criticism (i.e. the terms used in appreciation and critical analysis of poems). • CO2. Encourage to make a detailed study of a few sample masterpieces of English poetry. • CO3. Enhance awareness in the aesthetics of poetry and to	Having completed this course, students are now able to use and explain key terms in poetry criticism and analysis. They can analyze and interpret selected masterpieces of English poetry and evaluate the aesthetic qualities of poetry, engaging in critical appreciation.

				empower them to read, appreciate and critically evaluate poetry independently.	
12	S.Y.B.A.	IV	Discipline Specific Course (DSC-2A) (Old Special Paper-II) Appreciating Poetry 24332	• After studying the paper successfully, the learners will be able to- • CO1. Acquaint with the terminology in poetry criticism (i.e. the terms used in appreciation and critical analysis of poems). • CO2. Encourage to make a detailed study of a few sample masterpieces of English poetry. • CO3. Enhance awareness in the aesthetics of poetry and to empower them to read, appreciate and critically evaluate poetry independently.	
13	S.Y.B.A.	III	Skill Enhancement Course- (SEC-2A & 2B) "A Certificate Course in Skill Development" 23334	• After studying the paper successfully, the learners will be able to- • CO1. Enhance the skill of using English for everyday communication • CO2. Acquaint with the verbal and nonverbal communication. • CO3. Create opportunities to access exposure of speaking in various contexts. • CO4. Acquaint and familiarize with soft skills.	Having completed this course, students can effectively use English for routine conversations and diverse contexts, understand both verbal and nonverbal communication, and apply essential soft skills such as teamwork,

				• CO5. Develop interest among the students to interact in English.	leadership, and adaptability.
14	S.Y.B.A.	IV	Skill Enhancement Course- (SEC-2A & 2B) "A Certificate Course in Skill Development" 24334	• After studying the paper successfully, the learners will be able to- • CO1. Enhance the skill of using English for everyday communication. • CO2. Acquaint with the verbal and nonverbal communication. • CO3. Create opportunities to access exposure of speaking in various contexts. • CO4. Acquaint and familiarize with soft skills. • CO5. Develop interest among the students to interact in English.	
15	T.Y.B.A.	V	Compulsory English 35001	• After studying the paper successfully, the learners will be able to- • CO1. Familiarize with some excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English. • CO2. Become competent and effective users of English in real life situations. • CO3. Contribute to the overall personality development. • CO4. Instill humanitarian values and foster sympathetic attitude.	Having completed this course, students can appreciate and articulate the beauty of English through prose and poetry analysis, use English effectively in real-life scenarios, and exhibit personal growth through improved communication and critical

				• CO5. Train in practical writing skills required in work environment. • CO6. Enhance employability through imparted knowledge of some essential soft skills. •	thinking. They also reflect humanitarian values and show a sympathetic attitude in their interactions.
16	T.Y.B.A.	VI	Compulsory English 36001	• After studying the paper successfully, the learners will be able to- • CO1. Familiarize with some excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English. • CO2. Become competent and effective users of English in real life situations. • CO3. Contribute to the overall personality development. • CO4. Instill humanitarian values and foster sympathetic attitude. • CO5. Train in practical writing skills required in work environment. • CO6. Enhance employability through imparted knowledge of some essential soft skills.	
17	T.Y.B.A.	V	Skill Enhancement Course (SEC 1-C & SEC 1-D) (Old G-3) Enhancing Employability Skills	• After studying the paper successfully, the learners will be able: • CO1. Be aware of career opportunities available to them.	Having completed this course, students can explore career

			35333	• CO2. Identify the career opportunities suitable to them. • CO3. Understand the use of English in different careers. • CO4. Develop competence in using English for the career of their choice. • CO5. Enhance skills required for their placement. • CO6. Use English effectively in the career of their choice. • CO7. Exercise verbal as well as nonverbal communication effectively for their career. •	opportunities aligned with their skills and interests, assess and select career paths, and understand English usage in professional contexts. They have developed essential employability skills such as resume writing, interview techniques, and professional communication, and can apply their English language skills confidently in their careers.
18	T.Y.B.A.	VI	Skill Enhancement Course (SEC 1-C & SEC 1-D) (Old G-3) Enhancing Employability Skills 36333	• After studying the paper successfully, the learners will be able: • CO1. Be aware of career opportunities available to them. • CO2. Identify the career opportunities suitable to them. • CO3. Understand the use of English in different careers. • CO4. Develop competence in using English for the career of their choice. • CO5. Enhance skills required for their placement. • CO6. Use English effectively in the career of their choice. • CO7. Exercise verbal as well as	

				nonverbal communication effectively for their career.	
19	T.Y.B.A.	V	Discipline Specific Elective (DSE-1C&DSE-1D) (Old S-3) Appreciating Novel 35331	• After studying the paper successfully, the learners will be able to: • CO1. Introduce to the basics of novel as a literary form. • CO2. Expose to the historical development and nature of novel. • CO3. Be aware of different types and aspects of novel. • CO4. Develop literary sensibility and sense of cultural diversity in students. • CO5. Expose to some of the best examples of novel.	Having completed this course, students can explain the basic elements and structure of the novel, classify and analyze its types and aspects, and demonstrate an understanding of literary sensibility and cultural diversity. They are also able to evaluate and appreciate significant works of fiction from various literary traditions.
20	T.Y.B.A.	VI	Discipline Specific Elective (DSE-1C& DSE-1D) (Old S-3) Appreciating Novel 36331	• After studying the paper successfully, the learners will be able to: • CO1. Introduce to the basics of novel as a literary form. • CO2. Expose to the historical development and nature of novel. • CO3. Be aware of different types and aspects of novel. • CO4. Develop literary sensibility and sense of cultural diversity in students. • CO5. Expose to some of the best examples of novel.	
21	T.Y.B.A.	V	Discipline Specific Elective (DSE-2C &	• After studying the paper successfully, the learners will be	Having completed this course,

			DSE-2D) (Old S-4) Introduction to Literary Criticism 35332	able to: • CO1. Introduce to the basics of literary criticism. • CO2. Become aware of the nature and historical development of criticism. • CO3. Become familiar with the significant critical approaches and terms. • CO4. Interpret literary works in the light of the critical approaches. • CO5. develop aptitude for critical analysis.	students can explain key concepts and principles of literary criticism, identify major critical approaches and terminology, apply these approaches to interpret literary works, and conduct in-depth critical analysis of texts.
22	T.Y.B.A.	VI	Discipline Specific Elective (DSE-2C & DSE-2D) (Old S-4) Introduction to Literary Criticism 36332	• After studying the paper successfully, the learners will be able to: • CO1. Introduce to the basics of literary criticism. • CO2. Become aware of the nature and historical development of criticism. • CO3. Become familiar with the significant critical approaches and terms. • CO4. Interpret literary works in the light of the critical approaches. • CO5. Develop aptitude for critical analysis.	
23	T.Y.B.A.	V	Skill Enhancement Course (SEC 2-C & SEC 2-D) Mastering Life Skills and Life	• After studying the paper successfully, the learners will be able:	

			Values 35334	• CO1. Equip with the social skills. • CO2. Train the students interpersonal skills. • CO3. Build self-confidence and communicate effectively. • CO4. Encourage the students to think critically. • CO5. Learn stress management and positive thinking. • CO6. Enhance leadership qualities. • CO7. Become aware about universal human values. • CO8. Develop overall personality.	Having completed this course, students have increased self-confidence, effective communication skills, critical thinking abilities, and enhanced leadership qualities, including decision-making, motivation, and team management.
24	T.Y.B.A.	VI	Skill Enhancement Course (SEC 2-C & SEC 2-D) Mastering Life Skills and Life Values 36334	• After studying the paper successfully, the learners will be able: • CO1. Equip with the social skills. • CO2. Train the students' interpersonal skills. • CO3. Build self-confidence and communicate effectively. • CO4. Encourage the students to think critically. • CO5. Learn stress management and positive thinking. • CO6. Enhance leadership qualities. • CO7. Become aware about universal human values. • CO8. Develop overall	

				personality.	
25	F. Y. B. Com.	I	Compulsory English 111	• CO1 Offer relevant and practically helpful pieces of prose and poetry to students so that they not only get to know the beauty and communicative power of English but also its practical application • CO2 Expose students to a variety of topics that dominate the contemporary socio-economic and cultural life	Having completed the course, students will appreciate literature and learn about different themes and cultures. They will improve their critical thinking and analysis skills regarding important global issues. Their communication skills will enhance through writing and presentations, helping them express their ideas clearly. Students will also become more creative and develop a love for reading and writing. Overall, they will grow into thoughtful and caring individuals who can make a positive difference in the world.
26	F. Y. B. Com.	II	Compulsory English 121	• CO1 Develop oral and written communication skills of the students so that their employability enhances • CO2 Develop overall linguistic competence and communicative skills of students	
27	F. Y. B. Com.	I	Additional English 117A	• CO 1 Expose students to a good blend of old and new literary extracts having various themes that are entertaining, enlightening and informative so that they realize the beauty and	Having completed the course, students will enjoy a variety of literary works and understand their themes and the beauty of the English language. They will learn about different cultural values and current global issues,

				communicative power of English	helping them develop empathy and understanding. Their critical thinking and analysis skills will improve through discussions about the texts. They will also enhance their communication skills through writing and presentations, making it easier to share their ideas. In the end, students will become thoughtful individuals who are ready to make a positive impact in the world.
28	F. Y. B. Com.	II	Additional English 127A	• CO1 Make students aware of the cultural values and the major problems in the world today • CO2 Develop literary sensibilities and communicative abilities among students	
29	S. Y. B. Sc	III	ENGLISH (Ability Enhancement Compulsory Course-AECC) 23221	• CO1 Introduce the use of English in multimedia • CO2 Acquaint the students with the language skills in multivalent contexts CO3 Acquaint and enlighten students regarding the speaking skill in various contexts	Having completed the course, students will be able to use English effectively in multimedia and different situations, improving their language skills. They will enhance their speaking abilities and develop advanced writing skills for specific purposes. Students will also learn important soft skills that are useful for their careers. The course will help close the gap between their current communication skills and what they need for the workplace. Lastly, students will learn to appreciate and analyze short stories and poetry, deepening their understanding of literature.
30	S. Y. B. Sc	IV	ENGLISH (Ability Enhancement Compulsory Course-AECC) 24321	• CO1 Acquaint and familiarize the students with advanced writing skills in different Contexts • CO2 Acquaint and familiarize the students with soft skills • CO3 Minimize the gap between the existing communicative skills of the students and the skills they require at professional level • CO4 Develop competence among the students to appreciate and analyze short stories and poetry	

31	S. Y. B. Sc (Computer Science)	III	ENGLISH AECC-II : Language Communication ─I 23922	• CO1 Introduce the use of English in multimedia • CO2 Acquaint the students with the language skills in multivalent contexts • CO3 Acquaint and enlighten students regarding the speaking skill in various contexts	Having completed the course, students will be able to use English effectively in multimedia and different situations, improving their language skills. They will enhance their speaking abilities and develop advanced writing skills for specific purposes. Students will also learn important soft skills that are useful for their careers. The course will help close the gap between their current communication skills and what they need for the workplace. Lastly, students will learn to appreciate and analyze short stories and poetry, deepening their understanding of literature.
32	S. Y. B. Sc (Computer Science)	IV	ENGLISH AECC-II : Language Communication ─II 24922	• CO1 Acquaint and familiarize the students with advanced writing skills in different Contexts • CO2 Acquaint and familiarize the students with soft skills • CO3 Minimize the gap between the existing communicative skills of the students and the skills they require at professional level • CO4 Develop competence among the students to appreciate and analyze short stories and poetry	

DEPARTMENT OF ECONOMICS

SN	Class	Sem	Subject with code	CO	Attainments
1	MA-II (2019)	3	Macro Economics Analysis-I EC-3001	To provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in real-life situations.	Ability develop to analyze and demonstrate knowledge of the basic theories/laws in macroeconomics.
				• To discuss the modern developments in macroeconomics.	• At the end of the course, the student should be able to evaluate macroeconomic concepts, models and its use in real life situations
2	MA-II (2019)	3	Growth & Development -I EC-3002	• To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc.	Ability to apply the concepts of economic growth and compare international comparison of economic development, etc.
				• To analyze and evaluate the obstacles in the process of economic growth and development	• Ability to analyze and demonstrate knowledge of the economic growth and development theories of economic growth and development
3	MA-II (2019)	3	Research Methodology- I EC-3003	• To enable an understanding of Research and its methods under various areas of economics.	Ability to develop, demonstrate and examine topics under Economics to pursue research.

				• To demonstrate the practical and the applied aspects of research in relation to Economics	• Ability to evaluate and examine subject areas in economics and explore possibilities of research
4	MA-II (2019)	3	DEMOGRAPHY EC-3004	• To provide an understanding of Demography and its application under various topics under economics.	• Ability to develop, demonstrate and examine various topics under Demography.
				• To demonstrate the practical and the applied aspects of Demography and the study of Population and its relation to Economics.	• Ability to evaluate and examine subject areas in economics bringing out the relation to population studies and demography.
5	MA-II (2019)	4	Macro I Economics Analysis II EC-4001	• To provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in various contexts.	• Ability to analyze and demonstrate knowledge of the basic theories/laws in economics- general equilibrium psychological law of consumption, etc.
				• To discuss the modern developments in macroeconomics.	• At the end of the course, the student should be able to evaluate macroeconomic concepts, models and its use in real life situations.

6	MA-II (2019)	4	Growth & Development II EC-4002	• To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc.	• Ability to analyze and demonstrate knowledge of the economic growth and development theories of economic growth and development
				• To analyze and evaluate the obstacles in the process of economic growth and development	• Ability analyze, evaluate and apply the growth and development concepts, role of human capital, etc. in real life situations
6	MA-II (2019)	4	Research Methodology - II EC-4003	• To enable an understanding of Research and its methods under various areas of economics.	• Ability to develop, demonstrate and examine topics under Economics to pursue research.
				• To demonstrate the practical and the applied aspects of research in relation to Economics	• Ability to evaluate and examine subject areas in economics and explore possibilities of research.
7	MA-II (2019)	4	ECONOMICS OF ENVIRONMENT EC-4004	• To develop an understanding of the economics of environment in the theoretical as well as practical context.	• Ability to analyze and evaluate the subject with reference to various aspects of the economics of environment.
				• To discuss various analytical tools to comprehend various environmental issues.	• Ability to develop an understanding of the economics of environment and various analytical tools to comprehend environmental issues

DEPARTMENT OF GEOGRAPHY

SN	Class	Sem	Subject With Code	CO	Attainments
1.	F. Y. B. A.	I	Gg110 (A): Physical Geography(11201)	1. Explain principal terms, definitions, Concept and theories of geomorphology.	The student now know the diversity of landforms
				2. Students Identify different Materials of the earth crust, rock types, and types of weathering, mass movements and types of slope.	Student can the earth crust, rock types, and types of weathering, mass movements
				3. Describe importance of latitude, longitude and the reasons why different countries have different time zone and date	Student can now able to identify different time zone and date
2.	F.Y.B.A	II	Gg110 (B): Human Geography(12201)	1. The student will understand the basic concepts of human geography.	Learner now can able to evaluate their own values, beliefs in relation to social standard of ethics.
				2. The course will also explain the causes of population growth.	Student can now analyze and evaluate causes of population growth
				3.The student will understand the process of urbanization	The Learner can understands growth of urbanization
3.	F.Y.B.Com	I	Commercial Geography (115C)	1. Keep students update with various economic activities in Geographical Environment	The Learner can understands growth of activities in Geographical Environment
4.	F.Y.B.Com	II	Commercial Geography (125C)	To acquaint learners to the correlations between Economic activities and Geographical factors.	The Learner can understands growth of economic activities
5.	S. Y. B. A.	III	Gg.220 (A): Geography of	1. To make students aware of the magnitude of problems and prospects in	Students understand the magnitude of problems and prospects in

			Maharashtra (S-1)I(23201)	Maharashtra.	Maharashtra.
				2. To acquaint students with Geography of our State.	Students came to know Geography of our State.
6.	S. Y. B. A.	IV	Gg.220 (B): Geography of Maharashtra (S-1) (24201)	1. To help students understand the inter relationship between the subject and the society.	Student understood inter relation between society
				2.To help students to understand the agriculture activities in Maharashtra	Students understand the types of farming in different area of Maharashtra
7.	S. Y. B. A.	III	Gg. 201 (A) Practical Geography-I (S-2) (23203)	1. To enable students to use various Scales and Projection Techniques in Geography.	Students are aware of the Scales and Projection Techniques in Geography.
				2To acquaint students with the utility of various Projections in Geographical knowledge.	Students know the know the utility of various Projections in Geographical knowledge.
				3. To explain the elementary and essential principles of practical work in Geography.	Students know the types of principles of practical work in Geography.
8.	SYBA	IV	Gg. 201 (B) Practical Geography-I Cartographic Techniques, Surveying and Excursion (24203)	1. To introduce the students to the basic and contemporary concepts in Cartography.	Students understand basic and contemporary concepts in Cartography.
				2. To acquaint the students with the utility and applications of various Cartographic Techniques.	Student can classify utility and applications of various Cartographic Techniques.
				3. To introduce the latest concepts regarding the modern cartography in the field of Geography.	Students learned concepts regarding the modern cartography in the field of Geography.

				4. To make students aware of the new techniques, accuracy and skills of Map Making.	Students can use techniques, accuracy and skills of Map Making.
9.	SYBA	III	: SEC Applied course of Disaster Management (23207)	1. Students are introduced to the basic concepts and fundamental structure of Disaster Management (DM).	Students lead about the concepts and fundamental structure of Disaster Management
10.	SYBA	IV	: SEC Applied course of Travel and Tourism (24207)	Students are introduce about various types of tourism	Students understood types of tourism
11.	SYBA	III	S. Y. B. A. Geography Course Gg-210 (A): Environment Geography- I, (General -2) (23204)	1. To create the awareness about dynamic environment among the student.	Students understood the environmental
				2. To acquaint the students with fundamental concepts of environment geography for development in different areas.	2. students understood the environmental concept
12.	SYBA	IV	Gg-210 (A): Environment Geography- I, (General -2) (24204)	1.To make aware students about the problems of environment, its utilization and conservation in the view of sustainable development	Students able to differentiate the issues related environment in society
				2. To acquaint students about the past, presents and future utility and potentials of natural resources.	1. students aware about limitation use of natural resources
13.	TYBA	V	Gg: 320 Geography of India (S-3)	1. Explain principal terms, definitions, nature and scope of Agriculture Geography	Student knows that definitions, nature and scope of Agriculture Geography

			(35201)		
				2. Discuss fundamental concept, land use, crops, agricultural production and Development, determinants of agricultural activities, physical determinants, and socio-economic determinants.	Students understood land use, crops, agricultural production and Development, determinants of agricultural activities, physical determinants, and socio-economic determinants.
14.	TYBA	VI	Gg: 320 Geography of India (S-3)(36201)	3. Discuss problems and prospects of agriculture with Indian examples.	Students know that problems and prospects of agriculture with Indian examples.
				4. Evaluate allied areas in agriculture and agricultural development.	Students understood the areas in agriculture and agricultural development.
15.	TYBA	V	Gg-301 Techniques of Spatial Analysis (S-4) (35203)	1. Identify different methods of Relief Representation.	Students understood the methods of Relief Representation.
				2.Describe basic of Statistical data and the skill of data representation	Students able to calculate Statistical data and the skill of data representation
16.	TYBA	VI	Gg-301 Techniques of Spatial Analysis (S-4) (36203)	3.Interpret topo sheet/ map, aerial photographs and analysis of topo sheet/ map, aerial Photographs	Student now able to interpret topo sheet/ map, aerial photographs and analysis of topo sheet/ map, aerial Photographs
17.	T.Y.B.A (G3)	V	Gg. 310 (A) Geography of Tourism- I(35204)	1. Students understand the history of Tourism.	Students understood the history of the tourism
				2. Students are introduced to the basic concepts in Tourism Geography.	Students understood the basic concepts in Tourism Geography.
				3. Gained knowledge different aspects of Tourism Geography.	Students can differentiate the aspect of tourism
18.	T.Y.B.A (G3)	VI	Gg. 310 (B) Geography of	Gained knowledge different aspects of Tourism Geography.	Students can differentiate the aspect of tourism

			Tourism- II(36204)		
				Students able to plan tourism activity	Students can plan tour
19.			SEC 2 C Research Methodology - I(35207)	1. Students developed the understanding of the basic concept of research.	Students able developed the understand of the basic concept of research.
				2. Students developed the understanding of the basic framework of sampling and data collection.	Developed the understanding of the basic framework of sampling and data collection.
20			SEC 2 C Research Methodology - II(36207)	Students Understand of the conducting survey on various issues and develop the Report writing skill of students.	Students able to survey on various issues and develop the Report writing skill of students.

