2.6.1: Link for Program outcomes and course outcomes of First Year (2022-23)

https://kirticollege.edu.in/academic-syllabus/

COURSE OUTCOMES
HINDI Department

F. Y. BA.	
SEM-I	
PAPER -I	**Hindi Ancillary-** आधुनिक गद्य विधाएँ। **Course Code: UAHIN 101** **Course title:**
CO1	गद्य शैलियों से छात्रों को परिचित कराना।
CO2	कहानी,निबन्ध और आत्मकथा तथा जीवनी को समझाना।
CO3	छात्रों को गद्य लिखने के लिए प्रेरित करना।
CO4	गद्य के प्रकारों के सन्दर्भ में जानकारी प्रस्तुत करना।
SEM-II	
PAPER-I	**Hindi Ancillary -** आधुनिक गद्य विधाएँ। **Course Code: UAHIN 201** **Course title:**
CO1	हिंदी साहित्य के गद्य विधाओंको छात्रों को समझना।
CO2	उपन्यास का परिचय बताना।
CO3	लघुकथा का परिचय करना।
CO4	निबन्ध कैसे लिखा जाता है लिखने के लिए प्रोत्साहित करना।
S.Y. B.A.	
SEM-III	
PAPER -II	**Course title:** मध्यकालीन एवं आधुनिक काव्य। **Course Code: UAHIN 301**
CO1	मध्यकालीन कविताओं का परिचय छात्रों को कराना।
CO2	आधुनिक कविताओं का परिचय छात्रों को कराना।
CO3	दार्शनिक, सामाजिक,राष्ट्रीय मानवीय मूल्यों को छात्रों को समझना।
CO4	काव्य के अंतर्गत शैलियों को छात्रों को परिचित कराना।
PAPER- II।	**Course title:** प्रयोजनमूलक हिंदी। **Course Code: UAHIN 302**
CO1	तकनीकी क्षेत्र में भाषा की उपयुक्तता को छात्रों को समझना।
CO2	हिंदी के तकनीकी तत्वों को परिचित कराना।
CO3	छात्रों को पत्रलेखन की प्रक्रिया को समझना।
CO4	छात्रों को रिपोर्ट कैसे लिखतें है, परिचय कराना।
SEM-IV	
PAPER II	**Course title:** आधुनिक हिंदी गद्य। **Course Code: UAHIN 401**
CO1	विद्यार्थियों में मानवीय संवेदना और मूल्यों का विकास करना।
CO2	साहित्य समाज में किस प्रकार परिवर्तन करता है छात्रों को परिचित कराना।
CO3	विद्यार्थियों में साहित्य को रसास्वादन करने की अभिरुचि को बढ़ावा देना।
CO4	उपन्यास ,नाटक विधाओंको का परिचय कराना।
PAPER- III	**Course title:** जनसंचार माध्यम। **Course Code: UAHIN 402**
CO1	विद्यार्थियों जनसंचार माध्यमों में रोजगार के अवसर से अवगत होंगे।
CO2	अनुवाद के द्वारा व्यसायिक रूप से छात्र आत्मनिर्भर होंगे।
CO3	छात्रों को भाषा दक्षिता मे प्रवीणता प्राप्ति होगी।
CO4	परिभाषिक शब्दावली से परिचित कराना।

T.Y.BA	
SEM-V	
PAPER IV हिंदी साहित्य का इतिहास **Course title**	**Course Code: UAHIN 501**
CO1	विद्यार्थियों को हिंदी साहित्य इतिहास की व्यापक जानकारी प्राप्त होगी।
CO2	विद्यार्थियों में साहित्य के माध्यम से कलात्मक गुणों की अभिवृद्धि होगी।
CO3	हिंदी साहित्य के इतिहास का परिचय होगा।

PAPER V Course title: स्वतंत्रोत्तर हिंदी साहित्य	**Course Code: UAHIN 502**
CO1	कला की साहित्यिक विधाओंको के प्रति अभिरुचि जागृत होगी।
CO2	विद्यार्थियों को आधुनिक युग की प्रवृत्तियों को अवगत कराना।
CO3	स्वतंत्रता के बाद के साहित्य से विद्यार्थी परिचित होंगे।
PAPER Vl Course title:हिंदी में सूचना प्रौद्योगिकी।	**Course Code: UAHIN 503**
CO1	सोशल मीडिया के अधुनातन माध्यम से छात्र अवगत होंगे।
CO2	छात्र हिंदी में कम्प्यूटर का इस्तेमाल के करने के प्रक्रिया से अवगत होंगे।
CO3	छात्रों को सूचना प्रादयोगिकी रूप में नोकरी के अवसर प्राप्त होंगे।
PAPER VII Course title:साहित्य समीक्षा :छंद एवं अलंकार	**Course Code: UAHIN 504**
CO1	विद्यार्थियों को काव्यशास्त्र के मानदंडों से अवगत कराएंगे।
CO2	छात्रों को समीक्षा के तत्व से परिचित कराना।
CO3	साहित्य में काव्य के महत्व को समझते हुए रचना के लिए प्रेरित करना।
PAPER VIII Course title: भाषा विज्ञान:हिंदी भाषा और व्याकरण	**Course Code: UAHIN 505**
CO1	विद्यार्थियों को भाषा के विविध रूप अवगत होंगे।
CO2	भाषा परिवर्तन के कारणों का ज्ञान प्राप्त करेंगे।
CO3	समाजिक रूपसे भाषा के विकास को छात्र अवगत होंगे।
PAPER IX Course title: संचार माध्यम	**Course Code: UAHIN 506**
CO1	विद्यार्थी सोशल मीडिया ,जनसंचार, से लिये कौशल प्राप्त करेंगे।
CO2	प्रिंट मीडिया के द्वारा छात्रों रोजगार के अवसर प्राप्त होंगे
CO3	पारिभाषिक शब्दावलि से अनुवाद में सही शब्दों का चयन करने की कला अवगत होंगी।
SEM - VI	
PAPER IV Course title: आधुनिक हिंदी साहित्य का इतिहास	**Course Code: UAHIN 601**
CO1	आधुनिक हिंदी के इतिहास के उतपत्ति को समझेंगे ।
CO2	वैचारिक निबन्ध साहित्य को समझाना।
CO3	साहित्य के सामाजिक तत्वो के द्वारा समाज का अध्ययन करना।
CO4	
PAPER V Course title: स्वतंत्रोत्तर हिंदी साहित्य	**Course Code: UAHIN 602**
CO1	साहित्य की विभिन्न विधाओंको व्यापक ज्ञान होगा छात्रों को।
CO2	इतिहास के राजनीतिक, सामाजिक ,धार्मिक एवं आर्थिक परिवेश की ज्ञान प्राप्त होगा।
CO3	विद्यार्थियों को साहित्य के द्वारा नए मूल्य की प्राप्ति होगी
PAPER VI Course title: सोशल मीडिया	**Course Code: UAHIN 603**
CO1	सोशल मीडिया के द्वारा समाज मे जाग्रत करने की पृष्ठभूमि को छात्र अवगत होंगे।
CO2	सोशल मीडिया के उपकरनों से छात्र अवगत होंगे।
CO3	मीडिया और समाज के अंतर्संबंधों से विद्यार्थी अवगत होंगे
PAPER VII Course title:साहित्य समीक्षा छंद एवं अलंकार	**Course Code: UAHIN 604**
CO1	काव्यशास्त्र में छंद और अलंकार के महत्व से परिचित होंगे।
CO2	सौंदर्यशास्त्र के कौशल को छात्र भली भांति समज पाएंगे।
CO3	काव्यशास्त्र के नियमों के द्वारा काव्य को रसास्वादन करने की कला को अवगत होंगे।
PAPER VIII Course title भाषा विज्ञान:हिंदी भाषा और व्याकरण	**Course Code:UAHIN 605**
C01	भाषा का इस्तेमाल करने की सटीकता को प्राप्त छात्र करेंगे।
CO2	सुलभ लेखन के अध्ययन के कारण छात्रों को रोजगार केअवसर प्राप्त होंगे।
CO3	हिंदी भाषा के व्याकरण के माध्यम से शब्द उच्चारण की कला को अवगत होंगे।
PAPER IX Course title: संचार माध्यम	**Course Code: UAHIN 606**
CO1	तकनीक क्षेत्र में रोजगार के लिए छात्र अवगत होंगे।
CO2	प्रिंट मीडिया और इलेक्ट्रॉनिक मीडिया में छात्रों की व्यावसायिक रूप में अभिरुचि बढ़ेगी।

CO3	विद्यार्थियों को जनसंचार में रोजगार अवसर प्राप्त होंगे ।

COURSE OUTCOMES

F. Y. B.A		
SEM-I		
PAPER 1 Course Title: Marathi compulsory Course Code:		
	MARATHI COMPLSARY SEM 1	
CO1 निवडक कथांचा अभ्यास	●दलित कथा – बुध्दाची शपथ , भूक, चौथी भिंत, झूमची दांडी ,वि-हार ●ग्रामीण कथा – पाणबुडी , लचांड, सातबा-याचा गर्भ, राखीव सावल्यांचा खेळ ●गूढकथा – उद्‌ध्वस्त, नवीन गोष्ट शिकण्यासाठी गोष्ट ●महानगरीय जाणिवेची कथा – पूर ●मानसशास्त्रीय कथा – मोराची बायको ● आदिवासी कथा – मी मेलोच नाही , भुताळ्या	
CO2 व्यावहारिक मराठी	● मराठी लेखनाचे नियम आणि विरामचिन्ह ● वर्तमानपत्रासाठी वृत्तलेखन ● वृत्तांतलेखन ● अर्जलेखन ●भाषांतर (इंग्रजीतून मराठीत)	
CO3		
MARATHI COMPLSARY SEM 2		
	MARATHI COMPLSARY SEM 2	
CO1 निवडक कवितांचा अभ्यास	● मार्क्सवादी कविता – चार शब्द, आई, तू नको करू चिंता , मनाच्या कॅनव्हासवरचं बुजगावण ●आधुनिक कविता – तुकारामाचा अंत, इराणी , आता, ते वर्ष होतं की कोळ्याच जाळं ●स्त्रीवादी कविता – रांगोळी , वाण ,स्त्री हाच तुझा समाज ? ,माझी पाच सहा वर्षाची पोरगी	

	●ग्रामीण कविता – ह्या नभाने ह्या भुईला दान द्यावे , बळीराजासाठी गाणं , उजळमाथ्यानं कुणबीपण, मेलं नाही अजून आभाळ ,मातीचे पाय ●आदिवासी कविता – युनोत पाणी ,गोंडवन माझे , माडया , गोंगलू ● मुस्लिम कविता – घरट्यासाठी झिजतो काढतो मरतो माझा बाप , सुरुवात ●दलित कविता -स्वागत , नफिसा ,आसक्तीच्या मनाला , वासनाकांड, दारासमोरचे देव , आयडियल स्टेटच्या हद्दीबाहेरून, उन्हाच्या कटाविरुध्द, स्टेज .नाही फिरलो माघारी , बेसावध , मी पण शिकतलय	
CO2 व्यावहारिक मराठी	● इतिवृत्तलेखन ● वर्तमानपत्रासाठी जाहिरातलेखन ●उताऱ्यावरील प्रश्न ● सारांशलेखन ● निबंधलेखन	
CO3		
Course Title: Marathi Optional SEM-I Course Code:		
CO1 नाटक ' या साहित्य प्रकाराचे सैद्धांतिक परिचय	● नाटक म्हणजे काय? ● नाटकाचे आशयानुरूप प्रकार ● नाटकाचे घटक ● मराठी नाटकाची वाटचाल ● मराठी नाटकाची वाटचाल	
CO2 सिगारेट' मनस्विनी लता रवींद्र	● आधुनिक पिढीतील नाते संबंध ● जागतिकीकरणानंतर एकविसाव्या पिढीतील बदल ● नवपिढीच्या मनातील	

	घालमेल व उलथा पालत ● नव्या व जुन्यापिढीतील भावनिक संमिश्रतेचा परिचय	
CO3' सत्यशोधक' गोविंद पुरुषोत्तम देशपांडे	● महात्मा जोतीराव फुले यांच्या विचारांचा वेध ● जोतीरावांच्या कर्तृत्वातले मुख्य आणि क्रांतिकारक भाग ● स्त्री मुक्ती विचार, धर्म विषय विचार	
CO4		
CO5		
SEM-II		
Course Title: Marathi Optional Sem 2 Course Code:		
CO1 प्रवासवर्णन मराठी साहित्याचे घटक	● प्रवासवर्णनाचे स्वरूप, प्रेरणा व प्रयोजन महत्व मांडणे ● प्रवासवर्णनाची प्राचीन वाटचाल अभ्यासणे ● प्रवासवर्णन एक वाङ्मय प्रकार	
CO2 कुंपनापलिकडचा देश पाकिस्तान - मनीषा टिकेकर	● पाकिस्तानातील सामाजिक, सांस्कृतिक, भौगोलिक, एतिहासिक व राजकीय अभ्यास ● पाकिस्तानातील काही शहरांचे चित्रणात्मक लेखन ● पाकिस्तानातील भारतीय नातेसंबध व इतिहास	
CO3 नाद अंतरिचा श्रीलंका - महावीर जोंधळ	● प्राचीन ते अर्वाचीन काळातील भिन्न प्रवासवर्णनाची माहिती ● श्रीलंकेतील धर्म, तीर्थयात्रा, ज्ञानार्जन, अर्थार्जन यांचे महत्व ● कला, सहित्य, संस्कृती, निसर्ग यात हरवलेला माणसाचे महत्व व्यक्त करणे	

CO4		
S.Y.B.A		
SEM-III		
PAPER 3 Course Title: Marathi Compulsory Course Code:		
CO1 कांदबरी : एक साहित्यिक प्रकार	कांदबरी परिचय करून देणे महत्व सांगणे कांदबरीचे आशयानुरूप प्रकार कादंबरीची प्राचीन वाटचाल अभ्यासणे	
CO2 थंक्यू मिस्टर ग्लाड - अनिल बर्वे	कांदबरीचे महत्व मांडणे कादंबरी शिकवणे	
CO3 दिवे गेलेले दिवस - रंगनाथ पठारे	कांदबरीचे विविध विचार ,अर्थ व्यक्त करणे	
CO4		
CO5		
PAPER 2 Course Title: Marathi Compulsory Sem-2 Course Code:		
CO1आत्मकथन	मराठी साहित्यातील एक घटक प्रकार,घटक, प्रक्रिया मांडणे	
CO2 मन में हैं विश्वास -विश्वास नांगरे पाटील		
CO3 जसं घडलं तसं		
CO4		
SEM-IV		
PAPER 4 Course Title: Marathi compulsory भाषा आणि भाषाभ्यास **Course Code:**		
CO1 (अ) मानवी भाषेचे स्वरूप	• संप्रेषण - मानवी आणि मानवेतरांचे •मानवांचे भाषिक व भाषेतर संप्रेषण • मानवी भाषेची लक्षणे किंवा स्वरुप विशेष • मानवी भाषेच्या व्याख्या	

(आ) भाषेची विविध कार्य	•रोमान याकबसनचे संप्रेषणाचे नमुनारुप व भाषिक कार्य	
CO2 (अ) भाषा , समाज आणि संस्कृती	•सांस्कृतिक संचित , सांस्कृतिक जडणघडण • एडवर्ड सपीर - बेंजामिन वोर्फ यांचा भाषिक सापेक्षतावादाचा सिद्धांत • समाजातील भाषावैविध्य आणि भाषेचा बहुजिनसीपणा • भाषिक - सांस्कृतिक विविध परस्परसंबंध	
CO3(आ) भाषेचा विकास आणि -हास	• जागतिकीकरण आणि भाषिक सांस्कृतिक विविधता - परिणाम •भाषा विकासाची संकल्पना, प्रगतीचे निकष •भाषिक -हासाची कारणे •भाषानियोजन आणि भाषेचा विकास	
CO4(अ) भाषा, प्रमाण भाषा आणि बोली	• प्रमाणभाषा – आवश्यकता •प्रमाणभाषा व बोली यांच्यातील संबंध, वापरण्यात •बोलीवैविध्य •बोलींविषयीचे गैरसमज व तथ्ये • मराठीच्या विविध बोली	
CO5		
MARATHI COMPLSARY SEM 4	सत्र 2	
CO1	• व्युत्पत्ती आणि विकास •व्याकरणिक वैशिष्ट्ये, उच्चार प्रक्रिया – म्हणी , वाक्प्रचार, शब्दसंग्रह • मालवणी लोकसंस्कृती, मालवणी बोलीचे प्रभावक्षेत्र , मालवणी सा सांस्कृतिक हित्याचा इतिहास	

CO2 नाटक चाकरमानी - सुंदर तळाशीकर	• नाटकाचा आशय , पात्रचित्रण, अवकाश ,संवादभाषा , बोली वैशिष्ट्ये	
CO3 मालवणी बोलीतील कवितांचा अभ्यास	• विठ्ठल कृष्ण नेरुरकर : ठेव झाला घराची आठव रे , चेडवाक निरोप • वसंत सावंत : आझान माझान, आराड गे बेडके सांन जांवदे • महेश केळुसकर : व्हनीबाय ज्युनार दी गे , बाळगो नि मालग्या •नारायण परब : वाडवळ , झेटलीमन • प्रवीण बांदेकर : नया घराचो पावो खनताना , वारुळ •सई लळीत: वांगड ,शबय •अविनाश बापट : मालवणी मेवो , नामो कुळकार •दादा मडकईकर : जत्रा , पावस इलो पावस • नामदेव गवळी : खेळे , भातालय •अजय कांडर : शेताभातातलो शिरवान, तांबेट पसरलेल्या मांडवात •रुजारिओ पिंटो : दर्या राजा , माय • सुर्नदा कांबळे : तावडन आजी , गटारी	
CO4		
CO5		
PAPER 3 Course Title: Journalism (पत्रकारिता) Sem 1 Course Code:		
CO1 •पत्रकारिता- व्याख्या, स्वरूप, व्याप्ती •पत्रकारितेची मूलतत्वे •पत्रकार आणि त्यांची गुणवैशिष्टे •कर्तव्ये हक्क व जबाबदारी •वृत्तपत्र स्वातंत्र	• पत्रकारितेचे स्वरूप व व्याप्ती यांचे महत्व सांगणे • पत्रकारितेचे मुलतत्व तसेच गुणवैशिष्टे, कर्तव्ये यांचा परिचय करणे • पत्रकारितेचे हक्क व जबाबदारी समजावून देणे	

•इ. स १९४७ पूर्वीची भारतीय पत्रकारिता •इ. स १९४७ नंतरची पत्रसृष्टी चांगल्या वार्ताहराची वैशिष्ट्ये	• पत्रकारितेचा स्वातंत्र्य व इतिहासाची विद्यार्थ्यांना ओळख करून देणे • चांगल्या वार्ताहराची कौशल्ये विद्यार्थ्यांना अवगत करणे	
CO2 •लेखन भाषेचा उपयोग शैली •पत्रकारितेची शैली •विशेषवृत्ते व्याख्या व प्रकार •विशषवृत्त लेखकांना मार्गदर्शन •लेखनाचे प्रकार •वृत्तपत्राचा संपादक	Sem 2nd • वृत्त कथनाचे प्रकार व त्यांचे दैनंदिन जीवनातील महत्व सांगणे • वृत्तांत असलेल्या भाषा शैलीचा अभ्यासा बद्दल विद्यार्थ्यांना माहिती देणे • विद्यार्थ्यांना विशेषवृत्ताकाराच्या कामगिरीचा परिचय करून देणे • लेखनाचे प्रकार किती व कोणते त्याचा वापर परस्परसंबधाचे ज्ञान देणे	
CO3		
T.Y.B.A		
SEM-V		
PAPER 1 **Course Title:** अभ्यासपत्रिका - 4 सत्र 5 वे मध्ययुगीन मराठी वाड्.मयाचा इतिहास		**Course Code:**86516
CO1 • महानुभवीय वाड्.मय • वारकरी पंथीयांचे वाड्-मय • शिवकालीन महाराष्ट्र • पंडिती काव्य	• महानुभाव साहित्याचे प्रेरणास्थान ईश्वरचिंतन आहे. समाजप्रबोधनाची जाणिव झाली. • अद्वैत तत्वज्ञानावर दृढ विश्वास असणा-या संताचे महत्त्व समजले. • स्वराज्य प्रेरणा जाणवली संतानी समाजपरिवर्तन घडवले. • विद्वानासाठीच काव्य लेखन केले. सामाजिक विषयापासून पंडित कवी दूर राहिले	

	आत्माविष्कारापेक्षा पांडित्य प्रदर्शन केले.	
मध्ययुगीन मराठी वाड्.मयाचा इतिहास	अभ्यासपत्रिका - 4 सत्र 5 वे	
CO1 • नाथ व दत्त पंथ • समर्थ व लिंगायत पंथ • ख्रिस्ती व इस्लामी धर्मियाची वाड्.मय निर्मिती • बखर वाड्.मय	• तत्कालीन समाजावर, धर्मसत्तेचा जबरदस्त प्रभाव जाणवला. समाजसुधारणेच्या दृष्टीकोनातून गोरक्षनाथाची नाथ संप्रदायाची स्थापना केली. • स्वधर्म रक्षणाखाली पंथाची स्थापना झाली. पंथ पे्ररणेतून वाड्.मयाची निर्मिती झाली. • आपल्या धर्माचा प्रसार व प्रचार करण्यासाठी वाड्.मय निर्मिती केली. • तत्कालीन जीवनाचा वारसा जतक करण्याचे श्रेय बखरीना आहे. बखर वाड्.मय हे काळाचे अपत्य आहे.	
CO4		
SEM-V		
PAPER 5 Course Title: अभ्यासपत्रिका - 5 सत्र 5 वे भारतीय व पाश्चात्य साहित्यशास्त् **Course Code:**86547		
CO1 • भारतीय साहित्यशास्त्र - संकल्पना व सिद्धांत • भारतीय साहित्यशास्त्र - साहित्याचा आस्वाद • साहित्यभाषेचे स्वरूप व कार्य • साहित्याची निर्मिती प्रक्रिया व प्रयोजन	• साहित्यातील सौंदर्याची विद्याथ्र्यांना जाणीव झाली. • आपणास त्या त्या रसाचा प्रत्यय कशामुळे येतो याची विद्याथ्र्यांना जाणीव झाली. • व्यंजना शब्दशक्तीचे साहित्यातील महत्व व्यंजनेमुळे साहित्यातील सौंदर्याची जाणिव विद्याथ्र्यांना झाली. • विद्याथ्र्यांना प्रतिभा शक्तीचे महत्व जाणवले. साहित्य कशासाठी निर्माण केले जाते हे	

	समजले.	
CO2		
PAPER 5 Course Title: भारतीय व पाश्चात्य साहित्यशास्त्र सत्र 6 **Course Code:**86585		
CO1 • पाश्चात्य साहित्यविचार - साहित्याचे स्वरूप • साहित्याची भाषा • साहित्याची निर्मिती प्रक्रिया व प्रयोजन विचार • साहित्याचा आस्वाद	• प्लेटो व अॅरिस्टॉटल या विचारवंतांची साहित्याबद्दलची वेगळी मते लक्षात आली. • रूपक व प्रतिक व प्रतिक या साहित्याच्या भाषेचे वेगळेपण विद्याथ्र्यांना जाणवले. • आपण साहित्य का निर्माण करू शकत नाही. तसेच साहित्य कशासाठी लिहिले जाते याचे भान विद्याथ्र्यांना आले. • कलाकृती पासून आपणास आनंद होतो. प्रक्रिया विद्याथ्र्यांना समजली.	
CO2		
PAPER 6 Course Title: अभ्यासपत्रिका - 6 सत्र 5 वे साहित्य आणि समाज **Course Code:**86585		
CO1 • साहित्य - समाज अन्योन्य संबंध • स्त्रीवादी जाणिवेचे साहित्य - 'भिन्न' - कादंबरी • महानगरी जाणिवेचे साहित्य 'दृश्य नसलेल्या दृश्यात' - काव्यसंग्रह	• साहित्य हे समाजमनावर संस्कार करते हा संस्कार सौंदर्यात्मक, सामाजिक आणि वैचारिक स्वरूपाचा आहे. • भिन्न - लिंग भावाचे राजकारण मांडणारी कांदबरी • महानगरातील हिंसा, फसवणूक, भ्रष्टता ही आशयसूत्रे कवितेच्या माध्यमातून विद्याथ्र्यांना समजली.	
CO2		
	अभ्यासपत्रिका - 6 सत्र 6 वे	
CO1		