DEPARTMENT OF POLITICAL SCIENCE

Sr. No.	Class	Sem.	Subject With Code	CO	Attainments
1	FYBA	I	Introduction to Indian Constitution (11161)	**CO-1** Understanding of basic concept of Indian Constitution **CO-2** Understanding of structure and functions of Indian Political Systems.	**Students adhere to the values of the Constitution while behaving in society.**
2	FYBA	I	Democracy, Election and Governance (12999)	**CO-1** To introduce the students meaning of democracy and the role of the governance.	**Students ask questions about their rights when acting in society.**
3	SYBA	III	An Introduction to Political Ideology (23164)	**CO-1** To study of power Politics **CO-2** To study the role of ideology	**Students take their political role in society according to the views of different political thinkers.**
4	SYBA	III	Western Political Thoughts (23161)	**CO-1** To know basic concept of Western Political Thought **CO-2** Major traditions of thought that have shaped political discourse in different parts of The world	**Students develop their own political views by comparing the views of different political thinkers.**
5	SYBA	III	Political Journalism (23162)	**CO-1** To Introduced The concept of Political Journalism **CO-2** To Developed interest in study of Political Journalism	**Students express their opinions about political journalism and visit various news papers to learn more about journalism.**
6	TYBA	V	Local Self Government in Maharashtra (35164)	**CO-1** To study of Local self Government **CO-2** To Study of Jhilha Parishad	**Students participate in meetings held in local self-government bodies and discuss issues.**
7	TYBA	V	Public Administration (35161)	**CO-1** Understand the Concept of Governance **CO-2** Knowledge of Bureaucracy	**While working in a government office, they do their work according to the rules there.**

8	**TYBA**	**V**	**International Relation (35162)**	**CO-1** Introduction of the various approaches to the study of international relation **CO-2** Knowledge of Post Second World War	**They understand the inter national issues facing India and express their views on them.**
9	**MA-II**	**III**	**Introduction to Constitution (30095)**	**CO-1** To acquaint students with the important features of the Constitution of India and with.The basic framework of Indian government	**Students adhere to the values of the Constitution while behaving in society.**
10	**MA-I**	**I**	**Human Rights (10091)**	CO-1 The students will be able to understand the value of human rights. CO-2 The students will be able to differentiate between different rights and will be able to understand the context in which these rights can be exercised.	**Students will behave well with others as they understand human rights.**
11	**FYBA**	**II**	**Introduction to Indian Constitution (12161)**	**CO-1** Knowledge of fundamental rights and duty. **CO-2** Understanding the role of cast and religion in Indian Politics	**Students adhere to the values of the Constitution while behaving in society.**
12	**FYBA**	**II**	**Democracy, Election and Governance (12999)**	**CO-1** To help them understand the various approaches to the study of democracy and Governance**.**	**Students ask questions about their rights when acting in society.**
13	**SYBA**	**IV**	**An Introduction to Political Ideology (24164)**	**CO-1** Role of different political ideologies and their impact in politics **CO-2** To study how to work political Ideology	**Students take their political role in society according to the views of different political thinkers.**
14	**SYBA**	**IV**	**Western Political Thoughts (24161)**	**CO-1** The great diversity of social contexts and philosophical visions	**Students develop their own political views by comparing the views of different political thinkers.**
15	**SYBA**	**IV**	**Political Journalism (24162)**	**CO-1** Awareness about various agencies of Political Journalism **CO-2** Understand interrelationship	**Students express their opinions about political journalism and visit various news papers to learn more**

				between the Communication Mediaand Power Politics	**about journalism.**
16	**TYBA**	**VI**	**Local Self Government in Maharashtra (36164)**	**CO-1** To Study of Panchayat Samiti & Gram Panchayat **CO-2** To Study of Municipal Corporation	**Students participate in meetings held in local self-government bodies and discuss issues.**
17	**TYBA**	**VI**	**Public Administration (36161)**	**CO-1** Introduction about various method of recruitment and training **CO-2** Generate Interest in budgetary process in India	**While working in a government office, they do their work according to the rules there.**
18	**TYBA**	**VI**	**International Relation (36162)**	**CO-1** Understanding of basic concept of International Politics **CO-2** Study of Various issue in international Politics	**They understand the inter national issues facing India and express their views on them.**
19	**MA-I**	**I**	**Human Rights (20091)**	CO-1 The students will be able to criticize how human rights operate in the context of global as well as Indian political order.	**Students will behave well with others as they understand human rights.**

DEPARTMENT OF COMMERCE

B. Com.					
Sr. No.	**Class**	**Sem.**	**Subject with Code**	**Course Outcome**	**Attainment of COs**
1	F. Y. B. Com	I	112- Financial Accounting	1. Students got knowledge of various accounting concepts 2. Students gained knowledge about accounting procedures, methods and techniques.	Having completed this course, students can voluntarily implement the recording of various business transactions and posting of primary entries in the ledgers.
2	F. Y. B. Com	I	114- Business Mathematics and Statistics	1. Students got prepared for competitive examinations. 2. Students understood the concept of Simple interest, compound interest and the concept of EMI. 3. Students got aware with the concept of shares and calculations of Dividend 4. Students understood the concept of population and sample. 5. Students upgraded their knowledge regarding the use of frequency distribution useful for make decision.	Having completed this course, students can solve basic and also advanced mathematical problems which are the part of daily business operations and other such mathematical problems which can be set in various competitive examinations. Students can now decide the best method to collect sample from the population for the analysis of any data. Students are now able to present the data so analyzed in the graphical way.
3	F. Y. B. Com	I	116- Consumer Protection and Business Ethics	1. Students got acquaint with concept of consumer and consumer movement. 2. The students got aware about consumer rights, duties and	Having completed this course, students can understand the difference between a business enquiry and a purchase order. They also know various right and duties

				mechanism for resolving their disputes.	of a consumer as stated in the consumer protection act.
4	F. Y. B. Com	II	122- Financial Accounting	1. Students gained knowledge about accounting procedures, methods and techniques. 2. Students have developed practical approach to accounts writing by using software package.	Having completed this course, students can record the business transactions electronically in the computer, with the help of various accounting software. This has helped many students to get a job of an accountant in many businesses of this region.
5	F. Y. B. Com	II	124- Business Mathematics and Statistics	1. Students understood various methods of calculation regarding averages and variations. 2. Students understood the concept and application of profit and loss in business. 3. Students obtained knowledge for solving the LPP to maximize the profit and to minimize the cost. 4. Students knew about utility of correlation and regression analysis and estimation about the relationship between two variables. 5. Students understood the concept and techniques of different types of index numbers.	Having completed this course, students can now calculate the percentage and averages, students can now find out the gross profit and net profit percentage from the final accounts of any business Unit. With the help of Linear programming problem students are now able to calculate the maximum profitability and also the minimum cost of any business equation. Students are now able to calculate index numbers for different variables of an economy and can derive the correct meaning of the changes in those indexes, this way a important skill of interpretation of data is developed in the students.

6	F. Y. B. Com	II	126- Consumer Protection and Business Ethics	1. Students got aware about laws relating to consumers. 2. Students got aware with role of Business Ethics in various functional areas.	Having completed this course, students can explain the importance and the impact of various important provisions in the Consumer protection Act.
7	S. Y. B. Com	III	231 - Business Communication I	1. Students understood the concept, process and importance of communication. 2. Students acquired and developed good communication skills requisite for business correspondence. 3. Students developed awareness regarding new trends in business communication	Having completed this course, students can compose and write different business letters and reports in suitable format. Students are now able to use different sentence structure as per the new trend and the best suitable business language which is easily understood by the businessmen.
8	S. Y. B. Com	III	232 - Corporate Accounting I	1. The students are enabled to develop awareness about Corporate Accounting in conformity with the provisions of Companies Act and Accounting as per Indian Accounting Standards. 2. The students have learned about the conceptual aspect of corporate accounting and skills for Computerized Accounting 3. The students are capable to implement their skills about accounting standards	Having completed this course, students can prepare and draft profit and loss account and Balance Sheet of a Company as per the formats given ni the Companies Act. They can also do the adjustments in the Final accounts of a Company and post the effects properly. Students are able to incorporate the computerized accounting with the traditional accounting. Their ability to read and understand the final account has increased because of their increased skill of preparing

				4. Students were updated with knowledge for preparation of final accounts of a company as per Schedule III of the Companies Act 2013	final accounts from the Trail Balance. Students also understood the importance of different schedules supporting final accounts and the sues of such schedules.
9	S. Y. B. Com	III	234 - Business Management-I	1. Students upgraded with the basic knowledge & understanding about business management concept. 2. Help was provided to the students to develop cognizance of the importance of management principles.	Having completed this course, students can make decisions which are important from the oint of view of any business units because students have leant in depth – various management principles and management techniques.
10	S. Y. B. Com	III	235 - Elements of Company Law	1. Students imparted with the knowledge of fundamentals of Company Law. 2. The knowledge of students updated regarding the provisions of the Companies Act of 2013. 3. The knowledge of students improved regarding new concepts involving in company law regime.	Having completed this course, students can ascertain the meaning and the purpose for which various sections are framed in the Companies Amendment Act. 2013. Students understood the basic purpose for which the Companies Act is amended and the scope covered by the new Act.
11	S. Y. B. Com	IV	241 - Business Communication II	1. Students aware regarding new trends in business communication. 2. Students were provided with knowledge of various media of communication.	Having completed this course, students can write a sample communication suitable for businesses and can be transmitted through different medias. Students are now able to compose or draft

				3. Students upgraded with the knowledge of various media of communication. 4. Students developed with various skills of business communication through the application and exercises.	communication suitable for different business occasions and which can be transmitted by using various kinds of medium available. Students are able to transmit business message using an email or using web publishing.
12	S. Y. B. Com	IV	242 - Corporate Accounting I	1. Students are empowered with skills to interpret the financial statements in simple and summarized manner for effective decision making process 2. Students got acquaint with knowledge about various concepts, Objectives and applicability of some important accounting standards associated with corporate accounting. 3. An understanding among the students was developed on the difference between commencement and incorporation of a company and the accounting treatment for transactions during the two phases.	Having completed this course, students can interpret the Indian Accounting Standards and their uses and impact in the Corporate Accounting. Students are able to record the transactions appearing in the phase of formation of a company. Students are able make decisions on the basis of financial statement of a company given for different periods. They can judge the profitability and also the liquidity in the different phases of the formation of a company. Students are able to make long term decision of the capital structure and business viability in the long run.
13	S. Y. B. Com	IV	244 - Business Management-II	1. Students understood various functions of management 2. Students were provided with tools and techniques to be used in the	Having completed this course, students can manage the resources of a joint stock company including money, men and machinery.

				performance of the managerial job.	Students can make use of various management theories.
14	S. Y. B. Com	IV	245 - Elements of Company Law	1. Students acquainted with the duties and responsibilities of Key Managerial Personnel. 2. Students imparted with the provisions and procedures under company law 3. The capacity of the learners is enhanced to seek the career opportunity in corporate sector.	Having completed this course, students can manage the duties and responsibilities of key management personnel. Students can make judgment and interpret the meaning of vital provisions of Companies Act. Students have opted for Company Secretary Course and also further studies like graduation in Law and Legislation.
15	T. Y. B. Com.	V	351 Business Regulatory Framework	1. Students grasped the detailed information regarding the basic concepts, terms & provisions of Mercantile and Business Laws. 2. Awareness improved among the students regarding these laws affecting business, trade and commerce.	Having completed this course, students can initiate a trade and commerce with the help of various mercantile laws. Students can distinguish between two different laws which are applicable for a business but has different operational area.
16	T. Y. B. Com.	V	352 Advanced Accounting	1. Imparted the knowledge of various accounting concepts 2. The knowledge about accounting procedures, methods and techniques has installed.	Having completed this course, students can maintain books of accounts of different entities that too for different circumstances like amalgamation or mergers or liquidation of a company.
17	T. Y. B. Com.	V	354- Auditing	1. The students got acquaint with the concept and principles of Auditing, Audit process,	Having completed this course, students can vouch the transaction recorded in books of account of

				Assurance Standards, Tax Audit, and Audit of computerized Systems. 2. They got knowledge about preparation of Audit report.	different entities. They can find out mistakes ot even frauds and can suggest the remedial measures to avoide such happening in future. Few students are pursuing the Chartered Accountant Course.
18	T. Y. B. Com.	V	355A– Business Administration	1. Students understood the concept and functions of Management and levels of management 2. Students acquired basic knowledge about various forms of business organizations 3. Students got information about various theories of management with modern aspects 4. Students understood management in globalize scenario	Having completed this course, students can execute mock functions of management like planning, forecasting, coordinating and problem solving skills as it is done in actual business environment. Students have submitted the proposal for internship under this subject in which they have selected the topic for internship of their choice, they have selected the organization of their choice after having detailed consultation with the subject teacher.
19	T. Y. B. Com.	V	355E– Cost & Works Accounting	1. Students got knowledge about Basic Cost concepts, Elements of cost, Ascertainment of Material and Labour Cost. 2. Students obtained knowledge about the concepts and principles application of Overheads 3. Students understood various methods of costing and their	Having completed this course, students can calculate various cost incurred during production process. Students have submitted the proposal for internship under this subject in which they have selected the topic for internship of their choice, they have selected the organization of their choice after

				applications	having detailed consultation with the subject teacher.
20	T. Y. B. Com.	V	355H– Marketing Management	1. Students understood the concept and functions of marketing planning and sales management 2. Students got knowledge about marketing strategies and organization 3. Students got information about various facts of marketing with regulatory aspects 4. Students understood marketing in globalize scenario	Having completed this course, students can plan for an advertisement campaign for a small business located in nearby area. Students have submitted the proposal for internship under this subject in which they have selected the topic for internship of their choice, they have selected the organization of their choice after having detailed consultation with the subject teacher.
21	T. Y. B. Com.	VI	361 Business Regulatory Framework	1. Students were provided with conceptual knowledge about the framework of business Law in India. 2. Students were oriented about the legal aspect of business.	Having completed this course, students can practice the business of proving services of legal nature to small businesses in the nearby area.
22	T. Y. B. Com.	VI	362 Advanced Accounting	1. Students got acquainted with practical approach to accounts writing by using software package. 2. Students are empowered with skills to prepare the investment account in simple and summarized manner.	Having completed this course, students can use a computer software and all the required function of it to record financial transaction for accounting purposes. Students can save, share, print and forward the electronically recorded transactions.

23	T. Y. B. Com.	VI	364 Taxation	1. Students understood the basic concepts and to acquire knowledge about Computation of Income, Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection Authorities under the Income Tax Act, 1961. 2. Students are trained to file income tax return in online mode.	Having completed this course, students can get their own PAN and can register themselves on the Income Tax Portal of Central Government. They can calculate the total taxable income and the final tax liability of an individual assessee for a given financial year.
24	T. Y. B. Com.	VI	365A– Business Administration	1. Students got knowledge about management techniques and organization structure. 2. Students got acquaint about business environment and its implications thereon. 3. Students understood the recent trends in business.	Having completed this course, students can implement the administrative functions in a small business selected by them for the internship program. Students have submitted the internship report to the college in which they have mentioned the task they have performed in the organization selected for internship.
25	T. Y. B. Com.	VI	365E – Cost & Works Accounting	1. Students understood the concepts and utility regarding costing techniques. 2. Students obtained the information about importance of training includes concepts, procedures and legal Provisions of cost audit.	Having completed this course, students can prepare cost sheet and suggest measures to control various cost of any organization. Students have submitted the internship report to the college in which they have mentioned the task they have performed in the organization selected for internship.

26	T. Y. B. Com.	VI	365H– Marketing Management	1. Students obtained knowledge regarding the concepts of Marketing Research 2. Students understood the role of Brand and Distribution of production including Management in marketing. 3. Students understood the basic concepts related to Marketing, Management, Productivity and Economic Development 4. Students obtained knowledge about the importance of control on marketing activities	Having completed this course, students can prepare an advertising schedule for a small business located in the nearby area. They can suggest a best possible marketing strategy which is the best suitable to a business according to its size and nature. Students have submitted the internship report to the college in which they have mentioned the task they have performed in the organization selected for internship.
M. Com.					
27	M.Com. Part I	I	MA501MJ Management Accounting	1) Students understood importance of management accounting and functions of Management Accounting. 2) Students understood various decision-making techniques of marginal costing and its application in modern business. 3) Product Pricing decision-making capacity of the students has been developed. 4) Learners have prepared various budgets independently	Having completed this course, students can calculate various ratios and percentages like Capital gearing ratio, working capital ratio, Quick ratio, Gross Profit/Net profit ratio, stock turnover ratio, average collection period for debtors, Return on investment, Debt to equity ratio etc. Students gained the ability to interpret the financial statement of an business entity.

28	M.Com. Part I	I	IE502M J Industrial Economics	1. Learners are acquainted with the concepts of industrial economics 2. The learners got exposed to recent changes in industrial finance, measures to correct industrial imbalance etc. 3. The students have identified the location of industries and the concepts associated therewith 4. The learners are aware of the industrial profile of Maharashtra 5. The students have developed an ability to apply and interpret the concepts of industrial economics	Having completed this course, students can locate the need of a business pertaining to the modification to be done as per the changing business environment. Students can suggest the right direction in which the industrial economy is developing. They can also suggest the best possible location for an industry according to the availability of the natural resources and financial schemes offered by the government. Students can suggest the remedies to overcome industrial imbalance in some regions.
29	M.Com. Part I	I	RM529MJ Research Methodology	1. Students have understood research process and can explore various ethical issues and modern practices in research. 2. Students gained fundamental knowledge about Methods of Data Collection and formulating questionnaire. They understood the process of Analysis and Interpretation of data. 3. Students grasped knowledge on developing the most appropriate methodology for their research	Having completed this course, students can write a hypothesis on the research topic selected by them after the discussion with the guide. They can select the best research methodology suitable to the topic and the data to be analyzed. Students are able to prepare a research proposal which incorporate all the required details, data and explanations in support to their choice of subject. Students can form a questionnaire for primary data

				studies 4. Students developed knowledge on how to write a research report by using different research methods and techniques.	collection.
30	M.Com. Part I	II	FA551MH Financial Analysis & Control.	1. Students acquired sound knowledge of concepts, methods and techniques of management accounting and the students developed for competence with their usage in managerial decision making and control 2. Students learned to analyse the financial information for decision-makings.	Having completed this course, students can calculate the financial risk involved in various business projects, after the ascertainment of risk they can suggest the options to minimize the risk the financial plan to adjust the internal rate of return. Students gained the ability to analyze the financial statement and make reporting to the management to assist the decision making process.
31	M.Com. Part I	II	ST552MJ Strategic Management	1. Students understood the concept and process of strategic management. Emergence of changes in modern business environment will be learn be them. 2. Students developed strategic analytical skills to design an effective strategic plan. They gained technical and managerial skills in various areas of business administration. 3. Students learned Development of	Having completed this course, students can analyse the business environment and can tackle the problem of financial and managerial nature, the development of a strategy to overcome a particular situation in a modern and complex business. Students got aware of the changing circumstances of a particular business and the need of developing a vital strategy in proper time to avoid the crucial situation

				Applicability skills for effective plan implementation. They will gain technical skills required for evaluation of alternatives and analytical skills for choice among alternatives 4. Students have a strong foundation in understanding the formulation of sound functional Strategy in various areas of business. They developed Analytical and Managerial Abilities for critical evaluation.	forecasted. Students have developed among themselves the abilities of Analytical and Managerial Abilities for critical evaluation. Students developed strategic analytical skills to design an effective strategic plan. They gained technical and managerial skills in various areas of business administration.
32	M. Com. Part 2	III	321-Business Finance	Students acquired sound knowledge of concepts, nature and structure of business finance.	Having completed this course, students can project the need and plan the time for finance required for a business.
33	M. Com. Part 2	III	322- Research Methodology for Business	1. The students got acquaint with the areas of Business Research Activities. 2. The students enhanced capabilities to conduct the research in the field of business and social sciences. 3. The students got enable in developing the most appropriate methodology for their research studies. 4. The students are familiar with the	Having completed this course, students can select a vital area for business research, can carry out an exclusive research which can be helpful in shaping the future of the business. They can select the best research methodology suitable to the topic and the data to be analyzed. Students enhanced the capabilities to conduct the research in the field of business and social sciences

				art of using different research methods and techniques	
34	M. Com. Part 2	III	334- Business Administration	1. Students got sound knowledge of concepts, nature and structure of Financial Management 2. Students acquire sound knowledge of concepts, nature and importance of knowledge management 3. Students got acquaint with in-depth knowledge of HRM, practices followed by HR managers and understanding about recent trends in HRM	Having completed this course, students can identify most proper source of finance for a particular business depending upon the need and time span of investment. Students can contact the funding/lending agency by best possible medium and negotiate the term and conditions of finance. Students can participate in the recruitment process and can help a business for optimal utilization of human resource.
35	M. Com. Part 2	IV	421- Capital Market and Financial Services.	1. Students acquired sound knowledge, concept and structure of capital market and financial services.	Having completed this course, students can open an account/folio in the bank/broker/financial institution for experience in investment sector. Students came to know about financial services related to it.
36	M. Com. Part 2	IV	422- Industrial Economic Environment.	1. The basic concepts of Industrial Finance. 2. The effects of New Economic Policy. 3. The impact of Labor reforms on Industries.	Having completed this course, students can provide management advisory services to small and medium scale businesses located in nearby areas.

37	M. Com. Part 2	IV	434- Business Administration	1. Students understood various concepts of organization behavior, knowledge about process of formation of group behaviour in an organization set up 2. The students got familiarize with the recent advancements in business administration and developed understanding about tools and their application in the business. 3. Students learnt the actual research process of the business organization	Having completed this course, students can analyze and interpret the reasons and outcomes of various group behaviors. Students can suggest and frame different incentive plans suitable for both the management and workers. Students can suggest solutions on case studies of industrial disputes. They can also do sample survey and construct a questionnaire and can do research for any problem of business located in nearby area.

DEPARTMENT OF CHEMISTRY

Sr. No	Class	Sem	Subject code and Subject name	CO	Attainment
1.	FYBSC	I	CH-101: Physical Chemistry	➢ After completing the course work learner will be acquired with knowledge of chemical energetics, Chemical equilibrium and ionic equilibria.	➢ The student acquires the knowledge of chemical energetics, chemical equilibrium, and ionic equilibria after completing the course material
2.	FYBSC	I	CH-102: Organic Chemistry	➢ Students will learn Fundamentals of organic chemistry, stereochemistry (Conformations, configurations and nomenclatures) and functional group approach for aliphatic hydrocarbons	➢ Student get knowledge about fundamentals of stereochemistry (Conformations, configurations and names) and the aliphatic hydrocarbon functional group method
3.	FYBSC	I	CH-201: Inorganic Chemistry	➢ Students will learn quantum mechanical approach to atomic structure, Periodicity of elements, various theories for chemical bonding.	➢ Students will study the periodicity of elements, the quantum mechanical approach to atomic structure, and several hypotheses regarding chemical bonds.
4.	FYBSC	II	CH-202: Analytical Chemistry	➢ Students will know about basics of analytical chemistry, some techniques of analysis and able to do calculations essential for analysis.practical methods of quantitative analysis.	➢ Students will be familiar with the fundamentals of analytical chemistry, a few analysis techniques, ➢ Students Capable of doing computations necessary for analysis.
5.	FYBSC	II	Lab Course (Practical) CH 103 and CH-203	➢ 1. The practical course is in relevance to the theory courses to improve the Understanding of the concepts. 2. It would help in development of practical skills of the students. 3. Use of microscale techniques wherever required.	➢ The practical course contributes to the improvement of the theory courses. ➢ Student also enhance their practical skills
6.		*III*	*CH-301: Physical and Analytical Chemistry*	➢ Physical & Analytical Chemistry Students are made aware about kinetics of chemical reactions, photochemical laws , distribution law and extraction process.	➢ Student should get the knowledge about kinetics of chemical reactions, photochemical laws, distribution laws,and extraction processes are explained to the

				Students are introduced to analytical chemistry in which they are made aware of reaction order and molecularity, determination of rate law, factors affecting reaction rates, integrated rate laws ➢ Along with it they also study error in quantitative analysis & ways to minimize them. ➢ Solve & discuss problems using theory derivations of collision theory and transition state theory of bimolecular reaction and comparison. Student apply adsorption process to real life problem.	students. ➢ Student shoude be able to analytical chemistry is taught to students, who learn about integrated rate laws, factors influencing reaction rates, reaction order and molecularity, and rate law determination. ➢ Student additionally examine errors in quantitative analysis and strategies for reducing them. ➢ Student aware and utilize collision theory derivations and transition state theory of bimolecular reaction and comparison to solve and analyze difficulties.
7.	SYBSC	*III*	CH-302: Inorganic and Organic Chemistry	➢ To understand the different terms related to the coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand, chelate effect ➢ To understand Werner's theory of coordination compounds. Differentiate between primary and secondary valency. Correlate coordination number and structure of complex ion. ➢ The students should be able to apply IUPAC nomenclature to coordination compound. ➢ To understand the Identify and draw the structures aromatic hydrocarbons from their names or from structure name can be assigned.	➢ Students acquainted with the various terms like coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand. ➢ Students knows about Werner's theory of coordination compounds. Differentiate between primary and secondary valency. ➢ Students able to apply IUPAC nomenclature to coordination compound. ➢ Students were familiar with theratesofvarious chemical reactions both theoretically and experimentally and also observe the effect of catalyst and determine energies of activation of such reactions. ➢ Students able to understand the mechanism of reactions involved.