• सामाजिक स्थित्यंतरे व मराठी साहित्य • ग्रामीण साहित्य 'ऐसे कुणबी भूपाळ' - कादंबरी • दलित साहित्य 'जाता नाही जात' - नाटक	• वैचारिक मराठी साहित्याने समाजाला दिशा देण्याचे काम केले आहे. • बदलत्या खेडयाचा समाजजीवनावर होणारा परिणाम जाणवला. • धर्म आणि जातीचा समाजजीवनावर होणारा परिणाम विद्यार्थ्यांना समजला.	
CO5		
PAPER 7 **Course Title:**Linguistics and Marathi Grammar भाषाविज्ञान अभ्यासपत्रिका- ७ सत्र - ५ **Course Code:**_86616		
CO1 •भाषाशास्त्राच्या विविध शाखा - वर्णात्मक , ऐतिहासिक, समाजशास्त्रीय •स्वनिम विन्यास (स्वन, स्वनिम, स्वनांतर) स्वनिमांचे प्रकार स्वनिम विश्लेषणाची तत्वे - तंत्रे •रूपिमविन्यास - रूपिका,रूपिम,रूपिकांतर, रूपिमांचे प्रकार, रूपिम प्रक्रिया •अर्थविन्यास - भाषिक अर्थाचे स्वरूप , शब्दार्थाचे प्रकार अर्थ आणि त्याचे परस्पर संबंध	• भाषेचे स्वरूप लक्षात येणे • भाषाविज्ञान या ज्ञानशाखेचा परिचय होणे • ऐतिहासिक भाषाविज्ञानाची अभ्यासपध्दती समजावणे • भारतातील भाषा कुलांची माहिती होणे • मराठी भाषेच्या इतिहासाचे ज्ञान होणे	
CO2		
	PAPER 7 **Course Title:**Linguistics and Marathi Grammar भाषाविज्ञान अभ्यासपत्रिका- ७ सत्र 6	
CO1 •शब्दांचे वर्गीकरण - पारंपरिक व आधुनिक विकरण-लिंग ,वचन, विभक्ती ,आख्यात •शब्दसिध्दी •प्रयोगविचार	•व्याकरणाचे महत्व अभ्यासणे •विद्यार्थ्यांना व्याकरण शिकवणे	
CO5		
Course Title: Modern Marathi literature(आधुनिक मराठी साहित्य) अभ्यासपत्रिका-८ सत्र ५ **Course Code:**_86651		
CO1	• आधुनिक, आधुनिकता व	

•आधुनिक, आधुनिकता, आणि आधुनिकतावाद : संकल्पना विचार •१]आधुनिक मराठी कथा - ऐतिहासिक आढावा २] आधुनिक मराठी कांदबरी - ऐतिहासिक आढावा •आधुनिक मराठी कथा- १]कांदाचिर - जी. के. ऐनापुरे २]भर चौकातील अरण्यरूदन - रंगनाथ पठारे आधुनिक मराठी कांदबरी	आधुनिकतावाद संकल्पना समजावणे ● आधुनिक मराठी साहित्याचा अभ्यास करणे ● आधुनिक मराठी साहित्याचा इतिहास समजावणे ● कांदाचिर या कथा संग्रहाचा अभ्यास करणे ● भर चौकातील अरण्यरूदन या कांदबरीचा अभ्यास करणे	
CO2		
Course Title: Modern Marathi literature(आधुनिक मराठी साहित्य)		
	अभ्यासपत्रिका ८ सत्र-६	
CO1 आधुनिक मराठी कविता आधुनिक मराठी कविता साकल्याचा प्रदेश-संपा-कवितासंग्रह आधुनिक मराठी नाटक - किरवंत-प्रेमानंद गज्वी	आधुनिक मराठी कविता ऐतिहासिक आढावा घेणे साकल्याचा प्रदेश कवितासंग्रहाचा अभ्यासणे आधुनिक मराठी नाटक ऐतिहासिक आढावा घेणे किरवंत-प्रेमानंद गज्वी नाटक अभ्यासणे	
Course Title: Accupationl Marathi व्यावसायभिमुख मराठी अभ्यासपत्रिका - ९ सत्र ५ **Course Code:**86684		
CO1 •भाषांतर - सैद्धांन्तिक विचार •भाषांतर- प्रत्यक्ष भाषांतर अभ्यास •उताराचे आकलन •प्रकल्प अहवाल	● भाषांतर अनुवाद,रूपांतर या संकल्पना समजावणे ● ललित साहित्याचे आकलन होणे ● भाषेचे आकलन होणे ● विविध माध्यमांचे आकलन होणे ● ग्रंथ परिक्षणाचा अभ्यास करणे ● नव साहित्याचे आकलन होणे	
CO2		

	अभ्यासपत्रिका - ९ सत्र - ६	
CO1 • मुलाखत सैद्धांन्तिक विचार •ग्रंथ परिक्षण - सैद्धांन्तिक विचार व स्वरूप •वाङ्मयीन निबंध	• मुलाखत घटकांचा अभ्यास करणे • ग्रंथ परिक्षण अभ्यासणे • वाङ्मय निबंधाचा अभ्यास करणे	

COURSE OUTCOMES:

ACCOUNTANCY

F.Y.B.COM	
SEM I	
PAPER 1	**Accountancy and Financial Management-I**
CO1	The learner would be able to implement basic accounting standards, maintaining accounting records and to find out the correct value of inventory by using various methods of stock valuation.
CO2	The learner would classify the nature of transaction between capitaland revenue and able to prepare final accounts of manufacturing concern
CO3	The learner would be able to find out the profitability of each departmentand understand the concept of inter departmental transfer at various price.
CO4	The learners would learn a concept of special transactions in account namely "Hire Purchase Transaction" and understand the accounting treatment for hire purchase from the view point of hire purchaser and hire vendor.
SEM - II	
PAPER 2	**Accountancy and Financial Management-II**
CO1	The learner would be able to prepare final account of Proprietary Trading Concern which does not maintain complete and proper record of all accounting transactions.
CO2	The learner would be able to understand the concept, accounting treatment of consignment transaction and find out commission of consignee and Profit or Loss to consignor.
CO3	The learner would be able to find out profit or loss of dependent branch and learn different methods of accounting such as Debtors method and Stock and Debtors method.
CO4	The learner would compute loss of stock by fire and ascertain the amount ofclaim as per the insurance policy.

COURSE OUTCOMES:

BUSINESS ECONOMICS

F. Y. B.Com.	
SEM-I	
PAPER I	**Course Title: BUSINESS ECONOMICS - I**
	On completion of this course the students will be able to:
CO1	Understand scope and importance of business economics such asbasic- tools, basic economic relation and concepts of revenue.
CO2	Understand to analyze demand function, demand estimation and demandforecasting.
CO3	Understand supply and production function such as Short run and longrun production function.
CO4	Understand cost production and extensions of cost analysis such as accounting cost, economic cost, Cost reduction through experience andbreak-even analysis.
SEM-II	
PAPER I	**Course Title: BUSINESS ECONOMICS- II**
CO1	The learner will be able to analyze product pricing under acompetitive market and monopoly.
CO2	The learner will be able to examine pricing and output decisions underimperfect competition.
CO3	The learner will be able to understand pricing methods used in thebusiness world.
CO4	The learner will be able to interpret various methods of evaluating capitalprojects.

COURSE OUTCOMES

F. Y. B.Com.	
COMMERCE – I	
SEM-I	
PAPER 1 Course Code:	
	The Learner would be able to
CO1	Understand the impact of Liberalisation, Privatisation and Globalisation on Indian Economy.
CO2	Analyse the concept of business environment and International current trends in the world.
CO3	Examine project planning, Feasibility Studies, Project Reports, Statutory requirements of documents legal provisions, etc.

CO4	Apply their skills and knowledge as entrepreneurs, managers, innovators find opportunities and professionalism and assuming the risks and rewards also competencies, communication skills in the world of business.
	SEM-II
CO1	Understand the importance of service sector in the economic growth of nation through it's scope and marketing mix for services also its physical evidence and process of service delivery.
CO2	Evaluate the nature of marketing research and service development cycle and also find out demand capacity, strategies, opportunities and challenges in the service sector in India and Abroad.
CO3	Understand the concept of organized and unorganized retailing in India, also recent trends in retailing, their survival strategies retail store formats retail scenario in global context as well as FDI in retailing.
CO4	Examine the recent trends in service sector, understand what is outsourcing enterprise resource planning, FDI in banking and insurance sector in India and the importance of logistics and its challenges in India.

COURSE OUTCOMES
F.Y.B.COM.

ENVIRONMENTAL STUDIES	
SEM I	
CO1	Learner will learn to create an environmental awareness among commerce students.
CO2	Learner will understand importance of environment and man- environment relationship.
CO3	Learner will understand different ecosystems, functions and structures.
CO4	Learner will understand types and classification of natural resources andsustainable development and problems associated with management of resources
CO5	Learner will know Population explosion problems and measures and human develop index.
CO6	Learner will analyze Urbanization and environmental problems and emergenceof smart cities and safe cities.
CO7	Learner will learn to read thematic maps and will be able to fill the map usingpoint, line and polygon segments
SEM II	
CO1	The Learner will be aware of the classification of solid wastes and its sourcesand will learn solid waste management.
CO2	Learner will learn environmental problems associate with agriculture and industrial development, and also sustainable practices to overcome thesame.
CO3	Learner will learn types, nature, scope and importance of tourism and its potential to develop in India and its positive and negative impacts.
CO4	Learner will learn to create and insight into various environmental issues at various levels and environmental movements towards making environment sustainable.
CO5	Learner will be able to fill environmentally significant featuresin maps of Mumbai and Konkan.

COURSE OUTCOMES
FYBCOM:

	BUSINESS COMMUNICATION
	SEM: I
CO1	Learner has understood the basics of communication in an effective way
CO2	Learner is equipped with innovative ways of communication in the 21st century world of technology.
CO3	Learner is equipped for effective communication at the work place, due to exposure given to them of various methods and platforms of communication.
CO4	Learner understand the value of ethics as an integral part of every business organization.
CO5	Learner is capable of erasing physical, physiological and psychological barriersto communicate effectively.
CO6	Learner is capable of recognizing the art of active listening in everyday communication
CO7	Learner is trained in the format of writing business letters (Statement of Purpose, Letter of Recommendation, Letter of Acceptance of Job offer, Letterof Resignation and Letter of Appreciation) which is integral part of effective communication in most organizations.
CO9	The commercial terms used in Business Communication, helps the learner toenhance his communication skills.
CO10	An exposure in writing skills enables the learner to write in a clear, concise, persuasive and descriptive manner
	SEMESTER II
CO1	Lessons on interview techniques help the learner to cultivate 21st centuryskills of effectively presenting himself for interviews
CO2	Process of organizing meetings, conferences, exposes the learner to leadershipskills with effective communication
CO4	Training in handling Public Relations in an effective way, helps the learner tomanage company's public reputation which helps to gain the trust of stake holders.
CO5	Learner is equipped with letter writing skills in the industry to address grave matters, complaints, RTI etc.
CO6	Learner is trained in the skill of writing reports and a business proposal which makes him market ready to undertake a business adventure.
CO7	Exposure to the Business writing skills, exclusively paraphrasing long passages in a precise and logical manner helps the learner to advance his business communication ability

CO8	Learner is trained in recognizing the significance of group discussion and generation of ideas among students
CO9	Learner is in a position to understand the significance of modern methods of conferences like Web conference, Skype & Webinar

COURSE OUTCOMES

F.Y.BCOM

MATHEMATICAL AND STATISTICAL TECHNIQUES	
SEM - I	
CO1	Students will understand the characteristics of different financial assets such as shares and mutual funds and how to buy and sell these assets in financial markets.
CO2	Be able to enumerate the number of arrangements(permutations(combinations) that can be performed from a given number of objects , convert real life problems into mathematical form and get the optimum solution using linear programming
CO3	Develop an understanding of the various averages and measures of dispersion to describe statistical data
CO4	Learn to predict the occurrence or non-occurrence of an event or more than one event in real life applications, Calculate the expected value of a random variable.
CO5	Learn to making best decision using actions based on various states of nature
SEM – II	
CO1	How to convert real life problem into mathematical form using functions, derivatives of functions and its applications in economics
CO2	Learn the effects of interest on saving and loans, learn to calculate simple interest, compound interest, present and future value of an annuity and equated monthly instalments.
CO3	Learn to measure the existence, direction and degree of the relationship between two linear related variables graphically and a linear model(equation of a line) that can be developed to predict a value for one variable given a value of the other variable.
CO4	Learn to use statistical techniques to analyze the trends and tendencies through time and their use in forecasting using linear models, explain the construction and application of index numbers to real life situations
CO5	Identify random variable(s) of interest in different real life situations and compute probabilities for different standard discrete and continuous probability distributions

COURSE OUTCOMES
F. Y. B.Com.

FOUNDATION COURSE	
SEM-I	
CO1	The learner would be able to understand the rich cultural diversity ofIndian society.
CO2	The learner would understand the concept of disparity, become gender sensitive and develop compassion and empathy towardsdifferently abled citizens
CO3	The learner will be able to point out the nature of intergroup conflictsand the ways to resolve them.
	The learner would develop scientific temperament and inculcate values of tolerance, peace and communal harmony to strengthen socialfabric of Indian society.
SEM-II	
CO1	It makes them aware of economic concept like liberalization, privatization, globalization and impact of globalization on various sectors of Indian economy. It also covers impact of information andcommunication (ICT) on everyday life.
CO2	The concept of origin and evolution of Human Rights along with Universal Declaration of Human Rights is absorbed by learner. There is special mention for Fundamental Rights stated by Indian Constitution. This will help them to be a good and responsible citizenof the country.
CO3	It sensitizes Learners towards environment and its degradation. It also emphasizes on Sustainable Development. This will help learner to preserve environment for present and future needs.
CO4	It puts forth before learner various aspects of individual developmentsuch as agents of socialization, significance of values, ethics and prejudices etc. Also, helping them to understand reasons of stress andtechniques of stress management. This will help them in overall personality development.
CO5	Learners can recognize the different conflict of motives and its resolution. It also helps them to acknowledge the various stages ofself-actualization.

COURSE OUTCOMES

S.Y.B.COM

Accountancy	
PAPER 3	**Accountancy and Financial Management-III**
	SEM - III
CO1	The learner would be able to differentiate the concept of admission, retirement and death of a partner and prepare partnership final accounts.
CO2	The learner would be able to understand the concept of piecemeal distribution, settlement of liabilities and different method ofdistribution i.e. Proportionate Capital and Excess Capital Method.
CO3	The learner would be able to calculate Purchase Consideration incase of amalgamation of firms.
CO4	The learner would be able to understand the concept of conversionof partnership firm into Ltd companies.
	SEM - III
PAPER 5	**Financial Accounting and Auditing-V (Management Accounting)**
CO1	The learner would understand the concept, function and Scope ofManagement Accounting Apply it in facilitating decision making.
CO2	The learner would be able to study and prepare financial statement in vertical form suitable for analysis and to analyze financial statement using different tools of analysis.
CO3	The learner would be able to analyze financial statement by usingvarious ratios and interpret the results of the ratios.
CO4	The learner would be to understand the concept and types of working capital and to determine the required amount of working capital.
CO5	The learner would able to formulate the estimated period of completion and Profitability of long term investment and equip with various techniques of capital budgeting decisions.

SEM - IV	
PAPER 4 Accountancy and Financial Management-IV	
CO1	The learner would be able to revise different terminology used inCompanies Account regarding Shares and Debenture.
CO2	The learner would be able to understand the procedure regarding redemption of preference shares and Preparation of Companies Balance sheet as per Companies Act 2013.
CO3	The learner would be able to apply the provisions and differentmethods of redemption of debentures
CO4	The learner would be able to understand the concept and principles for ascertainment of Profit Prior to Incorporation and preparation of Income Statement.
SEM - IV	
PAPER 6 Financial Accounting and Auditing-VI (Auditing)	
CO1	The learner would be able to understand the basic terms and concepts of Audit and to differentiate between Accounting and Auditing, Auditing and Investigation.
CO2	The learner would be able to plan an audit taking into accountconcepts of evidence, risk and materiality.
CO3	The learner would be able to apply auditing techniques like audit sampling, test check, materiality as well as understand the basic concepts related to internal audit.
CO4	The learner would be able to vouch various transactions of incomeand expenses and verify Balance Sheet items.

COURSE OUTCOMES

S.Y.B.COM.

BUSINESS ECONOMICS	
SEM-III	
BUSINESS ECONOMICS – III	
CO1	This course is an introduction to the basic analytical tools of macroeconomics to evaluate macroeconomic conditions such as inflation, unemployment and growth.
CO2	It is designed to make the system of overall economy understandable and relevant. The aim is to provide a clear explanation of many aspects of aggregate economic variables to inspire a consistent way of thinking about key macroeconomic phenomena.
CO3	It intends to familiarize the commerce students with basic concepts of macroeconomics and with certain common features of economic occurrence in thereal world.
SEM-IV	
BUSINESS ECONOMICS – IV	
After completion of this course, following will be gained by Learner:	
CO1	It helps to familiarize learners with the fundamental concepts and issues of Public Finance. And about the role of government in an economy.
CO2	An understanding of government finance i.e. sources, shifting of tax burden,effects of taxation etc. is essential to a learner of economics as it forms the grounding of analysing public policies.
CO3	It makes learner aware of impact of public policies on social and economic lives of people. Also, about significance of Public Expenditure and Public Debt in economy.
CO4	It inculcates an interest in Public Finance and Fiscal Policy at the same time. It stimulates learner to get involved in debates and discussions on these issues.

COURSE OUTCOMES
S.Y.B.COM.

BUSINESS LAW	
SEM - III	
BUSNESS LAW – I	
	Learner would be able to:
CO1	Understand the essential legal rules of Contract Act.
CO2	Understand the concept of performance, discharge and remedies of breach of contract.
CO3	Understand various types of special contract and the rights and duties of the parties.
CO4	Understand all conditions and warranties of Sale of Goods Act
CO5	Apply Negotiable Instrument Act in practical life.
	SEM IV
	BUSINESS LAW – II
CO1	Understand the methodology of formation of company, its registration and functioning of the company.
CO2	Understand all provisions governing various types of meetings.
CO3	Apply the way of formation, dissolution of partnership in real life.
CO4	Understand the procedure for registration of Intellectual property Right and protectit from infringement of their rights.
CO5	Apply the rights of consumer and various provision of Competition of Act 2002 in practical life.

COURSE OUTCOMES
S.Y.B.COM.

COMMERCE	
SEM-III	
COMMERCE II	
CO1	Understand the concept, nature, functions managerial skills and competencies in the field of management as also the evolutionary and modern management approach in the 21st century in India
CO2	Analyse the importance of coordination, MBO, MBE, MIS and also the techniques of decision making in the field of management.
CO3	Evaluate organization as a structure and process, the bases of departmentation, spam of management and delegation of authority in the organization in India.
CO4	Apply his skills and knowledge through direction and controlling motivation, communication and leadership qualities in the organization or the company in India.
SEM-IV	
COMMERCE III	
CO1	The learner would be able to examine production planning and inventory management in the production management area through control and production systems etc.
CO2	The learner would be able to examine the quality management through dimensions of quality and cost of quality, quality circle also the total quality management and I.S.O 9000 certification procedure etc.
CO3	The learner would be able to Interpret the Indian Financial system through Indian Financial Market and its structure. Also functions, protection measures of SEBI to the investors in India.
CO4	The learner would be able to evaluate recent trends in financial markets like Mutual Funds, commodity and Derivatives Markets also startu p ventures and their sources of funding etc.

COURSE OUTCOMES
SYBCOM

ADVERTISING	
SEM - III	
ADVERTISING – I	
	The learner would be able to:
CO1	Understand Integrated marketing communication through advertising and its Media, Geographic Area, Audience etc. Also objectives of advertising like create awareness, positive attitude, brand image, brand loyalty, corporate image, facing competition etc.
CO2	Evaluate the advertising agency through it's structure and services. How maintaining agency client relationship reasons of client turnover? also evaluate skills for career in advertising world and career options etc.
CO3	Interpret Economic and social aspects of advertising. Also Social and Regulatory Laws of Advertising ethical issues and unethical cultural aspects etc.
CO4	Examine the Brand Building and Special purpose advertising through communication process AIDA Model, Brand Equity and Brand Crisis. Also special purpose means rural, political, advocacy, corporate image and green advertising etc.
SEM - IV	
Advertising II	
CO1	Understand the Advertising Media like, Newspapers Magazines Radio – Television out of home and film also new age media like Digital Internet and Media research etc.
CO2	Examine planning advertising campaign, Advertising Budget also media planning like Reach, Frequency and DRP process media selection and media scheduling strategy etc.
CO3	Understand the Advertising Media like, Newspapers Magazines Radio – Television out of home and film also new age media like Digital Internet and Media research etc.
CO4	Understand and apply to execution and evaluation of advertising like elements of copy and essentials. Types of copy, layout and Illustration principles also evaluation of Pre-testing and Post testing Methods, objectives of testing advertising effectiveness etc.

COURSE OUTCOMES
S.Y.B.Com.

FOUNDATION COURSE	
SEM-III	
CO1	It emphasizes on unraveling the importance of human rights
CO2	It probes Threats to environment Dealing with disaster
CO3	It traces the development of science and technology
CO4	It explores how to develop leadership quality
CO5	Vital issues like affordable health facility
	SEM-IV
CO1	The learner would be able to understand new age human rights.
CO2	The learner would be able to comprehend the need and strategies for sustainable development.
CO3	The learner will be able to critically evaluate the pros and cons of modern technologies.
CO4	The learner would understand the importance of acquiring communication skills and other soft skills

COURSE
OUTCOMES
T.Y.B.COM

ACCOUNTANCY	
SEM - V	
PAPER 7	**Financial Accounting and Auditing –VII (Financial Accounting)**
	The learner would be able to
CO1	Prepare financial statements of companies as per provisions of Companies Act.
CO2	Differentiate between Internal Reconstruction and External Reconstruction and to execute the legal and accounting aspect of internal reconstruction.
CO3	Enumerate accounting procedures, conditions and steps of Buy Back of Shares
CO4	Maintain his/her personal Investment Account as per Accounting Standard and calculate returns on investment in various securities.
CO5	Corelate various forms of ethics and to evaluate corporate governance, corporatesocial responsibility
PAPER 8	**Financial Accounting and Auditing –VIII (Cost Accounting)**
CO1	Understand the basic concepts of cost, Elements and classification of cost.
CO2	Explain and record different types of costs relating to material, labour and overheadsin the cost sheet.
CO3	Describe Inventory Control and Inventory Accounting and prepare Stock Ledger tovalue inventories.
CO4	Understand Classification of Overheads and would prepare a Statement showing Primary Distribution of Overheads.
CO5	Identify the reasons for disagreement of profits shown by Financial Accounts and Cost Accounts and prepare Reconciliation Statement.
Elective paper	**Direct and Indirect Taxation-I**
CO1	Understand the basic terms of Income Tax, Scope of total income and residential status and find out residential status and Income of individual assessee.

CO2	Classify the various heads of Income and find out income from Salary and House Properties, Profit and Gains from business, Capital Gains on transfer of residential house property and income from other sources.
CO3	Understand various deductions under chapter VIA from Total Income and find outTaxable Income.
CO4	Calculate Total Income of Individual after considering all heads of income and deductions under chapter VIA.
SEM - VI	
PAPER 9 Financial Accounting and Auditing –IX (Financial Accounting)	
CO1	Maintain and record accounting entries in the books of Transferor and Transferee Company and understand the procedure of corporate restructuring in terms ofAmalgamation, Absorption and External Reconstruction.
CO2	Find out profit and loss arise due to International Transaction (Import and Export) of Goods and Assets and implement accounting standard in respect of foreign currency transaction.
CO3	Ascertain the funds to be distributed by official liquidator under legal provisions of liquidation of companies and find out the contribution to be made by List 'B' Contributories.
CO4	Familiarise with various types of underwriting and determine Underwriter's Liability.
CO5	Prepare financial statement of Limited Liability of Partnership and to convert Soleproprietorships and Partnership firm into Limited Liability Partnership.
PAPER 10 Financial Accounting and Auditing –X (Cost Accounting)	
CO1	Know Non-integrated Cost Accounting System and understand the Principal Ledgerand Subsidiary Ledgers.
CO2	Find out the profit or loss by preparing Contract Account and the treatment of profit onincomplete contracts.
CO3	Apply the method of Process Costing and ascertain normal loss, abnormal loss andabnormal gain.
CO4	Get insight into Profit-Volume Ratio, Break-Even Point and Margin of Safety.
CO5	Compare the actual costs with standard costs and ascertain the variances of Materialand Labour.
CO6	Understand some emerging concepts of cost accounting

Elective paper	**Direct and Indirect Taxation-II**
CO1	understand the basic concepts related to Goods and Service Tax, Scope of Supply, Levy and Collection of Tax, composition of Levy.
CO2	find out taxable amount for computation of GST.
CO3	learn Time, Place and Value of Supply and find out applicability of IGST, CGST, SGST and UTGST
CO4	understand Input Tax Credit and Payment of Tax and Computation of Tax Liability and payment of tax and find out GST Payable.
CO5	know Procedure for registration, Cancellation of Registration and Eligibility for GST Registration under GST Law.

COURSE OUTCOMES

T.Y.B.Com.

BUSINESS ECONOMICS	
SEM-V	
BUSINESS ECONOMICS	
After completion of this course, following will be gained by Learner:	
CO1	It helps in analyses and critique the functioning of the Indian Economy (i.e. Macro Economics Overview of India) in a lucid and yet in-depth manner. Keeping this in mind, it introduces Learners to the various issues and challenges of the Indian Economy.
CO2	It stresses the understanding of the New Economic Policy 1991 and its continued impact on the various sectors of the economy. All the three sectors of the economy i.e. primary, secondary and service.
CO3	Emphasis has been laid on familiarizing learners with the policies and programmes of the government, evaluating and analyzing their effect on the economy.
CO4	The Banking and financial markets are the backbone of the Indian financial sector. It makes them aware of recent trends, issues, challenges and reforms in these markets.
CO5	Overall, it will widen their knowledge base preparing them for their future career paths.
SEM-VI	
BUSINESS ECONOMICS	
After completion of this course, following will be gained by Learner:	
CO1	Various theories of International Trade are introduced to them to make their subject base clear. This helps them to visualize how trade concepts evolved in the past. It brings concept and graphical representation of Gains from trade and Terms of Trade for better understanding of trade.
CO2	It gives pros and cons about International Trade. It also introduces to them about various Tariff and Non-Tariff Barriers. Also, about International Economic Integration like EU, BREXIT and ASEAN.

CO3	Learners become aware about Balance of Payment i.e. a method about keeping record of export receipt and import payments. Another aspect of trade i.e. WTO (World Trade Organisation) recent developments in TRIPS, TRIMS and GATS. This knowledge will give them a picture of World Trade and its issues.
CO4	It is essential to become familiar with Foreign Exchange when it comes to International Trade or foreign travel. Learners become aware of the functioning of foreign exchange markets and its players. Concept and types of Exchange rate are introduced to them.

COURSE OUTCOMES

T.Y.B.Com.

MHRM	
SEM - V	
PAPER 1	**ADVERTISING - I**
	The learner would be able to
CO1	Apply his skills and knowledge of marketing as a functional area of business organization apart from creating demand, effective marketing generates customer satisfaction, enhances corporate image, enable the firms to gain competitive advantage maintains customer relations and develop the brand image, enhances brand equity and sustains brand loyalty etc.
CO2	Understand MIs process consumer behavior and market segmentation etc. also market research to solve the market problems, and factors influencing consumer behavior etc.
CO3	Evaluate marketing mix which refers to the marketing variables that combines to sell a product to the target market.
CO4	Understand physical distribution as a process of effectively delivering the product to the consumers in proper distribution efficiency, salesmanship balancing demand and supply etc.
	SEM - VI
	HRM
CO1	Human Resource Management and Human Resource planning HRM are processes of managing human resources to improve individuals, group and organizational effectiveness.
CO2	Evaluate human resource development which is the integrated use of training and development, organizational development and career development to improve individual's group and organization effectiveness.
CO3	Examine human relations and it is a process of an effective motivation of individuals ina given situation in order to achieve a balance of objectives, which will give greater human satisfaction and help accomplish company goals.
CO4	Understand recent trends in HRM like HRA (Human Resource Accounting) which isconcerned with the measurement of cost and value of people in the organization. It also involves measuring the economic value of people in the organization.

COURSE

OUTCOMES

T.Y.B.COM.

EXPORT MARKETING	
SEM - V	
PAPER 1	**EXPORT MARKETING - I**
The learner would be able to:	
CO1	Understand the full concept of Export Marketing which involves export business with individuals, firms, organizations or Government entities in other countries and the importance of exports for a nation.
CO2	Analyse global framework for exports like Trade Barriers i.e. tariff and non-tariff, major economic groupings, World Trade Organization and it's objectives and functions, overseas market selection.
CO3	Understand India's Foreign Trade Policy 2015-2020 and Highlights, the Exim policy which provides a list of initiatives and procedural guidelines for exporters and importers (GOI renamed the EXIM policy as Foreign Trade Policy in 2004).
CO4	Evaluate financial incentives and assistance to exporters to encourage them to increase exports like EPCGS, DBK, MDA, exemption from GST octroi and Rail freight Refunds, EOUS, SEZs etc.
	SEM - VI
	EXPORT MARKETING - II
CO1	Understand product planning and pricing decisions like, branding decisions and it's process management, packaging labeling and pricing decisions also FOB quotations etc.
CO2	Examine export distribution and promotion channels, logistics and their mode of transports also need for insurance and sales promotion techniques in exports etc.
CO3	Evaluate export finance and their methods of payments pre and post shipments finance that is also referred as packing credit, role of export financing institutions etc.
CO4	Understand export financing institutions etc.

COURSE OUTCOMES

T.Y.B.COM.

COMPUTER SYSTEMS AND APPLICATIONS	
SEM - V	
COMPUTER SYSTEMS AND APPLICATIONS - I	
Data Communication, Networking and Internet.	
CO1	The Learner would understand what is Computer? How it works? How it is getting used for Distributive Data Communication.
CO2	The Learner would able to know the basic things such as how to communicate with other computers through computer networks, what are the hardware and software require for that, what are the types of networks, its topology.
CO3	The Learner would be able to get connected with internet. He has learnt differenttypes of internet connections, facilities provided by internet, protocols of internet, mobile networks, how data travels, how credit cards works, how the data is protected.
CO4	The Learner would be able to understand cyber-crime, hacking, sniffing, and spoofing.
Database and MySQL	
CO1	The Learner would understand Databases, Relational and Non-relational database systems and MySQL as a Non-procedural Language.
CO2	Learner can create databases, manipulate databases and tables with insert modify add update set commands.
CO3	The Learner would understand concept of RDBMS which contains simple queries, Multi Table Queries, Nested queries and simple transactions.
Introduction to Excel	
CO1	The Learner can Create and Navigate through worksheets and adding information to worksheets. He learns different types of data such as texts,numbers, dates, functions.
CO2	The Learner would be able to execute commands like Cut, Copy, Paste, Adding and moving columns or rows. Inserting columns and rows. Find and replace values. Spell check. Formatting cells, Numbers, Date, Times, Font, Colors, Borders and Fills.
CO3	The Learner would be able to work on Multiple Spreadsheets commands like Adding, removing, hiding and renaming worksheets. Add headers/Footers to a Workbook. Page breaks, preview. Creating formulas, inserting functions, cell references, functions and analysis.

SEM - VI	
COMPUTER SYSTEMS AND APPLICATIONS - II	
E – Commerce	
CO1	The Learner would able to understand the definition and features of E- commerce, Different types of E-commerce
CO2	The Learner would be able to work on Business models like Advertising, Subscription, Transaction Fee, Sales Revenue, Affiliate Revenue. B2C models like Portal, Etailer, Content Provider, Transaction Broker, Market Creator, Service Provider, Community provider.
CO3	The Learner would understand the security systems like Encryption, Digital Signatures, SSL, Decryption.
CO4	The Learner would get acquainted with Payment Systems: Digital Cash, Online stored value, Digital accumulating balance payment, Digital credit accounts, digital checking.
Advanced Spread Sheet	
CO1	The Learner can handle Multiple Spread sheets - Creating and using templates, using predefined templates, adding protection option. Creating and Linking Multiple Spreadsheets. Creating Formulae, Using formulae that use reference to cells in different worksheets.
CO2	The Learner would able to execute Database functions like LOOKUP, VLOOKUP, HLOOKUP , Conditional Logic functions IF, Nested IF, COUNTIF, SUMIF, AVERAGEIF , String functions and date functions
CO3	The Learner would able to understand Data analysis Filter with customized condition, Graphical representation of data Column, Line, Pie and Bar charts, Using Scenarios, creating and managing a scenario, Using Goal Seek , Using Solver, Understanding Macros, Creating, Recording and Running Simple Macros.
Introduction to Visual Basic	
CO1	The Learner understands Visual Basic, Graphical User Interface (GUI) Programming Language (Procedural, Object Oriented, Event Driven), Writing VB Projects. The Visual Basic Environment.
CO2	The Learner would be able to know VB Controls, Variables, Constants, and Calculations Variable and Constant, Data Type.
CO3	The Learner would be able to understand Decision and Condition, Comparing numeric variables and constants, Comparing Strings, Comparing Text Property of text box, Compound Conditions (And, Or, Not). Sub-procedures and Sub-functions.

COURSE OUTCOMES

Department of Physics

F. Y. B.Sc.	
SEM-I	
PAPER 1 Course Title: Classical Physics Course Code: USPH101	
CO1	Understand Newton's laws and apply them in calculations of the motion of simple systems.
CO2	Use the free body diagrams to analyze the forces on the object.
CO3	Understand the concepts of friction and the concepts of elasticity, fluid mechanics and to be able to perform calculations using them.
CO4	Understand the concepts of lens system and interference.
CO5	Comprehend the basic concepts of thermodynamics & its applications in physical situation. Learn about situations in low temperature.
CO6	Demonstrate quantitative problem solving skills in all the topics covered
PAPER 2 Course Title: Modern Physics Course Code: USPH102	
CO1	Understand concept of Radioactivity, nuclear properties and nuclear behavior.
CO2	Understand the type isotopes and their applications. Carbon dating and its applications.
CO3	Understand the concept of various types of nuclear reaction, fission and fusion
CO4	Understand and demonstrate quantum mechanical concepts.
CO5	Demonstrate problem solving skills in all topics in the syllabus.
SEM-II	
PAPER 1 Course Title: Mathematical Physics Course Code: USPH201	
CO1	Understand the basic concepts of mathematical physics and their applications in physical situations.
CO2	Understand electrical concepts and applications of passive components (R,C,L)in everyday life
CO3	Apply mathematical concept to Superposition of Collinear Harmonic oscillations and concept of beats
CO4	Demonstrate quantitative problem solving skills in all the topics covered.
PAPER 2 Course Title: Electricity and Electronics Course Code: USPH202	
CO1	To understand difference between A.C. and D.C Voltages , to know about A.C. C-R , L- R , Series L-C-R and Parallel L-C-R Circuits. To study Phasor diagrams in A.C. Circuits
CO2	To study and compare different types of A.C. Bridges.
CO3	Understand various circuit theorems and their application in solving different electrical networks
CO4	Understand the concept of power supply, clippers and clampers and various digital electronic circuits.
CO5	Understand basic quantities like charge, forces in between them, electric fields produced by them etc. and sources of magnetic field.

S.Y.B.Sc	
SEM-III	
PAPER 1 Course Title: Mechanics and Thermodynamics Course Code:USPH301	
CO1	Understand concept of mechanics and properties of matter and use it to solve problems.
CO2	Understand basic concepts of thermodynamics and its applications in physical situation.
CO3	Understand the methods of obtaining low temperatures.
CO4	Understand thermodynamical concepts by solving the problems.
CO5	Understand importance of thermodynamical concepts in day today life.
PAPER 2 Course Title: Vector calculus, Analog Electronics Course Code:USPH302	
CO1	Understand the basic concepts of mathematical physics and their applications in physical situations.
CO2	Understand the basic laws of electrodynamics and be able to perform calculations using them.
CO3	To understand working of transistors, biasing and designing of different typestransistor circuits.
CO4	To understand difference between Amplifiers and Oscillators. To know different types of Oscillators
CO5	Understand functioning and different types of OPAMP Circuits
PAPER 3 Course Title: Applied Physics-I Course Code: USPH303	
CO1	Students will be exposed to contextual real life situations.
CO2	Students will appreciate the role of Physics in interdisciplinary areas related to materials, Bio Physics, Acoustics etc.
CO3	The learner will understand the scope of the subject in Industry & Research.
CO4	Experimental learning opportunities will faster creative thinking & a spirit of inquiry.
SEM-IV	
PAPER 1 Course Title: Optics and Digital Electronics Course Code:USPH401	
CO1	Understand and differentiate between Fresnel and fraunhofer diffraction of light due to various diffracting systems.
CO2	Understand polarization effect produced in the light and different types of polarization and polarizing materials.
CO3	Understand the concept of digital electronics and working of digital electronic circuits.
CO4	Understand different optics phenomena like reflection, refraction, diffraction, polarization etc. by performing the experiments and fabrication of different digital electronic circuits.
CO5	Understand day today life events by applying the concepts studied in thecourse.
PAPER 2 Course Title: Quantum Mechanics Course Code: USPH402	
CO1	To Understand difference between Classical Mechanics and Quantum Mechanics. Understand about Wavefunction, operators , Eigen Values , Expectation Values
CO2	Understand Postulates of Quantum Mechanics , Schrodinger's time dependent and time Independent equation
CO3	Understand Applications of Schrodinger's Steady state Equations i.e Free particle , Particle in infinitely deep potential well ,Particle infinitely deep potential well , Step potential

CO4	Understand Applications of Schrodinger's Steady state Equations i.e. Potential barrier , tunnel effect , theory of alpha decay
CO5	Know about Harmonic Oscillator
	PAPER 3 Course Title: Applied Physics-II Course Code: USPH403
CO1	Understand about the earth and various concepts and phenomena related to earth using physical methods
CO2	Comprehend the basic concepts of thermodynamics & its applications in physical situations.
CO3	Understand the concept of various communication techniques
CO4	Demonstrate tentative problem solving skills in all above areas.
CO5	Understand the concept of microprocessor and build up various programs using instructions of microprocessor 8085.
T.Y.B.Sc	
SEM-V	
PAPER 1 Course Title: Mathematical , Thermal and Statistical Physics Course Code:USPH501	
CO1	Understand some mathematical techniques required for the physical phenomena at the undergraduate level and get exposure to important ideas of statistical mechanics.
CO2	Understand Concept of probability and solve simple problems in probability. Understand the concept of independent events and work with standard continuous distributions.
CO3	Explore to idea of the functions of complex variables; solve nonhomogeneous differential equations and partial differential equations using simple methods.
CO4	Understand the concept of microstates, Boltzmann distribution and statistical origins of entropy.
CO5	Demonstrate quantitative problem solving skills in all the topics covered.
	PAPER 2 Course Title: Solid State Physics Course Code: USPH502
CO1	Understand the basics of crystallography, Electrical properties of metals.
CO2	Understand Band Theory of solids, demarcation among the types of materials, Semiconductor Physics and Superconductivity.
CO3	To understand conduction in semiconductors and BCS theory of superconductivity.
CO4	Understand the basic concepts of Fermi probability distribution function, Density of states
CO5	Demonstrate quantitative problem solving skills in all the topics covered.
	PAPER 3 Course Title: Atomic and Molecular Physics Course Code:USPH503
CO1	The application of quantum mechanics in atomic physics
CO2	The importance of electron spin, symmetric and antisymmetric wave functions and vector atom model
CO3	Effect of magnetic field on atoms and its application
CO4	Learn Molecular physics and its applications.
CO5	This course will be useful to get an insight into spectroscopy.
	PAPER 4 Course Title: Electrodynamics Course Code: USPH504
CO1	Understand laws of electrostatics in vacuum and apply it to solve the problems
CO2	Understand laws of electrostatics in matter and magnetostatics in vacuum and apply it to solve the problems.

CO3	Understand laws of magnetostatics in matter and development of Maxwells equations in electrodynamics and apply them to solve the problems.
CO4	Understand application of electromagnetic theory to study the behaviour of light waves
CO5	Understand laws electrodynamics and apply them to solve the problems
Applied Component: Course Title: Analog Circuits, Instruments and Consumer Appliances. **Course Code: USACEI501**	
CO1	Understand the difference between a transducer and a sensor.
CO2	Understand the construction, working and uses of different types of transducers.
CO3	Understand the concept Data Acquisition and Conversion
CO4	Understand construction of different electronic circuits using chips and semiconductor devices.
CO5	Understand usefulness of chip technology to develop different household appliances and medical imaging devices.
SEM-VI	
PAPER 1 Course Title: Classical Mechanics Course Code: USPH601	
CO1	Understand Motion under a central force, Elliptic orbits, The Kepler problem.
CO2	Concept of coordinates, Rotating coordinate systems, Laws of motion on the rotating earth, The Foucault pendulum, Larmor's theorem.
CO3	The introduction to simple concepts from fluid mechanics and understanding of the dynamics of rigid bodies
CO4	Understand difference between Lagrangian Mechanics and Newtonian Mechanics , to study various examples by Lagrangian Equations.
CO5	Understand the drastic effect of adding nonlinear corrections to usual problems of mechanics and how nonlinear mechanics can help understand the irregularity we observe around us in nature.
PAPER 2 Course Title: Electronics Course Code: USPH602	
CO1	Understand the basics of semiconductor devices and their applications.
CO2	Understand the basic concepts of Operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation.
CO3	Understand the basic concepts of timing pulse generation and regulated powersupplies
CO4	Understand the basic electronic circuits for universal logic building blocks and basic concepts of digital communication.
CO5	Develop quantitative problem solving skills in all the topics covered.
PAPER 3 Course Title: Nuclear Physics Course Code: USPH603	
CO1	To understand the fundamental principles and concepts governing classical nuclear and particle physics
CO2	Knowledge about the distribution of electrons in atoms and molecules
CO3	Gain knowledge of particle physics applications and interactions of ionizing radiation with matter the key techniques for particle accelerators the physical processesinvolved in nuclear power generation.
CO4	Knowledge on elementary particles will help students to understand the fundamental constituents of matter and lay foundation for the understanding ofunsolved questions about dark matter, antimatter and other research oriented topics.

CO5	Develop quantitative problem solving skills in all the topics covered.
PAPER 4 Course Title: Special Theory of Relativity Course Code: USPH604	
CO1	Understand significance of Michelson Morley experiment and failure of existing theories to explain null result of experiment.
CO2	Understand importance of Einsteins postulates of special theory of relativity, Lorentz space-time transformation equations, absoluteness and relativity
CO3	Understand transformation equations of mechanical quantities such as velocity, acceleration, momentum force and mass energy equivalence.
CO4	Understand transformation equations of electric and magnetic fields and essence of general theory of relativity.
CO5	Understand how Einsteins theory of relativity is applicable to study events in space.
Applied Component: **Course Title: Digital Electronics, Microprocessor, Microcontroller and OOP** **Course Code: USACEI601**	
CO1	Analyze/design and implement combinational logic circuits.
CO2	Understand various advance instructions of microprocessor 8085 and build up various programs using advanced instruction.
CO3	Understand the concept of 8255 Programmable Peripheral device and its use to connect various I/O devices to microprocessor
CO4	Understand usefulness of C++ programming language.
CO5	Understand applications of C++ programming language.

COURSE OUTCOMES

SUBJECT - CHEMISTRY

F. Y. B.Sc.	
SEM-I	
PAPER 1	**Course Title: Chemistry Paper I Course Code: USCH101**
CO1	The main objective of the course is Knowledge inclusion in students by conducting theory lectures on Chemical Thermodynamics and Chemical calculations. By studying chemical thermodynamics Students acquired knowledge about the correlation between chemical energy and work considering various systems at different temperatures and pressures. By studying chemical calculations students learned about stoichiometry and methods of expressing concentration of solution.
CO2	The learner will be able to understand the basic concepts of inorganic chemistry like structure of atom, electronic configuration & its related concepts
CO3	The learner will be able to understand periodic table and periodic properties like atomic size, ionizationPotential, electron affinity & electronegativity
CO4	The learner will be able to write the names of mono bifunctional aliphatic compounds including their cyclic analogues. Draw the structure of organic compounds based on systematic names
CO5	Comprehend the fundamental concepts which govern the structure,bonding & hybridization,bond angles and shapes of the molecules.The learner will know the concept of electronic effects, understand the importance of reaction intermediates.
PAPER 2	**Course Title: Chemistry Paper II Course Code: USCH102**
CO1	On completion of this topic on **Chemical Kinetics**, students will be able to understand the concept of Rate of chemical reaction and factors affecting the rate of reaction.They will be able to calculate and conclude about the order of given reaction. Different methods of determination of orders are studied and understood.
CO2	At the end of this course on **Liquid State**, the learner shall be able to identify the liquid state from other states of matter and differentiate between the various properties of matter particularly surface tension, viscosity,refractive index and polarizability. He will also know the experimental methods of determination of these properties, its instrumentation, the theory behind it and also the practical applications of the various properties. The learner will be able to understand the concept of liquid Crystal - its different types, its properties and applications.

CO3	The students will understand the importance of comparative chemistry of main group elements by studying their metallic and non-metallic nature, oxidation states, electronegativity, anomalous behaviour of second period elements, allotropy, catenation and diagonal relationship.
CO4	They will also gain the knowledge of comparative chemistry of carbides, nitrides, oxides and hydrides of Group-I and Group-II elements along with some important
	compounds. They will study environmental aspects of compounds of carbon, nitrogen and sulphur.
CO5	Learners will be able to distinguish and draw different molecular projections and to interconvert them.
CO6	Learners would be able to identify and assign stereo descriptors using CIP rules.
CO7	Learners would understand the conformers of alkanes and their relative stabilities.
SEM-II	
PAPER 1 Course Title: Chemistry Paper I Course Code: USCH201	
CO1	On completion of this topic on **Gaseous State**, the students will be able to recapitulate the basic concepts such as gas laws, kinetic theory of gases etc. They will learn about the deviation of real gases from ideal behaviour, compressibility factor, Van der waal equation, Joule- Thomson effect- qualitative discussion and experimentation, Inversion temperature.
CO2	On completion of this topic on **Chemical Equilibria and Thermodynamic Parameters**, the student will know about reversible and irreversible reactions, dynamic equilibria and equilibrium constant(Kp and Kc), the relation between
CO3	The learner will have holistic knowledge of the nature of compounds in chemistry and categorise them as Acid, Base or Neutral.
CO4	In chemistry of aliphatic hydrocarbons, the students will be able to learn the chemistry of C-C Sigma bonds and C-C pi bonds.
CO5	Preparation, chemical properties and reactions of alkanes, alkenes, alkynes.
PAPER 2 Course Title: Chemistry Paper II Course Code: USCH202	
CO1	The main objective of teaching this course is to make students understand about the concept of equilibrium in chemical reactions, pH and pH of buffer solution, Molecular Spectroscopy and Solid State.
CO2	The students will study the concept of chemical bond and reactivity in which they understand the types of bonds along with comparison, polarizability, shapes of molecules, Lewis dot structure, VSEPR theory, isoelectronic principles, applications and limitations of VSEPR theory.
CO3	The students will understand the importance of oxidation reduction chemistry by understanding the concept of reduction potentials, redox potentials along with applications of redox chemistry.
CO4	Conformational analysis of cycloalkanes would be learnt.
CO5	Basics of aromatic compounds, Huckel's rule of aromaticity would be learnt. Learners would be able to write the mechanism of electrophilic aromatic substitution and understand Hammond's postulates.