				➢ To understand synthesis of aromatic hydrocarbons. ➢ To understand the mechanism of reactions involved. ➢ To understand how to identify and draw the structures alcohols / phenols from their names or from structure name.	➢ Students able to how to identify and draw the structures alcohols / phenols from their names or from structure name.
8.	SYBSC	*IV*	CH-401: Physical and Analytical Chemistry	➢ Students are made aware about thermodynamic aspects of Ideal solutions- Gibbs free energy change, Volume change, Enthalpy change and entropy change of mixing of Ideal solution. ➢ Students are are derive distribution law and its thermodynamic proof. Apply solvent extraction to separate the components of from mixture interest. ➢ Students also study different modes of concentration , distillation of solutions of liquid in liquid , partially immiscible liquids& distillation of immiscible liquids. ➢ Student also study solvent extraction to separate the components of from mixture interest. ➢ Students are made to understand volumetric analysis wherein they study non-instrumental volumetric analysis which comprises of study of various titrations, indicators used in it& some theoretical aspects related with titrations.	➢ Student shoude get the ideas of Helmholtz and Gibbs free energies, as well as the free energy of chemical processes and physical transformations, are introduced to the students. ➢ Student get knowledge to study partial immiscible liquids, distillation of immiscible liquids, distillation of solutions of liquid in liquid, and other concentration techniques. ➢ shoude be able to separate the components of the mixture of interest, students also study solvent extraction ➢ shoude be able the distribution law and its thermodynamic proof are derived by the students. To extract the components of the mixture of interest, use solvent extraction. ➢ Student understand this study which help students comprehend volumetric analysis, they study non-instrumental volumetric analysis, which includes studying different titrations, the indicators that are employed in them, and certain theoretical features of titrations.
9.	SYBSC	IV	CH-402: Inorganic and	➢ To understand isomerism in coordination complexes.	➢ Students able to distinguish between isomerism in coordination complexes.

			Organic Chemistry	➢ To understand different types of isomerism in coordination complexes. ➢ To understand correlation between no. of unpaired electrons and orbitals used for bonding. ➢ To understand Apply crystal field theory to different type of complexes (Td, Oh, Sq. Pl complexes). ➢ To understand calculation of field stabilization energy and magnetic moment for various complexes. ➢ To understand spectrochemical series, tetragonal distortion / Jahn-Teller effect in Cu(II) Oh complexes only. ➢ 7. To understand convert one conformation of cyclohexane to another conformation and should able to identify governing structural changes	➢ Students able to correlation between no. of unpaired electrons and orbitals used for bonding. ➢ Students are able to calculate field stabilization energy and magnetic moment for various complexes. ➢ Students are able to identify spectrochemical series, tetragonal distortion / Jahn-Teller effect in Cu(II) Oh complexes only. ➢ Students are able to convert one conformation of cyclohexane to another conformation and should able to identify governing structural changes. ➢ 6. Students are able to draw structures of different conformations of methyl / t-butyl monosubstituted cyclohexane (axial, equatorial) and 1, 2 dimethyl cyclohexane.
10.	TYBSC	V	CH-501: Physical Chemistry- I	➢ Introduction, de Broglie hypothesis, The Heisenberg's uncertainty principle, quantisation of energy, Operators, Schrodinger wave equation, well behaved function, Particle in a one-, two and three-dimensional box (no derivation), Physical interpretation of the ψ and ψ2, sketching of wave function and probability densities for 1D box, degeneracy, applications to conjugated systems, zero-point energy and quantum tunnelling, Numerical ➢ Introduction: Molar refraction and molecular structure, Dipole moment and molecular structure, electromagnetic spectrum, energy of molecules, Types of	➢ Students understand the concept de Broglie hypothesis, The Heisenberg's uncertainty principle, quantisation of energy, Operators, Schrodinger wave equation, well behaved function, Particle in a one-, two and three-dimensional box (no derivation), Physical interpretation of the ψ and ψ2, sketching of wave function and probability densities for 1D box, degeneracy, applications to conjugated systems, zero-point energy and quantum tunnelling, Numerical ➢ Students knows about Molar refraction and molecular structure, Dipole moment and molecular structure, electromagnetic spectrum, energy of molecules, Types of

				molecular spectra. ➢ Microwave Spectroscopy: Introduction, Classification of molecules on the basis of moment of Inertia, Rotational spectra of rigid diatomic molecules, relative intensities of spectral lines, effect of isotopic substitution on the rotational spectra, Determination of bond length and moment of inertia from rotational spectra, Problems. ➢ Infrared Spectroscopy: Introduction, Simple Harmonic oscillator, Modes of vibration, force constant, Vibrational spectrum of a diatomic molecule: Vibrational Energy expression, Allowed vibrational energies, zero-point energy, Selection rule, Vibrational energy level diagram with transitions, spectrum depiction, Vibration-rotation Spectra: Born-Oppenheimer approximation, Energy expression for vibrational rotor, Selection rules, Vibrational-rotational energy level diagram with transitions, Nature of vibrational spectra, P, Q and R branches of lines of the IR spectra, Problems ➢ Raman Spectroscopy: Introduction, Classical and Quantum theory of Raman effect, Rayleigh, Stokes and anti-stokes lines, Pure rotational Raman spectra of linear diatomic molecules ➢ Introduction, Difference between thermal and photochemical processes, Laws of photochemistry: i) Grothus - Draper law ii)	molecular spectra. ➢ Students acquainted Microwave Spectroscopy: Introduction, Classification of molecules on the basis of moment of Inertia, Rotational spectra of rigid diatomic molecules, relative intensities of spectral lines, effect of isotopic substitution on the rotational spectra, Determination of bond length and moment of inertia from rotational spectra, Problems. ➢ Students acquainted Infrared Spectroscopy: Introduction, Simple Harmonic oscillator, Modes of vibration, force constant, Vibrational spectrum of a diatomic molecule: Vibrational Energy expression, Allowed vibrational energies, zero-point energy, Selection rule, Vibrational energy level diagram with transitions, spectrum depiction, Vibration-rotation Spectra: Born-Oppenheimer approximation, Energy expression for vibrational rotor, Selection rules, Vibrational-rotational energy level diagram with transitions, Nature of vibrational spectra, P, Q and R branches of lines of the IR spectra, Problems ➢ Students acquainted Raman Spectroscopy: Introduction, Classical and Quantum theory of Raman effect, Rayleigh, Stokes and anti-stokes lines, Pure rotational Raman spectra of linear diatomic molecules ➢ Students got knowledged about Difference between thermal and photochemical processes, Laws of photochemistry: i)

				Stark-Einstein law, Quantum yield, Reasons for high and low quantum yield., Factors affecting Quantum yield, Experimental method for the determination of quantum yield, types of photochemical reactions - photosynthesis, photolysis, photocatalysis, photosensitization, Jablonski diagram depicting various processes occurring in the excited state: Qualitative description of fluorescence and phosphorescence, Chemiluminescence, Problems	Grothus - Draper law ii) Stark-Einstein law, Quantum yield, Reasons for high and low quantum yield., Factors affecting Quantum yield, Experimental method for the determination of quantum yield, types of photochemical reactions - photosynthesis, photolysis, photocatalysis, photosensitization, Jablonski diagram depicting various processes occurring in the excited state: Qualitative description of fluorescence and phosphorescence, Chemiluminescence, Problems
11.	TYBSC	V	CH-502: Analytical Chemistry- I	➢ Define basic terms in gravimetry, spectrophotometry, qualitative analysis and parameters in instrumental analysis. Such as: ➢ Gravimetry, precipitation, solubility product, ionic product, common ion effect, precipitating agent, washing of ppt., drying and ignition of ppt., linearity range, detection limit, precision, accuracy, Sensitivity, Selectivity, Robustness and Ruggedness, electromagnetic radiations, spectrophotometry, Beers law, absorbance, transmittance, molar absorptivity, monochromator, wavelength of maximum absorbance, CBCS: 2019 Pattern ➢ Metal ligand ration, qualitative analysis, group reagent, dry tests, wet test, confirmatory test, precipitation, thermogravimetry, thermogram, percent wt. loss, differential thermal analysis, etc. ➢ Identify important parameters in analytical	➢ Students acquiented define basic terms in gravimetry, spectrophotometry, qualitative analysis and parameters in instrumental analysis. Such as: ➢ Students got the knowledge about Gravimetry, precipitation, solubility product, ionic product, common ion effect, precipitating agent, washing of ppt., drying and ignition of ppt., linearity range, detection limit, precision, accuracy, Sensitivity, Selectivity, Robustness and Ruggedness, electromagnetic radiations, spectrophotometry, Beers law, absorbance, transmittance, molar absorptivity, monochromator, wavelength of maximum absorbance, CBCS: 2019 Pattern ➢ Students familiar withMetal ligand ration, qualitative analysis, group reagent, dry tests, wet test, confirmatory test, precipitation, thermogravimetry, thermogram, percent wt. loss, differential

				processes or estimations. Example: minimum analyte concentration in particular method, reagent concentration in particular analysis (gravimetry, spectrophotometry, thermogravimetry), reagent for particular analysis, reaction condition to convert analyte into measurable form, drying and ignition temperature for ppt in gravimetry, heating rate thermogravimetry, wavelength in spectrophotometry, group reagent, removal borate and phosphate in qualitative analysis, etc. 3. Explain different principles involved in the gravimetry, spectrophotometry, parameters in instrumental analysis, qualitative analysis.	thermal analysis, etc. ➢ Students understand Identify important parameters in analytical processes or estimations. Example: minimum analyte concentration in particular method, reagent concentration in particular analysis (gravimetry, spectrophotometry, thermogravimetry), reagent for particular analysis, reaction condition to convert analyte into measurable form, drying and ignition temperature for ppt in gravimetry, heating rate thermogravimetry, wavelength in spectrophotometry, group reagent, removal borate and phosphate in qualitative analysis, etc. 3. Explain different principles involved in the gravimetry, spectrophotometry.
12.	TYBSC	V	Inorganic Chemistry-I (CH-504)	➢ Understand the principles of molecular orbital theory as applied to coordination compounds. ➢ Analyze the bonding in coordination complexes using molecular orbital diagrams. ➢ Comprehend the mechanisms of ligand substitution reactions in square-planar and octahedral complexes. ➢ Differentiate between dissociative, associative, and interchange mechanisms. ➢ Understand the periodic properties of transition metals and their complexes. ➢ Predict and rationalize the chemical behavior of transition metal ions. ➢ Understand the electronic configurations	➢ Students will be able to explain the fundamental concepts of molecular orbital theory and apply them to describe the bonding in coordination compounds. ➢ Students will be able to construct and interpret molecular orbital diagrams for coordination complexes, predicting their bonding and electronic properties. ➢ Students will be able to describe the step-by-step mechanisms of ligand substitution reactions in both square-planar and octahedral complexes. ➢ Students will be able to distinguish between dissociative, associative, and interchange mechanisms, and identify the conditions under which each mechanism is favored.

				and general characteristics of lanthanides and actinides. ➢ Explain the lanthanide and actinide contraction and its consequences. ➢ Understand the electronic structures and physical properties of metals, semiconductors, and superconductors. ➢ Explain the principles of superconductivity and its applications.	➢ Students will be able to explain the periodic trends and properties of transition metals, including their oxidation states, magnetic properties, and coordination chemistry. ➢ Students will be able to predict the reactivity and stability of transition metal ions based on their electronic configurations and ligand field effects. ➢ Students will be able to describe the electronic configurations, oxidation states, and general chemical properties of lanthanides and actinides. ➢ Students will be able to explain the phenomenon of lanthanide and actinide contraction and its impact on the properties of these elements and their compounds. ➢ Students will be able to describe the electronic structures and physical properties of metals, semiconductors, and superconductors, and explain how these properties arise from their atomic and molecular structures. ➢ Students will be able to explain the basic principles of superconductivity, including the Meissner effect and Cooper pairs, and discuss the practical applications of superconductors in technology.
13.	TYBSC	V	Industrial Chemistry (CH-505)	➢ Understand the principles and practices of modern chemical industry, including sustainable and green chemistry approaches. ➢ Analyze the impact of technological advancements on the efficiency and	➢ Students will be able to explain the core principles of modern chemical industry practices and apply sustainable and green chemistry approaches to real-world scenarios. ➢ Students will be able to assess how

				environmental footprint of chemical manufacturing processes. ➢ Comprehend the production processes for key basic chemicals such as ammonia, sulfuric acid, and ethylene. ➢ Evaluate the economic and environmental aspects of basic chemical manufacturing, including raw material sourcing and waste management. ➢ Understand the biochemical processes involved in the production of sugar and fermentation products. ➢ Analyze the industrial applications of fermentation technology in producing biofuels, beverages, and pharmaceuticals. ➢ Understand the chemical formulations and manufacturing processes of soaps and detergents. ➢ Evaluate the environmental impact and regulatory considerations in the production and use of cleaning agents. ➢ Understand the chemical properties and synthesis methods of various dyes and pigments. ➢ Analyze the applications and environmental implications of dyes and pigments in different industries, including textiles and coatings.	technological advancements improve the efficiency of chemical manufacturing and reduce its environmental impact. ➢ Students will be able to describe the industrial production processes for key basic chemicals and understand the underlying chemical reactions. ➢ Students will be able to evaluate the economic viability and environmental sustainability of basic chemical manufacturing processes, including considerations for raw material sourcing and waste management. ➢ Students will be able to explain the biochemical pathways involved in sugar production and fermentation, and their industrial applications. ➢ Students will be able to analyze the use of fermentation technology in various industries, including the production of biofuels, beverages, and pharmaceuticals. ➢ Students will be able to describe the chemical formulations and manufacturing processes of soaps and detergents, and understand their functional properties. ➢ Students will be able to evaluate the environmental impact of cleaning agents and understand the regulatory frameworks governing their production and use. ➢ Students will be able to explain the chemical properties and synthesis methods of different dyes and pigments, and their applications in various industries.

					➢ Students will be able to analyze the industrial applications of dyes and pigments, particularly in textiles and coatings, and assess their environmental implications.
14.	TYBSC	V	CH-507: Organic Chemistry - I	➢ Define and classify polynuclear and hetreonuclear aromatic hydrocarbons. ➢ Write the structure, synthesis of polynuclear and hetreonuclear aromatic hydrocarbons. ➢ Understand the reactions and mechanisms ➢ Explain the reactivity of polynuclear and hetreonuclear aromatic hydrocarbons. Meaning of active methylene group ➢ Reactivity of methylene group, ➢ Synthetic applications ethyl acetoacetate and malonic ester ➢ To predict product with panning or supply the reagent/s for these reactions ➢ What is rearrangement reaction? ➢ Different types of intermediate in rearrangement reactions? ➢ To write the mechanism of some named rearrangement reactions and their applications ➢ Electrocyclic rearrangement with their mechanisms ➢ 1,1 and 1,2 elimination ➢ E1, E2 and E1cB mechanism with evidences of these reactions ➢ Understand stereochemistry by using models and learn reactivity of geometrical isomers	➢ Students acquainted polynuclear and hetreonuclear aromatic hydrocarbons. And their structure, synthesis of polynuclear and hetreonuclear aromatic hydrocarbons and able to Understand the reactions and mechanisms also the reactivity of polynuclear and hetreonuclear aromatic hydrocarbons. ➢ Students acquainted the meaning of active methylene group and Reactivity of methylene group like ethyl acetoacetate and malonic ester and planning or supply the reagent/s for these reactions ➢ Students acquire the knowledge of rearrangement reaction, different types of intermediate in rearrangement reactions and their applications ➢ Student get the knowledge of electrocyclic rearrangement with their mechanisms viz 1,1 and 1,2 elimination, E1, E2 and E1cB mechanism with evidences of these reactions and understand stereochemistry by using models and learn reactivity of geometrical isomers, orientation and reactivity in E1 and E2 elimination and Hoffmann and Saytzeff's Orientation.

				➢ Orientation and reactivity in E1 and E2 elimination ➢ Hoffmann and Saytzeff's Orientation ➢ Effect of factors on the rate elimination reactions	
15.	TYBSC	V	CH-508: Chemistry of Biomolecules	➢ Introduction to molecular logic of life. The student will understanding of Cell types, Difference between a bacterial cell, Plant cell and animal cell. Biological composition and organization of cell membrane, structure and function of various cell organelles of plant and animal cell. Concepts of biomolecules, Bonds that link monomeric units to form macromolecules ➢ Carbohydrates: The student will understand the types of carbohydrates and their biochemical significance in living organisms, structure of carbohydrates and reactions of carbohydrates with Glucose as example. Properties of carbohydrates. ➢ Lipids: The student needs to know the types of lipids with examples, structure of lipids, properties of lipids ➢ Amino acids and proteins: The student will understand the structure and types of amino acids. Reactions of amino acids. Properties of amino acids. Peptide bond formation. Types of proteins. Structural features in proteins. Effect of pH on structure of amino acid, Determination of N and C terminus of peptide chain. ➢ Enzymes: The student know the classes of	➢ The student familarize with Cell types, Difference between a bacterial cell, Plant cell and animal cell. Biological composition and organization of cell membrane, structure and function of various cell organelles of plant and animal cell. Concepts of biomolecules, Bonds that link monomeric units to form macromolecules ➢ The student well knows the types of carbohydrates and their biochemical significance in living organisms, structure of carbohydrates and reactions of carbohydrates with Glucose as example. Properties of carbohydrates. ➢ The student got the knoledge of the types of lipids with examples, structure of lipids, properties of lipids ➢ The student were acquinted the structure and types of amino acids. Reactions of amino acids. Properties of amino acids. Peptide bond formation. Types of proteins. Structural features in proteins. Effect of pH on structure of amino acid, Determination of N and C terminus of peptide chain. ➢ Enzymes: The student know the classes of enzymes with subclasses and examples. Enzyme specificity, Equations of enzyme kinetics Km and its significance, features of

				enzymes with subclasses and examples. Enzyme specificity, Equations of enzyme kinetics Km and its significance, features of various types of enzyme inhibitions, industrial applications of enzymes. ➢ Hormones: Basic concepts of Endocrinology. Types of Endocrine glands and their hormones. Biochemical nature of hormones. Mechanism of action of lipophilic and hydrophilic hormones.	various types of enzyme inhibitions, industrial applications of enzymes.
16.	TYBSC	V	CH-510 (B) Polymer Chemistry	➢ Basic terms- monomer, polymer, polymerisation, degree of polymerisation, functionality. ➢ Different schemes of classification of polymers, polymer nomenclature, molecular forces and chemical bonding in polymers, glass transition temperature of polymer. ➢ History of polymers. ➢ Difference between simple compounds and polymer. ➢ Difference between natural, synthetic, organic and inorganic polymers. ➢ Terms-Monomer, Polymer, Polymerization, Degree of polymerization, Functionality, Number average, Weight average molecular weight. ➢ Mechanisms of polymerization. Polymerization techniques. Uses & properties of polymers. Role of polymer industry in the economy.	➢ Students acquiented the basic terms-monomer, polymer, polymerisation, degree of polymerisation, functionality. ➢ Students got knwldge about Different schemes of classification of polymers, polymer nomenclature, molecular forces and chemical bonding in polymers, glass transition temperature of polymer. ➢ Students acquiented the difference between simple compounds and polymer. ➢ Students understand terms-Monomer, Polymer, Polymerization, Degree of polymerization, Functionality, Number average, Weight average molecular weight. ➢ Students got the about knowledge Mechanisms of polymerization. Polymerization techniques. Uses & properties of polymers. Role of polymer industry in the economy.
17.	TYBSC	V	CH-511 (A) : Environmental	➢ Introduction, Environmental Pollution and Classification, Units of concentration,	➢ Students knows about Environmental Pollution and Classification, Units of