S.Y.B.Sc	
SEM-III	
PAPER 1 Course Title: General Chemistry Course Code: USCH301	
CO1	At the end of the course on **Thermodynamics**, the student will be able to- identify the unique vocabulary associated with thermodynamics, understand the concept of free energy, derive and apply the Helmholtz and van't Hoff's equations to different thermodynamic systems, learn concept of open system, partial molal properties, chemical potential, fugacity and activity, derive and apply Gibbs – Duhem equation
CO2	On completion of this course on **Electrochemistry**, the student should be able to- define basic terms related to electrolyte conductivity, predict how the conductivity of an electrolyte depends on the electrolyte concentration, learn what are industrial applications of conductivity measurements
CO3	The students will understand the fundamentals of **Chemical Bonding**s, various types of chemical bonds and their nature; structures of various types of crystals by using ball-and-stick models. The students will also grasp the concepts of Molecular Orbital Theory to explain the orbital pictures and the energies of different types of molecules.
CO4	The students will be able to understand the general mechanism of nucleophilic substitution reactions.
CO5	The students will be able to explain the properties and reactivity of Alcohols and Phenols. The students will be able to understand the concept of Epoxides and their Ring opening reactions.
PAPER 2 Course Title: General Chemistry Course Code: USCH302	
CO1	On completion of this course **Chemical Kinetics**, the student should be able to recall and explain why certain factors such as concentration, temperature, medium and the presence of a catalyst will affect the speed of a chemical change,interpret a reaction coordinate diagram with respect to the concept transition states, an activation energy and reaction intermediates,derive, manipulate and properly employ the Arrhenius Equation.
CO2	On completion of this course **Solutions,** the students will construct P-x-y, T-x-y diagrams for ideal and non-ideal binary miscible liquid-liquid systems. The student will describe salient features of liquid-liquid phase equilibrium plots. The student will understand the basics of various distillation processes.
CO3	On completion of this course students will acquire the knowledge of electron deficient compound of p block element like boron
CO4	The learner will have knowledge of compounds of p block elements like compounds of silicon, Germanium and Nitrogen
CO5	The students will be able to understand the nomenclature of carbonyl compounds. The students will understand the mechanism of nucleophilic addition reactions of carbonyl compounds.
CO6	The students will be able to understand the mechanisms of some name reactions of carbonyl compounds.

PAPER 3	**Course Title: Chemistry Paper III** **Course Code: USCH303**
CO1	In role of analytical chemistry ,the learner will have complete holistic knowledge about the subject of analytical chemistry which is a new subject to them
CO2	The topic significance of sampling in analytical chemistry depicts the techniques in sampling of solids .liquids and gases which will give the learner a good broad view about the preparative step of sampling required for analysis
CO3	By studying the topic of classical methods of analysis ,the learner will get a complete theoretical knowledge about the classical methods such as gravimetric and titrimetric analysis which are performed by the learner in practicals which is a added asset to them in their further career as a chemist
CO4	In the topic Instrumental method, the basic concepts of spectroscopy discussed ,thereby the learner will get a complete idea about the principle involved in spectroscopic analysis ,classification of analytical methods such as spectroscopic ,electroanalytical ,thermal methods will outline various methods clearly in the minds of the learner
CO5	The theory behind absorption and emission spectroscopy and the instrumentation of UV Visible spectrophotometer will be greatly beneficial to the learner to understand the working of the instrument and to operate the instrument in his future career.
SEM-IV	
PAPER 1	**Course Title: General Chemistry** **Course Code: USCH401**
CO1	On completion of this course on **Electrochemistry**, the student should be able to - evaluate fundamentals of electrochemistry, evaluate electrodes and cells, discuss electrode potentials and cell thermodynamics, explain the type of electrodes, explain the types of indicator electrodes, express the Nernst equation
CO2	On completion of this course on **Phase Diagram**, the student should be able to - explain the basic definitions and terms in a phase diagram, defines phase, equilibrium, component, degree of freedom and phase rule concepts, learn applications of phase rule to different systems
CO3	The students will understand the concepts of **Co-ordination Compounds**, ligands and their types, structures and geometries of coordination compounds, Werners theory of coordination compounds. The students will learn the fundamentals, concepts, nature, periodic properties, the properties of different compounds in the course **Comparative Study of Transition (p-block) Elements**.
CO4	The learner will be able to understand nomenclature, structure and properties of Carboxylic acids.
CO5	The learner will be able to understand the nomenclature of Sulfonic acids and mechanism of Sulfonation of Benzene.
PAPER 2	**Course Title: General Chemistry** **Course Code: USCH402**
CO1	Upon completion of **Solid State** course, the students will be able to - define crystal, crystal lattice and unit cell, explains various crystal systems, crystal planes and directions, Miller and Weiss indices, Diffraction of waves by crystals and Bragg's law, determination of interplanar distance by XRD

CO2	Upon completion of **Catalysis** course, the students will be able to: understand different types of catalysts, their mode of action, advantages and disadvantages, as well as their principal applications, evaluate the activity, selectivity of the catalytic processes, know the main homogeneous reactions catalyzed by acids, bases and enzymes and their reaction mechanisms
CO3	Studying the environmental aspect of oxides and oxoacids of nitrogen, sulphur and phosphorus.
CO4	Accomplish knowledge of behaviours of different cations and anions in water.
CO5	The learner will be able to understand the nomenclature and basicity of Amines and electrophilic substitution reactions in Aromatic Amines.
CO6	The learner will be able to clarify structure, aromaticity,synthesis and reactivity of 5-and 6-membered Heterocyclic compounds.
PAPER 3	**Course Title: Chemistry Paper III Course Code: USCH403**
CO1	The effect of studying methods of separation is that the learner will get well versed with the various analytical separation used as a preparative step for analysis in a small and large scale,the learner will understand the various types of separation methods based on solubility ,gravity,volatility,electrical effects, their principles and industrial applications
CO2	Solvent extraction depicts to the large separation methods used in industries as well as small scale separation with principles
CO3	Chromatography topic will show how separation can be done on small quantities and also qualitative analysis can be done on the basis of Rf values .Their separation skill is also developed due to practicals of paper chromatography and thin layer chromatography which are included in the practical course
CO4	The instrumental methods based on electroanalytical techniques such as Potentiometry ,conductometry and pH metry will help them to understand titrations without indicators using instruments done in a accurate manner
CO5	Statistical treatment of analytical data will give the learner a complete idea about the method used for quality control in industry and equip them with the criteria of accepting or rejecting data using various tests such as test significance ,2.5d ,4d Q test,F test etc
T.Y.B.Sc	
SEM-V	
PAPER 1	**Course Title: Physical Chemistry Course Code: USCH501**
CO1	Upon completion of the course on **Molecular Spectroscopy**, the students will be able to: understand the basic physical chemistry that govern molecular spectroscopy, students will understand basic information about different molecular spectroscopy methods such as microwave(rotational), IR (vibrational) and Raman, students will be able to select molecular spectroscopy methods suitable for solving given scientific problem

CO2	In this course of **Thermodynamics,** the learner will learn about Colligative properties such as Vapour Pressure, Elevation in boiling point, Depression in freezing point and Osmotic pressure. He will also be able to derive their relationships with molar mass of non volatile solute and the methods of determination of these properties..
CO3	By studying the topic of **Chemical Kinetics,** the learner will get the knowledge of collision theory of reaction rates and its application to unimolecular and bimolecular reactions. They will also learn about the classification of slow, fast and ultra fast reactions and the study of fast reactions by Stop Flow method and Flash Photolysis method
CO4	After completing this course of **Surface chemistry and Colloids** the student will gain knowledge with respect to – the concept of occurrence of adsorption processes, will be able to generate adsorption isotherm models, their derivation and applications, describing and explaining different types of colloidal systems, describing interactions between colloidal particles and explaining colloidal stability and instability, describing structure and properties of self-associating colloidal systems.
CO5	From the study of Nuclear Chemistry, the learner will be able to understand the basic terms- radioactive constants and units of radioactivity, types of nuclear radiations , measurement of nuclear radiations, instrumentation and working of G.M. counter and scintillation counter. He will get knowledge of radioisotopes and their applications, nuclear reactions, Q-value and threshold energy of nuclear reactions, nuclear reactors and also fission and fusion processes
PAPER 2	**Course Title: Inorganic Chemistry** **Course Code: USCH502**
CO1	Acquiring the knowledge and understanding of symmetry of molecules for determination and description of structures of molecules in chemistry.
CO2	Understanding bonding in heteronuclear polyatomic molecules with the help of advance theory like Molecular Orbital Theory
CO3	Understanding degree of order and perfection in the structures of crystalline solids and forces and energies associated with them (solid state Chemistry)
CO4	The students will understand the importance of non-aqueous solvents with their classification and the concept of auto-ionization.
CO5	The students will get the knowledge of Group-16 elements with general trends, electronic configuration and allotrope
CO6	The students will know about Group-17 elements, their characteristics and the formation of interhalogens.

PAPER 3	**Course Title: Organic Chemistry** **Course Code: USCH503**
CO1	The learner should able to grasp the basic concept and terminologies involved in photochemical reactions with special emphasis on photochemical reactions of olefins and carbonyl compounds,importance of agrochemicals, classification based on structure and mode of action along with synthesis of certain agrochemicals. Advantage and disadvantage of agrochemicals with special emphasis on biopesticides.
CO2	linear and convergent synthesis, with special emphasis on chemo selective and regioselective reactions, multicomponent synthesis. Twelve principles of green chemistry with special emphasis on atom economy, e-factor, calculations and their significance.· characteristic features of terpenoids, alkaloids and hormones. Methods of isolation, structural elucidation in citral, nicotine and adrenaline.
CO3	Apply fundamentals of Organic Reaction Mechanisms to various reactions.
CO4	Complete understanding of Symmetry elements and chirality concept and the stereochemistry of chiral compounds without stereogenic compounds would be learnt.
CO5	Assign IUPAC names to bicyclo biphenyls, cumulenes, quinolines and isoquinolines. Also the basics of organic spectroscopy of UV-visible and mass spectrometry would be learnt.
PAPER 4	**Course Title: Analytical Chemistry** **Course Code: USCH504**
CO1	The main objective of the course is to orient the students towards industry i.e. chemical industry. The student gained knowledge of Validation methods ,The aspects of quality control, sampling and chemical calculation. . By studying chemical calculations students learned about stoichiometry and methods of expressing concentration of solution. In the estimation of % of magnesium in a giveni talcum powder student will convert insoluble oxide of magnesium by using HCl into soluble salt form and practice complexometry.
CO2	The main objective of the course is Knowledge inclusion in students by conducting theory lectures on titrymetry analysis. By studying titrymetry analysis students learned different types of titrations, methods to determine equivalence point, selection of indicator and quantitative analysis. Learners will determine the amount of persulphate ions in the given solution by back titration with standard Ferrous ammonium sulphate solution and understand the redox reaction involved in the estimation.
CO3	The main goal of teaching optical methods is to incorporate knowledge and skill in students to make them capable of operating various instruments used for analysis such as UV Visible spectrophotometry. Flame photometer, Atomic absorption spectrophotometer, fluorometer ect. Learner determine the chemical oxygen demand of the given water sample by using potassium dichromate in acidic medium which oxidises organic substances present the given water sample.and back titration is understood.

CO4	The main goal of the teaching method of separation is Knowledge inclusion in students about solvent extraction, HPLC, HPTLC. the course provides information about the basic principle, instrumentation, working and its applications so as to enable students to work on advanced instruments in analytical laboratory.
PAPER 5	**Course Title: Applied Chemistry** **Course Code: USCH505**
CO1	The students will be able to understand Dyes,Requirements of a good dye, Suffixes of Commercial Dyes with at least one example (Nomenclature of Dyes).
CO2	The learner will be able to understand the general idea of Optical Brighteners,their characteristics and their classes.
CO3	The learner will be able to understand Armstrong's theory, Witt's theory, VBT,MOT to explain the colour of compounds.
CO4	Students are supposed to learn the etiological concepts, chemical classes, chemical structures, uses and side effects of pharmacodyanamic drugs like Analgesics, Antipyretics and Anti-inflammatory (SAID & NSAID) drugs, Antihistaminic drugs, CNS drugs, Antiparkinsonism drugs.
CO5	Students will inculcate the basic concepts involved in Cardiovascular drugs, Drugs for respiratory system, Anthelmintic and Antifungal drugs and chemical classes, structures, uses and side effects of these drugs.
CO6	Students will understand the fundamentals of a drug, characteristics of an ideal drug; classification, nomenclature of drugs and definitions of some terms like pharmacon, pharmacophore, pro-drug, half-life efficiency, LD_{50}, ED_{50}, Therapeutic index, receptors, drug-receptor interaction, bioavailability, drug potency; Various routes of drug administrations.
SEM-VI	
PAPER 1	**Course Title: Physical Chemistry** **Course Code: USCH601**
CO1	At the end of this course on **Electrochemistry** students should- know the different types of galvanic cells in particular concentration cells, know the importance of electrochemical processes in today's world, know the principles of electrochemistry and its applications, able to apply Nernst equation and the Tafel equation to different electrochemical systems
CO2	At the end of the **Polymer** course students should- define polymer science related terms, summarize historical evolution and classification of the polymers, learn the concept of average molecular weight, its types, solving numerical problems, and learning different experimental methods to determine it.
CO3	By studying the course on **Basics of Quantum Mechanics,** the learner will understand the limitations of classical mechanics and how it is possible to explain the behaviour of subatomic particles with the application of quantum mechanics (black body radiation, photoelectric effect, Compton effect). He will learn about

	Schrodinger's wave equation, its interpretation and properties of wave function. He will also be able to learn about Operators,Eigen function and Eigen values
CO4	From the topic of **Renewable Energy Resources**, the learner will get to know about the conventional resources of energy and renewable (alternative) resources of energy. He will be able to get information about photoelectric effect, Solar cell- its working and advantages., semiconductors and insulators. The learner will also get knowledge of Hydrogen - the fuel of future
CO5	On the completion of the topic of **NMR - Nuclear Magnetic Spectroscopy,** the learner will understand the principle of NMR, nuclear spin,magnetic moment,nuclear g-factor, Larmour precession,Relaxation processes in NMR and instrumentation of NMR Spectrometer From the study of ESR- Electron Spin Resonance Spectroscopy, the learner will be able to understand its fundamental principle, electron g-factor, hyperfine splitting and experimental set up of ESR spectrometer. The learner will also be able to explain Hydrogen and Deuterium spectra.
PAPER 2	**Course Title: Inorganic Chemistry Course Code: USCH602**
CO1	The students will understand the limitations of Valence bond theory. They will understand the importance of crystal field theory, effect of crystal field on central metals valence orbitals. The students will get the knowledge of how splitting of d-orbitals takes place in octahedral, square planar and tetrahedral crystal fields. The learner will be able to get the idea of distortions from octahedral geometry, crystal field splitting , spectrochemical series, crystal field stabilization energy with calculations etc., limitations of CFT.
CO2	The students will understand the importance of molecular orbital theory for co-ordination compounds. They will learn about molecular orbital diagrams. The students will get the knowledge of stability of metal complexes where they will study thermodynamic and kinetic stability, stepwise and overall stability constants. The students will know about reactivity of metal complexes along with types of reactions in metal complexes, inert and labile complexes, ligand substitution reactions. The students will understand the concept of electronic spectra where they will study types of electronic transitions in co-ordination compounds, selection rules for electronic transitions etc.
CO3	Acquiring knowledge about organometallic compound whose generally used as catalyst
CO4	Understanding how to obtain metals from their natural source for their industrial and commercial use. (metallurgy)
CO5	Accomplish knowledge of compounds of group 18 elements and their uses
PAPER 3	**Course Title: Organic Chemistry Course Code: USCH603**
CO1	The student will be able to understand the basis of biopolymer, general structure, classification and characteristic features of amino acid, polypeptides and proteins. Methods of preparation of amino acids and polypeptide synthesis

CO2	General structure of carbohydrates, classification, structure of monosaccharides: Fischer projection (4-6 carbon monosaccharide) and Howarth formula, furanose and pyranose form of pentose and hexose sugar, stereoisomers of D-Glucose, Mutarotation, chain lengthening and chain shortening reactions along with special reactions of D-Glucose and D-Fructose
CO3	General introduction and various terms involved in polymers, different types of polymers such as condensation, addition based on synthesis. stereochemistry of polymer, natural and synthetic polymer, additives in polymer and biodegradable polymer,catalyst and reagent with respect to functional group transformation and selectivity
CO4	The learner would be able to write the stereochemistry of various reaction mechanisms. Also the mechanisms of the rearrangements reactions such as Pinacol-pinacolone rearrangement, Beckmann rearrangement, Favorski rearrangement, Michael addition, and Wittig reaction with examples and stereochemistry wherever applicable.
CO5	Learners would understand the basics of IR and PMR. Structure elucidation of various simple molecules on the basis of UV, mass, IR and PMR values would be learnt.
PAPER 4	**Course Title: Analytical Chemistry Course Code: USCH604**
CO1	In the estimation of reducing sugar i.e. glucose in honey sample students will learn about redox reactions by using Wilstatter's method
CO2	In the estimation of zinc and magnesium by using anion exchange resin student will learn about the basic principles of the ion exchange method.
PAPER 5	**Course Title: Applied Chemistry Course Code: USCH605**
CO1	The learner will be able to understand the types of dyes such as Nitro,Nitroso,Azo dyes,Heterocyclic dyes,Quinone dyes etc.
CO2	The students will be able to understand non-textile uses of dyes such as Biomedical uses,dyes used in food and cosmetics,dyed used for Paper and Leather,use of dyes as indicators,hair dye etc.
CO3	The learner will be able to understand the concept of Make in India-Future Prospects of Dye Industry.
CO4	The students will inculcate the knowledge about chemical classes, structures, uses and side effects and syntheses of various chemotherapeutic drugs like Antiamebic drugs, Anti-HIV drugs, Antimalarial drugs, Antineoplastic drugs, Antituberculosis and Antileprotic drugs.
CO5	The students will also learn the advanced trends in Drug discovery, design and development; concepts in the drug metabolism like Absorption, Metabolism of drugs, Excretion of metabolites after metabolism with examples.
CO6	The students shall also understand concepts, structures of Drug Intermediates and their uses in the manufacture of a number of drugs.

COURSE OUTCOMES

MATHEMATICS DEPARTMENT

	FYBSC.
	Sem I
	Paper I **CALCULUS – I** **Course Code: USMT 101**
CO I	Describe the real line as a complete, ordered field, Determine the basic topological properties of subsets of the real numbers and produce rigorous proofs of results that arise in the context of real analysis.
CO II	To understand the concept of Intervals and neighborhoods, interior points, Bounded sets, supremum and infimum. To understand use of inequalities, Hausdorff property, I.u.b. axiom and its consequences, Archimedean property and its applications, density of rationals.
CO III	Use the definitions of convergence as they apply to sequences, series, and functions. To understand Limit of a convergent sequence and uniqueness of limit. To study Convergence of some standard sequences
CO IV	To analyze the boundedness and monotonic behavior of sequences. To understand algebra of convergent sequences and properties of subsequences.
CO V	To understand graphs of some standard functions. To study the existence of limit and continuity of a function.
	Paper II **ALGEBRA – I** **Course Code: USMT 102**
CO I	To understand the process of induction, binomial theorem and Pascal triangle and ability to apply them in solving problems involving binomials. To solve problems by using divisibility of integers and fundamental theorem of arithmetic. To understand the concept of congruence and some standard theorems.
CO II	To understand the concept of function, domain, co-domain and range of a function, image, inverse image, injective, surjective, bijective functions, Composite of functions, invertible functions. To study examples of functions including constant, identity, projection, inclusion.

CO III	To understand binary operation as a function, it's properties and examples. To understand the concept of Equivalence relation, Equivalence classes and its properties. To understand the construction of Congruence and modulo n, Multiplication modulo n, examples.
CO IV	To understand the concept of polynomial and its basic properties. To use Divisional Algorithm to find quotient and remainder when two polynomials are divided and its applications and Euclids algorithm for finding GCD of polynomial.
CO V	To analyze the roots of polynomials and their properties.
	SEM - II
	Paper I **CALCULUS - II** **Course Code: USMT 201**
CO I	To find limit of a function , check whether a function is continuous and understand the properties of limits and continuity.
CO II	To determine differentiability of functions defined on subsets of the real line, Apply the Mean Value Theorem to problems in the context of real analysis.
CO III	To understand the concept of Extreme values, increasing and decreasing functions and sketch of graphs of functions using properties.
CO IV	To solve problems on Taylors theorem and Taylors polynomials.
	Paper II **ALGEBRA – II** **Course Code: USMT 202**
CO I	Define permutation of objects, state basic results on permutation, Express permutations as a product of disjoint cycles, define a recurrence relation and obtain recurrence relation in counting problems, solve homogeneous and non-homogeneous recurrence relation using various methods.
CO II	Define finite, countable and uncountable sets, state and prove various principles of preliminary counting, explain pigeon hole principle and its strong form and solve examples.
CO III	State principal of inclusion and exclusion and apply it to solve problems, Permutation and combination of sets and multi-sets, circular permutations, emphasis on solving problems, define derangements, solve examples using explicit formula
CO IV	Apply binomial and multinomial theorem in examples of counting, derive Euler's function $\emptyset(n)$, $n \in N$ and find $\emptyset(n)$

	S.Y.B.Sc.
	Sem III
	Paper I CALCULUS – III Course code – USMT 301
CO I	To understand the Calculations of limit of series, types of series and use of Convergence tests.
CO II	Evaluate Upper/Lower Riemann sums, Upper/Lower integrals and state their properties, define Riemann integral on a closed and bounded interval, identify Riemann integrable functions using theorems, and use properties of Riemann integrable functions to solverigorous problems
CO III	State Fundamental theorem of integral calculus, Mean Value theorem, Integration by parts andsolve problems based on these theorems, identify Improper integrals-type 1 and type 2 and check convergence of improper integrals of type 1 and type 2 , using Abel's or Dirichlet's test to check for convergence of these improper integrals.
CO IV	Identify Beta and Gamma functions, state their properties and the relationship between them, apply integration in finding area between curves, volumes of solids of revolution , lengths of plane curves, areas of surfaces of revolution.
	Paper II ALGEBRA – III Course Code : USMT 302
CO I	Understand systems of homogeneous and non-homogeneous linear equations, find solutions of such systems using matrix representations and give a geometric and algebraic understanding of the solutions. Understand elementary matrices and their consequences
CO II	Define a vector space and its subspace over $\mathbb{R}$. Learn various examples of vector spaces, how to construct them and their properties.
CO III	Learn determinants as permutations on n symbols and establish their properties. Learn the notionof rank and use it to find solutions of non-homogeneous linear equations.
	Paper III ORDINARY DIFFERENTIAL EQUATIONS Course Code:USMT303
CO I	Learn to solve types of higher order linear homogeneous and non-homogeneous differential equations with constant and nonconstant coefficients
CO II	Learn to solve Systems of First Order Linear homogeneous and non-homogeneous Differential Equations.
CO III	Learn several methods of Numerical Analysis to find solutions of Ordinary Differential Equations

	S.Y.B.Sc
	Sem IV
	Paper I **CALCULUS IV** **Course Code: USMT 401**
CO I	Using the Euclidean inner product and Euclidean norm function in $\mathbb{R}^n$, a student can find distancebetween two points, using the definition of an open ball, open set he can determine whether the given set is an open set, define scalar and vector valued functions, explain the basic results on limitsand continuity of such functions and solve examples, evaluate partial and directional derivative of a given function.
CO II	Can distinguish between scalar and vector valued functions and explain the basic results on limitsand continuity of such functions, evaluate partial and directional derivative of a given function.
CO III	He can use definition of differentiability on many variables to find total derivative, gradient, partial derivatives, explain the relationship between them, evaluate higher order derivative on a scalar field, use chain rule of differentiability to find derivative of a composite function, use the sufficient condition to check for equality of mixed partial derivatives.
CO IV	Evaluate Jacobian matrix of a vector valued function as a tool for finding derivatives of vector valued functions, find stationary points, maxima, minima of vector fields, apply chain rule of differentiation to evaluate the derivative of a composite function.
	Paper II **ALGEBRA IV** **Course Code: USMT 402**
CO I	Introduction to linear transformations of vector spaces , examples and properties and the relation between matrices and linear transformations
CO II	Define dot product, inner product and general inner product space, orthogonal and orthonormal sets, find orthonormal basis of a vector space using Gram-Schmidt orthogonalization process, find orthogonal projections on a line.
CO III	Learn what are eigen values and eigen vectors of linear transformations and matrices, how to find them, their properties and applications

	Paper III	**ORDINARY DIFFERENTIAL EQUATIONS** **Course Code: USMT 403**
CO I	Define a differential equation and ordinary differential equation, find the order and degree of a differential equation, state the existence and uniqueness theorem for first order linear differential equation, define Lipschitz function and verify Lipschitz condition for a given function, identify different types of differential equation and solve them using appropriate methods	
CO II	Define homogeneous and non-homogeneous second order differential equations, solve such equations using different methods based on its types, find the general solution of a homogeneous and non-homogeneous second order ordinary differential equation.	
CO III	Define system of differential equations and solve the system, define and evaluate Wronskian of linear system of differential equations, determine the solution of system of homogenous and non-homogeneous equations with constant coefficient.	
	Sem V	
	Paper I	MULTIVARIABLE CALCULUS – II Course Code : USMT501
CO I	Define double and triple integrals and explain its geometrical significance in calculating area and volume, evaluate a double/triple integral by expressing it as an iterated integral, identify that a function of two/three variables is integrable over a closed and bounded region, simplify a calculation by changing the order of integration of a triple integral, change of variables formula, solve examples of double and triple integrals by converting it to polar, cylindrical and spherical coordinates, learn its applications in physics.	
CO II	Define Line integrals of the gradient vector field, compute line integrals directly, using the fundamental theorem for line integrals, and using Green's theorem. evaluation of line integrals in physics applications	
CO III	Understanding the architecture of curves and surfaces in plane and space etc., solve problems of area of such surfaces, define surface integrals of scalar-valued and vector fields defined on a surface, compute curl and divergence of a vector field, learnt elementary identities involving gradient, curl and divergence, compute surface integrals, directly, using Stokes' theorem and using the Gauss divergence theorem	

	Paper II	**LINEAR ALGEBRA** **Course Code : USMT502**
CO I	Define and explain quotient structures on vector space., learnt properties of inner product spaces and determine orthogonality in inner product spaces state and prove the first isomorphism theorem of vector space, show that a given map is an orthogonal transformation and determine whether it represents reflection or rotation, apply Cayley-Hamilton theorem to compute the inverse and powers of a given matrix.	
CO II	Find characteristic polynomial and hence the eigen values and eigen vectors of a matrix, define similar polynomials, deduce that similar polynomials have same characteristic polynomial and hence same eigen vectors, find the minimal polynomial of a matrix.	
CO III	Calculate algebraic and geometric multiplicity of eigen values of a given matrix and deduce if a matrix is diagonalizable, define a quadratic form and evaluate the rank and signature of a quadratic form, characterize positive definite matrices in terms of principal minors.	
	Paper III	**TOPOLOGY OF METRIC SPACES** **Course Code : USMT503**
CO I	Solve examples to verify a given set forms a metric space, explain properties of metric space, classify and explain open and closed sets, interior points , limit points, closure of a subset of metric space, closed sets in a metric space, and their properties, use Hausdorff property, find distance of a point from a given set.	
CO II	Define sequences, convergent sequences and Cauchy sequences in a metric space, give examples of convergent and Cauchy sequences in infinite metric spaces, characterize limit points and closure in terms of sequences, define complete metric spaces and state nested interval theorem, apply Cantor's intersection theorem to show that the set of real numbers is uncountable	
CO III	Define compact metric space using open cover, sequentially compact metric space and solve examples, explain properties of compact metric space, state and explain Heine Borel property, closed and boundedness property and Bolzano-Weierstrass property.	