			Chemistry	Segments of Environment, Biogeochemical cycles of C, N, P, S and O system. Water resources, Hydrological Cycle: stages of hydrological cycle and chemical composition of water bodies, Microbially mediated aquatic reactions, Classification of water pollutants ➢ Organic and Inorganic pollutants, Sewage and Domestic waste, Sediments, Detergents, Pesticides, Eutrophication, Sampling and monitoring water quality parameters: pH, D.O. (Winkler Method), COD, TOC, Total hardness, free chlorine. ➢ Water quality parameters and standards, domestic water quality parameters, surface water, sampling, preservation, Monitoring techniques and methodology pH, conductance, DO, ammonia, nitrate and nitrite, Cl, F, CN, Sulfide, sulphate, phosphate, total hardness, boron, metals and metalloids- As, Cd, Cr, Cu, Fe, Pb, Mn, Hg (Exclude polarographic and AAS methods), COD, BOD, TOC, phenols, pesticides, surfactants, tannis and lignins, E. Coli, Case studies of water pollution. ➢ Water pollutants, Eutrophication, Waste water treatment aerobic treatment, anaerobic treatment, upflow aerobic sludge bed, industrial waste water treatment, drinking water supplies, Trace elements in water, chemical speciation (Cu, Pb, Hg, As, Se, Cr)	concentration, Segments of Environment, Biogeochemical cycles of C, N, P, S and O system. Water resources, Hydrological Cycle: stages of hydrological cycle and chemical composition of water bodies, Classification of water pollutants ➢ Students acquainted Organic and Inorganic pollutants, Sewage and Domestic waste, Sediments,Detergents,Pesticides,Eutrophication, Sampling and monitoring water quality parameters: pH, D.O. COD, TOC, Total hardness, free chlorine. ➢ Students got knowledged about Water quality parameters and standards, domestic water quality parameters, surface water, sampling, preservation, Monitoring techniques and methodology pH, conductance, DO, ammonia, nitrate and nitrite, Cl, F, CN, Sulfide, sulphate, phosphate, total hardness, boron, metals and metalloids- As, Cd, Cr, Cu, Fe, Pb, Mn, Hg, COD, BOD, TOC, phenols, pesticides, surfactants, tannis and lignins, E. Coli, Case studies of water pollution. ➢ Students understands the terms Water pollutants, Eutrophication, aerobic treatment, anaerobic treatment, upflow aerobic sludge bed, industrial waste water treatment, drinking water supplies, Trace elements in water, chemical speciation (Cu, Pb, Hg, As, Se, Cr)
18.	TYBSC	V	Inorganic	➢ Understand the principles of gravimetric	➢ Students will be able to explain the

			Chemistry Practical-I (CH-506)	analysis and its applications in quantitative chemical analysis. ➢ Perform accurate gravimetric estimations by following standard procedures and techniques. ➢ Understand the methods and techniques used in the preparation of inorganic compounds. ➢ Synthesize various inorganic compounds using laboratory procedures and characterize their properties. ➢ Understand the principles of qualitative analysis of inorganic compounds. ➢ Identify cations and anions in unknown inorganic samples using systematic qualitative analysis techniques.	fundamental principles of gravimetric analysis and apply them to determine the quantity of analytes in various samples. ➢ Students will be able to conduct gravimetric estimations with precision, adhering to standard laboratory protocols and techniques. ➢ Students will be able to describe and apply various methods and techniques for the preparation of inorganic compounds in the laboratory. ➢ Students will be able to synthesize a range of inorganic compounds and characterize their physical and chemical properties using appropriate analytical methods. ➢ Students will be able to explain the theoretical principles underlying the qualitative analysis of inorganic compounds. ➢ Students will be able to systematically identify the presence of specific cations and anions in unknown samples through qualitative analysis techniques.
19.		V	CH-349: Organic Chemistry Practical	➢ Students Perform the quantitative chemical analysis of binary mixture, explain principles behind it. ➢ Separate, purify and analyse binary water insoluble mixture. ➢ Separate, purify and analyse binary water-soluble mixture. ➢ Understand the techniques involving drying and recrystallization by various method.	➢ Students well familiarize the separation of binary mixture, its purification and detection of functional group. ➢ Students well known about the preparations of derivative various functional groups

				➢ Familiarize the test involving identification of special elements. ➢ Learn the confirmatory test for various functional groups. ➢ Learn the preparations of derivative various functional groups aspects of electrical experiments.	
20.	TYBSC	VI	CH-602 Physical Chemistry-III	➢ Cohesive Energy of ionic crystals based on coulomb's law and Born Haber Cycle Correspondence between energy levels in the atom and energy bands in solid Band structure in solids – Na , Ca and diamond ➢ Conductors and insulators – Its correlation with Extent of energy in energy bands phenomena of photoconductivity ➢ Semiconductors – Role of impurity in transformation of insulator into semiconductor Temperature dependant conductivity semiconductors ➢ Cohesive Energy in metals Numericals based on cohesive energy	➢ Students acquiented cohesive Energy of ionic crystals based on coulomb's law and Born Haber Cycle Correspondence between energy levels in the atom and energy bands in solid Band structure in solids – Na , Ca and diamond ➢ Students got the about knowledge Conductors and insulators – Its correlation with Extent of energy in energy bands ➢ Students understand semiconductors – Role of impurity in transformation of insulator into semiconductor Temperature dependant conductivity semiconductors ➢ Students familiar with cohesive Energy in metals Numericals based on cohesive energy
21.	TYBSC	VI	Inorganic Chemistry-II (CH-604)	➢ Understand the structure and bonding in organometallic compounds, including the 18-electron rule. ➢ Analyze the reactivity and mechanisms of organometallic reactions, including catalytic cycles. ➢ Understand the principles and mechanisms of homogeneous and heterogeneous catalysis. ➢ Evaluate the applications of catalytic	➢ Students will be able to explain the structure and bonding in organometallic compounds, applying the 18-electron rule to predict stability and reactivity. ➢ Students will be able to analyze the reactivity patterns and mechanisms of organometallic reactions, including the steps involved in catalytic cycles. ➢ Students will be able to describe the fundamental principles and mechanisms

				processes in industrial and environmental contexts. ➢ Understand the role of metal ions in biological systems, including metalloenzymes and metalloproteins. ➢ Analyze the mechanisms of metal ion transport and storage in biological systems. ➢ Understand the synthesis and properties of inorganic polymers, including silicones and phosphazenes. ➢ Evaluate the applications of inorganic polymers in various industries. ➢ Understand the structure and properties of inorganic solids and ionic liquids. ➢ Analyze the applications of inorganic solids and ionic liquids in technology and industry.	underlying both homogeneous and heterogeneous catalysis. ➢ Students will be able to assess the practical applications of catalytic processes, considering their industrial efficiency and environmental impact. ➢ Students will be able to explain the biological roles of metal ions, particularly in the function of metalloenzymes and metalloproteins. ➢ Students will be able to analyze the mechanisms by which metal ions are transported and stored within biological systems. ➢ Students will be able to describe the synthesis methods and properties of various inorganic polymers, such as silicones and phosphazenes. ➢ Students will be able to evaluate the diverse applications of inorganic polymers across different industries, including their advantages and limitations. ➢ Students will be able to explain the structural characteristics and properties of inorganic solids and ionic liquids. ➢ Students will be able to analyze the technological and industrial applications of inorganic solids and ionic liquids, highlighting their significance and potential.
22.	TYBSC	VI	Inorganic Chemistry-III (CH-605)	➢ Understand the fundamental concepts of acid-base and donor-acceptor interactions, including Lewis and Brønsted-Lowry	➢ Students will be able to explain the fundamental concepts of acid-base and donor-acceptor interactions, applying Lewis

				theories. ➢ Analyze the behavior of acids, bases, and donor-acceptor complexes in various chemical reactions and environments. ➢ Understand the structure and properties of ionic solids, including lattice energy and crystal structures. ➢ Analyze the factors affecting the stability and conductivity of ionic solids. ➢ Understand the structure and properties of zeolites, including their pore structure and ion-exchange capabilities. ➢ Evaluate the applications of zeolites in catalysis, adsorption, and environmental remediation. ➢ Understand the principles and techniques used in the synthesis and characterization of nanomaterials. ➢ Analyze the unique properties of nanomaterials and their applications in various fields such as medicine, electronics, and energy. ➢ Understand the principles of toxicology and the mechanisms of action of various toxic substances. ➢ Evaluate the impact of chemical toxins on human health and the environment, and understand the methods for their detection and mitigation.	and Brønsted-Lowry theories to various chemical contexts. ➢ Students will be able to analyze and predict the behavior of acids, bases, and donor-acceptor complexes in different chemical reactions and environments. ➢ Students will be able to describe the structure and properties of ionic solids, including the concepts of lattice energy and various crystal structures. ➢ Students will be able to analyze the factors that influence the stability and electrical conductivity of ionic solids. ➢ Students will be able to explain the structure and properties of zeolites, focusing on their pore structure and ion-exchange capabilities. ➢ Students will be able to evaluate the various applications of zeolites, particularly in catalysis, adsorption, and environmental remediation. ➢ Students will be able to describe the principles and techniques involved in the synthesis and characterization of nanomaterials. ➢ Students will be able to analyze the unique properties of nanomaterials and discuss their applications in fields like medicine, electronics, and energy. ➢ Students will be able to explain the principles of toxicology and the mechanisms by which various toxic substances exert their effects.

					➢ Students will be able to evaluate the impact of chemical toxins on human health and the environment, and understand the methods used for their detection and mitigation.
23.	TYBSC	VI	CH-607: Organic Chemistry-II	➢ Organic Spectroscopic Methods in Structure Determination. (Chapter 1-5) Students will learn the interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters. ➢ Students will learn the principle of mass spectroscopy, its instrumentation and nature of mass spectrum. ➢ Students will understand the principle of UV spectroscopy and the nature of UV spectrum. They will learn types of electronic excitation. ➢ Students will be able to calculate maximum wavelength for any conjugated system. And from the value of λ-max they will be able to find out the extent of conjugation in the compound. ➢ Students will understand the principle of IR spectroscopy, types of vibrations and the nature of IR spectrum. ➢ From the IR spectrum, they will be able to find out IR frequencies of different functional groups. And thus, they will be able to find functional groups present in the compound. ➢ Students will understand the principle of NMR spectroscopy and will understand	➢ Students well knows about the all Spectroscopic. ➢ Students undarstood the principle of IR spectroscopy, types of vibrations and the nature of IR spectrum. ➢ Students well acquainted understand the principle of NMR spectroscopy and will understand various terms used in NMR spectroscopy. They will learn measurement of chemical shift and coupling constants. ➢ Students well interpret the NMR data and they able to use it for determination of structure of organic compounds. ➢ Students well familiarize the use of models to draw different types of disubstituted cyclohexanes in chair form. The geometrical isomerism in disubstituted cyclohexanes. The stability, energy calculations and optical activity of these conformers

				various terms used in NMR spectroscopy. They will learn measurement of chemical shift and coupling constants. ➢ Students will be able to interpret the NMR data and they will be able to use it for determination of structure of organic compounds. ➢ Students will be able to determine the structure of simple organic compounds on the basis of spectral data such as λ max values, IR frequencies, chemical shift (δ values) ➢ The use of models to draw different types of disubstituted cyclohexanes in chair form. The geometrical isomerism in disubstituted cyclohexanes. The stability, energy calculations and optical activity of these conformers	
24.	TYBSC	VI	CH-608: Organic Chemistry-III	➢ Introduction, Different terms used – Disconnection, Synthons, Synthetic equivalence, FGI, TM. One group disconnection, Retrosynthesis and Synthesis of target molecules ➢ Chemistry of reactive intermediates (carbocations, carbanions, free radicals, carbenes, nitrenes, benzynes etc…); 2. Wolff rearrangement (Step up), 3. Hofmann rearrangement (Step down), 4. Simmons-Smith reaction, 5. Michael reaction, 6. Wittig reaction and McMurry reaction, 7. Diels-Alder reaction, 8. Functional group interconversions and structural problems using chemical	➢ Students well acquainted with the planning of retrosynthesis and its terminology like Disconnection, Synthons, Synthetic equivalence, FGI, TM. One group disconnection, Retrosynthesis and Synthesis of target molecules ➢ Students well familiarize the chemistry of reactive intermediates (carbocations, carbanions, free radicals, carbenes, nitrenes, benzynes) ➢ Students well knows the Wolff rearrangement (Step up), Hofmann rearrangement (Step down), Simmons-Smith reaction, Michael reaction, Wittig reaction and McMurry reaction, Diels-

				reactions ➢ Reducing Reagents:Oxidizing Reagents: ➢ Terpenoids: Introduction, Isolation, Classification. Citral- structure determination using chemical and spectral methods, Synthesis of Citral by Barbier and Bouveault Synthesis. Alkaloids: Introduction, extraction, Purification, Some examples of alkaloids and their natural resources. Ephedrine- structure determination using chemical methods.Synthesis of Ephedrine by Nagai.	Alder reaction, ➢ Students well undrstood the Functional group interconversions and structural problems using chemical reactions ➢ Students understood the Reducing Reagents, Oxidizing Reagents with example ➢ Students well understood the Terpenoids and Alkaloids.
25.	TYBSC	VI	CH-610 (A) : Chemistry of Soil and Agrochemicals	➢ Role of agricultural chemistry Introduction to soil chemistry, definitions of soil, Soil components- Mineral component, organic matter or humus, soil atmosphere, soil water, soil microorganism. ➢ Physical properties of soil- Soil texture, soil structure, soil colour, soil temperature, soil density, porosity of soil. ➢ Surface soil and sub-soil, Functions of soil. Chemical properties of soil - Soil reactions, importance of soil reaction, factors controlling soil reactions ,Buffer action, buffering capacity, importance of buffer reaction in agriculture, ion exchange and importance of ion exchange. ➢ Introduction to problematic soils. Acid soils- formation of acid soil, effect of soil acidity on plant, reclamation of acidic soil, application of lime in improving the acidity of soil, lime requirements. Alkali	➢ Students acquainted Role of agricultural chemistry Introduction to soil chemistry, definitions of soil, Soil components- Mineral component, organic matter or humus, soil atmosphere, soil water, soil microorganism. ➢ Students got knowledge about Physical properties of soil- Soil texture, soil structure, soil colour, soil temp, soil density, porosity of soil. ➢ Students understands the terms Surface soil and sub-soil, Functions of soil. Chemical properties of soil - Soil reactions, importance of soil reaction, factors controlling soil reactions ,Buffer action, buffering capacity, importance of buffer reaction in agriculture, ion exchange and importance of ion exchange. ➢ Students acquainted Introduction to problematic soils. Acid soils- formation of acid soil, effect of soil acidity on plant,

				Soil- formation of alkali soil, reclamation of alkali soil. Classification of alkali soil- saline soil, alkali soil, saline alkali soil, non-saline alkali soil. Soil testing - Introduction, different methods of soil fertility evaluation. Objectives of soil testing. ➢ Collection of soil Samples from field. Soil sample preparation for analysis of various parameters. Digestion and Extraction Procedures for soil. ➢ Introduction, Classification of nitrogenous fertilizers, reaction of ammonium sulphate, urea as a fertilizer in soil. Nano fertilizers- Nano-Fertilizers for Sustainable Crop Production, Nano urea- preparation, forms and application of nano urea. Phosphatic fertilizers- Classification of phosphatic fertilizers, reactions of superphosphate as a fertilizer in soil. Potassic fertilizers - Classification of potassic fertilizers, reactions of potash fertilizer in soil. Complex fertilizers- Characteristics, advantages and disadvantages, Mixed fertilizers - Characteristics, advantages and disadvantages. Time and mode of applications of fertilizers in the solid and liquid form to plants. Factors affecting efficiency of fertilizers. ➢ Introduction, Definition and classification of manures. Effect of bulky organic manures on soil. Farm yard manures (FYM), improved methods of handling	reclamation of acidic soil, application of lime in improving the acidity of soil, lime requirements. Alkali Soil- formation of alkali soil, reclamation of alkali soil. Classification of alkali soil- saline soil, alkali soil, saline alkali soil, non-saline alkali soil. Soil testing - Introduction, different methods of soil fertility evaluation. Objectives of soil testing. ➢ Students got knowledge about Collection of soil Samples from field. Soil sample preparation for analysis of various parameters. Digestion and Extraction Procedures for soil. ➢ Students acquainted Introduction, Classification of nitrogenous fertilizers, reaction of ammonium sulphate, urea as a fertilizer in soil. Nano fertilizers- Nano-Fertilizers for Sustainable Crop Production, Nano urea- preparation, forms and application of nano urea. Phosphatic fertilizers- Classification of phosphatic fertilizers, reactions of superphosphate as a fertilizer in soil. Potassic fertilizers - Classification of potassic fertilizers, fertilizers- Characteristics, advantages and disadvantages, Mixed fertilizers - Characteristics, advantages and disadvantages. Time and mode of applications of fertilizers. Factors affecting efficiency of fertilizers. ➢ Students got knowledge about Introduction, Definition and classification of manures.

				FYM- Trench method for FYM, Factors affecting the composition of FYM, losses during the handling and storage of FYM, Gober gas-compost plant - construction and advantages. Biofertilizers - Definition, classification, role & advantages.Vermicompost - Preparation, effect of vermicompost on soil fertility.Classification of pesticides. ➢ Insecticide- Definition, Classification on the basis of mode of action and chemical properties. Inorganic insecticides - plants or animal origin insecticides- nicotine, pyrethrum, rotenone. Synthetic organic insecticides – a) Organochlorine insecticides - DDT, BHC, Aldrin and dieldrin. b) Organophosphorus insecticides – Parathion, Malathion, c) Carbamate insecticides – Carbaryl, Baygon. Fungicide – Definition and Classification of fungicides. Inorganic fungicide- Copper fungicides a) Bordeaux mixture, b) Copper oxychloride. Organic fungicides- Dithiocarbamate, Quinone fungicides, Heterocyclic fungicides. Synthetic fungicides. Herbicides- Definition, Classification on the basis of mode of action Selective and non-selective herbicides,classification based on their effect on weeds- contact, systemic herbicides. Classification on the basis of their chemical structures. Nano pesticides: Its Scope and Utility in Pest Management.	Effect of bulky organic manures on soil. Farm yard manures (FYM), improved methods of handling FYM- Trench method for FYM, Factors affecting the composition of FYM, losses during the handling and storage of FYM, Gober gas Biofertilizers - Definition, classification, role & advantages.Vermicompost - Preparation, effect of vermicompost on soil fertility. ➢ Students knows about Insecticide- Definition, Classification on the basis of mode of action and chemical properties. Inorganic insecticides - plants or animal origin insecticides- nicotine, pyrethrum, rotenone. Synthetic organic insecticides – Organochlorine insecticides - DDT, BHC, Aldrin and dieldrin. b) Organophosphorus insecticides – Parathion, Malathion, c) Carbamate insecticides – Carbaryl, Baygon. Fungicide – Definition and Classification of fungicides. Inorganic fungicide- Copper fungicides a) Bordeaux mixture, b) Copper oxychloride. Organic fungicides- Dithiocarbamate, Heterocyclic fungicides. Synthetic fungicides. Herbicides- Definition, Classification. . Nano pesticides: Its Scope and Utility in Pest Management.

26.	TYBSC	VI	CH-611(A): Analytical Chemistry-II	➢ Define basic terms in solvent extraction, basics of chromatography, HPLC, GC, and AAS and AES. Some important terms are: solvent extraction, aqueous and organic phase, distribution ratio and coefficient, solute remain unextracted, percent extraction, ion association complex, theoretical plate. ➢ HETP, retention time, selectivity, resolution, stationary phase, normal and reverse phase, ion exchange, column efficiency, carrier gas, split and spitless injection, packed column, tubular column. ➢ Atomic absorption and emission spectroscopy, electronic excitation in atoms, nebulization, atomization, reduction of metal ions in flame, absorbance by atoms in flame, flame atomizers, furnace atomizers, interference in AES and FES, HCL, hydride generator, etc. ➢ Estimations. Example: minimum analyte concentration in particular method, reagent concentration for particular analysis, reagent for particular analysis, reaction condition to convert analyte into measurable form, wavelength selection in HPLC with spectrophotometric and fluorometric detector, solvent or carrier gas in HPLC and GC,choice method for the sample preparation in atomic spectroscopic methods, choice of filter and HCL in atomic spectroscopic methods, etc.	➢ Students understand Define basic terms in solvent extraction, basics of chromatography, HPLC, GC, and AAS and AES. Some important terms are: solvent extraction, aqueous and organic phase, distribution ratio and coefficient, solute remain unextracted, percent extraction, ion association complex, theoretical plate. ➢ Students acquiented HETP, retention time, selectivity, resolution, stationary phase, normal and reverse phase, ion exchange, column efficiency, carrier gas, split and spitless injection, packed column, tubular column. ➢ Students got the about Atomic absorption and emission spectroscopy, electronic excitation in atoms, nebulization, atomization, reduction of metal ions in flame, absorbance by atoms in flame, flame atomizers, furnace atomizers, interference in AES and FES, HCL, hydride generator, etc. ➢ Students familiar with Estimations. Example: minimum analyte concentration in particular method, reagent concentration for particular analysis, reagent for particular analysis, reaction condition to convert analyte into measurable form, wavelength selection in HPLC with spectrophotometric and fluorometric detector, solvent or carrier gas in HPLC and GC,choice method for the sample preparation in atomic spectroscopic methods, choice of filter and HCL in

					atomic spectroscopic methods, etc.
27.	TYBSC	VI	Inorganic Chemistry Practical-II (CH-606)	➢ Understand the principles and techniques of volumetric analysis, including titration methods. ➢ Perform accurate volumetric estimations to determine the concentration of unknown solutions. ➢ Understand the principles and instrumentation of flame photometry. ➢ Analyze the concentration of metal ions in samples using flame photometry techniques. ➢ Understand the principles and techniques of column chromatography. ➢ Separate and purify compounds using column chromatography methods. ➢ Understand the principles and methods used in the synthesis of nanomaterials. ➢ Characterize the properties of synthesized nanomaterials and evaluate their potential applications.	➢ Students will be able to explain the fundamental principles and techniques of volumetric analysis, including various titration methods, and apply them in laboratory settings. ➢ Students will be able to conduct precise volumetric estimations to determine the concentration of unknown solutions, ensuring accuracy and reliability in their measurements. ➢ Students will be able to describe the principles and instrumentation involved in flame photometry, understanding how it is used to analyze metal ions. ➢ Students will be able to accurately analyze the concentration of metal ions in various samples using flame photometry techniques, interpreting the results effectively. ➢ Students will be able to explain the principles and techniques of column chromatography, including the separation mechanisms and types of stationary phases used. ➢ Students will be able to effectively separate and purify compounds using column chromatography methods, optimizing conditions for maximum efficiency. ➢ Students will be able to describe the principles and various methods used in the synthesis of nanomaterials, including bottom-up and top-down approaches.

					➢ Students will be able to characterize the physical and chemical properties of synthesized nanomaterials and evaluate their potential applications in fields such as medicine, electronics, and energy.
28.	TYBSC	VI	CH-609: Organic Chemistry Practical-II	➢ Students should be aware about the "fingerprint region" of an infrared spectrum can used in the identification of an unknown compound. ➢ Students understand use NMR spectra to determine the structures of compounds, Interpret integration of NMR spectra, Calculate coupling constants from 1 H NMR spectra and Interpret elemental analysis technique ➢ Students aware about the practical knowledge of handling chemicals, Achieve the practical skills required to estimations of glucose and glycine. ➢ Achieve the practical skills required to Saponification value of oil. ➢ Determine the molecular weight of given tribasic acids. ➢ Organic Extractions The students will be able to 1. Apply the principles of extraction 2. Understand the equipment for extraction. 3. Gain practical hands-on experience of modern Extraction. 4. Develop basic design of extractor 5. Describe the extraction separation process. ➢ Column chromatography The students will be able to 1. Defines the basic parameters in chromatography 2. Explain the	➢ Students well knows the "fingerprint region" of an infrared spectrum can used in the identification of an unknown compound. ➢ Students well understood the use NMR spectra to determine the structures of compounds. ➢ Interpret integration of NMR spectra , Calculate coupling constants from 1 H NMR spectra. And Interpret elemental analysis technique ➢ Students well acquinted with practical knowledge of handling chemicals. ➢ They were well knowns the practical skills required to estimations of glucose and glycine. ➢ The practical skills required to Saponification value of oil. ➢ Determine the molecular weight of given tribasic acids. ➢ Organic Extractions The students well knows to 1. Apply the principles of extraction 2. Understand the equipment for extraction. 3. Gain practical hands-on experience of modern Extraction. 4. Develop basic design of extractor 5. Describe the extraction separation process. ➢ Column chromatography The students will

				processes of a chromatography analysis ➢ Describes the types and materials of column. 4. Explains the types of mobile phase and elution. 5. Realize the selection of appropriate mobile phase, column and detector	be able to 1. Defines the basic parameters in chromatography 2. Explain the processes of a chromatography analysis 3. Describes the types and materials of column. 4. Explains the types of mobile phase and elution. 5. Realize the selection of appropriate mobile phase, column and detector
29.	MSC I	I	CHE-501: Physical Chemistry Paper-I	➢ To understand the student's concepts of thermodynamic parameters, quantum mechanical postulates, rate laws of chemical reactions and computation of macroscopic properties of matter. ➢ To understand the students' basics like state function and path function, Schrodinger wave equation, kineticsoffast reactions, partitionfunctionsandensembles. ➢ The students should be able to apply the knowledge of various quantum mechanical methods to determine the different molecular properties and built the concept of the relation between thermodynamics and quantum mechanics. ➢ To understand the studentstoanalyzetheratesofvarious chemical reactions both theoretically and experimentally and also observe the effect of catalyst and determine energies of activation of such reactions.	➢ Students acquainted with the various terms of thermodynamic parameters, quantum mechanical ostulates, rate laws of chemical reactions and computation of macroscopic properties of matter. ➢ Students understand the basics like state function and path function, Schrodinger wave equation, kinetics of fast reactions, partition functions and ensembles. ➢ Students able to apply the knowledge of various quantum mechanical methods to determine the different molecular properties and built the concept of the relation between thermodynamics and quantum mechanics. ➢ Students were familiar with theratesofvarious chemical reactions both theoretically and experimentally and also observe the effect of catalyst and determine energies of activation of such reactions. ➢ Students should be able to evaluate variation of thermodynamic parameters for multi component systems and their variation with other extensive properties, Schrodinger wave equation and its application to hydrogen and hydrogen like

					atoms. ➢ Students should be able to create the solutions to avoid excess use of energy in chemical reactions by applying their knowledge of thermodynamics and chemicalkinetics.
30.	MSC I	I	CHE-502: Inorganic Chemistry Paper-I Section I- Molecular Symmetryand itsapplications to Inorganic chemistry & Chemistryof Main Group Elements	➢ To understand the students to define symmetry elements and symmetryoperations, classes, properties of a group, group multiplication table, etc. ➢ To understand the classification of the symmetry elements, point group, Group, sub-group and classes. ➢ To understand the problem based on point group, matrix representation and character table & solve it. ➢ To understand the construction of charactertableofvariouspointgroup. ➢ To understand whichcantakepart inbondingonthebasisof SALC and point group of molecules. ➢ To understand the electron deficient, electron precise and electron rich species, Pseudohalogens, Oxoacids and Oxidation state. ➢ To understand the special properties of fluorine, Nitrogen activation, Oxo acidsofnitrogen, sulphur andphosphorous, synthesis and structure of xenon fluorides. ➢ To understand the determination of oxidation states of nitrogen and theirinter conversionand applicationofcrownether inextraction of alkali and alkaline earth	➢ Students acquainted with the various terms in symmetry like symmetry elements and symmetryoperations, classes, properties of a group, group multiplication table, etc. ➢ Students got knowledge about symmetry elements, point group, Group, sub-group and classes. ➢ Students acquired the use wave function as basis for determination of irreducible representations and the Great Orthogonality theorem and its consequence. ➢ Students solve problem based on point group, matrix representation and character table ➢ Students learned the constructcharactertableofvariouspointgroup ➢ Students knows about which orbitalscantakepart inbondingonthebasisof SALC and point group of the molecules. ➢ Students lerned about electron deficient, electron precise and electron rich species, Pseudohalogens, Oxoacids and Oxidation state. Students got knowledge about special properties of fluorine, Nitrogen activation, Oxo acidsofnitrogen, sulphur andphosphorous, synthesis and structure of xenon fluorides.

				metal. ➢ To understand the classification of hydrides,boridesandoxyacidsanddraw their structure.	➢ Students acquainted the term metal sulfides, selenides, tellurides, polonide, inter-halogens, Halogen oxides, Graphene, fullerenes and carbon nanotube. ➢ Students got knowledge about determine Oxidation states of nitrogen and their inter conversionand applicationofcrownether inextraction of alkali and alkaline earth metal.
31.	MSC I	I	CHEPIA-503, Organic Chemistry-I	➢ To understand the concepts of aromaticity, stereochemistry, and oxidation-reduction reactions. ➢ To learn the concepts of stereochemistry. ➢ To predict the product and mechanism of the reactions. ➢ To apply the concepts of oxidations and reduction to solve the advance problems. ➢ To develop problem solving ability.	➢ Students will be able to understand the aromatic character, Huckels rule, antiaromaticity, homoaromaticity. Students also able to understand the stereochemistry, stereoisomerism, diastereomers, epimers. ➢ Students will be able to assign R/S and E/Z configuration of various compounds like spiranes, biphenyls, etc. ➢ Students will able to understand the different types of oxidising and reducing agents and reactions. ➢ Students will be able to identify and describe the different types of stereoisomerism (geometric and optical) in different organic compounds. ➢ Students will be able to identify nucleophile, electrophile, electrophilic and nucleophilic centres in the reaction mechanism. ➢ Students will be able to solve the reaction mechanisms.
32.	MSC I	I	CHEPIA-507 (D), Basic Organic	➢ To understand the concepts of chemical bonding, various structural effects, acids and bases, and types of reactions.	➢ Students will be able to understand the basic concepts of reaction mechanism. ➢ Students will be able to identify

			Chemistry	➢ To understand basic knowledge of aliphatic and aromatic substitutions, elimination and addition reactions. ➢ To understand and identify the types of organic reactions. ➢ To understand for writing the mechanism of aliphatic and aromatic substitutions, elimination and addition reactions and oxidation-reduction reactions. ➢ To develop problem solving ability of the students	nucleophile, electrophile, electrophilic and nucleophilic centres in the reaction mechanism. ➢ Students will able to understand the different types of oxidising and reducing agents and reactions. ➢ Students will be able to identify the reactive centres in the reactions, i.e. electrophilic and nucleophilic centres. ➢ Students will be able to identify bases and acids in the reaction mechanism. ➢ Students will be able to solve the reaction mechanisms.
33.	MSC I	I	CHE-508, Research methodology	➢ Develop a comprehensive understanding of different research methodologies and their applications in mathematics. ➢ Cultivate critical thinking and analytical skills necessary for identifying research problems and formulating research questions. ➢ Provide practical experience in designing experiments, collecting and analyzing data, and interpreting the research results.	➢ Students acquainted to develop a comprehensive understanding of different research methodologies and their applications in mathematics. ➢ Students got knowledge about cultivate critical thinking and analytical skills necessary for identifying research problems and formulating the research questions. ➢ Students get idea about provide practical experience in designing experiments, collecting and analyzing data, and interpreting research results.
34.	MSC I	I	CHE-504, Physical Chemistry Practical	➢ To understand student's concept of reaction rate and its significance in Chemical Kinetics. ➢ To understand the students that learns how to use experimental data to deduce rate laws and rate constants. ➢ To understand the student's fundamental principles of colorimetry and	➢ Students will grasp the concept of reaction rate and its significance in Chemical Kinetics. ➢ Students will be familiar with the fundamental principles of colorimetry and spectrophotometry including Beer's law, Lambert- Beer's law and the relationship between absorbance and concentration.

				spectrophotometry including Beer's law, Lambert- Beer's law and the relationship between absorbance and concentration. ➢ To understand the students to operate the instruments like spectrophotometer and colorimeter.	➢ Students will able to operate the instruments like spectrophotometer and colorimeter. ➢ Students will be able to determine the densities of the solutions and can calculate molar volumes.
35.	MSC I	I	CHE-505, Inorganic Chemistry Practical-I	➢ To understand how to prepare solution of required conc. and handle the laboratory equipment properly. ➢ To understand how will you perform the experiment accurately and able to perform calculations. ➢ To understand how to will perform the experiment and principal of experiment in detail. ➢ To understand how will you perform calculations and discuss results and write conclusions of the experiment. ➢ Apply the knowledge to a) Design experiment for given aim or modify experiment toenhanceresults.b)tofindout lacuna in experimental procedure. ➢ Solveproblem/numericaldependingongiven experimental data / information.	➢ The students learn to preparesolutionofrequiredconc.andhandleth e laboratory equipment properly. ➢ Students performexperiment accuratelyandabletoperform calculation. ➢ Students explainexperimentandprincipalofexperimen tin detail. ➢ Students performcalculationsanddiscussresultsandwr ite conclusions of the experiment. ➢ Students applyknowledgeto a) designexperiment forgiven aimormodifyexperiment toenhanceresults.b)tofindout lacuna in experimental procedure. ➢ Students solveproblem/numericaldependingongiven experimental data / information.
36.	MSC I	I	CHE-506, Organic Chemistry Practical I	➢ To understand the theoretical aspects behind separation, purification and synthesis of organic compounds. ➢ To acquire the experimental skills for separation, purification, identification and synthesis of organic compounds. ➢ To design experimental set up for performing the organic reactions.	➢ Students will able to perform experiment independently using literature procedures. ➢ They will also learn about essential safety measures to be adopted in industries to ensure a safe working environment. Additionally, students will be able to describe the production processes of key chemicals and understand the steps

				➢ To monitor the organic reactions. ➢ To describe the mechanistic aspects of organic reactions.	involved in their manufacturing. ➢ Students will be able to identify nucleophile, electrophile, electrophilic and nucleophilic centres in the reaction mechanism. ➢ Students will be enriching the skill regarding the reaction setup, reaction monitoring, product isolation, workup procedure, etc.
37.	MSC I	I	CHE- 551, Physical Chemistry-II	➢ 1. To understand the basic concepts of molecular ➢ spectroscopy, selection rules, intensity of spectral lines, radioactive decay and decay kinetics. ➢ 2. To understand the basic concepts of molecular spectroscopy, selection rules, intensity of spectral lines, radioactive decay and decay kinetics. ➢ 3. To understand principles and applications of rotational, vibrational, Raman, electronic and Mossbauer spectroscopy. Understand concepts of nuclear and radiation Chemistry. Applications of Radioisotopes. ➢ 4. To Analyse vibrating diatomic molecule, simple harmonic and anharmonic oscillator, Scattering of light, Raman Spectrum, interaction of γ radiation with matter and radiation dosimetry. ➢ 5. To understand the evaluation of bond length, vibrational frequency, force constant and dissociation energy using spectral data.	➢ 1. Students are aware about basic concepts of molecular spectroscopy, selection rules, intensity of spectral lines, radioactive decay and decay kinetics. ➢ 2. Students are familiar to basic concepts of molecular spectroscopy, selection rules, intensity of spectral lines, radioactive decay and decay kinetics. ➢ 3. Students understand principles and applications of rotational, vibrational, Raman, electronic and Mossbauer spectroscopy. Understand concepts of nuclear and radiation Chemistry & applications of Radioisotopes. ➢ 4. Students are familiar to the evaluation of bond length, vibrational frequency, force constant and dissociation energy using spectral data. ➢ 5. Students understand the theoretical rotational and vibrational spectra of simple molecules. Identify and define various types of nuclear changes or processes including fission, fusion and decay reactions.

				➢ 6. To understand the theoretical rotational and vibrational spectra of simple molecules. Identify and define various types of nuclear changes or processes including fission, fusion and decay reactions.	
38.	MSC I	I	CHE-552: Inorganic Chemistry-II (Coordination and Bioinorganic Chemistry)	➢ To understand the R. S. term, configuration, microstate, paramagnetic, diamagnetic ferromagnetic, antiferromagnetic, Curie and Neel temperature. ➢ To understand the complex ions showing same R.S. terms, degeneracy of ground state terms ofmetal ions, and spin multiplicities of different configurations. ➢ To understand the interpretation of electronic spectra for spin allowed Oh and Td complexes using Orgel diagram, Magnetic properties of A, E and T ground terms in complexes and selection rules. ➢ To interpret the electronic spectra forspin allowed Oh and Td complexes using Orgel diagram, Magnetic properties of A, E and T ground terms in complexes and selection rules. ➢ To understand the calculation of frequencies of absorption spectrum, 10Dq, Racah and Nepholauxetic parameter for a complex, and magnetic moments of complexes. ➢ To construct the microstate table for various configuration and prepare correlations diagram and Tanabe-Sugano	➢ 1. Students are aware about R. S. term, configuration, microstate, paramagnetic, diamagnetic ferromagnetic, antiferromagnetic, Curie and Neel temperature. ➢ 2. Students are aware about the interpretation of electronic spectra for spin allowed Oh and Td complexes using Orgel diagram, Magnetic properties of A, E and T ground terms in complexes and selection rules. ➢ 3. Students are aware about calculation of frequencies of absorption spectrum, 10Dq, Racah and Nepholauxetic parameter for a complex, and magnetic moments of complexes. ➢ 4. Students are able to construct the microstate table for various configuration and prepare correlations diagram and Tanabe-Sugano diagram for various configurations in Td an Oh ligand field.

				diagram for various configurations in Td an Oh ligand field.	
39.	MSC I	II	CHEPIA-553, Organic Chemistry-II (2 credits)	➢ 1. To Understand the concepts of molecular rearrangements. ➢ 2.To know the Basic knowledge of Organic Spectroscopy such as UV, IR and NMR. ➢ 3. To understand how to solve the problems based on molecular rearrangement reactions. ➢ 4.To understand how to deduce the structure from the spectral data and justify the findings. ➢ 5.To develop problem solving ability. ➢ 6. To apply the concepts of oxidations and reduction to solve the advance problems.	➢ Students will be able to classify different types of polymerization reactions (addition and condensation), understand the thermodynamic and transport properties of polymers, and identify various commercial polymers and their applications. ➢ Students will understand the significance of the sugar industry, including the production and consumption of plantation white sugar. They will be able to describe the process of cane juice extraction using various methods and explain the clarification processes such as carbonation, sulphation, and Phosphatation, supported by flow diagrams. ➢ Students will gain knowledge about different types of surfactants, the raw materials used in detergent production, and the mechanisms of washing action. They will also learn about detergent builders and additives, and their roles in enhancing detergent performance. ➢ Students will be able to describe the preparation of dye intermediates, understand the structural features of dyes, and classify them based on their chemical structure and application. They will also learn about the various applications of dyes in different industries.
40.	MSC I	II	CHE-557 (C) Green Chemistry	➢ 1.To apply the principles of green chemistry to chemical processes. ➢ 2.To understand the basic principles of	➢ 1. Students are aware about principles of green chemistry to chemical processes. ➢ 2. Students are aware about basic

			(2 Credits)	green chemistry to reduce the cost of chemical processes. ➢ 3. To develop economical synthetic route involving principles of green chemistry. ➢ 4. To analyze chemical data and choose safer and renewable raw materials for chemical processes.	principles of green chemistry to reduce the cost of chemical processes. ➢ 3. Students are able to analyze chemical data and choose safer and renewable raw materials for chemical processes.
41.	MSC I	II	CHE- 554, Physical Chemistry Practical II [2 Credits]	➢ 1.To understand the students will grasp the fundamental principles of Conductometry, Polarography, Potentiometry and pH metry. ➢ 2. To understand the operation of Conductometer, Polarimeter, Potentiometer and pH meter. ➢ 3. To understand the concepts of conductance, resistance and learn how to calculate and interpret these values. ➢ 4. To interpret polarographic waves and understand their significance in identifying electroactive species and determining their concentration. ➢ 5. To explore the applications of Potentiometry in various fields such as acid- base titrations, determination of pH and analysis of ionic concentration.	➢ 1. Students will grasp the fundamental principles of Conductometry, Polarography, Potentiometry and pH metry. ➢ 2. Students will familiar with the operation of Conductometer, Polarimeter, Potentiometer and pH meter. ➢ 3. Students will understand the concepts of conductance, resistance and learn how to calculate and interpret these values. ➢ 4. Students will learn to interpret polarographic waves and understand their significance in identifying electroactive species and determining their concentration. ➢ 5. Students will explore the applications of Potentiometry in various fields such as acid- base titrations, determination of pH and analysis of ionic concentration.
42.	MSC I	II	CHE-555: Inorganic Chemistry Practical-II (2 Credits)	➢ 1. Define coordination complex, cell constant, resistance, specific conductance, equilibrium constant, absorbance, Beers law, solubility product, chromatography, etc. ➢ 2. Discuss photochemistry of potassium trioxalatoferrate complex, kinetics of formation of Cr(III)-EDTA, Determination	➢ 1. Students know about coordination complex, cell constant, resistance, specific conductance, equilibrium constant, absorbance, Beers law, solubility product, chromatography, etc. ➢ 2. Students know to photochemistry of potassium trioxalatoferrate complex, kinetics of formation of Cr(III)-EDTA,

				of Cu(II)and Fen(II) by solvent extraction technique. ➢ 3. Outline the flow-chart for synthesis of [Mn(acac)3], Chloropentaamminecobalt(III) chloride, Nitro pentaamminecobalt(III) chloride, Bis[TrisCu(I)thiourea complexes. ➢ 4. Estimate purity of the [Mn(acac)3], Chloropentaamminecobalt(III) chloride, Nitro pentaamminecobalt(III) chloride, Bis[TrisCu(I)thiourea complexes. ➢ 5. Calculate the quantity from observation of the experiments and Interpret the result obtained respective experiments.	Determination of Cu(II)and Fen(II) by solvent extraction technique. ➢ 3. Students aware about the flow-chart for synthesis of [Mn(acac)3], Chloropentaamminecobalt(III) chloride, Nitro pentaamminecobalt(III) chloride, Bis[TrisCu(I)thiourea complexes. ➢ 4. Students aware about estimation of purity of the [Mn(acac)3], Chloropentaamminecobalt(III) chloride, Nitro pentaamminecobalt(III) chloride, Bis[TrisCu(I)thiourea complexes.
43.	MSC I	II	CHE-556, Organic Chemistry Practical II	➢ 1. To understand the theoretical concepts behind organic synthesis. ➢ 2. To acquire the experimental skills for separation, purification, identification and synthesis of organic compounds. ➢ 3. To design experimental set up for performing the organic reactions. ➢ 4. Monitor the organic reactions and analyse the products using spectral results. ➢ 5. To develop problem solving ability.	➢ 1. Students aware about the theoretical concepts behind organic synthesis. ➢ 2. Students acquire the experimental skills for separation, purification, identification and synthesis of organic compounds. ➢ 3. Students are aware about design experimental set up for performing the organic reactions. ➢ 4. Students are able to monitor the organic reactions and analyse the products using spectral results.
44.	MSC II	IV	CHA-490: Advanced Analytical Spectroscopic Techniques	➢ Define / understand various terms in atomic absorption, atomic emission, fluorescence, ESR and electron spectroscopy. ➢ Explain instrumentation of atomic absorption, atomic emission, ICPAES, ICPAES-MS, fluorescence, ESR and electron spectroscopy.	➢ Students acquainted with the various terms in atomic absorption, atomic emission, fluorescence, ESR and electron spectroscopy. ➢ Students were familiar with the instrumentation of atomic absorption, atomic emission, ICPAES, ICPAES-MS, fluorescence, ESR and electron

				➢ To describe basic principles of atomic absorption, atomic emission, ICPAES, ICPAESMS, fluorescence, ESR and electron spectroscopy. ➢ Select appropriate methods for sample treatment in AAS / AES, ICPAES, ICPAES-MS.	spectroscopy. ➢ St ➢ Students got the knowledge basic principles of atomic absorption, atomic emission, ICPAES, ICPAESMS, fluorescence, ESR and electron spectroscopy. ➢
45.	MSC II	IV	CHA-491: Chemical Methods of Pharmaceuticals Analysis	➢ Define / understand various terms in pharmaceutical raw material and finished product analysis. ➢ Explain various pharmaceutical dosage forms and types of raw materials used. ➢ To describe basic principles of methods of pharmaceutical analysis according to IP. ➢ Explain importance particular test in pharmaceutical raw material and finished product analysis.	➢ Students familiar with the various terms in pharmaceutical raw material and finished product analysis. ➢ Students acquiented the different pharmaceutical dosage forms and the types of raw materials used. ➢ Students got the about knowledge basic principles of methods of pharmaceutical analysis according to IP. ➢
46.	MSC II	IV	CHA-492: B) Analytical Chemistry of agriculture, Polymer and Detergent	➢ Define / understand various terms in soil analysis, pesticide residue analysis, detergent analysis and polymer analysis. ➢ Explain / describe techniques / methods of soil analysis, pesticide residue analysis, detergent analysis and polymer analysis. ➢ To describe basic principles techniques/methods ➢ soil analysis, pesticide residue analysis, detergent analysis and polymer analysis.	➢ Students knows about the various terms in soil analysis, pesticide residue analysis, detergent analysis and polymer analysis. ➢ Students familiar with the methods of soil analysis, pesticide residue analysis, detergent analysis and polymer analysis. ➢ Students acquired the information about the basic principles techniques methods of soil analysis, pesticide residue analysis, detergent analysis and polymer analysis.
47.	MSC II	IV	CHA-493: A) Optional Analytical Chemistry Practical	➢ Maintain proper record of analytical data in notebook. Observer personal safety in laboratory and able handle all chemicals, instruments, etc safely in laboratory. ➢ Define / understand various terms	➢ Students improved the practical hand with proper record of analytical instrument with analytical data. Students handle all chemicals, instruments safely in laboratory. ➢ Student acquired the various terms involved

				involved practical methods of quantitative analysis. ➢ Perform analysis of sample with described procedure. Able to handle analytical instruments.	practical methods of quantitative analysis. ➢ Students familiar with the Performing of analysis of sample with described procedure and they were Able to handle analytical instruments.
48.	MSC II	IV	CHA-493: B) Project	➢ Maintain proper record of analytical data in note book for research purpose. ➢ Perform review of literature related to the topic of project work and design the problem for project work. ➢ Decide and describe methodology for problem to solve proposed problem in the form of project. Decide and ➢ perform application of research work.	➢ Students acquainted how to Maintain proper record of analytical data in note book for research purpose. ➢ Student perform review of literature related to the topic of project work and design the problem for project work. ➢ Student learned the methodology for problem to solve proposed problem in the form of project and perform application of research work.