	Paper IV	**NUMERICAL ANALYSIS – I** **Course Code : USMT5A4**
CO I	Define relative, absolute and percentage errors, find errors in different iterative methods, apply iterative methods based on first degree equation such as Newton Raphson method, secant method etc., to find roots of polynomial, find rate of convergence of various iterative methods, analyze the errors obtained in the numerical solution of problems.	
CO II	Apply methods based on second degree equation like Muller method, Chebyshev method, Multipoint iteration method, apply iterative methods for polynomial equations such as Descartes rule of signs, Birge-vieta method etc., to find the roots of polynomials, find rate of convergence of various iterative methods.	
CO III	Using appropriate numerical methods, determine approximate solutions to systems of linear equations, express the given system of linear equation in matrix form and apply Gaussian method to find the solution of the given system, use Triangularization methods such as Doolittle and Crout's method, Cholesky method etc., to find the solution of system of linear	
	equations, find the largest and smallest Eigen value of a matrix using power method, find the Eigen values of symmetric matrices using Jacobi method.	
	APPLIED COMPONENT Computer Programming and System Analysis Course code USACCS501	
CO I	Have a broad understanding of database concepts and database management system software, major DBMS components and their function, write SQL commands to create tables and indexes, insert, update, delete data and query data in relational DBMS, prepare various database tables and join them using SQL commands	
CO II	Reflect on the advantages and benefits of PL/SQL within a database environment, work on processes of Database Development and Administration using SQL and PL/SQL, declaring program variables and complex data types, developing logic within PL/SQL program blocks, use PL/SQL code constructs of IF-THEN-ELSE and LOOP types as well as syntax and command functions, solve Database problems using Oracle 9i SQL and PL/SQL, use Procedures and Functions.	

CO III	Know the Java software architecture, and the design decisions which make Java software portable, efficient, secure and robust, learn how to configure a simple Java development environment, know the data types and flow control constructs of the Java language for simple procedural programming, create Java technology applications that leverage the object-oriented features of the Java language, such as encapsulation, inheritance, and polymorphism, execute a Java technology application from the command line, use Java technology data types and expressions, use arrays and other data collections.
CO IV	Explain the various methodologies to handle the exception mechanisms and the principles of inheritance, packages and interfaces, implement error-handling techniques using exception handling, understand what exceptions are and when and how they happen, understand the try catch finally statement.
	Sem VI
	Paper I **BASIC COMPLEX ANALYSIS** **Course Code : USMT601**
CO I	Understand the complex numbers algebraically and geometrically, Explain limits and convergence of sequences of complex numbers and results using properties of real sequences, Apply the Cauchy-Riemann equation to check the differentiability of a complex valued function, define harmonic functions, harmonic conjugate of a complex valued functions and find the same.
CO II	Evaluate the line integral and prove the Cauchy integral formula , prove Taylors theorem for analytic function , define and solve examples of Mobius transformations, explain properties of exponential function, trigonometric function, hyperbolic functions.
CO III	Represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem.
CO IV	Apply the methods of complex analysis to evaluate definite integrals and infinite series.

	Paper II	**ALGEBRA** **Course Code : USMT602**
CO I	Explain the significance of the notion of cosets, normal subgroups, and quotient groups, solve examples of group homomorphism, finding the kernel of a group homomorphism, group isomorphism, and their consequences, external direct product of a group and properties of external direct products.	
CO II	Define algebraic structures like rings, integral domain, field, ideals, Commutative ring, quotient rings, subrings and use it to identify and construct their examples and identify non-examples, examples and properties of homomorphisms and isomorphisms of rings, define characteristic of a ring and find characteristic of some standard rings and integral domain and solve examples.	
CO III	Define , classify principal ideal, prime and maximal ideals and prove theorems, determine whether the given ideal is a prime ideal and maximal ideal, define polynomial rings, divisibility in integral domain define associates, irreducible polynomials and primes, list the irreducibility tests and use it to determine the irreducibility of a given polynomial, define field, subfield and examples, characteristic of fields, characterization of fields in terms of maximal ideals, irreducible polynomials. construction of quotient field of an integral1 domain.	
	Paper III TOPOLOGY OF METRIC SPACES AND REAL ANALYSIS **Course Code : USMT603**	
CO I	Define continuity of function from one metric space to another using $\epsilon - \delta$ definition, use Characterization of continuity at a point in terms of sequences, open sets and closed sets to	
	solve examples, prove algebra of continuous real valued functions in a metric space, continuity of composite functions, solve examples on uniform continuity of a metric space, Contraction mapping and fixed point theorem and its applications	
CO II	Define connected and disconnected sets in metric space, explain the properties of connected sets, define path connectedness in $\mathbb{R}^n$ and solve examples. Show that path connected subset of $\mathbb{R}^n$ is connected, convex sets are path connected. define connected components and give examples of a connected set which is not path connected.	
CO III	Define sequence of functions, point wise and uniform convergence of real value functions, show that point wise convergence does not imply uniform convergence, solve problems of pointwise and uniform convergence of sequence of functions	
CO IV	Define series of functions and their convergence, state and prove Weierstrass M-test, solve examples, state and prove properties of uniform convergence such as continuity, differentiability and integrability, Consequences of these properties for series of functions, term by term differentiation and integration, solve examples based on these properties.	

	Paper IV NUMERICAL ANALYSIS – II Course Code : USMT6A4
CO I	Define Basic concepts of operators Δ, E, ∇, form a difference table, find the relation between difference and derivatives of polynomial, perform interpolation such as linear, quadratic and cubic interpolation to find the polynomial, derive formula and solve problems using Newton forward formula and Newton backward formula, Stirling's Interpolation, explain results on interpolation error.
CO II	Evaluate numerical differentiation based on interpolation, perform piecewise interpolation such as linear, quadratic and cubic interpolation to find the polynomial, derive formula and solve problems using Lagrange's Bivariate interpolation and Newton's Bivariate interpolation.
CO III	Derive Newton-Cotes method, Simpson's 1/3, 3/8 rules, trapezoidal rule, composite Simpson's and trapezoidal rule, evaluate the numerical integration using Simpson's 1/8, 3/8 rules and trapezoidal rule, analyze the errors obtained in the numerical solution of problems
	APPLIED COMPONENT Computer Programming and System Analysis **Course code USACCS601**
CO I	Write and execute Java applets, use the graphics class, painting, repainting and updating an applet, sizing graphics, font class, draw graphical figures-lines and rectangle, circle and ellipse, drawing arcs, drawing polygons and Work with Colors: Color methods, setting the paint mode, use AWT package: Containers: Frame and Dialog classes, Components: Label; Button; Checkbox; Text Field, Text Area.
CO II	Will be able to identify Python object types, define the structure and components of a Python program, write loops, decision statements and functions and pass arguments in Python
CO III	Use lists, tuples and dictionaries in Python programs, use indexing and slicing to access data in Python programs, learn how to read and write files in python, design object-oriented programs with Python classes, use class inheritance in Python for reusability, use exception handling in Python application and error handling.
CO IV	Work with the Python standard library, describe data with statistics, and visualize it with line graphs and scatter plots, apply Python's symbolic math functions to solve algebraic problems.

COURSE OUTCOMES

BOTANY

F. Y. B.Sc.	
SEM-I	
PAPER 1	**Course Title: PLANT DIVERSITY – I** **Course Code: USBO101**
CO1	To learn the salient features of major group of algae Chlorophyta with suitable examples.
CO2	To understand blue green algae and also economic importance of algae group in general.
CO3	To gain knowledge about fungi, their life cycle patterns and economic importance.
CO4	To study plant group Class- Hepaticae from Bryophyta.
PAPER 2	**Course Title: FORM AND FUNCTIONS- I** **Course Code: USBO102**
CO1	To understand plant cell, the structure and function of different cell organelles.
CO2	To acquire information about basic concepts related to environmental landscape formations and functioning of different components of an ecosystem.
CO3	To gain knowledge about hereditary phenomenon observed in nature and interactions of genetic crosses
	SEM - II
PAPER 1:	**Course Title: PLANT DIVERSITY – I** **Course Code: USBO201**
CO1	To learn about life cycle pattern of ornamental plants-Ferns and their significance in evolution of plant life.
CO2	To understand life cycle of living fossil plant and the economic importance of Gymnosperms.
CO3	To gain knowledge about modifications and adaptations of plant organ leaf and patterns of arrangement of flowers.
CO4	To illustrate particular type of flowering plants under specific broad classification group of plant family
SEM-II	
PAPER 2	**Course Title: FORM AND FUNCTIONS- I** **Course Code: USBO202**
CO1	To understand the internal components and construction of various plant organs.
CO2	To gain knowledge about functional mechanisms of synthesis of food material by plants.
CO3	To analyze and apply the information about medicinal plants gained by simple observations related to common ailments, household remedies with traditional knowledge.

	S.Y. B.Sc.
	SEM - III
PAPER 1: Course Title: PLANT DIVERSITY – II Course Code: USBO301	
CO1	To learn about salient features of group Phaeophyta of algae with suitable examples.
CO2	To study plant group Class Anthocerotae from Bryophytes.
CO3	To understand some objectives and goals of plant systematics and its interactions with other branches of Botany, including study of few specific plant families.
CO4	To get acquainted with modern techniques for study of plant diversity with proper plant preservation methods.
CO5	
PAPER 2: Course Title: FORM AND FUNCTIONS- II Course Code: USBO302	
CO1	To understand the structure and function of some cell organelles, micro bodies in cell.
CO2	To gain knowledge about different mechanisms of cell division.
CO3	To study about hereditary carriers and their role in genetic mechanism of living organisms.
CO4	To learn about molecular biology aspect of genes.
PAPER 3 Course Title: CURRENT TRENDS IN PLANT SCIENCES I Course Code: USBO 303	
CO1	To understand phytochemical aspects of known medicinal plants, mainly secondary metabolites and their adulterants.
CO2	To gain knowledge about forest resources and their conservation, with special concern with social forestry, economic botany and organic farming practices.
CO3	To explore about industrial applications and plant based products in mainly food industry, pharmaceuticals and fuels.
	SEM IV
PAPER 1 Course Title: PLANT DIVERSITY – II Course Code: USBO 401	
CO1	To learn the general characteristics of fungal group Ascomycetes with suitable examples and also Lichens—Symbiotic forms
CO2	To understand the scope and importance of plant pathology
CO3	To gain knowledge about extinct plant fossils and study of living forms of group Pteridophyta and Gymnosperms
CO4	To study group Coniferophyta of Gymnosperms which is of great economic importance
PAPER 2 Course Title: FORM AND FUNCTIONS- II Course Code: USBO 402	
CO1	To understand the internal changes that occur in plants during their growth and how plants get strength to withstand their erect position?
CO2	To gain knowledge about mechanism of flowering in plants and supply of energy for vital activities by breakdown of food materials
CO3	To learn about various mechanisms that occur in cycling processes and role of soil as a growth medium for plants
CO4	To study about different aspects of plant assemblages or plant community
PAPER 3: Course Title: CURRENT TRENDS IN PLANT SCIENCES I Course Code: USBO 403	

CO1	To learn about various features of a garden and different types of gardens.
CO2	To gain knowledge of plant based biotechnological aspects viz. plant tissue culture and genetic engineering.

CO3	To get the idea of applications of statistical methods to solve the biological problems and use of computers, internet for biological data related with molecular biology i.e. Bioinformatics
	T.Y.B.S c.
SEM-V	
PAPER 1	**Course Title: PLANT DIVERSITY – III Course Code: USBO501**
CO1	To gain knowledge about microbial diversity and techniques for culturing and visualization.
CO2	To understand the salient features of three major groups of algae, their lifecycle patterns with a suitable example; to be able to identify them.
CO3	To learn the general characteristics and classification of two major groups of fungi along with life cycles of each group; to be able to identify them.
CO4	To understand the scope and importance of Plant Pathology and apply the concepts of various control measures of commonly widespread plant diseases.
CO5	
PAPER 2	**Course Title: PLANT DIVERSITY – IV Course Code: USBO502**
CO1	To acquire knowledge of different fossil forms and understand their role in evolution.
CO2	To provide plant description, describe the morphological and reproductive structures of seven families and also identify and classify according to Bentham and Hooker's system.
CO3	To gain proficiency in the use of keys and identification manuals for identifying any unknown plants to species level.
CO4	To relate anomalies in internal stem structure with function and appreciate the salient features of the root stem transition zone.
CO5	To get exposure to pollen study and learn to apply it in various fields.
PAPER 3	**Course Title: FORM AND FUNCTIONS- III Course Code: USBO503**
CO1	To acquire knowledge about two important organelles and molecular mechanisms of translation.
CO2	To understand water relations of plants, inorganic and organic solute transport, and apply the knowledge to manage mineral nutrition and survival in challenging abiotic stresses.
CO3	To understand succession in plant communities and study remediation technologies in order to apply knowledge acquired for cleanup of polluted sites.
CO4	To get exposure to principles and techniques of plant tissue culture and apply these studies for improving agriculture and horticulture and to become an entrepreneur
PAPER 4: Course Title: CURRENT TRENDS IN PLANT SCIENCE – II Course Code: USBO504	
CO1	To get exposure to the technique of mushroom cultivation and explore the possibility of entrepreneurship in the same.
CO2	To learn ethnobotanical principles, applications and utilize indigenous plant knowledge for the cure of common human diseases and improvement of agriculture.
CO3	To gain knowledge about the latest molecular biology techniques for isolation and characterization of genes.
CO4	To learn principles and application of commonly used techniques in instrumentation.

CO5	To gain proficiency in the monograph study and pharmacognostic analysis of six medicinal plants.
SEM-VI	
PAPER 1 Course Title: PLANT DIVERSITY – III	**Course Code: USBO601**
CO1	To identify, describe and study in detail the life cycles of three Bryophytes.
CO2	To and study in detail classification and general characters of three classes of Pteridophytes and identify as well as describe the life cycles of one example from each class.
CO3	To study evolutionary aspects and economic utilization of Bryophytes and Pteridophytes.
CO4	To identify, describe and study in detail the life cycles of three Gymnosperms.
CO5	
PAPER 2 Course Title: PLANT DIVERSITY – IV	**Course Code: USBO602**
CO1	To study contribution of Botanical gardens, BSI to Angiosperm study and provide plant description, describe the morphological and reproductive structures of seven families.
CO2	To gain exposure to a phylogenetic system of classification.
CO3	To gain insight into the anatomical adaptations of different ecological plant groups.
CO4	To understand development plant of male and female gametophytes, embryonic structure and development.
CO5	To understand the different aspects and importance of Biodiversity and utilize them for conservation of species so as to prevent further loss or extinction of Biodiversity and preserve the existing for future generations.
PAPER 3 Course Title: FORMS AND FUNCTION – III	**Course Code: USBO603**
CO1	To study various plant biomolecular structures and appreciate the structures, role, functions and applications of enzymes.
CO2	To gain insight into the Nitrogen and plant hormone metabolism with applications of the same in agriculture and horticulture.
CO3	To understand principles of genetic mapping, mutations and solve problems based on them, gain knowledge of various metabolic disorders and their implications.
CO4	To generate and test hypotheses, make observations, collect data, analyse and interpret results, derive conclusions, and evaluate their significance within a broad scientific context, using suitable statistical techniques.
PAPER 4 Course Title: CURRENT TRENDS IN PLANT SCIENCE - II Course Code: USBO604	
CO1	To gain insight into recent molecular biology techniques for DNA analysis and amplification and Barcoding techniques and applications therein.
CO2	To understand and apply tools of Bioinformatics for data retrieval and phylogenetic analysis.
CO3	To learn about the sources of economically important plants in the field of fats and oils and apply it for extraction, dealing with entrepreneurship in the field.
CO4	To gain knowledge and proficiency in preservation of post -harvest produce and explore the possibility of entrepreneurship in the field

Paper : Applied Component Course Code: USACHO501	**Course Title: HORTICULTURE & GARDENING –I**
CO1	To gain knowledge about various natural and artificial methods of multiplication of plants that are useful for plantation purpose which is basic concept of plant nursery development.
CO2	To learn about different nutritional requirement of plants and other supplements, natural manures and fertilizers with use of live organisms for sustainable gardening practices.
CO3	To get idea about different preparatory measures for establishment of cultivation area for various horticultural crops and their proper maintenances.
CO4	To get acquainted with common pests and diseases with their necessary control measures to manage the garden properly as well as improve the conditions so that beneficial organisms can settle in appropriate condition in cultivation areas.
CO5	To get the idea about different aspects of applied branch of horticulture to accommodate diversified garden crops and allied branches or industries which are using horticultural resources for their establishment.
Paper: Applied Component Course Code: USACHO601	**Course Title: HORTICULTURE & GARDENING –II**
CO1	To understand the underlying principles and requirements of planning a landscape in an area and also the suitable vegetation for that site.
CO2	To gain knowledge about modern techniques in horticulture and floriculture industry like greenhouse management, hydroponics, space garden- and utilization of horticultural produce
CO3	To learn about actual culture needs for commercial and large scale production of some important horticultural crops, with selection of their proper suitable varieties
CO4	To understand the different methods of preservation of perishable horticultural produce for future use and value addition of horticultural produce.
CO5	To explore the possibility of establishing a horticultural business requirement for small startup unit or self-employment venture with entrepreneurial skills.

COURSE OUTCOMES

B.Sc. - ZOOLOGY

F. Y. B.Sc.	
SEM-I	
PAPER 1 Wonders of Animal World, Biodiversity and its Conservation Course Code:**USZO101**	
CO1	Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest andlove for the subject of Zoology
CO2	Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation.
CO3	Minds of learners would be impulse to think differently and would be encouraged ipso facto to their original crude ideas from the field of biological sciences.
PAPER 2 Instrumentation And Animal Biotechnology CourseCode: USZO102	
CO1	Learners would work safely in the laboratory and avoid occurrence of accidents (mishaps) which will boost their scholastic performance and economy in use of materials/chemicals during practical sessions.
CO2	Learners would understand recent advances in the subject and their applications for the betterment of mankind; and that the young minds would be tuned to think out of the box
CO3	Students will be skilled to select and operate suitable instruments for the studies of different components of Zoology of this course and also of higher classes including research.
SEM-II	
PAPER 1 Ecology and Wildlife Management Course Code: USZO201	
CO1	This unit would allow learners to study about nature of animal population, specific factors affecting its growth and its impact on the population of other life form.
CO2	Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment and will lead to better understanding about implications of loss of fauna specifically on human being, erupting spur of desire for conservation of all flora and fauna.
CO3	Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism.

PAPER 2	**Nutrition, Public Health And Hygiene** **CourseCode: USZO 202**
CO1	Healthy dietary habits would be inculcated in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits.
CO2	Promoting optimum conservation of water, encouragement for maintaining adequate personal hygiene, optimum use of electronic gadgets, avoiding addiction, thus facilitating achievement of the goal of healthy young India in true sense.
CO3	Learners will be able to promptly recognize stress related problems at initial stages and would be able to adopt relevant solutions which would lead to psychologically strong mind set promoting positive attitude important for academics and would be able to acquire knowledge of cause,symptoms and precautions of infectious diseases.
	S.Y. B.Sc.
	SEM-III
PAPER 1 Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids Course Code: USZO301	
CO1	Learner would comprehend and apply the principles of inheritance to study heredity. Learner will understand the concept of multiple alleles, linkageand crossing over.
CO2	Learner will comprehend the structure of chromosomes and its types. Learner will understand the mechanisms of sex determination. Learner would be able to correlate the disorders linked to a particular sex chromosome.
CO3	Learner will understand the importance of nucleic acids as genetic material. Learner would comprehend and appreciate the regulation of gene expressions.
PAPER 2 Nutrition and Excretion, Respiration and Circulation, Control and Coordination ofLife Processes, Locomotion and Reproduction **Course Code: USZO302**	
CO1	Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy. Learner would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.
CO2	Learner would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy. Learner will be able to correlate the habit and habitat of animals with respiratory and circulatory organs
PAPER 3	**Ethology, Parasitology, Economic Zoology** **Course Code: USZOE1303**
CO1	Learner would gain insight into different types of animal behaviour and their role in biological adaptations. Learner would be sensitized to the feelings which are instrumental in social behaviour
CO2	Learner would understand the general epidemiological aspects of parasites that affect humans and take simple preventive measures for the same.
CO3	Learner would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment
CO4	Learner would gain knowledge on animals useful to mankind and the means to make the most of it. Learner would learn the modern

	techniques in animal husbandry. Learner would pursue entrepreneurship as a career
SEM-IV	
PAPER 1 Origin and Evolution of Life, Population Genetics and Evolution, Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research Course Code: USZO401	
CO1	Learner will gain insights into the origin of life. Learner will analyse and critically view the different theories of evolution. Learner would understand the forces that cause evolutionary changes in natural populations.
CO2	Learner would understand the forces that cause evolutionary changes in natural populations. Learner would comprehend the mechanisms of speciation Learner will be able to distinguish between microevolution, macroevolution and megaevolution
CO3	To develop an understanding of genetic variability within a population and learn as to how the change in the gene pool leads to evolution of species
CO4	The learner would develop qualities such as critical thinking and analysis The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research
PAPER 2 Cell biology , Endomembrane system, Biomolecules Course Code: USZO402	
CO1	Learner would acquire insight into the composition of the transport mechanisms adopted by the cell and its organelles for its maintenance and composition of cell
CO2	Learner would appreciate the intricacy of endomembrane system. Learner would understand the interlinking of endomembrane system for functioning of cell
CO3	The learner will realize the importance of biomolecules and their clinical significance.
PAPER 3 Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms USZO501: Course Code: USZOE1403	
CO1	Learner will be able to understand and compare the different types of eggs and sperms Learner will be able to understand and compare the different pre- embryonic stages
CO2	Learners will able to understand human reproductive physiology Learners will become familiar with advances in ART and related ethical issues.
CO3	The learners will be sensitized about the adverse effects of pollution and measures to control it.
T.Y.B.Sc	
SEM-V	
PAPER 1 Taxonomy - Invertebrates and Type Study Course Code: USZO501	
CO1	Learners will apprehend the basis of classification and modern classification up to class of the lower invertebrate animals.