DEPARTMENT OF BOTANY

Sr. No.	Class	Sem.	Subject Code with Subject	Course Outcome	Attainment
1	F.Y. B.Sc	I	BO111: Plant Life & Utilization I	1.Understand the outline classification of plant kingdom and diversity among the plants. 2. To Know the systematic, morphology and structure, of Algae. Understand the life cycle Spirogyra. Usefulness of the algae. 3.Acquire the knowledge about Symbiotic association, types and utilization of Lichen.	Students understand the outline and know classification of plant kingdom and diversity among the plants. Students now able to know the systematic position, morphology and structure, of Bryophytes with the life cycle study of representative Riccia. Utilization of bryophytes. Students understand about Symbiotic association, types and utilization of Lichen.
2	F.Y. B.Sc	I	BO112: Plant Anatomy & Morphology	1.Students will be well acquainted with morphology and different terms used for the study of morphology of plants. 2.They can also study plant identification, nomenclature systems and classification of plants.	Students now knows morphology of plants. Students now knows IUCN rules.
3	F.Y. B. Sc	I	BO113: Practical based on BO111 & BO112	1.Introduction to handling of microscope, sectioning and slide preparation, practicalperformance in view of examination. 2.Understanding the life cycle pattern of various plant groups with specimen study ofSpirogyra, Agaricus, and Riccia. 3.Understand the types of lichens and	Now students can handle the microscope, can take the section and able to prepare the slides. Students now understand the life cycle pattern of Spirogyra, Agaricus and Riccia. Students know the types of lichen and can

				process of mushroom cultivation.	be able to cultivate the Mushroom.
4	F.Y. B.Sc	II	BO121: Plant life & Utilization II	1.Know the external morphological features of reproductive parts viz, inflorescence,flower, floral whorls, fruits, seeds, their types, modifications and functions. 2.Understand the internal primary structure of monocots and dicots with reference to root, stem and leaf for observing difference at internal organization level between these two groups.	Students can be identify the reproductive parts like inflorescence and their types, flower types, floral whorl types, types of fruits, types of seeds with their modifications and functions. Students can be identify the Monocot and Dicot plants can enlist the differences in between them with respect to root, stem and leaf on the basis of internal characters.
5	F.Y. B.Sc	II	BO122: Principles of plant science	1.Important physiological phenomenon like diffusion , osmosis, plasmolysis, plant growth etc. can be learn by the students. 2.The role of all these physiological process in plant life can be better understood by the student. 3.The students will better familiar with basics of plant cells and also get knowledge of various cell organells.	Student can know important physiological phenomenon like diffusion, osmosis, plasmolysis etc. Student can know physiological process in plant life. Student knows various cell organells in plants.

6	F.Y. B. Sc	II	BO123: Practical based on BO121 &BO122	1.Understanding the life cycle pattern of plant groups pteridophytes and gymnosperms with specimen study of Nephrolepis and Cycas. 2.know the comparative account of Dicotyledonous and Monocotyledonous plants w.r.t to external morphological characters.	Students learn the life cycle pattern and can be identify the pteridophytes and gymnosperms with specimen Nephrolepis and Cycas. Students can be differentiating the Dicotyledonous and Monocotyledonous plants.
7	S.Y. B. Sc	III	BO231: Taxonomy of plant angiosperms & Ecology	1.Get knowledge regarding introduction, scope and importance of taxonomy in study ofangiospermic plants. 2.Aware with available systems of plant classification along with their merits and demerits utilized in the taxonomy from ancient period to the date for classification of flowering plants. 3.Understand the plant diversity, and study the representative specimen of plant familieswith reference to systematic position, salient features, floral formula, floral diagram andeconomic importance of that family.	Students understand the scope and importance of taxonomy in study ofangiospermic plants. Students understand the systems of plant classification along with their merits and demerits utilized in the taxonomy from ancient period to the date for classification of flowering plants. Students get the importance of plant diversity and can be identify the plant family with reference to systematic position, salient features, floral formula, floral diagram andeconomic importance of that family.
8	S.Y. B.Sc	III	BO232: Plant Physiology	1.The student will be able to understand relation between plant and water.	The student now knows the plant water relation.

				2.The student understands the importance of Biological Nitrogen Fixation.	Student can now Know the roll and Importance of Biological Nitrogen Fixation.
9	S.Y. B. Sc	III	BO233: Practical based on BO231&BO232	1.The student will be able to understand the rate of photosynthesis. 2.The student will be able to understand which tools, Instruments are use in taxonomy and ecological study. 3.The student will be able to understand ecological adaptations in Hydrophytes and Xerophytes.	The student now knows how to calculate rate of photosynthesis. The student now knows various tools, Instruments are use in taxonomy and ecological study. The student now knows hydrophytes, xerophytes plants and their ecological adaptation.
10	S.Y. B. Sc	IV	BO241: Plant Anatomy & Embryology	1.Know the scope of plant anatomy in various field. 2.Understand the structure, types and functions of epidermal tissue system with referenceto epidermis, stomata and epidermal outgrowths. 3.Learn the mechanical tissue system with reference to their distribution in plants andfollowing the principle for providing the strength and support to the plants. 4. Understand the types of vascular tissue system and their role in development of normalor abnormal secondary growth in various plant as per the need of plant.	Students now understand the importance of Plant Anatomy with respect to various field. Students now identify the structure, types and functions of epidermal tissue system with reference to epidermis, stomata and epidermal outgrowths. Students understand the importance of mechanical tissue system with reference to their distribution in plants andfollowing the principle for providing the strength and support to the plants. Students can identify the types of vascular tissue system and understand their role in

					development of normalor abnormal secondary growth in various plant as per the need of plant.
11	S.Y. B. Sc	IV	BO242: Plant Biotechnology	1.The student will be able to understand Scope and importance of Plant Biotechnology. 2.The student understands the importance of Plant Tissue Culture. 3.The student will be able to understand Basic techniques Plant Tissue Culture. 4.The learner will understand the Applications of plant genetic engineering. 5.The student understands the uses of Microbes in industry especially SCP.	Students can know Scope and importance of Plant Biotechnology. Students can know Plant Tissue Culture. Students can know Types of culture, Media preparation, sterilization, inoculation, incubation, hardening. Student can know insect pest resistance, abiotic stress tolerance, herbicide resistance. Student can know Student can know uses of Microbes in industry especially SCP.
12	S.Y. B. Sc	IV	BO243: Practical based on BO241&BO 242	1.The learner will understand the Plant anatomy concepts. 2.The learner will understand the dicot and monocot embryo.	Student can know types of epidermis, types of stomata, and mechanical tissues. Student can know dicot and monocot embryo structure.
13	T.Y. B. Sc	V	BO351: Algae & Fungi	1.Learn the knowledge of the lower cryptogams. 2.Identify the Algal and Fungal thallus.	The students now knows the lower cryptogams. The Learner can understand Algal and Fungal thallus organization.

				3.Study the life cycle of algae. 4.Identify the economic importance of algae.	Students now knows life cycle Nostoc, Oedogonium, Batrachospermum ,Sargassum algae. Learner can understand economic importance of algae.
14	T. Y. B. Sc	V	BO352: Archegoniate	1.Gain the knowledge of Archegoniate. 2.Identify the Bryophytes. 3.Collect the knowledge of range of thallus organization. 4. Study the life cycles of Bryophytes. 5.Compare different Bryophytes.	Students can able tounderstand Introduction, distribution & characters of archegoniate. Students are able to identify the classification of bryophyte. The students can collect the knowledge of range of thallus organization. Students now knows life cycle Marchantia, Anthoceros, Funaria bryophyte. Students are able to understand evolution & different Bryophyte.
15	T. Y. B. Sc	V	BO353: Spermatophyta& paleobotany	1.The learner will understand the how Origin of angiosperms. 2.The learner will understand the Speciation & Endemism of plants. 3.The learner will understand the plant families, Diagnostic characters, floral formula and floral diagram.	Student can know how Origin of angiosperm plants on earth. Student can know how new species evolved and types of Speciation. Student can know identify the plants.
16	T. Y. B.Sc	V	BO354: Plant Ecology	1.Learn the interrelation ship between the living world and the environment. 2.Gain the knowledge of Biogeography. 3.Learn the population ecology and	Students now knows interrelation ship between the living world and the environment. Thestudents can Gain theknowledge of

				community ecology. 4.Study of biogeochemical cycles.	Biogeography. Learner can understand population ecology and community ecology. The students now know biogeochemical cycles.
17	T. Y. B. Sc	V	BO355: Cell& Molecular biology	1.Define the terms in cell biology. 2.Collect the information on cell organells. 3.Identify the nucleus and nuclear organizer and nuclear envelope.	The student now know the concept of cell biology. Student can now collect the information according to functions of organells. Student can study about nucleus& their parts.
18	T. Y. B.Sc	V	BO356: Genetics	1.Define genetics and terms involved in it. 2.Gain the insights of Mendelism and Neo Mendelism (Gene Interaction). 3.Learn the multiple alleles, linkage,recombination and crossing over and mutation. 4.Solve the numerical and structural alterations of chromosomes. 5.Learn the sexlinked chromosomes.	Learner now can able to explore how advances in our understanding genetics. Learners can understands types of gene interaction and the influence of allelic or non-allelic gens. The LearnersUnderstandsthat most of genes exist in two forms & multiple alleles always influence the same characters. During his study on genetic mendel assumed that only two alleles of one trait.
19	T. Y. B.Sc	V	BO357: Practical based on BO351 & BO 352	1.Correlate between practical with theory to improve the understanding. 2.Participate actively in educational tour for the study of flora and characterization of different molecules. 3.Learn the plant related practical skills. 4. Gain insights of research related methodology.	students know the Correlate between practical with theory to improve the understanding. The students can Participate actively in educational tour for the study of flora and characterization of different molecules. The studentsLearn the plant related

					practical skills.
20	T.Y. B.Sc	V	BO358: Practical based on BO353 &BO354	1.The learner will understand the plant families, Diagnostic characters, floral formula and floral diagram. 2.The student will be able to understands the Preparation of Botanical keys. 3.The student will be able to understands the physicochemical properties of water. 4.The student will be able to understands the internal and external morphology of Gnetum and pinus.	Students understand the identify of plant family. Students understand the prepare Botanical keys. Students understand the physicochemical properties of water body by using Sacchi disc, pH meter and electric conductivity meter. Students understand the internal and external morphology of Gnetum and pinus.
21	T.Y. B. Sc	V	BO359: Practical based on BO355 &BO356	1.correlate between practicals with theory to improve the understanding. 2.Cytological techniques- preparation of fixatives , preparation of stains. 3.Isolation of nuclei and characterization.	Student can understands the theory topics. Student has learn the charactersof the chromosomes which have proved to taxonomic value including , chromosome number, chromosome size,morphology etc. Students now know the nuclei characters present in plant cell.
22	T.Y. B. Sc	V	SEC- BO3510: Medicinal Botany	1.Study of medicinal plants: History, Scope and Importance. 2.Define and Scope of Indigenous Medicinal Sciences.	The students can learn medicinal plants: History, Scope and Importance. The student can learn the Definition and Scope of Indigenous Medicinal Sciences.

				3.Study of Ayurveda, Siddha and Unani.	Students can understand Ayurveda, Siddha and Unani system.
23	T.Y. B. Sc	V	SEC- BO3511: Plant Diversity & Human Health	1.Study of plant biodiversity, agrobiodiversity and loss of biodiversity. 2.Study of management of plant biodiversity and conservation of biodiversity. 3.Study of role of plant in relation to human welfare. 4.prepare list of plants.	Student knows develop and understanding of biodiversity. Student has learn about protection and management of biodiversity and natural habitat. Student knows the plants are vital to human welfare in many wayssuch as, food, oxygen, soil conservation and medicine. Student has learn all the species seen during a visit to site.
24	T.Y. B. Sc	VI	BO361: Plant Physiology & metabolism	1.Learn mineral nutrition. 2. Gain the knowledgeof mechanism of photosynthesis. 3.Learn the respiration,types of respiration, mechanism of aerobic respiration. 4.Learn stomatal biology.	The learner knows mineral nutrition. Students understand the mechanism ofphotosynthesis. Thestudents can Learn respiration,typesof respiration, mechanism of aerobic respiration. Students understand the stomatal biology.
25	T.Y. B. Sc	VI	BO362: Biochemistry	1.Learn the foundation of Biochemistry. 2.Identify the importance of the solvent of life. 3.Define enzymes and learn nature of enzymes and co-factors.	Students understand the foundation of Biochemistry. Students are able to Identify the importance of the solvent of life. The students now know Define enzymes and learn nature of enzymes and co-

				4.Give classification and properties of enzymes.	factors. Students canunderstand classification of carbohydrate and properties of enzymes.
26	T.Y.B. Sc	VI	BO363: Plant Pathology	1.Learn Non-Parasitic Disease. 2.Learn the fundamentals of plant pathology. 3. Learn the concept of plant pathology.	Student can learn the plant disease that is not caused by a living pathogen. Some disorders includes, air pollution, genetic defects, nutrient imbalances, etc. Student can understands plant pathology is known as phytopathology. The main goal is to prevent plant disease to increase food production and maintain the quality of the harvest. Students can know the study of plant diseases, it includes study of, plant pathogen interaction, disease processes, disease resistance, and plant health.
27	T.Y.B. Sc	VI	BO364: Evolution & population Genetics	1.Learn the concept organicevolution. 2.Explain the evidence of evolution. 3.Learn the evolution through ages. 4.Study population genetics and evolution.	The students now know the concept organic evolution. The Learner can understand evidence of evolution. Students can understand evolution through ages. The students can learn Study population genetics and evolution.

28	T.Y.B. Sc	VI	BO365: Advanced plant Biotechnology	1.Introduce Biotechnology. 2.Study Plant Tissue Culture. 3.Identify the techniques of genetic engineering and methods of gene transfer. 4.Learn cryopreservation and Germplasm conservation.	Student know that biotechnology utilizes biological systems, living organisms and also use to develop new products intended to improve human health & society. Students understands this technique is used to produce clones of plant, PTC can be used to, propagate plant. Students know that uptake of DNA refers to the process that moves a specific piece of DNA into cell.
29	T,Y,B. Sc	VI	BO366: Plant breeding & seed Technology	1.Define and give scope and objectives of plant breeding. 2.Learn the techniques and practices of plant. 3.Identify and use advanced techniques in plant breeding.	Students can learn plant breeding is important for to increase the crop yield develop a disease resistant crop. Students can understandsthe improvement of crop yield, seed quality and abiotic stresses in plants. Students know the research on plant breeding with new advanced selection methods.
30	T.Y.B. Sc	VI	BO367: Practical based on BO361 & BO362	1.Correlation between practicals with theory to improve the understanding. 2.To organize educational tour for study of flora. 3.To develop plant related practical skill among the students.	The Learner can understand Correlation between practical's with theory to improve the understanding. Students have UnderstandingVarious types of species & study of flora. Students have develop plant related practical skill among the students.

31	T.Y.B. Sc	VI	BO368: Practical based on BO363 & BO364	1.Study the preparation of anyone culture media an techniquefor isolation ofplant pathogens. 2.Prepare1% Bordeauxmixture, 10%Bordeaux paste and Jivamruta. 3.Solve numerical problems.	Student can prepare of any one culture media and culture technique for isolation of plant pathogens. Student can Prepare 1% Bordeaux mixture , 10%Bordeaux paste and Jivamruta. Student can Solve numerical problems.
32	T.Y.B. Sc	VI	BO369: Practical based on BO365 & BO366	1.Identify the different tissue culture techniques. 2.Study of the equipment used in genetic engineering. 3. Prepare plant based Nano-Particles. 4. Demonstrate wine production in different fruit.	Students now can understand, Concept of plant tissue culture and some plant tissue culture techniques includes, callus culture, embryo culture, suspension culture, anther culture etc. Students knows that equipments in genetic engineering and how to used. Students learnsa plant based nanoparticles are created using plant extracts through process of green synthesis.
33	T.Y.B.Sc	VI	SEC- BO3610: Nursery & Gardening Management	1.Study the different nursery management techniques. 2.Study of garden management and Sowing/raising of seeds and seedlings.	Students can understand the different nursery management techniques. Student can known garden management and Sowing/raising of seedsand seedlings.
34	T.Y.B. Sc	VI	SEC- BO3611: Biofertilizers	1.Study the General account of microbes used as biofertilizer. 2.Study the compost and manuring w.r.t. recycling methods, Vermicomposting.	Students knows that biofertilizers are MOS that add to the nutrient quality of the soil such as, bacteria, fungi, and algae. Students can understands produced vermicompost are rich in nutrition and widely used as biofertilizer.

DEPARTMENT OF ZOOLOGY

SN	Class	Sem	Subject With Code	CO	Attainments
1	F.Y. B.Sc.	I	Animal diversity-I ZO-111	1. The student will be able to understand classify and identify the diversity of animals.	The student now know the diversity of animals
				2. The student understands the importance of classification of animals and classifies them effectively using the six levels of classification.	Student now classify the animal according to six level of classification.
				3. The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.	Student now protect and preserve the wild life.
		II	Animal Ecology ZO-112	1.The learners will be able 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. promote betterment of environment.	Learner can able to evaluate their own values, beliefs in relation to social standard of ethics.
				2.To understand anticipate, analyze and evaluate natural resource issues and act on a lifestyle that conserves nature.	Student now analyze and evaluate natural resources.
				3.The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community.	The Learner understands and appreciates the diversity of ecosystems
				4.The learner will be able to link the intricacies of food chains, food webs and link it with human life for its betterment and for non-exploitation of the biotic and abiotic	The learner now link the intricacies of food chains, food webs and link it with human life

				components.	
				5.The working in nature to save environment will help development of leadership skills to promote betterment of environment.	Students have developed leadership skills to promote betterment of environment.
			Practical ZO-113	1.student will be able to identify the lower nonchordate animals.	Student are able to identify the lowernonchordate animals.
				2.student will learn how unicellular organism reproduce	Student has learn the development of unicellular organism
				3.student will learn what are the impurities present in the water and how to estimate them	Students now know the impurities present in water
2	**S.Y.B.Sc.**	**III**	Animal Systematics and Diversity-III ZO-231	1. The students will be able to understand, classify and identify the diversity of higher vertebrates.	Student know the diversity of higher animals
				2. The students will able to understand the complexity of higher vertebrates	Student know the complexity of higher animlas
				3. The students will be able to understand different life functions of higher vertebrates.	Student know the different life functions of higher vertebrates.
				4. The students will be able to understand the linkage among different groups of higher vertebrates.	Students now know the linkage among different groups of higher vertebrates
				5. The student will become aware regarding his role and responsibility towards nature as a protector, to understand his role as a trustee and conservator of life which he has achieved by learning, observing and understanding life.	Students become aware regarding his role and responsibility towards nature as a protector
		IV	Applied zoology-I ZO-234	1. The learner understands the basics about beekeeping tools, equipment, and managing beehives.	Students know the basics about beekeeping tools, equipment, and managing beehives.

				2. The learner understands the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques.	Students know the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques.
		III	Practical ZO-233	1.Student will get acquinted with the Animal group such as protochordate ,Pisces,Amphibia,	Students are aware of the Animal group such as protochordate ,Pisces,Amphibia,
				2.Syudent will come to know the types of fins,Scales and tail in fish.	Students know the know the types of fins,Scales and tail in fish.
				3.Student will learn about know the types of fins,Scales and tail in fish.	Students know the types of fins,Scales and tail in fish.
				4.Student will understand the different types of inect that damages the crop and how to control them.	Student know the types of insect that damages the crop and how to control them.
3	**F.Y.B.Sc.**	**II**	Animal Diversity-II ZO-121	1. The student will be able to understand classify and identify the diversity of animals.	Students now classify and identify the diversity of animals.
				2. The student understands the importance of classification of animals and classifies them effectively using the six levels of classification.	Student now classifies them effectively using the six levels of classification.
				3. The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.	Students now protect, preserver and promote life on earth.
			Cell Biology ZO-122	1. The learner will understand the importance of cell as a structural and functional unit of life.	Student know that cell is a structural and functional unit of life.
				2. The learner understands and compares between the prokaryotic and eukaryotic system and	Students are able to compare prokaryotic and eukaryotic

				extrapolates the life to the aspect of development.	system
				3.The dynamism of bio membranes indicates the dynamism of life. Its working mechanism and precision are responsible for our performance in life.	Students are able to distinguish between different layer of memberane.
				4.The cellular mechanisms and its functioning depends on endo-membranes and structures. They are best studied with microscopy.	Students know know that the function of cell memberane depend upon endomemberane structure.
			Practical ZO-123	1.student will be able to identify the Higher nonchordateanimlas.	Students can identify the Highernonchordateanimlas.
				2.student get acquainted with identify the Higher nonchordateanimlas.	Students got acquainted with the identification of the Higher nonchordateanimlas.
				3.student will come to know how to rear the lac insect a,earthworm honey bees for the production of lac,vermicompost and honey.	Student now rear the lac insect a,earthworm honey bees for the production of lac,vermicompost and honey.
4	**S.Y.B.Sc.**	**IV**	Animal Systematics And Diversity-IV ZO-241	1. The students will be able to understand, classify and identify the diversity of higher vertebrates.	Students now understand, classify and identify the diversity of higher vertebrates.
				2. The students will able to understand the complexity of higher vertebrates	Students know the complexity of higher vertebrates
				3. The students will be able to understand different life functions of higher vertebrates.	Students know the different life functions of higher vertebrates.
				4. The students will be able to understand the linkage among different groups of higher vertebrates.	Students are ableto link among different groups of higher vertebrates.
				5. The student will become aware regarding his role and responsibility towards nature as a protector, to understand his role as a trustee and conservator of life which he has achieved by learning, observing	Students now protect the nature, and understand his role as a trustee and conservator of life .

				and understanding life.	
			Applied zoology-II ZO-242	1.The learner understands the biology, varieties of silk silkworms and the basic techniques production.	Students know the varieties of silk silkworms and the basic techniques production.
				2. The learner understands the types of agricultural pests, Major insect pests of agricultural importance and Pest control practices.	Students know the agricultural pests, Major insect pests of agricultural importance and Pest control practices
			Practical ZOO-243	1.student will learn how to distinguish between poisonous and non-poisonous snake.	Student are able to distinguished between poisonous and non-poisonous snake.
				2.student will learn the diversity of beek and feet in birds.	Students able to tell diversity of bees and feet in birds.
				3.from the study of morphology and physiology of rat they will understand the human system.	Students know are able to understand the human system.
				3.Beekeeping help them to start their own business.	Student know start their own bee keeping business.
				4.study of pisciulture help them to start their own business.	Student know start their own bee Pisciculture business.