CO2	The learners will be familiarized with classification up to phylumNematoda along with their examples.
CO3	Learners will get an idea of higher groups of invertebrate animal life, their classification and their peculiar aspects.
CO4	Learners will get an idea of general characteristics and details ofinvertebrate animal systems.
PAPER 2 Haematology and Immunology Course Code: USZO502	
CO1	The learner shall comprehend basic haematology. The learner will be ableto identify various components of haemostatic systems.
CO2	The learner will be familiar with the terminology used and diagnostic tests performed in a pathological laboratory.
CO3	The learner shall be acquainted with diagnostic approaches in haematological disorders.
CO4	The learner will be better equipped for further pathological course or working in a diagnostic laboratory.
CO5	The learner shall comprehend the types of immunity and the components of immune system. The learner will realize the significant role of immune system in giving resistance against diseases.
CO6	The learner shall understand immune-pathology and the principles and applications of vaccines. The learner will develop basic understanding of immunology of organ transplantation.
PAPER 3 Histology, Toxicology, Pathology and Biostatistics Course Code: USZO503	
CO1	Learner would appreciate the well planned organization of tissues and cellsin the organ systems.
CO2	The course will prepare learner to develop broad understanding of the different areas of toxicology.
CO3	It will also develop critical thinking and assist students in preparation for employment in pharmaceutical industry and related areas.
CO4	Learner will be familiar with various medical terminology pertaining to pathological condition of the body caused due to diseases.
CO5	The learner will be able to collect, organize and analyse data using parametric and nonparametric tests.
CO6	They will also be able to set up a hypothesis and verify the same usinglimits of significance.
PAPER 4 Anatomy and Developmental Biology Course Code: USZO504	
CO1	Learner will be able to understand the importance of various types of epidermal and dermal derivatives along with their functions.
CO2	Learner will be able to understand the structure, types and functions of human skeleton.
CO3	Learner will be able to understand the types of long limb muscles, its arrangement and their role in body movements.
CO4	Learner will be able to understand the processes involved in embryonic development and practical applications of studying the chick embryology

SEM-VI	
PAPER 1 Taxonomy - Chordates and Type Study	**Course Code: USZO601**
CO1	Learners will get an idea of origin of Chordates, its taxonomy up to class with reference to phylogeny and their special features.
CO2	Learners will understand the characteristic features and examples of class of Reptilia, Aves and Mammalia.
CO3	Learners will get an idea of vertebrate animal life after studying one representative animal - shark.
PAPER 2 Physiology and Tissue Culture	**Course Code: USZO602**
CO1	The learner shall understand fundamentals of enzyme structure, action and kinetics.
CO2	The learner shall appreciate the enzyme assay procedures and the therapeutic applications of enzyme.
CO3	The learner shall comprehend the adaptive responses of animals to environmental changes for their survival.
CO4	The learner shall understand the types and secretions of endocrine glands and their functions.
CO5	The learner shall understand the significance of tissue culture as a tool in specialized areas of research. The learner will appreciate its applications in various industries
PAPER 3 Genetics and Bioinformatics	**Course Code: USZO603**
CO1	Learner shall get an insight into the intricacies of chemical and molecular processes that affect genetic material.
CO2	The course shall prepare learner to recognize the significance of molecular biology as a basis for the study of other areas of biology and biochemistry.
CO3	Learner shall also understand related areas in relatively new fields of genetic engineering and biotechnology.
CO4	The learner shall get acquainted with the vast array of techniques used to manipulate genes which can be applied in numerous fields like medicine, research, etc. for human benefit.
CO5	The learner shall become aware of the impact of changes occurring at gene level on human health and its diagnosis.
CO6	Learner shall become aware of the computational point of view of studying the genomes
PAPER 4 Environmental Biology and Zoopharmacognosy	**Course Code: USZO604**
CO1	Learner will understand the different factors affecting environment, its impact and environment management laws.
CO2	Learner will be able to understand various methods for wildlife conservation. Learner will be able to apply knowledge to overcome theissues related to wildlife conservation and management.
CO3	Learner will understand the paradigms of discovery and commercialization of biological resources and knowledge gained from self-medication observed in animals.
CO4	The learners will become acquainted with how and why different animal species are distributed around the globe

Applied Component (Marine Science) SEM - V	
Paper 5 Oceanography & Capture Fisheries Course code : USACMSC501	
CO1	• Learner will get an idea of geological distribution of sea and its relation to biodiversity.
	• Learner will understand different zones of sea (marine habitat) and their impact on biodiversity.
CO2	• Learner will understand different physical factors of ocean and their role in bringing out climatic changes. • Learner will get to know physical factors of ocean during different climate and their effect on marine organisms.
CO3	• Learner will get an idea of normal chemical constituents of sea water and their importance to marine ecosystem. • Learner will understand normal values of different chemical nutrients of sea water and their importance for the flora and fauna.
CO4	• Learner will know about different oceanographic instruments, their design, and mode of working and analysis of result using them. • Learner will come to know about important modern instruments used in the field of oceanography and different chemical, physical and biological parameters studied by using them.
CO5	• Learner will gain knowledge about declining marine fish landings, different rules and regulations for sustainable fishery. • Learner will educate about declining marine fish landings, different rules and regulations for sustainable fishery.
CO6	• Learner will explore to research vessels, deep sea fishing vessels and the advancement in oceanographic research. • Learner will understand recent trends in oceanographic research which will motivate them to become budding scientist of tomorrow.
CO7	• Learner will introduce to boat building, its maintenance and operation of fishing gears. • Learner will gain knowledge of boat building, its maintenance and operational methods of gears to optimize fish catch.
CO8	• Learner will comprehend and develop better acumen so as to, take wise and necessary decisions while participating in environment related projects or framing policies/assessing environmental damages/carrying out entrepreneurial activities beneficial to environment. • Learner shall primarily learn to tackle real life situations with common sense.

Applied Component (Marine Science) SEM - VI	
Paper 5 Production and Management Course code: USACMSC601	
CO1	• Learner will acquire in-depth knowledge about marine aquaculture ofcommercially important fishes and prawn. • Learner will take the first step to become entrepreneur in the field ofculture fishery with basic knowledge of marine aquaculture.
CO2	• Learner will gain an overview of value added products from marineorganisms. • Learner will be acquainted with variety of marine value added products,their nutritional values and economic significance.
CO3	• Learner will understand different methods of preservation and processingof marine products for maintaining its nutritional quality. • Learner will acquire knowledge of specific methods of preservation and processing for different fish products for enhancing their shelf life andcommercial value.
CO4	• Learner will acquire knowledge about fish diseases, causative agents,prevention techniques and treatment. • Learner will gain expertise to identify causative agents, symptoms andtreatment for different fish diseases.
CO5	• Learner will explore to the new avenues in the field of oceanography • The learner will become aware of new trends of oceanography whichwould make them expert in exploiting these opportunities to become successful entrepreneur.
CO6	• Learner will aware of different funding schemes for fishery and basics offinancial management. • Learner will be equipped with knowledge on various schemes availablefor obtaining finance from different government and semi government agencies and financial management.
CO7	• Learner will gain information on fishery marketing in local, national andinternational level. • Learner will gain knowledge on working of fishery markets and exports.
CO8	• Learner will select any one of the units prescribed in the syllabus withmore details and in depth leading to specialization in the capsule of units. • Learner will incorporate the topics of special need of the area which areotherwise not covered in the syllabus. • Learner will find scope to creativity and wisdom of a teacher who wantsto deal with the latest developments in the subject.

COURSE OUTCOMES

DEPARTMENT OF STATISTICS

F.Y.B.Sc.		
Sem-1		
Paper-1	**DESCRIPTIVE STATISTICS- I**	Course code: USST101
Course outcome	Description The learner would be able to understand:	
CO1	• Categorization of different types of data. • Different types of data measurement scales. • To measure the association between two attributes.	
CO2	• Construction of univariate and bivariate frequency distributionfor discrete and continuous variables. Cumulative frequency distribution. • Graphical representation of data for above frequencydistributions. • Analyze data using measures of central tendency.	
CO3	• Analyze data using measures of dispersion. • Relate raw moments and central moments. • Concept of skewness and kurtosis. • Identify outliers.	
	Paper-2 **STATISTICAL METHODS-1** Course code: USST102	
Course outcome	Description The learner would be able to understand	
CO1	• Basic rules of probability. Compute probabilities of events.	
CO2	• Concept of random variable and its distribution and properties.	
CO3	• Apply standard discrete probability distributions based on reallife.	

Sem-2		
Paper-1	**DESCRIPTIVE STATISTICS-II**	Course code: USST201
Course outcome	Description The learner would be able to understand:	
CO1	• Compute the correlation between two variables and its interpretation. • Construction of simple linear regression model. Interpretation ofregression coefficient and coefficient of determination. • Fitting of regression line and different types of curves using themethod of least squares.	
CO2	• Identifying various components of time series. • Different methods for identifying and eliminating these components.	
CO3	• Concept and construction of index numbers.	
	Paper-2 **STATISTICAL METHODS-2**	Course code: USST202
Course outcome	Description The learner would be able to understand:	
CO1	• Concept of continuous random variable and its probability densityfunction and cumulative distribution function.	
CO2	• Different types of standard continuous probability distributions andtheir properties.	
CO3	• Difference between point estimation and interval estimation. • Terminologies of testing of hypothesis and solving examples basedon large sample test.	
S.Y.B.Sc.		
Sem-3		
Paper-1	**PROBABILITY DISTRIBUTIONS**	Course code: USST301
Course outcome	Description The learner would be able to understand:	
CO1	• Compute M.G.F. , C.G.F. and Characteristic function of arandom variable.	
CO2	• Different standard discrete probability distributions and itsproperties.	
CO3	• Compute probabilities and derive the marginal and conditional distributions of bivariate random variables. • The probability density function of transformation of randomvariables.	

	Paper-2 **THEORY OF SAMPLING** Course code: USST302
Course outcome	Description The learner would be able to understand:
CO1	• Terminologies of sampling and need of sampling. • Concept of simple random sampling, formulate and calculate theestimates of population parameters.
CO2	• Stratified sampling, formulate and calculate the estimates of population parameters.
CO3	• Ratio and Regression estimation using SRSWOR. • Systematic sampling, Cluster sampling and Two stage sampling.
Paper- 3	**OPERATIONS RESEARCH 1** Course code: USST303
Course outcome	Description The learner would be able to understand:
CO1	• Formulate a linear programming problem and solving by usinggraphical method and simplex method. • Concept of duality and obtaining solution of primal.
CO2	• Transportation problem, obtain its solution using various methodsand optimize it.
CO3	• Assignment problem, obtain its solution using Hungarian methodand optimize it. • Sequencing problems using Johnson's method.
Sem-4	
Paper-1	**PROBABILITY AND SAMPLING DISTRIBUTIONS** Course code: USST401
Course outcome	Description The learner would be able to understand:
CO1	• Standard continuous probability distributions and its results.
CO2	• Normal distribution and its properties.
CO3	• Exact sampling distributions.
Paper-2	**ANALYSIS OF VARIANCE & DESIGN OF EXPERIMENTS** Course code: USST402
Course outcome	Description The learner would be able to understand:
CO1	• Analysis of One-way and Two-way classification.
CO2	• Terminologies of design of experiments. • Analysis of CRD and RBD.
CO3	• Analysis of LSD. • Factorial experiment and its analysis. • Concept of confounding.

Paper-3	**OPERATIONS RESEARCH – 2**	Course code: USST403
Course outcome	Description The learner would be able to understand:	
CO1	• Construction of project network and obtaining critical path. • Concept of crash activities to optimize project cost.	
CO2	• Game theory, obtaining its solution using dominance property,graphical method and linear programming problem.	
CO3	• Decision theory • Decision making under uncertainty. • Decision making under risk.	
T.Y.B.Sc.		
Sem-5		
Paper-1	**PROBABILITY AND DISTRIBUTION THEORY**	Course code: USST501
Course outcome	Description The learner would be able to understand:	
CO1	• Advanced concept of probability theory.	
CO2	• Under probability, inequalities and law of large numbers.	
CO3	• Trinomial distribution and derive its moment generating function. • Multinomial distribution.	
CO4	• Concept of order statistics and its application.	
	Paper-2 **THEORY OF ESTIMATION** Course code: USST502	
Course outcome	Description The learner would be able to understand:	
CO1	• Point estimation and properties of good estimators.	
CO2	• Various methods of point estimation.	
CO3	• Obtain estimator of a parameter using Bayes' approach. • Interval estimation.	
CO4	• General linear model of full rank.	
Paper-3	**BIOSTATISTICS**	Course code: USST503
Course outcome	Description The learner would be able to understand:	
CO1	• Application of statistics in epidemiology.	
CO2	• Application of statistics in biological sciences.	
CO3	• Terminologies of Clinical trials.	
CO4	• Terminologies of Bioequivalence. • Application of statistics in Clinical trials and Bioequivalence.	

Paper-4	**Regression Analysis using R software**	Course code: USST504
Course outcome	Description The learner would be able to understand:	
CO1	• Fundamentals of R software. • Data visualization and interpretation.	
CO2	• Concept of simple linear regression model.	
CO3	• Concept of multiple linear regression model.	
CO4	• Validity of assumptions for linear regression model.	

Sem-6

Paper-1 **DISTRIBUTION THEORY AND STOCHASTIC PROCESSES**
Course code: USST601

Course outcome	Description The learner would be able to understand:
CO1	• Bivariate normal distribution and its properties.
CO2	• Concept of generating function and probability generating function.
CO3	• Different stochastic processes and derive its parameters.
CO4	• Different queueing models and derive its measures.

Paper-2	**TESTING OF HYPOTHESIS**	Course code: USST602
Course outcome	Description The learner would be able to understand:	
CO1	• Terminologies of Testing of hypothesis. • Identify Most powerful test using Neyman- Pearson lemma.	
CO2	• Identify Uniformly Most powerful using Neyman- Pearson lemma. • Obtain Likelihood Ratio test.	
CO3	• Obtain Sequential probability ratio test for various probability distributions.	
CO4	• Parametric and Non-parametric tests. • Applications of various Non-Parametric test.	

Paper-3	**OPERATIONS RESEARCH TECHNIQUES**	Course code: USST603
Course outcome	Description The learner would be able to understand:	
CO1	• Advanced techniques of linear programming problem.	
CO2	• Meaning of inventory problem. • Deterministic and Probabilistic inventory models. • Compute reorder quantity and reorder period.	
CO3	• Find optimum age of replacement of an item under different conditions. • Individual and group replacement policy.	
CO4	• Simulate random numbers and random observations for somestandard probability distributions. • Generation of random numbers using Mid-square method and Multiplicative congruential method. • Apply Monte-Carlo technique for solving inventory and queueingproblem. • Concept of reliability. • Mathematical aspect of computing reliability.	
Paper-4	**ACTURIAL SCIENCE**	Course code: USST604
Course outcome	Description The learner would be able to understand:	
CO1	• Terminologies of mortality table. • Concept of mortality rate and selected rate.	
CO2	• Meaning of nominal rate and effective rate. • Concept of present value and accumulated value. • Various types of annuities and its present value and accumulatedvalue.	
CO3	• Various types of life annuities and its present value and accumulatedvalue.	
CO4	• Concept of assurance. • Evaluate the single premium and the level annual premium forvarious assurance schemes.	

COURSE OUTCOMES

BSC – COMPUTER SCIENCE

F. Y. B.Sc.	
SEM-I	
PAPER 1	**Computer Organization Design** **Course Code: USCS101**
CO1	To learn about how computer system works , to understand the structure, function and characteristics and underlying principles of computer system
CO2	To understand the design of the various functional units and components of computers , the basics of digital electronics needed for computers
PAPER 2	**Programming with Python- I** **Course Code: USCS102**
CO1	It is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language. Learning Outcomes: Problem solving and programming capability
CO2	Master the fundamentals of writing **Python** scripts, Learn **core Python** scripting elements such as variables and flow control structures. Discover how to work with lists and sequence data. Write **Python** functions to facilitate code reuse. Use **Python** to read and write files
PAPER 3	**Free Open Source Software** **Course Code: USCS103**
CO1	To expose students to free open source software environment and introduce them to use open source packages. Upon completion of this course, students should have a good working knowledge of Open Source ecosystem, its uses, impact and importance. Students will learn some important FOSS tools and techniques for contributing to projects and how to set up their own FOSS projects.
CO2	It help to learn Open Source methodologies, case studies with real life examples since it is powerful and robust. Implement various applications using build systems . Understand the installation of various packages in open source operating systems. Create simple GUI applications. Understand various version control systems. Understand the kernel configuration and virtual environment
PAPER 4	**Database Systems** **Course Code: USCS104**
CO1	Effectively explains the basic concepts of databases and data models. Explains the features of database management systems, architecture of database systems, and the role of database users. Defines the basics of the relational data model.
CO2	Understand database concepts and structures and query language Understand the E R model and relational model To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS. Understand Functional Dependency and Functional Decomposition. Apply various Normalization techniques Perform PL/SQL programming

PAPER 5	**Discrete Mathematics** **Course code: USCS105**
CO1	To provide overview of theory of discrete objects, starting with relations and partially ordered sets. Perform logical proofs. Apply recursive functions and solve recurrence relation
CO2	Study about recurrence relations, generating function and operations on them. Determine equivalent logic expressions. Describe useful standard library functions, create functions, and declare parameters.
PAPER 6	**Descriptive Statistics Probability** **Course code: USCS106**
CO1	Enable learners to know descriptive statistical concepts. How to calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data cases. How to apply discrete and continuous probability distributions to various business problems
CO2	Calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables. Analyze Statistical data using MS-Excel.
PAPER 7	**Soft Skills Development** **Course code USCS107**
COL1	To know about various aspects of soft skills and learn ways to develop personality
COL2	Understand the importance and type of communication in personal and professional environment.
	F. Y. B.Sc.
	SEM-II
PAPER 1	**Programming with C** **Course Code: USCS201**
CO1	Students should be able to write, compile and debug programs in C language.
CO2	Students should be able to use different data types and object oriented functions in a computer program.
PAPER 2	**Programming with Python– II** **Course Code: USCS202**
CO1	Students should be able to understand how to read/write to files using python libraries.
CO2	Students should be able to catch their own errors that happen during execution of programs and can work on any industrial system to manage database.
PAPER 3	**Linux** **Course Code: USCS203**
CO1	Upon completion of this course, students should have a good working knowledge of Linux operating system, from both a graphical and command line perspective, allowing them to easily use any Linux distribution.
CO2	This course shall help student to learn advanced subjects like Linux Administrative in computer science practically.
PAPER 4	**Data Structures** **Course Code: USCS204**
CO1	Learn about Data structures, its types and significance in computing program.
CO2	Explore about Abstract Data types and its implementation, various function practically.
PAPER 5	**Calculus** **Course code USCS205**
CO1	Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions.
CO2	Ability to appreciate real world applications which uses the concepts of logical mathematics.

PAPER 6	**Statistics Testing of Hypothesis Course code USCS206**
CO1	Enable learners to know descriptive statistical concepts and probability.
CO2	Enable study of probability concept required for Computer learners and manage Data science
PAPER 7	**Green Technologies Course code USCS207**
CO1	Learn about green IT can be achieved in and by hardware, software, network communication and data center operations.
CO2	Understand the strategies, frameworks, processes and management of green IT. **Enlist different concepts of green technologies in a project**
	S. Y. B.Sc.
	SEM-III
PAPER 1	**Theory of Computation Course Code: USCS301**
CO1	Understand and explain the models of computation, including formal languages, grammars and automata, and their connections.
CO2	Learn about Automatic theory and its application in Language Designing.
PAPER 2	**Core JAVA Course Code: USCS302**
CO1	Learn Object oriented programming and concepts of using Java.
CO2	Knowledge of input, its processing ,designing graphical user interface
PAPER 3	**Operating System Course Code: USCS303**
CO1	To program a operating system, its structures and functioning
CO2	Developing and understanding of algorithms used by operating systems for various function.
PAPER 4	**Database Management Systems Course Code: USCS304**
CO1	Learn stored procedure, functions,SQL and triggers and its uses.
CO2	Learn about using PL/SQL for data management
PAPER 5	**Graph Theory Course code: USCS305**
CO1	Understand the combinatory and how combinatorial problems naturally arise in many settings of program
CO2	Understand the combinatorial features in real world situations and Computer Science applications.
APER 6	**IoT Programming Course code: USCS306**
CO1	Enable learners to understand System On Chip Architectures.
CO2	Introduction and preparing Raspberry Pi with hardware and installation.
PAPER 7	**Web Programming Course code: USCS307**
CO1	To design valid, well-formed, scalable, and meaningful pages using emerging technologies.
CO2	Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites
	SEM-IV
PAPER 1	**Fundamentals of Algorithms Course Code: USCS401**
CO1	Understand the concepts of algorithms for designing system program
CO2	Implement algorithms using Python concepts
PAPER 2	**Advanced JAVA Course Code: USCS402**
CO1	Understand the concepts related to Java Technology
CO2	Explore and understand use of Java Server Programming, servlets and applets.
PAPER 3	**Computer Networks Course Code: USCS403**
CO1	Learner will be able to understand the concepts of networking, which are

	important for them to be known as a 'networking professionals'.
CO2	Useful to proceed with industrial requirements and International vendor certifications.
PAPER 4	**Software Engineering** **Course Code: USCS404**
CO1	The Nature of Software, Software Engineering, The Software Process, Generic Process Model
CO2	Types of testing, different models to develop software using different designing model.
PAPER 5	**Linear Algebra using Python** **Course code USCS405**
CO1	Appreciate the relevance of linear algebra in the field of computer science.
CO2	Understand the concepts through program implementation
PAPER 6	**.NET Technologies** **Course code USCS406**
CO1	Understand the .NET framework
CO2	Develop a proficiency in the C# programming language
PAPER 7	**Android Developer** **Course code USCS407**
CO1	Understand the requirements of Mobile programming environment.
CO2	Learn about basic methods, tools and techniques for developing Apps
T. Y. B.Sc.	
SEM-V	
PAPER 1	**Artificial Intelligence** **Course Code: USCS501**
CO1	After completion of this course, learner get a clear understanding of AI and different search algorithms used for solving problems.
CO2	The learner should also get acquainted with different learning algorithms and models used in machine learning.
PAPER 2	**Linux Server Administration** **Course Code: USCS502**
CO1	Demonstrate proficiency with the Linux command line interface, directory & file management techniques, file system organization, and tools commonly found on most Linux distributions.
CO2	Effectively operate a Linux system inside of a network environment to integrate with existing service solutions.
PAPER 3	**Software Testing and Quality** **Course Code: USCS503**
CO1	To provide learner with knowledge in Software Testing techniques
CO2	To understand how testing methods can be used as an effective tools in providing quality assurance concerning for software.
PAPER 4	**Information and Network Security Course Code: USCS504**
CO1	Understand the principles and practices of cryptographic techniques. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application.
CO2	Understand various protocols for network security to protect against the threats in a network
PAPER 5	**Architecting of IoT** **Course code: USCS505**
CO1	Learners are able to design & develop IoT Devices.
CO2	They should also be aware of the evolving world of M2M Communications and IoT analytics.
PAPER 6	**Web Services** **Course code: USCS506**
CO1	Emphasis on SOAP based web services and associated standards such as WSDL
CO2	Design SOAP based / RESTful / WCF services Deal with Security and QoS

	issues of Web Services
PAPER 7	**Game Programming** **Course code: USCS5507**
CO1	Learner should study Graphics and gamming concepts with present working style of developers where everything remains on internet and they need to review it
CO2	Understand and learn to develop Andriod applications.
T. Y. B.Sc.	
SEM-VI	
PAPER 1	**Wireless Sensor Networks and Mobile Communicatio**n **Course Code: USCS601**
CO1	Understand the concepts of algorithms for designing mobile programming, networking program
CO2	Implement algorithms using Python libraries for networking
PAPER 2	**Cloud Computing** **Course Code: USCS602**
CO1	Understand the concepts related to Java Technology to create cloud computing concepts
CO2	Explore and understand use of Java Server Programming and learn to develop cloud server.
PAPER 3	**Cyber Forensics** **Course Code: USCS603**
CO1	Learner will be able to understand the concepts of networking, which are important for them to be known as a 'networking professionals' which will be used for security.
CO2	Understand to Analysis data to identify evidence, Technical Aspects & Legal Aspects related to cyber crime.
PAPER 4	**Information Retrieval** **Course Code: USCS604**
CO1	Understand common text compression algorithms and their role in the efficient building and storage of inverted indices
CO2	Become familiar with difference between Information retrieval and data Base Management Systems. Students will be able to learn different indexing techniques to apply data Base systems. students will be able to understand various searching techniques to retrieve data from databases and ware houses.
PAPER 5	**Digital Image Processing** **Course code USCS605**
CO1	Understand the need for image transforms different types of image transforms and their properties, develop any image processing application.
CO2	understand the need for image compression and to learn the spatial and frequency domain techniques of image compression.
PAPER 6	**Data Science** **Course code USCS606**
CO1	Students will **develop relevant programming abilities**. Students will demonstrate proficiency with statistical analysis of data. Students will develop the ability to build and assess data-based models.
CO2	Students will execute statistical analyses with professional statistical software.
PAPER 7	**Ethical Hacking** **Course code USCS607**
CO1	Understand Identify footprinting techniques and tools. Recognize the characteristics of the enumeration phase of an attack and effective countermeasures. .
CO2	Learn to Determine the techniques and tools used in system **hacking**. Describe the characteristics of trojans, worms, and malware.