DEPARTMENT OF PHYSICS

SN	CLASS	SEM	SUBJECT WITH CODE	COURSE OUTCOME	ATTAINMENTS
1	F.Y.B.Sc.	I	Mechanics and Properties of Matter PHY-111	• To understand the concept of motion displacement velocity Newtons laws of motion. • To understand Work and Energy, Work done with varying force. • To demonstrate Fluid mechanics, Bernoulli's Principle, viscosity. • To understand property of matter, stress and strain, Hook's law, young's modulus. solving the problem.	• Students gets knowledge of basic Physics laws by demonstration. • Also they acquire the properties of matter in day to day life. • Also they understood the fluid mechanics. • Students are able to measure the properties of matter
2	F.Y.B.Sc.	I	Physics Principles and Application PHY-112	• To understand the general structure of atom, spectrum of hydrogen atom. • To understand the atomic excitation and LASER principles. • To understand the bonding mechanism and its different types. • To demonstrate an understanding of electromagnetic waves and its spectrum. • Understand the types and sources of electromagnetic waves and applications. • To demonstrate quantitative	• Students gets knowledge of basic Physics concepts like atom, molecules and its structure by demonstration. • Also they understood the laser light and its characterization and its application. • Students are able to understand the electromagnetic waves. • Students are able to get

				problem solving skills in all the topics covered.	problems solving skills.
3	F.Y.B.Sc.	I	Physics Laboratory-IA PHY-113	• To train students in skills related to research, education, industry, and market. • To help students to build-up a progressive and successful career in Physics. • Study and use of various measuring instrument such as vernier caliper, micrometer screw Gauge, Travelling microscope. • Study of various practical related to research level such as LASER ,Spectrometer, Flat spiral spring with moment of inertia of disc, Coefficient of viscosity angle of prism.	• By the practicals, students obtained the knowledge of various experiments. • They handle the various electronic components and its applications. • They can also utilized in daily life. • Students are able to use of spectrometer, lasers and other practical instruments.
4	F.Y.B.Sc.	II	Heat and Thermodynamics PHY-121	• To understand thermodynamic state, Van Der Waal's equation with study of laws of thermodynamic. • To understand the concept of Heat transfer mechanism, Study the different types of heat engine such as Carnot's cycle, • To study the thermometry, Gas filled thermometer, bimetallic thermometer, Platinum resistance thermometer, thermocouple.	• Ability to understand the heat and thermal relations with help of experiment and diagram. • To understand the different laws of thermodynamics with help of practical.
5	F.Y.B.Sc.	II	Electricity and Magnetism PHY-122	• To understand the concept of the electric force, electric field and electric potential for stationary	• • Ability to apply basic mathematical skills and

				charges. • Able to calculate electrostatic field and potential of charge distributions using Coulomb's law and Gauss's law. • To understand the dielectric phenomenon and effect of electric field on dielectric. • To Study magnetic field for steady currents using Biot-Savart and Ampere's Circuital laws. • To study magnetic materials and its properties. • Demonstrate quantitative problem solving skills in all the topics covered.	basics of vector algebra. • Understanding the foundational theory of electromagnetism is developed. • Students are able to understand Biot-Savart & Ampere's circuital law. • Students are able to quantitative problem solving skills.
6	F.Y.B.Sc.	II	Physics Laboratory-1B PHY-123	• Study of thermocouple, specific heat oh gravity, thermal conductivity of lee's method, Carnot's cycle. • Design charging and discharging of capacitor LR circuit, Kirchhoff's law, Diode characteristics, frequency of AC mains.	• By the practical, students obtained the knowledge of various experiments. • They handle the various electronic components and its applications. • They can also utilized in daily life.
7	S.Y.B.Sc.	III	Mathematical Methods in Physics I PHY-231	• Understand the complex algebra useful in physics courses • Understand the concept of partial differentiation. • Understand the role of partial differential equations in physics • Understand vector algebra useful	• Ability to solve the mathematical equation and understand the mathematical formulae. • Students are able to solve

				in mathematics and physics • Understand the singular points of differential equation.	vector, scalar, trigonometric function and differential equation.
8	S.Y.B.Sc.	III	Electronics II PHY-232	• Apply laws of electrical circuits to different circuits. • Understand the properties and working of transistors. • Understand the functions of operational amplifiers. • Design circuits using transistors and operational amplifiers. • Understand the Boolean algebra and logic circuits.	• Ability to understand the electronics circuit with logical diagram and equations. • To understand the circuit diagram with the help of laws and equation. • Students are able to Boolean algebra and logic circuits.
9	S.Y.B.Sc.	III	Physics Lab-2A PHY-233	• Study of BAR pendulum, Compound pendulum with instruments. • Use various instruments and equipment. Design experiments to test a hypothesis and/or determine the value of an unknown quantity.	• By the practical, students obtained the knowledge of various experiments. • They handle the various electronic components and its applications. • They can also utilized in daily life. • Students will able to plot the graphs using MS-Excel.
10	S.Y.B.Sc.	IV	Oscillations, Waves and Sound PHY-241	• Understand the physics and mathematics of oscillations. • Solve the equations of motion for simple harmonic, damped, and	• Ability to understand the oscillations, waves and sound with help of experiment and diagram.

				forced oscillators. • Formulate these equations and understand their physical content in a variety of applications, Describe oscillatory motion with graphs and equations, and use these descriptions to solve problems of oscillatory motion. • Explain oscillation in terms of energy exchange, giving various examples. Solve problems relating to undamped, damped and force oscillators and superposition of oscillations. • Understand the mathematical description of travelling and standing waves. Recognize the one-dimensional classical wave equation and solutions to it.	• They understood the doppler effect. • They able to identify and utilize various laws of oscillations, waves and sound in day to day life.
11	S.Y.B.Sc.	IV	Optics PHY-242	• Acquire the basic concepts of wave optics. • Describe how light can constructively and destructively interfere. Explain why a light beam spreads out after passing through an aperture. • Summarize the polarization characteristics of electromagnetic waves. Appreciate the operation of many modern optical devices that utilize wave optics . • Understand optical phenomena such as polarization,	• Ability to understand the type of materials with the help of basic concept of Optics. • Students are able to develop about optical materials. • Students get knowledge about properties of optical materials with the help of practical's. • Students are able to analyze

				birefringence, interference and diffraction in terms of the wave model.	simple examples of interference and diffraction phenomena.
12	S.Y.B.Sc.	IV	Physics Lab-2B PHY-243	• Use various instruments and equipment. Design experiments to test a hypothesis and/or determine the value of an unknown quantity. • Investigate the theoretical background to an experiment. Set up experimental equipment to implement an experimental approach. • Analyze data, plot appropriate graphs and reach conclusions from your data analysis. • Work in a group to plan, implement and report on a project/experiment. Keep a well-maintained and instructive laboratory logbook.	• Ability to understand the various instruments, experimental component with help of experiment and diagram. • To understand the different laws of physics with help of practical. • Students are able to analyze simple examples of interference and plot the graphs.
13	T.Y.B.Sc.	V	Mathematical Method in Physics-II PHY-351	• Student will get information about various co-ordinate systems for solving physics • Student will able to explain different problems between Newtonian & Einstein relativity. • Student can solve physics problems using differential equations. • Student will know the important of Special function in physics &	• Students gets knowledge of Co-ordinates system by demonstration. • Also they understood Newtonian & Einstein relativity. • They able to understand the important of Special function in physics & their solutions.

				their solutions.	
14	T.Y.B.Sc.	V	Electrodynamics PHY-352	• Student will be able to solve problems on electric intensity & potentials using law of electrostatics. • Student will explain generation of magnetic field by electric currents. • Student will interpret the meaning of the Maxwell's equations in magnetic & dielectric media.	• To understand the concept about electric and magnetic field. • Ability to develop theoretical knowledge about electric current as well as magnetic field. • Student able to understand interpret the meaning of the Maxwell's equations
15	T.Y.B.Sc.	V	Classical Mechanics PHY-353	• Student will use conservation of energy & linear as well as angular momentum to solve dynamic problems. • Student will able to solve problems related to Newton's laws, Kepler's laws & their applications in planetary motion. • Student can explain types of scattering & get idea of canonical Transformation for solving problems in mechanics. • Student may apply Lagrangian & Hamiltonian equations to solve these problems.	• Ability to develop the differential equations with the help of various laws like Newton's law etc. • To understand the mechanics of the instruments which are useful in our day to day life. • Student are able to solve Lagrangian & Hamiltonian equations to solve these problems.
16	T.Y.B.Sc.	V	Atomic and Molecular Physics PHY-354	• Student will explain various atomic models & their assumption as well as	• Ability to develop the differential equations with the help of various concepts

				applications. • Student can get idea of different types of coupling. • Student will able to develop Zeeman effect set up. • Student will know idea of rotational & vibrational spectra. • Student can explain Raman spectroscopy & their applications.	like Atomic Models, Zeeman Effect, Spectroscopy and their applications etc. • Students get idea of rotational & vibrational spectra. • Students able to explain Raman spectroscopy & their applications.
17	T.Y.B.Sc.	V	C-Programming & Computational Physics PHY-355	• Student will know the basic idea of algorithm, flowchart, syntax of C-programming language reserve words constant, variables, operators, arrays, pointers, functions etc. • Student will solve problems in Physics using different Computation methods such as Newton Rhason method, Bisection method, Trapezoidal rule, Simpson's rule etc. • Student will know the basic graphic commands to draw different figures.	• Ability to develop computer knowledge and solve the equation, mathematical problems, etc. • Students are able to the know of programming language • Students are able to develop the knowledge about c programming language.
18	T.Y.B.Sc.	V	Elements of Material Science PHY-356	• The student will explain electric, mechanical & thermal properties of materials.	• Ability to understand the type of materials with the help of various experiments.

				• Student will study defect in solid like line, surface & volume defects. • Student will know diffusion mechanism according to Fick's law. • Student studies phases of metals & explain CRSS(Critical Resolved Shear stress), Plastic deformation. • Student will know polymerization process. • Student will know about ceramic materials by addition & condensation methods. • For phase diagram student will know lever rule & Gibb's phase rule & phases of substance.	• Students are able to develop the knowledge about materials • Students understand the properties with the help of practical's. • Student are able to use smart materials along with their properties & applications.
	T.Y.B.Sc.	V	Energy Studies PHY-3510H	• Students become capable of conduction energy audits and give consultancy in that field. • Students can design different types of solar heaters for small domestic as well as large scale community level applications. • Students acquire skills to implement solar P-V systems at domestic levels as well as for office premises and educational institutions. Students become able to start their own enterprise	• • Ability to understand the type of Solar energy with the help of various experiments . • They able to utilized the solar energy. • They gets idea for their projects. • Students become successful entrepreneurs in the energy field.

				in net metering. • Students get ideas and hence become self-employed in the field of design, production, commissioning and implementation of bio-mass energy sources , bio-gas plants, gasifiers, wind mills, hybrid systems etc. • Students can go for research in the fields of super-capacitors, battery technologies, fuel cells and material synthesis for implementation of these technologies.	• Students strive to make the regions where they live and work self-sufficient in generating and fulfilling their own energy needs using different energy solutions.
19	T.Y.B.Sc.	V	Physics Work shop Skill PHY-3511K	• This course is to get exposure with various aspects of instruments and their usage through hands-on mode. • After completion of this course students will able to handle and test various instruments.	• **Ability to understand the type of various electronic instruments with the help of various experiments .** • **They able to utilized that instruments to repairing electronics instruments.**
20	T.Y.B.Sc.	V	Physics Lab-3A PHY-357	• Student will get knowledge by verifying law's of physics after performing experiment in the laboratory.	• Ability to understand the type of basic physics laws with the help of various experiments.
21	T.Y.B.Sc.	V	Physics Lab-3B PHY-358	• Student will get knowledge by verifying law's of physics after performing experiment in the	• Ability to understand the type of basic physics laws with the help of various

				laboratory.	experiments.
22	T.Y.B.Sc.	V	Project-I PHY-359	• Student will get idea of research work by completing project in the laboratory and can draw the conclusion of the project.	• Ability to understand the type of Solar energy with the help of various experiments . • They able to utilized the solar energy. • They gets idea for their projects.
23	T.Y.B.Sc.	VI	Solid State Physics PHY-361	• Student will know various types of crystal structures & the properties. • X-ray diffractions techniques for analysis of materials. • Theoretical knowledge about band of metals, insulator & semiconductors. • Student will know different magnetic materials, their characteristics& uses.	• Ability to develop the knowledge about the solid materials with the help of various equation and laws. • Ability to differentiate the state of matters.
24	T.Y.B.Sc.	VI	Quantum Mechanics PHY-362	• Student will get basic knowledge of classical & quantum mechanics & comparison of two. • Get idea of wave function & its normalization. • Student can derive Schrodinger's time dependent & time-independent equations & can apply them to solve problems in physics & get appropriate	• Students gets knowledge of Classical & Quantum Mechanics by demonstration. • Also they understood the Schrodinger equations and its applications.

				solutions. • Student will get the idea of uncertainty principle &application of it. • Student will know operators in quantum mechanics & their properties to find expectation values. • Student can solve different properties of commutator operators.	• Student are able to get idea of parity of functions. • Student can determine the eigen value & eigen functions. • Student are able to solve different properties of commutator operators.
25	T.Y.B.Sc.	VI	Thermodynamics & Statistical Physics PHY-363	• Student will explain assumptions of Kinetic theory of gases. • Student will explain the physical significance of Maxwell's equations and get idea of statistical concepts for solving physics problems. • Student can calculate density states, probability using statistical laws. • Student will know different types of ensembles used in statistics. • Student will get idea of classical and quantum statics. • Student will get knowledge of skill to use statistical physics method, such as Boltzmann distribution.	• Students gets knowledge of kinetic theory of gases, Maxwells equations by demonstration. • Also they understood the Statistical Physics and its applications. • Student are able to understand different types of ensembles used in statistics. • Student get idea of classical and quantum statics. • Student are able to get knowledge of skill to use statistical physics method.
26	T.Y.B.Sc.	VI	Nuclear Physics PHY-364	• Student will get idea of nuclear and their properties.	• Ability to understand the theoretical foundations of

				• Student will explain radioactivity & its applications. • Students will know the fundamental properties of nuclear forces, particle accelerators and detectors. • Student will get information about energy generation using nuclear reactions and can calculate the parameters of nuclear reaction such as packing fraction. • Student will able to demonstrate A knowledge and broad understanding of nuclear physics.	Nuclear Physics is developed as wekk as its benefits, drawbacks and modern applications. • Student are able to get information about energy generation using nuclear reactions • Students calculate the parameters of nuclear reaction such as packing fraction. • Student are able to demonstrate of nuclear physics.
27	T.Y.B.Sc.	VI	Electronics-II PHY-365	• Student will explain different types of diode and their applications. • Student will classify amplifiers and able to design different types of amplifiers. • Student will know applications of Op-Amp. Such as integrator, differentiator, adder, subtractions. • Student will explain block diagram and applications of time 555. • Student can explain different types of power supply (723, 78XX, 79XX etc).	• Ability to understand the circuit diagram with the help of laws like keplers law, ohm's law etc. and • Develop the knowledge about various circuit diagrams with the help of practicals. • Students are able to design of law higher voltage power supplies. • Student are able to explain

				• Design of law higher voltage power supplies. • Student can explain adder, subtractor, multiplexer, demultiplexer using logic gates, • Use of Flip-flops, counters and registers.	adder, subtractor, multiplexer, demultiplexer using logic gates. • Students are able to use and verify Flip-flops, counters and registers.
28	T.Y.B.Sc.	VI	Renewable Energy Sources-II PHY-366	• Students become capable of conduction energy audits and give consultancy in that field. • Students can design different types of solar heaters for small domestic as well as large scale community level applications. • Students acquire skills to implement solar P-V systems at domestic levels as well as for office premises and educational institutions. Students become able to start their own enterprise in net metering. • Students get ideas and hence become self-employed in the field of design, production, commissioning and implementation of bio-mass energy sources , bio-gas plants,	• Ability to understand the type of Solar energy with the help of various experiments . • They able to utilized the solar energy. • They gets idea for their projects. • Students become successful entrepreneurs in the energy field. • Students strive to make the regions where they live and work self-sufficient in generating. • Students are able to fulfil their own energy needs using different energy solutions.
29	T.Y.B.Sc.	VI	**Solar PV System: Installation,**	• Learn basics of light conversion in electricity.	• **Ability to give details knowledge about solar**

			Repairing and Maintenance PHY-3610	• Hands on training will motivate to use Solar PV system. • Become entrepreneur/self-employed. • Analyzed of MSEB electricity bill and design and sizing of off-grid PV system • Participants will learn about solar PV module and batteries used in solar PV plant.	**materials with the help of solar machineries and benefits of use of solar system.** • **To develop scientific knowledge about solar materials for the research and project.**
30	T.Y.B.Sc.	VI	Instrumentation for Agriculture PHY-3611	• To make students familiar with the constructions and working principle of microprocessor • To make students aware about microprocessor • After successful completion of this course students are supposed to develop their own applications/ mini/ tiny projects using microcontroller.	• Ability to develop the knowledge about various instruments use in agriculture field. • To develop the knowledge about new technology in agriculture field.
31	T.Y.B.Sc.	VI	Physics Lab-4A PHY-367	• Student will get knowledge by verifying law's of physics after performing experiment in the laboratory. • Understand the thermodynamics & statistical physics experiments with details. Understand the nuclear physics experiments with details.	• Ability to test various laws of Physics through performing experiments in the laboratory. • Ability to test various laws of Physics through performing experiments in the laboratory.
32	T.Y.B.Sc.	VI	Physics Lab-4B PHY-368	• Student will get knowledge by	• Ability to test various laws

				verifying law's of physics after performing experiment in the laboratory. • Understand the basic and advanced electronics experiments with details. • Understand the acoustics and lasers experiments with details.	of Physics through performing experiments in the laboratory. • Students are be able to handle the electronic instruments.
33	T.Y.B.Sc.	VI	Project-II PHY-369	• Student will get idea of research work by completing project in the laboratory and can draw the conclusion of the project.	• Ability to create new things with the help of different projects which will create research mind.