COURSE OUTCOMES

B.Sc. I.T.

F. Y. B.Sc.	
SEM-I	
PAPER 1	**Imperative Programming** **Course Code: USIT101**
CO1	To learn about how computer systems, work and underlying principles
CO2	To understand the basics of C programming needed for computers
PAPER 2	**Digital Electronics** **Course Code: USIT102**
CO1	Students should be able to understand the concepts of Digital Electronics
CO2	Students should be able to develop logic gates.
PAPER 3	**Free Operating Systems** **Course Code: USIT103**
CO1	Upon completion of this course, students should have a good working knowledge of operating system
CO2	**Operating System** (OS) is an interface between a computer user and computer hardware.
PAPER 4	**Discrete Mathematics** **Course Code: USIT104**
CO1	Write an argument using logical notation and determine if the argument is or is not valid.
CO2	Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
PAPER 5	**Communication Skills** **Course Code: USIT105**
CO1	Demonstrate critical and innovative thinking.
CO2	Display competence in oral, written, and visual communication.
SEM-II	
PAPER 1	**Object oriented Programming** **Course Code: USIT201**
CO1	Describe the object-oriented programming approach in connection with C++
CO2	Illustrate the process of data file manipulations using C++
PAPER 2	**Microprocessor Architecture** **Course Code: USIT202**
CO1	To illustrate the architecture of 8085 and 8086 microprocessors.
CO2	To introduce the programming and interfacing techniques of 8086 microprocessor
PAPER 3	**Web Programming** **Course Code: USIT203**
CO1	Describe the architecture of client-side and server-side web applications
CO2	Identify the appropriate programming environment for developing dynamic client-side and server- side web applications.
PAPER 4	**Numerical and Statistical Methods** **Course Code: USIT204**
CO1	Introduction to mathematical modeling and numerical solution of engineering problems.
CO2	Problem Solving – Approximations, Accuracy, Precision, Round-Off Errors, and Truncation Errors.
PAPER 5	**Green Computing** **Course Code: USIT205**
CO1	Green Design: Designing energy efficient and environmentally sound components, computers, servers and cooling equipment's.
CO2	A green computer or green IT system is one where the entire process from design, manufacture, use, and disposal involves as little environmental impact as possible
S.Y.B.Sc.	
SEM-III	
PAPER 1 :	**Python Programming** **Course Code: USIT301**
CO1	Learn python programming language
CO2	Develop GUI based application ith python
PAPER 2	**Data Structures** **Course Code: USIT302**
CO1	Learn data structure and algorithm

CO2	Different type of sorting technique
PAPER 3	**Computer Networks** **Course Code: USIT303**
CO1	Student are going to learn Computer networks
CO2	Identify the Security model like Encryption and Decryption
PAPER 4	**Database Management Systems** **Course Code: USIT304**
CO1	Introduction to data base management system.
CO2	Learn relation model, perform queries to store data in data base
PAPER 5	**Applied Mathematics** **Course code: USIT305**
CO1	Identify Different types of matrices
CO2	Learn differential equation
	SEM-IV
PAPER 1	**Core Java** **Course Code: USIT401**
CO1	Student will learn java Programming language
CO2	Develop an application with the help of programming
PAPER 2	**Embedded Systems** **Course Code: USIT402**
CO1	Students should be able to understand the concepts of Embedded System
CO2	Students should be able to develop devices
PAPER 3	**Computer Oriented Statistical Techniques** **Course Code: USIT403**
CO1	The Mean, Median, Mode, and Other Measures of Central Tendency
CO2	Identify Standard Deviation and Other Measures of Dispersion
PAPER 4	**Software Engineering** **Course Code: USIT404**
CO1	Introduction to Software Development Process Models.
CO2	Identify Requirements Engineering Processes
PAPER 5	**Computer Graphics and Animation** **Course Code: USIT405**
CO1	Student to Introduction to Computer Graphics
CO2	Identify Two-Dimensional Transformation and Three Dimension
	T.Y.B.Sc.
	SEM-V
PAPER 1 :	**Software Project Management** **Course Code: USIT501**
CO1	Perform types of testing
CO2	Project planning
PAPER 2	**Internet of Things** **Course Code: USIT502**
CO1	What is internet of thing
CO2	Develop IOT machines
PAPER 3	**Advanced Web Programming** **Course Code: USIT503**
CO1	After completing this course, students will be able to: Identify And develop GUI base application
CO2	Explain the AJAX, ASP.NET technology
PAPER 4	**Artificial Intelligence** **Course Code: USIT504**
CO1	Student will learn Artificial intelligences
CO2	Develop machines with the help of supervised and unsupervised learning
PAPER 5	**Enterprise Java** **Course code USIT505**
CO1	Student will develop web-based application with the help of java
CO2	Learn advanced programming language
	SEM-VI
PAPER 1	**Software Quality Assurance** **Course Code: USIT601**
CO1	present effective testing techniques (both black-box and Whitebox) for ensuring high quality software
CO2	learn metrics for managing quality assurance and understand capabilities of test tools.
PAPER 2	**Security in Computing** **Course Code: USIT602**
CO1	identify some of the factors driving the need for network security
CO2	identify and classify particular examples of attacks
PAPER 3	**Business Intelligence** **Course Code: USIT603**

CO1	After completing this course, students will be able to: Identify the major frameworks of computerized decision support: decision support systems (DSS), data analytics and business intelligence
CO2	Explain the foundations, definitions, and capabilities of DSS, data analytics and BI..
PAPER 4	**Geographic Information Systems** **Course Code: USIT604**
CO1	geographic information science, the study of the nature of geographic information.
CO2	geographic information systems, the management and analysis of digital geographic information
PAPER 5	**IT Service Management** **Course code USIT606**
CO1	Be confident in selling their service. Measure and manage service quality, customer satisfaction, loyalty and value perceptions
CO2	Analyze the role of employees, customers and technology in service delivery. Be attuned to service personnel role stress.

COURSE OUTCOMES

BAF

F. Y.	
SEM-I	
PAPER 1	Financial Accounting (Elements of Financial Accounting) – I
CO1	Develop the capacity to utilize book keeping data to tackle an assortment of business issues.
CO2	Help in preparation of departmental accounts and accounting for hire purchase.
CO3	Demonstrate the knowledge of basics of accounting for the purpose of preparing financial statements inrelationship to decision making.
PAPER 2	Cost Accounting (Introduction and Element of Cost) - I
CO1	Practical knowledge on factory effected cost.
CO2	Familiarize the students with the concepts and practicability of material costing, labour costing etc.
CO3	Learners will peruse and comprehend the job of Cost Accounting in the management in business of manufacturing and non-manufacturing organizations and furthermore comprehend the fundamental idea of cost and how they are introduced in the books.
PAPER 3	Financial Management (Introduction to Financial Management) - I
CO1	The objective is to understand types of financing, leverage, cost of capital, concepts in valuation etc.
CO2	The learners will Read and understand the risk and returns associated withvarious long term and short term decisions of business.
CO3	They will be able to analyse and interpret various financial assets based on risk and return.
CO4	They will be in a position to estimate cash flows froma project and can evaluate various risks involved in investment decision making.
CO5	Learners can also apply the concept of Financial Management in contemporary financial events. Apply the leverages in EBIT and EPS analysis associate with financial data in corporate
PAPER 4	Business Communication - I
CO1	Understanding the objectives of communication, learning various types of business correspondence.
CO2	Learners read and understand the basic communication aspects such as formal mail drafting, letter drafting, leadership and motivational concepts.

CO3	Provide a climate for students to deal with multidisciplinary projects as a piece of various groups to improve their group building capacities like administration and motivation and they can show the same in certifiable circumstances
PAPER 5	Foundation Course – I
CO1	Learners will be able to read and understand the Diversity of Indian society, Disparities faced by economically, socially weaker sections of the society, problems that are being faced by the women in the society, Rights and Duties of citizens of India, significant aspects in Indian political system.
CO2	Inculcate knowledge of the Constitution of India, understanding political process in India.
CO3	Learning the fundamental duties and rights provided by the Constitution.
CO4	To apply the knowledge and understanding in real world problems and situations as a citizen of India
PAPER 6	Commerce (Business Environment) - I
CO1	Learners will be able to demonstrate and develop a conceptual framework of the business environment and generate interest in international business. Theywill also understand how an entity operates in a business environment.
CO2	Understanding contemporary issues
CO3	Interpret various business situations under different or complex business environments and demonstrate the knowledge by taking quick and tactical decisions.
PAPER 7	Business Economics – I
CO1	Learners will be able to understand the standard analytical tools of applied economics and analysis tobusiness situations, causes and consequences of unemployment, inflation and economic growth
CO2	Apply these tools in taking monetary or financialdecisions in day to day activities or in business situations
CO3	Understanding various types competitions in the market.
	SEM II
PAPER 1	Financial Accounting (Special Accounting Areas)- II
CO1	Practical knowledge of accounting from incomplete records
CO2	Learners will be able to compare dependentbranch accounting with independent branch accounting.
CO3	Learners will be able to identifyconsignment transactions
CO4	Learners will be able to calculate fire insurance claim.
PAPER 2	Auditing (Introduction and Planning) - I

CO1	Students will be aware of audit techniques with standards.
CO2	Better understanding on internal audit, planning, procedures and documentation.
CO3	Learners will read and understand about the basics ofAuditing, audit plan, audit programme, audit working papers, audit note book.
CO4	All this knowledge they can demonstrate if they takeup any further studies in the Banking sector or professional exams like CA, CS or CWA, or if they want to maketheir career in Accounting or Auditing field.
PAPER 3:	Innovative Financial Services
CO1	Acquainted students with the knowledge of Traditional Financial services,issue management
CO2	Securitization, financial services & its mechanism,consumer finance and credit rating are the practical essence of the market.
CO3	They will be able to apply financial concepts, theoriesand tools and would be in the position to evaluate the legal, ethical and economic environment related to financial services
PAPER 4	Business Communication – II
CO1	Knowing different types of letter to be presentedwith the corporates and management.
CO2	Understanding procedural aspects of a company
PAPER 5	Foundation Course – II
CO1	To understand Globalization and Indian Society and the concept of Human Rights.
CO2	Understand the Concept of Ecology.
CO3	Understanding Stress and Conflict.
CO4	Managing Stress and Conflict in Contemporary society.
CO5	Understand New industrial policy 1992 with its economic reform.
CO6	Understand fundamental rights stated in constitution.
PAPER 6	Business Law (Business Regulatory Framework) – I
CO1	Understand legality behind of making contract
CO2	Understand legality behind of making contract of saleand agreement to sale and also of negotiable instruments of promissory notes, bills of exchange, cheque.
CO3	Apply basic legal knowledge to business transactions
CO4	Communicate effectively using standard business and legal terminology
CO5	The relevance of business law to individuals and businesses and the role of law in a political and social context

PAPER 7:	Business Mathematics
CO1	Appreciate Business Mathematics concepts that are encountered in the real world.
CO2	To understand and be able to communicate the underlying business problems.
	SEM-III
PAPER 1	Financial Accounting (Special Accounting Areas)– III
CO1	It will provide the knowledge to the students with regards to Partnership Final Accounts, Amalgamationof firms, Conversion of partnership firm into a company
CO2	Lets the students understand about foreign trade and exchange fluctuations.
PAPER 2	Cost Accounting (Methods of Costing) – II
CO1	Solve cost sheet problems and acquired skill ofapplication of cost sheet. Oneof the important techniques to determine prices.
CO2	Find reasons of distinction between financial accounting and cost accounting and to solve practical problems.
CO3	Apply calculation of pricing of large size contract by contract costing and to solve practical problems.
CO4	Apply technique of determination of price at the timeof running manufacturingprocess by process costing in practical manner.
PAPER 3	Direct Taxation I
CO1	Understand the basis of chargeability
CO2	To know about different heads of income
CO3	Calculation of taxable income post deductions
PAPER 4	Information Technology in Accountancy – I
CO1	Learn different parts of hardware and different types of software.
CO2	Learn and execute different commands of Ms word, Ms Excel and Ms PowerPoint
CO3	Learn to downloading information, creating e-mail ID and sending/receiving emails.
CO4	Learn legal issues of internet, importance of electronic data interchange and e-commerce.
PAPER 5	Foundation Course in Commerce (Financial Market Operations) – III
CO1	Get proper guidance about investment, differenceabout banking and non-banking financial services, and inflation.
CO2	Understand knowledge regarding Sensex, IPO shares, methods of raising finance by company throughvarious financial instruments.
CO3	Understand classification of financial instruments, derivatives.
CO4	Get helpful knowledge about consumer finance, plastic money, features of financial services, underwriter.

PAPER 6	Business Law (Business Regulatory Framework) – II
CO1	Understanding an insight of various beneficial social legislative measures.
CO2	Understand rights and liabilities of partners,Outsiders. Incorporation anddissolution of partnership firm.
CO3	Understand nature of LLP, merits of LLP and process of winding up of LLP ·
CO4	Demonstrate an understanding of the Legal environment of business.
CO5	Apply basic legal knowledge to businesstransactions and to communicate effectively using standard business and legal terminology.
PAPER 7	Business Economics – II
CO1	Understand the concept of Macroeconomics and various circular flows of income.
CO2	Understand various concepts in money, prices and inflation.
CO3	To become aware of public finance in depth.
CO4	Understand various sources of public revenue and expenditure.
CO5	An appreciation of the ethical issues in economics competition.
	SEM IV
PAPER 1	Research Methodology In Accounting And Finance
CO1	To familiarize the students with basic of research,research design, research techniques and the research process.
CO2	To identify and discuss the concepts and procedures of sampling, data collection, analysis and reporting
CO3	To determine various sources of information for literature review
CO4	To enable the participants in conducting research work and formulating research synopsis and report (Third Year)
PAPER 2	Financial Accounting IV
CO1	To Read, understand, interpret and analyze Redemption of Preference Shares.
CO2	To Read, understand, interpret and analyze the Financial Statements of theCompany.
CO3	Read, understand, interpret and analyze Redemption of Debentures.
CO4	Understand the Accounting of Foreign Transactions
CO5	Understand the practical application of Profit Prior to Incorporation.
PAPER 3	Management Accounting
CO1	The learners will understand the practical application of various financial analysistools
CO2	Apply the financial tools in evaluation of the various targets achievable in future.

CO3	The course will make the students employable asFinance Manager in the field of Accounting and Finance
PAPER 4	Information Technology II
CO1	Describe the types of information systems supporting the major functional areas of the business.
CO2	Evaluate the role of information systems in today's competitive business environment.
CO3	Describe the need and benefits of computerized Accounting.
CO4	Describe the need and importance of IT in auditing.
PAPER 5	Law III
CO1	Demonstrate and understand the Legal Environment of the Company.
CO2	Identify the fundamental legal principles behind contractual agreements.
CO3	Apply basic legal knowledge to incorporation of Company and fundamental documents.
CO4	Communicate effectively using standard business and legal terminology.
CO5	
PAPER 6:	Foundation Course In Management
CO1	Learners will be able to explain the meaning and the functions ofmanagement.
CO2	Learners will be able to identify the traits and styles of leadership.
CO3	Learners will be able to categorize Recruitment and Selection processes.
CO4	Learners will be able to discuss the Employment tests and types of Interview.
PAPER 7	Taxation III
CO1	To Compute Tax Liability of Firm.
CO2	to Compute the tax liability of an individual.
CO3	Able to Compute Advance Tax and Interest on Advance Tax.
CO4	Understand DTAA Provisions and Compute Tax liability.
CO5	Understand and compute TDS.
SEM V	
PAPER 1	Cost Accounting - III
CO1	To understand the basic concepts used to determine Operating Costing and Process Costing
CO2	To understand the concept of Uniform Costing and Activity Based Costing.
CO3	To be able to analyze and evaluate information for cost ascertainment, planning, control and decisionmaking
PAPER 2	Financial Management – II
CO1	The learners will learn various investment techniqueslike Capital Budgeting, Capital Structure theories, Dividend Decision models and Credit Management.

CO2	Demonstrate the concept learned andunderstood in taking quick investment decisions
CO3	will make the learners employment ready in the field of Finance as Financial Advisors or as Chief Accountant, provided they do some further studies in the same field.
PAPER 3	Taxation - IV (Indirect Taxes - II)
CO1	Read and understand the definition, important terms, history and regulatory framework of GST in India.
CO2	Gain working knowledge on GST, application of the same in the organizations and also to understand theregistration process and the documentation involvedin GST
CO3	Learners can demonstrate the same in their job fields or helps in applying the samein business
PAPER 4	Management Application
CO1	Learners will be able to explain the meaning and the functions of management.
CO2	Learners will be able to identify the traits and styles of leadership
CO3	Learners will be able to compare formal organization within formal organization.
CO4	Learners will be able to categorize recruitment and Selection processes.
CO5	Learners will be able to discuss the employment tests and types of Interview.
PAPER 5	Financial Accounting V
CO1	Read and understand the various forms of business reconstruction.
CO2	Understand the theoretical and practical aspects and methodologies of business valuation.
CO3	Demonstrate the same during the Merger, amalgamation or internal reconstruction of thebusinesses.
PAPER 6	Financial Accounting VI
CO1	Read, understand, interpret and analyze financial reports of Banking and Insurance companies.
CO2	Understand differing accounting policies and their impact on financial statements
CO3	Demonstrate knowledge of accounting concepts and techniques
CO4	Make sound financial decisions in real world settings.
Sem VI	
PAPER 1	Economics
CO1	Learners will be able to understand the standard analytical tools of applied economics analysis to business situations, analyze causes and consequencesof unemployment, inflation and economic growth.
CO2	Apply these tools in taking monetary or financialdecisions in day to day activities or in business situations

CO3	Understanding the various types competitions in the market.
PAPER 2	Cost Accounting-IV
CO1	Will understand the concept of Budgeting and methods of Budgetary control.
CO2	Understand the difference between Absorption, costing and Marginal costing and Cost Volume and Profit analysis and its practical application.
CO3	Learn different managerial decision making strategies.
CO4	Get familiar with the techniques and concepts of standard costing and its practical application.
PAPER 3	Financial Management - III
CO1	The learners will read and understand the importance of various corporate restructuring strategies like Mergers, Acquisitions etc. and the difference between them.
CO2	To understand certain short term financing mediumsof companies such as Factoring, Hire Purchase, Leasing etc.
CO3	learners will be able to demonstrate the same in calculating the Value of a company's share through various methods like Earnings based, Cash Flow basis etc.
PAPER 4	Taxation
CO1	Students will be able to classify and determine value of imported goods.
CO2	Students will be able to understand and compute various types of customduties
CO3	Students will be able to compute tax liability, interest on delayed paymentsand refund.
CO4	Students will have knowledge about types of returns, audit and assessment.
PAPER 5	Financial Accounting-VII
CO1	Learners will develop the ability to use accounting information to solve a variety of business problems.
CO2	To understand the purpose of financial statements in relationship to decision making
PAPER 6	Project work
CO1	To acquaint students with research-based project work by implementing Research Methodology

COURSE OUTCOMES

B.M.S.

F.Y.B.M.S.	
SEM-I	
PAPER-1	**Financial Accounts**
CO1	Students will get an overview of the basics of financial accounting
CO2	Learners will study varied concepts like accounting transactions, depreciation & trial balance
CO3	Students will master the concept of final accounts
PAPER- 2	**Business Law**
CO1	Pupils will get an overview about various laws in the business world
CO2	Students will get to know about various law insights on Consumer Protection Act, Company Law, Sales Good Act etc.
CO3	Students will get a complete understanding on the various intellectual property rights mandatory for running a business & work culture
PAPER- 3	**Business Statistics**
CO1	Students will be groomed on their calculation and thinking ability using various statistical tools
CO2	Learners will be studying various concepts like time series, index numbers linear regression etc.
CO3	Pupils will increase their logical reasoning power by studying concepts like probability, decision theory etc.
PAPER- 4	**Business Communication I**
CO1	Students will get an overview on the theory of communication
CO2	They will be learning the obstacles to communication in the business world along with business correspondence
CO3	Pupils will be improvising on their language and writing skills

PAPER- 5	Foundation Course-I

CO1	This Course will enable students to get an overview of the Indian Society
CO2	Students will get the core knowledge on our Indian constitution
CO3	Pupils will study the significant aspects of the political processes
PAPER- 6	**Human Skills**
CO1	Students will receive an overview on the Human nature
CO2	Students will be introduced to the group dynamics, organization culture and motivation at workplace
CO3	Learners will get an ability to develop a creative mindset required to bring about organizational change and also deal with work stress
PAPER- 7	**Business Economics-I**
CO1	Students will get an introduction to Business Economics
CO2	Learners will understand various concepts like Demand and Supply, Market Structure, Dealing with Market Competition etc.
CO3	Students will understand the various trending Pricing practices
SEM - II	
PAPER-1	**Business communication**
CO1	The students will acquire knowledge about the Do's and Don'ts of the presentation skills
CO2	Students will be able to improve their Group Communication
CO3	The learners will be able to increase their Business Correspondence
CO4	The Language and Writing Skills of the students will be polished
PAPER- 2	**Industrial law**
CO1	Students will learn Laws Related to Industrial Relations and Industrial Disputes
CO2	Learners will understand Laws Related to Health, Safety and Welfare
CO3	The students will get an understanding about the Social Legislation
CO4	Laws Related to Compensation Management will be understood by the pupils
PAPER- 3	**Business Mathematics**
CO1	Students will understand Elementary Financial Mathematics
CO2	Students can solve problems of Matrices and Determinants

CO3	Students will use Derivatives and its applications to find the rate of change of functions in real life applications with respect to an independent variable
CO4	Learners can apply numerical methods to obtain approximate solutions to complex mathematical problems.
PAPER- 4	**Principles of Marketing**
CO1	Learners will get an overview about Introduction to Marketing
CO2	Students will study concepts like Marketing Environment, Research and Consumer behaviour
CO3	The most important concept of Marketing Mix will enhance the students knowledge on marketing specialization
CO4	Learners will get insights about Segmentation, Targeting and Positioning and Trends in Marketing
PAPER- 5	**Principles of management**
CO1	The Nature of Management will be understood by the students
CO2	Students will be able to Plan and improve on their Decision-making skills
CO3	The organising skill of the students will be enhanced
CO4	Students will be able to Direct, Lead, Co-ordinate and Control making them effective managers in return
PAPER- 6	**Foundation course**
CO1	The students will understand aspects about Globalisation and Indian Society
CO2	Pupils will get right knowledge about the Human Rights
CO3	Learners will study concepts like Ecology, stress and conflict
PAPER- 7	**Business Environment**
CO1	Students will get an Introduction to Business Environment
CO2	Pupils will understand the Political and Legal environment
CO3	Students will learn concepts like Social and Cultural Environment, Technological environment and Competitive Environment
CO4	Students will get an overview about the International Environment
SEM - III	
PAPER 1	**Business Planning Entrepreneurial Management**

CO1	Entrepreneurship is one of the major focus areas of the discipline of Management. This course introduces Entrepreneurship to budding managers.
CO2	To develop entrepreneurs and prepare students to take the responsibility of full line of management function of a company with special reference to SME sector.
PAPER 2	**IT In Business Management**
CO1	To acquaint the students about practical approaches to Motivation and Leadership and its application in the Indian context
CO2	Module II comprises of practical hands on training required for office automation. It is expected to have practical sessions of latest MS-Office software
CO3	To understand basic concepts of Email, Internet and websites, domains and security therein
CO4	To recognize security aspects of IT in business, highlighting electronic transactions, advanced security features
PAPER 3	**Accounts for managerial decisions**
CO1	To acquaint management learners with basic accounting fundamentals
CO2	To develop financial analysis skills among learners
CO3	The course aims at explaining the core concepts of business finance and its importance in managing a business
PAPER 4	**Environment Management**
CO1	Environmental concept, Sources, biochemical cycles
CO2	Environmental degradation
CO3	Sustainability and role of business
CO4	Innovations in business- an environmental perspective
PAPER 5	**Strategic Management**
CO1	The objective of this course is to learn the management policies and strategies at every Level to develop conceptual skills in this area as well as their application in the corporate world.