DEPARTMENT OF MATHEMATICS

Sr. No.	Class	Sem	Subject With Code	CO	Attainments
1	F.Y.B.Sc.	I	Algebra (MT-111)	After completion of this course, the student will be able to: ➢ Define Basic concepts of Set, Relations and functions. ➢ Use the division algorithm, Euclidian algorithm, in computations and proofs about the integers ➢ Learn about some important results in the theory of numbers including the prime number theorem, describe the properties of prime numbers, ➢ Show that every positive integer can be expressed as product of prime power in unique way ➢ Write a formula for the number of positive integers less than n that are relatively prime to n ➢ Define congruence and describe the properties of congruence ➢ State Chinese Remainder Theorem, Fermat's and Wilson's theorem ➢ Compute sums, products, quotients, conjugate, modulus, and argument of complex numbers · ➢ Apply De-Moivre's theorem to find the n^{th} roots of unity.	➢ Students logical ability is build & seen that they are solving different types of problems ➢ Students are solve problems of division algorithm ➢ Students are solve problems of Chinese Remainder Theorem ➢ Students are able to solve problems on De-Moivre's theorem to find the n^{th} roots of unity ➢ Students are able to solve assignments

2	F.Y.B.Sc.	I	Calculus – I (MT-112)	After completion of this course, the student will be able to: ➢ Describe the Algebraic and Order Properties of R ➢ Understand absolute value function and its properties, triangle inequality and its consequences, neighborhood of a point on real line. ➢ Define of Upper bound, Lower bound, supremum, infimum of subsets of R, completeness property of R. ➢ Know Archimedean property and its consequences, the density theorem ➢ Learn to define sequence in terms of functions from $\mathbb{R}$ to a subset of $\mathbb{R}$. ➢ Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence. ➢ Learn to check function is continuous understand the consequences of the intermediate value theorem for continuous functions.	➢ Students are able to solve problems on absolute value function and triangle inequality ➢ Students are able to solve problems on density theorem ➢ Students can calculate limit superior, limit inferior, and the limit of a bounded sequence of Cauchy and monotonic sequences ➢ Students are able to solve homework problems
3	F.Y.B.Sc.	I	MathematicsPractical (MT-113)	This course will enable the students to: ➢ Learn Maxima software. ➢ Learn to find graphs, roots and	➢ Students are able to draw graph of function to find their roots using maxima software ➢ Students are able to design three

				primes integer using maxima software ➢ Problem solve on algebra and calculus by using maxima software. ➢ Knowledge of application of mathematics	variable function using maxima software
4	S.Y.B.Sc	III	MT-231-Calculus of Several Variables(23111)	After completion of this course, the student will be able to: ➢ Learn conceptual variations while advancing from one variable to several variables in calculus. ➢ Understand Functions of two variables, Domain and Range, ➢ Graphs, Level Curves, Functions of Three or More Variables, Limits and Continuity. ➢ Applications of multivariable calculus tools in physics, economics, optimization, and understanding the architecture of curves and surfaces in plane and space etc ➢ Understand Partial Derivatives ➢ Learn Higher Derivatives, Clairaut's Theorem, Partial Differential Equations, Wave equation, Chain Rule, Homogeneous Functions, Euler's theorem. ➢ Recognize the major classification of PDEs and the qualitative differences between the classes of	➢ Students are sketches the graphs of various functions of several variables ➢ Students are able to solve problems on Graphs, Level Curves and Limits and continuity of three or more variables ➢ Students are able to solve problems on Partial Derivatives ➢ Students are able to solve problems on double and triple integral ➢ Students are able to solve

				equations. ➢ Be competent in solving linear PDEs using classical solution methods ➢ Understand Extreme values of functions of two variables. ➢ Learn Necessary conditions for extreme values, Second Derivative Test, Lagrange Multipliers ➢ Inter-relationship amongst the line integral, double and triple integral formulations. ➢ Sketch curves in Cartesian and polar coordinate systems.	homework problems ➢ Students are able to solve assignments
5	S.Y.B.Sc	III	MT-232(A):Numerical Methods & it's applications(23112A)	After completion of this course, the student will be able to: ➢ Obtain numerical solutions of algebraic and transcendental equations. ➢ Learn about various interpolating and extrapolating methods. ➢ Define Basic concepts of operators Δ,E, ∇ ➢ Find the difference of polynomial ➢ Solve problems using Newton forward formula and Newton backward formula. ➢ Derive Newton forward formula and Newton backward interpolation formula. ➢ Apply Lagrange's Interpolation formula when difference interval	➢ Students are able to solve problems on to find solutions of algebraic and transcendental equations ➢ Students are able to solve problems on relation between Δ,E, ∇ ➢ Students are able to solve problems on Newton forward formula, Newton backward formula and Lagrange's Interpolation formula when difference interval are unequal ➢ Identify suitable existing methods

				are unequal ➢ Understood the concept of Numerical Differentiation (Derivatives using Newton's forward difference formula) ➢ Apply various numerical methods in real life problems ➢ Derive general quadrature formula ➢ Derive Trapezoidal rule, Simpson's 1/3 and 3/8 rules -using general quadrature formula ➢ Solve initial and boundary value problems in differential equations using numerical methods. ➢ Find the solution of ordinary differential equation of first by Taylor's Series method, Picard's method of successive ➢ approximations, Euler method, Modified Euler's methods and Runge-Kutta methods	of analysis ➢ ➢ Students are able to solve problems on Trapezoidal rule, Simpson's 1/3 and 3/8 rule ➢ Students are able to solve problems on find the solution of ordinary differential equation of first by Taylor's Series method, Picard's method of successive ➢ Students are able to solve assignments
6	S.Y.B.Sc	III	MT-233:Mathematics Practical(23113)	This course will enable the students to: ➢ Learn Maxima software. ➢ Problem solve on analytic geometry and calculus by using maxima software. ➢ Problem solving on geometry and calculus. ➢ Give the knowledge of geometry using maxima software.	➢ Students are able to draw graph of function to find their roots using maxima software ➢ Students are able to design several variable functions using maxima software
7	F.Y.B.Sc	II	Analytical Geometry (MT-121)	After completion of this course, the student will be able to:	➢ Students are able to solve problems

				➢ Describe the various forms of equation of a plane, straight line, Sphere, Cone and Cylinder. ➢ Find the angle between planes, Bisector planes, Perpendicular distance from a point to a plane, Image of a line on a plane, Intersection of two lines ➢ Define coplanar lines and illustrate ➢ Compute the angle between a line and a plane, length of perpendicular from a point to a line ➢ Define skew lines ➢ Calculate the Shortest distance between two skew line	on to find the angle between planes, Bisector planes, Perpendicular distance from a point to a plane, Image of a line on a plane, Intersection of two lines ➢ Students are able to solve problems on to compute the angle between a line and a plane, length of perpendicular from a point to a line ➢ Students are answering the questions given them
8	F.Y.B.Sc	II	MT-122 (Calculus II)	After completion of this course, the student will be able to: ➢ Assimilate the notions derivative of a function at a point ➢ Calculate the limit and examine the continuity of a function at a point. ➢ Apply derivative tests in optimization problems appearing in social sciences, physical sciences, life sciences and a host of other disciplines. ➢ Understand L' Hospital Rule and Successive Differentiation ➢ Understand the genesis of ordinary differential equations. ➢ Solve first order differential	➢ Students explains the applications in day to day life ➢ Students are answering the questions given them ➢ Students solves the problems using L' Hospital Rule ➢ Student formulate mathematical models in the form of ordinary differential equations.

				equations utilizing the standard techniques to Learn various techniques of getting exact solutions of solvable first order differential equations and linear differential equations. ➢ 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.	➢ Students are able to solve assignments.
9	F.Y.B.Sc	II	Mathematics Practical (MT-123)	This course will enable the students to: ➢ Solves Problem on Calculus and analytical geometry ➢ Introduction to application of mathematics in real life. ➢ Learn to build logical concept.	➢ Students are able to draw graph of function to find their roots using maxima software ➢ Students are able to design functions using maxima software
10	S.Y.B.Sc.	IV	MT-241:Linear Algebra (24111)	After completion of this course, the student will be able to: ➢ Solve linear systems (using matrices)by Gauss elimination and Gauss-Jordan elimination method ➢ Understand the concepts of vector spaces, subspaces, bases, dimension and their properties. ➢ Recognize the concepts of the term linear independence, linear dependence, basis, and dimension, and apply these concepts to various vector spaces and	➢ Student understands the applications of eigen values and eigen vectors. ➢ Students solve the system of linear equations. ➢ Students solves the problems using Rank Nullity theorem.

				subspaces ➢ Understand about Row, Column and Null Space of a matrix, and Rank and nullity ➢ Discuss the linear transformations, properties and equality ➢ Understand the concepts of Kernel and range ➢ State Rank-Nullity theorem ➢ Use matrix algebra and the related matrices to linear transformations ➢ Relate matrices and linear transformations, compute eigen values and eigen vectors of linear transformations. ➢ Find the characteristic equation, eigen values and eigen vectors of a matrix. ➢ State Cayley- Hamilton theorem ➢ Learn basic Matrix Transformations in R^2 and R^3	➢ Students are able to solve assignments. ➢ Student improve problem solving technique. ➢ Student understand the applications of cayley Hamilton Theorem
11	S.Y.B.Sc.	IV	MT-242(B): Dynamical Systems(24112B)	After completion of this course, the student will be able to: ➢ Students understand the concept of Diagonalisation(matrices with real and distinct eigen values) ➢ Students understand the concept of Logistic Population Model ➢ Students understand the concept First-Order Equations and Planar Linear Systems ➢ Able to find eigenvectors when eigen values are complex	➢ Students are able to solve assignments. ➢ Identify suitable existing methods of Dynamical Systems ➢ Students able to solves problems on linear system.

				➢ Able to find Exponential of a matrix ➢ Students improve problem solving skills. ➢ Students will cooperate when appropriate to help each other understand the concepts of dynamical systems and to learn how to function in a work.	➢ Student improve problem solving technique.
12	S.Y.B.Sc.	IV	MT-243: Mathematics Practical(24113)	This course will enable the students to: ➢ To demonstrate used of interpolation method in numerical analysis. ➢ Use computational techniques and algebraic skills essential for the study of systems of Linear equations, matrix algebra, vector spaces, eigen values and eigenvectors, Orthogonality and Diagonalization	➢ Students are able to find Mathematical Operations using maxima software ➢ Students are able to graphs using maxima software ➢ Solve numerical problems using Maxima

DEPARTMENT OF COMPUTER SCIENCE

SN	Class	Semester	Subject With Code	Course Outcome	Attainments
1	F.Y. B.Sc. (CS)	First	CS-111 Problem Solving using Computer and 'C' Programming	• To understand the concept of Problem solving • To understand steps involved in algorithm & program development • To understand the concept of Algorithm • Develop Algorithm for simple problem • Ability to implement algorithms in the 'C' language. • Develop modular programs using control structures and arrays in 'C'.	➢ Students are able to solve problem logically. ➢ Able to identify the steps involved in algorithm /program development. ➢ Able to understand the concept of algorithm ➢ Able to develop Algorithm for simple problem. ➢ Able to implement algorithms in the 'C' language. ➢ Students logical ability is build and able to develop modular programs.

2	F.Y. B.Sc. (CS)	First	CS-112 Database Management Systems	• Describe the fundamental elements of relational database management systems • Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL. • Design ER-models to represent simple database application scenarios • Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data. • Improve the data base design by normalization.	➢ Students understand the fundamental elements of RDBMS. ➢ Understand the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL. ➢ Able to design ER-models to represent simple database application scenarios ➢ Able to convert the ER-model to relational tables, populate relational database and formulate SQL queries on data. ➢ Able to improve the database design by normalization.
3	F.Y. B.Sc. (CS)	First	CS-113 Practical course based on CS101 and CS102	• Able to devise pseudo code and flowchart for computational problems. • Understand how to write, debug and execute simple programs in C. •Create database tables in Postgres SQL. • Write and execute simple and nested queries.	➢ Students are able to devise pseudo code and flowchart for computational problems. ➢ Understand how to write, debug and execute simple programs in C. ➢ Able to create database tables in Postgres SQL. ➢ Able to write and execute simple and nested queries.

4	F.Y. B.Sc. (CS)	Second	CS-121 Advanced 'C' Programming	• Develop advanced concepts of programming using C. • Develop modular programs using control structures, pointers, arrays, strings and structures. • Design and develop solutions to real world problems using C. • To develop structured programming approach.	➢ Student logical ability is build & seen that they are able to develop C programs. ➢ Able to use structures to develop modular programs. ➢ Able to design and develop solutions to real world problems using C. ➢ Able to develop structured programming approach
5	F.Y. B.Sc. (CS)	Second	CS-122 Relational Database Management Systems	• Able to acquire knowledge of data security and its importance. • Design E-R Model for given requirements and convert the same into database tables. • Able to use database techniques such as SQL & PL/SQL. • Understand and able to implement concept of transactions. • Use advanced database Programming concepts.	➢ Able to acquire knowledge of data security and its importance. ➢ Design E-R Model for given requirements and convert the same into database tables. ➢ Able to use database techniques such as SQL & PL/SQL. ➢ Understand and able to implement concept of transactions. ➢ Student are able to design database tables, cursor, trigger, view, procedure , function in MYSQL, PL/PostgresSQL
6	F.Y. B.Sc. (CS)	Second	CS-123 Practical course based on CS201	• Write debug and execute programs using advanced features in C. • To perform advanced database operations.	➢ Students are able to debug & execute programs of Advanced C. ➢ Students are able to create databases and advanced operations on databases.

			and CS202		
7	S.Y. B.Sc. (CS)	Third	CS 231 Data Structures and Algorithms – I	• Understand different methods of organizing large amount of data using data structure. • Able to choose appropriate data structure as applied to specified problem definition. • Understand various techniques for representation of the data in the real world	➢ Students are able to understand different methods of organizing large amount of data using data structure. ➢ Able to choose appropriate data structure as applied to specified problem definition. ➢ Able to understand various techniques for representation of the data in the real world
8	S.Y. B.Sc. (CS)	Third	CS 232 Software Engineering	• To design and conduct experiments, as well as to analyze and interpret data. • To identify, formulate, and solve engineering problems. • To analyze, design, verify, validate, implement, apply, and maintain software systems. • Able to understand different phases of SDLC.	➢ Able to design and conduct experiments, as well as to analyze and interpret data. ➢ Able to identify, formulate, and solve engineering problems. ➢ Able to analyze, design, verify, validate, implement, apply, and maintain software systems. ➢ Able to understand different phases of SDLC.
9	S.Y. B.Sc. (CS)	Third	CS 233 Practical course on CS 231 and CS 232	• Students will be able to use linear and non-linear data structures like stacks, queues, linked list etc. • Student will be able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.	➢ Student are able to solve assignment of Data structure program on array, linked list, stack, and queue. ➢ Able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.

10	S.Y. B.Sc. (CS)	Fourth	CS 241 Data Structures and Algorithms – II	• To compute the complexity of various algorithms. • To understand structure of tress, graphs, etc. • To develop efficient search techniques.	➢ Able to compute the complexity of various algorithms. ➢ Able to understand structure of tress, graphs, etc. ➢ Able to develop efficient search techniques.
11	S.Y. B.Sc. (CS)	Fourth	CS 242 Computer Networks - I	• Understand basic computer network technology. • Understand and explain Data Communications System and its components. • Able to identify the different types of network topologies and protocols. • Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.	➢ Able to understand basic computer network technology. ➢ Able to understand and explain Data Communications System and its components. ➢ Able to identify the different types of network topologies and protocols. ➢ Able to enumerate the layers of the OSI model and TCP/IP and function(s) of each layer.
12	S.Y. B.Sc. (CS)	Fourth	CS 243 Practical course on CS 241 and CS 242	• Students will be able to use linear and non-linear data structures like stacks, queues, linked list etc. • Student will be able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.	➢ Students will be able to use linear and non-linear data structures like stacks, queues, linked list etc. ➢ Student will be able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures. ➢ Student are able to solve assignment of Data structure & software engineering

					mini project.
13	T.Y. B.Sc. (CS)	Fifth	CS-351 Operating Systems	• To Study Processes and Thread Scheduling by operating system • Synchronization in process and threads by operating system • Memory management by operating system using with the help of various schemes	➢ Understand processes and thread Scheduling by operating system ➢ Understand Synchronization in process and threads by operating system ➢ Understand Memory management by operating system using with the help of various schemes
14	T.Y. B.Sc. (CS)	Fifth	CS-352 Computer Networks - II	• To understand the different protocols of Application layer. • Develop understanding of technical aspect of Multimedia Systems • Develop various Multimedia Systems applicable in real time. • Identify information security goals. • Understand, compare and apply cryptographic techniques for data security.	➢ Student will understand the different protocols of Application layer. ➢ Develop understanding of technical aspect of Multimedia Systems ➢ Develop various Multimedia Systems applicable in real time. ➢ Identify information security goals. ➢ Understand, compare and apply cryptographic techniques for data security.
15	T.Y. B.Sc. (CS)	Fifth	CS-353 Web Technologies - I	• To study basics of PHP • To design logical code with std, PHP functions • To understand how to develop dynamic and interactive Web Page	➢ Understand the concepts of PHP ➢ Design logical code with std, PHP functions ➢ Understand how to develop dynamic and interactive Web Page
16	T.Y. B.Sc. (CS)	Fifth	CS-354 Foundations of Data Science	• Perform Exploratory Data Analysis • Obtain, clean/process, and transform data.	➢ Able to perform Exploratory Data Analysis. ➢ Able to obtain, clean/process, and transform data.

				• Detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization. • Demonstrate proficiency with statistical analysis of data. • Present results using data visualization techniques. • Prepare data for use with a variety of statistical methods and models and recognize how the quality of the data and the means of data collection may affect conclusions	➢ Detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization. ➢ Demonstrate proficiency with statistical analysis of data. ➢ Present results using data visualization techniques. ➢ Prepare data for use with a variety of statistical methods and models and recognize how the quality of the data and the means of data collection may affect conclusions
17	T.Y. B.Sc. (CS)	Fifth	CS-355 Object Oriented Programming using Java - I	• To understand the concept of classes, object, packages and Collections. • To develop GUI based application	➢ Understand the concept of classes, object, packages and Collections. ➢ Student are able to solve GUI based application
18	T.Y. B.Sc. (CS)	Fifth	CS-356 Theoretical Computer Science	On completion of the course, student will be able to– ● To understand the use of automata during language design. ● Relate various automata and Languages.	➢ Understand the use of automata during language design. ➢ Relate various automata and Languages.

19	T.Y. B.Sc. (CS)	Fifth	CS-357 Practical Course based on CS - 351	• To study Process synchronization • Processes and Thread Scheduling by operating system • Memory management by operating system using with the help of various schemes	➢ Understand Process synchronization ➢ Processes and Thread Scheduling by operating system ➢ Memory management by operating system using with the help of various schemes
20	T.Y. B.Sc. (CS)	Fifth	CS-358 Practical Course based on CS - 353 and CS - 354	• To study how to develop dynamic and interactive Web Page • To prepare data for use with a variety of statistical methods and recognize how the quality of the data may affect conclusions. • To perform exploratory data analysis	➢ Understand how to develop dynamic and interactive Web Page ➢ Prepare data for use with a variety of statistical methods and recognize how the quality of the data may affect conclusions. ➢ Perform exploratory data analysis
21	T.Y. B.Sc. (CS)	Fifth	CS - 359 Practical Course based on CS - 355	• Use an integrated development environment to write, compile, run, and test simple • To develop object-oriented Java programs. • Read and make elementary modifications to Java programs that solve real-world problems. • Validate input in a Java program.	➢ Use an integrated development environment to write, compile, run, and test simple ➢ Able to develop object-oriented Java programs. ➢ Read and make elementary modifications to Java programs that solve real-world problems. ➢ Validate input in a Java program.
22	T.Y. B.Sc. (CS)	Fifth	CS-3510 Python Programming	• To develop logic for problem solving using python. • To determine the methods to create and develop Python programs by utilizing the data Structures like lists, dictionaries, tuples and sets. • To be familiar about the basic constructs of	➢ Able to develop logic for problem solving using python. ➢ Determine the methods to create and develop Python programs by utilizing the data ➢ Structures like lists, dictionaries, tuples and sets. ➢ To be familiar about the basic constructs

				programming such as data, operations, conditions, loops, functions etc. • To write python programs and develop a small application project	of programming such as data, operations, conditions, loops, functions etc. ➢ Able to write python programs and develop a small application project
23	T.Y. B.Sc. (CS)	Fifth	CS-3511 Block chain Technology	On completion of the course, student will be able to– • Learn the fundamentals of Block chain Technology. • Learn Block chain programming • Basic knowledge of Smart Contracts and how they function.	➢ Understand the fundamentals of Block chain Technology. ➢ Learn Block chain programming ➢ Basic knowledge of Smart Contracts and how they function ➢ Student are able to understand concept of crypto-currency e.g.: bit coin.
24	T.Y. B.Sc. (CS)	Sixth	CS - 361 Operating Systems-II	• To study management of deadlocks and File System by operating system • Scheduling storage or disk for processes • Distributed Operating System and its architecture and the extended features in mobile OS.	➢ Understand management of deadlocks and File System by operating system. ➢ Understand scheduling storage or disk for processes ➢ Understand Distributed Operating System and its architecture and the extended features in mobile OS.
25	T.Y. B.Sc. (CS)	Sixth	CS-362 Software Testing	• Understand various software testing methods and strategies. • Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. • Understand design test cases and test plans, review reports of testing for qualitative software. • Understand latest testing methods used in the software industries.	➢ To understand various software testing methods and strategies. ➢ To understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. ➢ To design test cases and test plans, review reports of testing for qualitative software. ➢ To understand latest testing methods used

					in the software industries.
26	T.Y. B.Sc. (CS)	Sixth	CS - 363 Web Technologies - II	On completion of the course, student will be able to– • Build dynamic website. • Using MVC based framework easy to design and handling the errors in dynamic website.	➢ Able to build dynamic website. ➢ Able to use MVC based framework easy to design and handling the errors in dynamic website
27	T.Y. B.Sc. (CS)	Sixth	CS - 364 Data Analytics	• Use appropriate models of analysis, assess the quality of input, and derive insight from results. • Analyze data, choose relevant models and algorithms for respective applications • Understand different data mining techniques like classification, prediction, clustering and association rule mining • Apply modeling and data analysis techniques to the solution of real world business problem	➢ logical ability is build & seen that they are able Analyze data, ➢ Able to choose relevant models and algorithms for respective applications. ➢ Able to understand different data mining techniques like classification, prediction, clustering and association rule mining. ➢ Able to apply modeling and data analysis techniques to the solution of real world business problem
28	T.Y. B.Sc. (CS)	Sixth	CS- 365 Object Oriented Programming using Java – II	• To access open database through Java programs using Java Data Base Connectivity (JDBC) and develop the application. • Understand and create dynamic web pages, using Servlets and JSP. • Work with basics of framework to develop secure web applications.	➢ Able to access open database through Java programs using Java Data Base Connectivity (JDBC) and develop the application. ➢ Able to create dynamic web pages, using Servlets and JSP. ➢ Able to Work with basics of framework to develop secure web applications.
29	T.Y.	Sixth	CS-366	• To understand the process of scanning and parsing of source code.	➢ Able to understand the process of scanning and parsing of source code.

	B.Sc. (CS)		Compiler Construction	• Learn the conversion code written in source language to machine language. • To study tools like LEX and YACC.	➢ Able to learn the conversion code written in source language to machine language. ➢ Understand tools like LEX and YACC.
30	T.Y. B.Sc. (CS)	Sixth	CS-367 Practical Course based on CS - 361	• Management of deadlocks by operating system • File System management • Disk space management and scheduling for processes	➢ Able to do management of deadlocks by operating system ➢ Understand file system management ➢ Understand Disk space management and scheduling for processes.
31	T.Y. B.Sc. (CS)	Sixth	CS - 368 Practical Course based on CS - 363 and CS - 364	• Build dynamic website. • Using MVC based framework easy to design and handling the errors in dynamic website	➢ Build dynamic website. ➢ Using MVC based framework easy to design and handling the errors in dynamic website
32	T.Y. B.Sc. (CS)	Sixth	CS - 369 Practical Course based on CS - 365	• To Learn database Programming using Java • Understand and create dynamic web pages using Servlets and JSP. • Work with basics of framework to develop secure web applications	➢ To Learn database Programming using Java ➢ Understand and create dynamic web pages using Servlets and JSP. ➢ Work with basics of framework to develop secure web applications
33	T.Y. B.Sc. (CS)	Sixth	CS - 3610 Software Testing Tools	• To understand various software testing methods and strategies. • To understand a variety of software metrics and identify defects and managing those defects for improvement in quality for given software. • To design test cases and test plans, review reports of testing for qualitative software. • To understand latest testing tools used in the	➢ Able to understand various software testing methods and strategies. ➢ Able to understand a variety of software metrics and identify defects and managing those defects for improvement in quality for given software. ➢ Able to design test cases and test plans, review reports of testing for qualitative

				software industries.	software. ➢ Understand latest testing tools used in the software industries.
34	T.Y. B.Sc. (CS)	Sixth	CS - 3611 Project	• Project Planning, design, coding • Test Plan, Black Box Testing or Data Validation Test Cases. • White Box Testing or Functional Validation Test cases and results	➢ Logical ability is build & they are create project in different languages like JAVA, PHP using database like MYSQL, PostgreSQL. ➢ Able to use different Testing like White box, Black Box also used different environment framework like Net Beans, Eclipse, etc.

IQAC **PRINCIPAL**