CO2	The focus is to critically examine the management of the entire enterprise from the Top Management view points.
CO3	This course deals with corporate level Policy and Strategy formulation areas. This course aims to developing conceptual skills in this area as wellas their application in the corporate world.
PAPER 6	**Advertising**
CO1	To understand and examine the growing importance of advertising
CO2	To understand the construction of an effective advertisement
CO3	To understand the role of advertising in contemporary scenario
CO4	To understand the future and career in advertising
PAPER 7	**Consumer Behaviour**
CO1	The basic objective of this course is to develop an understanding about the consumer decision making process and its applications in marketingfunction of firms
CO2	This course is meant to equip undergraduate students with basic knowledge about issues and dimensions of Consumer Behaviour. Students are expected to develop the skill of understanding and analysing consumer information and using it to create consumer- oriented marketing strategies.
PAPER 6	**Recruitment and selection**
CO1	The objective is to familiarize the students with concepts and principles, procedure of Recruitment and Selection in an organization.
CO2	To give an in depth insight into various aspects of Human Resource management and make them acquainted with practical aspect of the subject.
PAPER 7	**Motivation and Leadership**
CO1	To gain knowledge of the leadership strategies for motivating people and changing organizations
CO2	To study how leaders facilitate group development and problem solvingand work through problems and issues as well as transcend differences
CO3	To acquaint the students about practical approaches to Motivation and Leadership and its application in the Indian context

PAPER 6	**Corporate finance**
CO1	The objectives of develop a conceptual frame work of finance function andto acquaint the participants with the tools techniques and process of financial management in the realm of financial decision making
CO2	The course aims at explaining the core concepts of corporate finance and its importance in managing a business
CO3	To providing understanding of nature, importance, structure of corporate finance related areas and to impart knowledge regarding source of finance for a business
PAPER 7	**Introduction to cost accounts**
CO1	This course exposes the students to the basic concepts and the tools used in Cost Accounting
CO2	To enable the students to understand the principles and procedure of cost accounting and to apply them to different practical situations
SEM -IV	
PAPER 1	**IT in management**
CO2	To provide conceptual study of Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, Key issues in implementation. This module provides understanding about emerging MIS technologies like ERP, CRM, SCM and trends in enterprise applications.
CO3	To learn and understand relationship between database management anddata warehouse approaches , the requirements and applications of data warehouse
CO4	To learn outsourcing concepts. BPO/KPO industries, their structures , Cloud computing
PAPER 2	**Production and Total quality management**
CO1	To acquaint learners with the basic management decisions with respect to production and quality management
CO2	To make the learners understand the designing aspect of production systems
CO3	To enable the learners apply what they have learnt theoretically

PAPER 3	**Business research methodology**
CO1	The course is designed to inculcate the analytical abilities and research skills among the students.
CO2	The course intends to give hands on experience and learning in Business Research.
PAPER 4	**Business Economics**
CO1	Introduction to Macroeconomic Data and Theory
CO2	Money, Inflation and Monetary Policy
CO3	Constituents of Fiscal Policy
CO4	Open Economy : Theory and Issues of International Trade
PAPER 5	**Ethics and Governance**
CO1	To understand significance of ethics and ethical practices in businesses which are indispensable for progress of a country
CO2	To learn the applicability of ethics in functional areas like marketing, finance and human resource management
CO3	To understand the emerging need and growing importance of good governance and CSR by organizations
CO4	To study the ethical business practices, CSR and Corporate Governance practiced by various organizations
PAPER 6	**Auditing**
CO1	To enable students get acquainted with the various concepts of auditing.
CO2	To ensure students understand and practice the various techniques of auditing while managing their finances
PAPER 7	**Strategic Cost management**
CO1	Learners should develop skills of analysis, evaluation and synthesis in cost and management accounting
CO2	The subject covers the complex modern industrial organizations within which the various facets of decision-making and controlling operations takeplace
PAPER 6	**Integrated Marketing Communication**

CO1	To equip the students with knowledge about the nature, purpose andcomplex construction in the planning and execution of an effective Integrated Marketing Communication (IMC) program.
CO2	To understand the various tools of IMC and the importance coordinating them for an effective marketing communication program.
PAPER 7	**Event Marketing**
CO1	To understand basic concepts of Event Marketing.
CO2	To impart knowledge to learners about categories of Events.
CO3	To understand segmenting, targeting and positioning in the context of Event Marketing.
CO4	To familiarize learners with trends and challenges in Event Marketing
PAPER 6	**Human resource planning and information**
CO1	To Understand the Concept and Process of HRP
CO2	To Understand Ways of matching Job Requirements and Human Resource Availability
CO3	To Explore the concept of Strategic HRP
CO4	To Understand the applications of HRIS
PAPER 7	**Training and Development**
CO1	This paper is not pure academic oriented but practice based. It has been designed, keeping in view the needs of the organizations.
CO2	This paper will attempt to orient the students to tailor themselves to meetthe specific needs of the organizations in training and development activities.
TYBMS	
SEM- V	
PAPER 1	**Logistics and Supply Chain Management**
CO1	To provide students with basic understanding of concepts of logistics and supply chain management
CO2	To introduce students to the key activities performed by the logistics function
CO3	To provide an insight in to the nature of supply chain, its functions and supply chain systems

CO4	To understand global trends in logistics and supply chain management
PAPER 2	**Corporate Communication and PR**
CO1	To provide the students with basic understanding of the concepts of corporate communication and public relations
CO2	To introduce the various elements of corporate communication and consider their roles in managing organizations
CO3	To examine how various elements of corporate communication must be coordinated to communicate effectively
CO4	To develop critical understanding of the different practices associated with corporate communication
PAPER 3	**Investment Analysis and Portfolio Management**
CO1	To acquaint the learners with various concepts of finance
CO2	To understand the terms which are often confronted while reading newspaper, magazines etc. for better correlation with the practical world
CO3	To understand various models and techniques of security and portfolio analysis
PAPER 4	**Financial Accounting**
CO1	To acquaint the learners in preparation of final accounts of companies
CO2	To study provisions relating to underwriting of shares and debentures
CO3	To study accounting of foreign currency and investment
CO4	To understand the need of ethical behaviour in accountancy
PAPER 5	**Risk Management**
CO1	To familiarize the student with the fundamental aspects of risk management and control
CO2	To give a comprehensive overview of risk governance and assurance with special reference to insurance sector
CO3	To introduce the basic concepts, functions, process, techniques of risk management
PAPER 6	**Direct Tax**
CO1	To understand the provisions of determining residential status of individual
CO2	To study various heads of income
CO3	To study deductions from total income
CO4	To compute taxable income of Individuals
PAPER 3	**Service Marketing**

CO1	To understand distinctive features of services and key elements in services marketing
CO2	To provide insight into ways to improve service quality and productivity
CO3	To understand marketing of different services in Indian context
PAPER 4	**E-Commerce and Digital Marketing**
CO1	To understand increasing significance of E-Commerce and its applications in Business and Various Sector
CO2	To provide an insight on Digital Marketing activities on various Social Media platforms and its emerging significance in Business
CO3	To understand Latest Trends and Practices in E-Commerce and Digital Marketing, along with its Challenges
PAPER 5	**Sales and Distribution Management**
CO1	To develop understanding of the sales and distribution processes in organization
CO2	To get familiarized with concepts, approaches and the **C**practical aspects of the key decision-making variables in sales management and distribution channel management
PAPER 6	**Customer Relationship Management**
CO1	To understand concept of Customer Relationship Management (CRM) and implementation of Customer Relationship Management
CO2	To provide insight into CRM marketing initiatives, customer service and designing CRM strategy
CO3	To understand new trends in CRM, challenges and opportunities for organizations
PAPER 3	**Finance for HR and Compensation Management**
CO1	To orient HR professionals with financial concepts to enable them to make prudent HR decisions
CO2	To understand the various compensation plans
CO3	To study the issues related to compensation management and understand the legal framework of compensation management
PAPER 4	**Strategic HRM and HR Policies**
CO1	To understand human resource management from a strategic perspective
CO2	To link the HRM functions to corporate strategies in order to understand HR as a strategic resource

CO3	To understand the relationship between strategic human resource management and organizational performance
CO4	To apply the theories and concepts relevant to strategic human resource management in contemporary organizations
CO5	To understand the purpose and process of developing Human Resource Policies
PAPER 5	**Performance Management**
CO1	To understand the concept of performance management in organizations
CO2	To review performance appraisal systems
CO3	To understand the significance of career planning and practices
PAPER 6	**Industrial Relations**
CO1	To understand the concept of performance management in organizations
CO2	To review performance appraisal systems
CO3	To understand the significance of career planning and practices
SEM VI	
PAPER 1	**Operation Research**
CO1	To help students to understand operations research methodologies
CO2	To help students to solve various problems practically
CO3	To make students proficient in case analysis and interpretation
PAPER 2	**International Finance**
CO1	The objective of this course is to familiarize the student with the fundamental aspects of various issues associated with International Finance
CO2	The course aims to give a comprehensive overview of International Finance as a separate area in International Business
CO3	To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of International Finance in this Globalised Market
PAPER 3	**Project Management**
CO1	The objective of this course is to familiarize the learners with the fundamental aspects of various issues associated with Project Management
CO2	To give a comprehensive overview of Project Management as a separate area of Management
CO3	To introduce the basic concepts, functions, process, techniques and create an awareness of the different roles.
PAPER 4	**Strategic Financial Management**

CO1	To match the needs of current market scenario and upgrade the learner's skills and knowledge for long term sustainability
CO2	Changing scenario in Banking Sector and the inclination of learners towards choosing banking as a career option has made study of financial management in banking sector inevitable
CO3	To acquaint learners with contemporary issues related to financial management
PAPER 5	**Indirect Taxes**
CO1	To understand the basics of GST
CO2	To study the registration and computation of GST
CO3	To acquaint the students with filing of returns in GST
PAPER 6	**Black Book Project Finance**
CO1	To understand the practical applications of the Finance Concepts
CO2	To study the Qualitative and Quantitative methods of conducting a research
PAPER 2	**Brand Management**
CO1	To understand the meaning and significance of Brand Management
CO2	To Know how to build, sustain and grow brands
CO3	To Know how to build, sustain and grow brands
PAPER 3	**Retail Management**
CO1	To familiarize the students with retail management concepts and operations
CO2	To provide understanding of retail management and types of retailers
CO3	To provide understanding of retail management and types of retailers
CO4	To acquaint the students with legal and ethical aspects of retail management
CO5	To create awareness about emerging trends in retail management
PAPER 4	**International Marketing**
CO1	To understand International Marketing, its Advantages and Challenges.
CO2	To provide an insight on the dynamics of International Marketing Environment.
CO3	To understand the relevance of International Marketing Mix decisions and recent developments in Global Market
PAPER 5	**Media Planning and Management**
CO1	To understand Media Planning, Strategy and Management with reference to current business scenario.
CO2	To know the basic characteristics of all media to ensure most effective use of advertising budget

CO3	To provide an insight on Media Planning, Budgeting, Scheduling and Evaluating the Different Media Buys.
PAPER 6	**Black book Project Marketing**
CO1	To understand the practical applications of the Marketing Concepts
CO2	To study the Qualitative and Quantitative methods of conducting a research
PAPER 2	**HRM in Global Perspective**
CO1	To understand the concepts, theoretical framework and issues of HRM in Global Perspective
CO2	To get insights of the concepts of Expatriates and Repatriates
CO3	To find out the impact of cross culture on Human Resource Management
CO4	To provide information about Global Workforce Management
CO5	To study International HRM Trends and Challenges
PAPER 3	**Organisational Development :**
CO1	To understand the concept of Organisational Development and its Relevance inthe organisation
CO2	To Study the Issues and Challenges of OD while undergoing Changes
CO3	To get an Understanding of Phases of OD Programme
CO4	To Study the OD Intervention to meet the Challenges faced in the Organisation
CO5	To get an Insight into Ethical Issues in OD
PAPER 4	**HRM in Service Sector Management**
CO1	To understand the concept and growing importance of HRM in service sector
CO2	To understand how to manage human resources in service sector
CO3	To understand the significance of human element in creating customersatisfaction through service quality
CO4	To understand the Issues and Challenges of HR in various service sectors
PAPER 5	**Human Resource Accounting and Auditing**
CO1	To understand the importance of Human Resource Accounting at National and International level
CO2	To familiarize with the Human Resource Accounting Practices in India
CO3	To familiarize the learners with the process and approaches of Human Resources Accounting and Audit
CO4	To understand the significance of Human Resource Auditing as a Tool of Human Resource Valuation
PAPER 6	**Black Book Project HR**
CO1	To understand the practical applications of the Human Resource Concepts
CO2	To study the Qualitative and Quantitative methods of conducting a research

Course Outcome:
Bachelor of Mass Media

F. Y.B.M.M	
SEM-I	
PAPER 1	**EFFECTIVE COMMUNICATION SKILLS–I**
CO1	The paper shall focus on functional and operational useof language in media. Withthe specific aim of use in media.
CO2	it will equip students with competence in language structure, abilities in reading and writing and skills
CO3	Close, critical reading of informative and discursive texts in Marathi, Hindi and English.
CO4	Effective presentation in writing (concise statement, use of appropriate organizational and rhetorical patterns andstyle) Marathi, Hindi and English.
CO5	Efficient oral communication in Marathi, Hindi and English
CO6	The learner will improve their structured and analytical thinking skills
PAPER 2	**FUNDAMENTALS OF MASS COMMUNICATION**
CO1	The learner would be able to understand what is communication models and expose them
CO2	The learner would be able to understand the various aspects of Mass Communication
CO3	The learner would be able to understand To develop acritical understanding of Mass Media, its potentialities and Impact
PAPER 3	**INTRODUCTION TO COMPUTERS**
CO1	The learner would be able to know a general understanding of computer basics for everyday use.
CO2	The learner would be able to use this understanding to supplement their presentation skills
PAPER 4	**LANDMARK EVENTS IN 20TH CENTURY HISTORY OF WORLD, INDIA & MAHARASHTRA**
CO1	The learner would be able to get acquaint with important ideas and events thatshaped 20th Centuryworld with emphasis on India & Maharashtra.
Paper 5	**INTRODUCTION TO SOCIOLOGY, THE SOCIOLOGY OF NEWS ANDSOCIAL MOVEMENTS IN INDIA**
CO1	Provide a sociological understanding of the basic concepts and perspectives relevant to mass-media
CO2	Learner would be aware of Indian Society's socio- cultural diversity and their responsibility as media personnel.

CO3	The learners would be sensitize them to pressing social issues of thecontemporary Indian society.
CO4	The learner would be able to know and to understand origins and spread of the various social movements in India.
PAPER 6	**INTRODUCTION TO ECONOMICS**
CO1	The main objective of this paper is to familiarize the learner of mass media with the fundamental concepts ofeconomics so that their analytical ability can be strengthened
CO2	For achieving this, the paper is to be taught with practical relevance.
CO3	Wherever applicable, reference is to be made in the context of Indian economy.
SEM-II	
PAPER 1	**EFFECTIVE COMMUNICATION SKILLS–II**
CO1	The learner would be develop communication skills in Marathi, Hindi and English acquired in the first semester.
PAPER 2	**POLITICAL CONCEPTS AND THE INDIAN POLITICAL SYSTEM**
CO1	The learner would be get acquainted with fundamentalpolitical concepts essential for understanding political systems and theories.
CO2	Orient the students to the Indian Constitution and the functioning of the Indian political system.
CO3	The learner would be able to understand with a strong base on the 'Indian Concepts' and to expose them to the complexities of Indian Political Systems.
PAPER 3	**PRINCIPLES OF MANAGEMENT AND MARKETING**
CO1	The learner would be given an introduction to the fundamentals of management and marketing.
PAPER 4	**INTRODUCTION TO PSYCHOLOGY**
CO1	The learner would get acquainted with an understandingof the basic concepts of Psychology and its relevance to mass media
PAPER 5	**AN INTRODUCTION TO LITTERATEURS**
CO1	Through reading about litterateurs and their work help students evolve into more thinking, aware, sensitive human beings; to deepen and widen their understandingof themselves and of life
CO2	The learner would able to apply good writing to help them write better.
CO3	The learner would be get acquainted with the various genres and literary terms to enhance their understanding of world literature.
PAPER 6	**TRANSLATION SKILLS**
CO1	The learner would be able to understand the importance

	of translation in media.
CO2	For that the learner is provide English, Hindi and Marathitranslation skills required in media.
SEM-III	
PAPER 1	**INTRODUCTION TO CREATIVE WRITING**
CO1	The learner would be encourage to read stories, poems, plays etc.
CO2	The learner would develop further and build upon the writing and analytical skills acquired in Semesters I and II
CO3	The learner will get acquainted with basic concepts in literary writing.
CO4	Familiarize the learner with the creative process
PAPER 2	**INTRODUCTION TO CULTURE STUDIES**
CO1	The learner would be introduce to a set of approaches in the study of culture.
CO2	Examine the construction of culture
CO3	And understand how the media represents culture.
PAPER 3	**INTRODUCTION TO PUBLIC RELATIONS**
CO1	The learner is introduced to the subject of public relations to the student and help understand its role and function it plays in society.
CO2	It will equip the student with the basic tools of public relations and give them an overall understanding of the subject.
PAPER 4	**INTRODUCTION TO MEDIA STUDIES**
CO1	The learner would be exposed to the well-developed body of media theory and analysis.
CO2	Foster analytical skills that will allow them to view the media critically.
PAPER 5	**UNDERSTANDING CINEMA**
CO1	The learner would get exposed with the various styles and schools of cinema throughout the world.
PAPER 6	**ADVANCED COMPUTERS**
CO1	The learner would be able to work on Macromedia Flash to create banner ads for websites.
CO2	Possibly introduction to High-end animation software like 3d Studio Max, Maya
CO3	The learner would be able to design a website
SEM-IV	
PAPER 1	**INTRODUCTION TO ADVERTISING**
CO1	The learner would get a brief insight about advertising & its different aspectsto the students of Media.

PAPER 2	INTRODUCTION TO JOURNALISM
CO1	The learner would be able to understand the history and

	development of journalism in the global and the Indian context
CO2	Introduce the learner to concepts related to news and journalistic practice
PAPER 3	**PRINT PRODUCTION AND PHOTOGRAPHY**
CO1	**H**elp learners to understand the principles and practice ofphotography
CO2	The learner would be able to enjoy photography as an art.
PAPER 4	**RADIO AND TELEVISION**
CO1	Introduce the basic terms and concepts of broadcasting
CO2	The learner would be get an overview of the structure and function of the broadcast industry
CO3	It will create an awareness of the development of broadcast media and currenttrends
PAPER 5	**MASS MEDIA RESEARCH**
CO1	The learner would be able to understand to debates in Research approaches and equip them with tools to carry on research
CO2	To understand the scope and techniques of mediaresearch, their utility andlimitations
PAPER 6	**ORGANISATIONAL BEHAVIOUR**
CO1	Orienting Learner to issues in organizational functioning
CO2	The learner would be able to understand the concepts given below at a preliminary level
SEMESTE R-V	
ADVERTISIN G	
PAPER 1	**ADVERTISING IN CONTEMPORARY SOCIETY**
CO1	The learner would be able to recognize the roles of advertising in modern society
CO2	The learner understand the current developments and problems concerning advertising as an economic and social force
CO3	Appreciate the increasingly international nature of advertising.
CO4	Analyze the interdependent nature of advertising and popular culture
PAPER 2	**COPYWRITING**
CO1	The learner would be familiarize with the concept of copywriting as selling through writing
CO2	Develop their inherent writing skills
CO3	The learner would be able to generate, develop and express ideas effectively
CO4	The learner would get familiarize with contemporary advertising techniques and practices.

PAPER 3	**ADVERTISING DESIGN (Project Paper)**
CO1	The learner would get exposed to the creative and technical aspects of art direction.
PAPER 4	**CONSUMER BEHAVIOUR**
CO1	The learner would be introduce the complexities of consumer behavior
PAPER 5	**MEDIA PLANNING AND BUYING**
CO1	The learner would be able to develop knowledge of major media characteristics and buying advertising space in themto develop an understanding of procedures, requirements, and techniques of media planning
PAPER 6	**BRAND BUILDING**
CO1	The learner would able to get an introduction to theconcepts and practices of contemporary brand management
CO2	Understand the appropriate strategies and tactics to build, measure and manageBrand Equity.
CO3	The learner would be able to plan an effective advertising campaign
SEMESTER-V	
JOURNALISM	
PAPER 1	**REPORTING**
CO1	Certain basic principles: Accuracy, Objectivity, Clarity and speed
CO2	The need to verify news. on the spot coverage, checking with the sources, double checking for controversial stories
CO3	Understanding New Values
PAPER 2	**EDITING**
CO1	The learner would be able to allow improvement in language skills
CO2	Impart skills required of a sub-editor
PAPER 3	**FEATURE AND OPINION**
CO1	Commenting on differences between reporting and feature writhing, the special skills needed for feature /Opinion writing
CO2	Role of opinion writing the need for mature thinking and professional experience
PAPER 4	**JOURNALISM AND PUBLIC OPINION**
CO1	The learner would be able to examine critically the relationship between the mediaand public, how much does the media influence public opinion,
CO2	Which are the agencies manipulating this process of influencing public opinion.

PAPER 5	**INDIAN REGIONAL JOURNALISM**
CO1	Study the evolution, growth and role in modern-day India of Indian newspapers other than in English
CO2	Case studies of Hindi, Marathi, Telugu and Urdu newspapers
CO3	Role of language papers in fostering socio – cultural development in their areasof circulation
CO4	Study intimacy between readers and language newspapers
PAPER 6	**MAGAZINE MAKING(Project Paper)**
CO1	This paper shall introduce the students to the art of newspaper and magazine design and will orient them towards the practical aspects of newspaper – magazine making.
SEMESTER-VI	
ADVERTISING	
PAPER 1	**ADVERTISING AND MARKETING RESEARCH**
CO1	Discuss the foundations of research and audience analysis that is imperative to successful advertising
PAPER 2	**LEGAL ENVIRONMENT AND ADVERTISING ETHICS**
CO1	The learner would able to get a perspective on the Legal Environment in India.
CO2	It will guide learner of media through the various ethics connected to Advertising.
CO3	Maharashtra state centric cases to be discussed in class as the situation demands.
PAPER 3	**FINANCIAL MANAGEMENT FOR MARKETING AND ADVERTISING**
CO1	The learner would get acquainted with the background, knowledge and skills necessary to be business and financial journalists
CO2	Create awareness about the importance of business and financial news
CO3	Acquire skills to write different kinds of business and financial leads
CO4	Enhance skills in reporting and writing basic and complex business beat.
PAPER 4	**AGENCY MANAGEMENT**
CO1	The learner would be exposed to the business of advertising
CO2	The learner would be familiarize with the different aspects of running an ad agency.
PAPER 5	**THE PRINCIPLES AND PRACTICE OF DIRECT MARKETING**
CO1	What Direct marketing is, including direct marketing terminology, how direct marketing differs from “traditional marketing”

CO2	How direct marketing differs from “traditional marketing” Direct marketing techniques

PAPER 6	**CONTEMPORARY ISSUES**
CO1	The learner would be getting sensitize to the environment around them
CO2	Developing a perspective towards issues related to the marginalized sections of the society
SEMESTER-VI	
JOURNALISM	
PAPER 1	**PRESS LAW AND ETHICS**
CO1	The learner would able to understand the importance of laws for the media industry
CO2	Get authenticate news and prevent plagiarism, and identify fake news
CO3	Uphold the principles of journalism
PAPER 2	**BROADCAST JOURNALISM**
CO1	Understand the development of broadcast journalism in India
CO2	Learn skills and techniques required for broadcast journalism
CO3	learn how to handle equipment- a camcorder and recorder – for a story
CO4	Regional language broadcast journalism to be examined as a growing and flourishing field
PAPER 3	**BUSINESS AND MAGAZINE JOURNALISM**
CO1	The learner would be able to create, design and compute his own magazine.
CO2	What types of text, pictures, stories incorporate in magazine
PAPER 4	**INTERNET AND ISSUES IN THE GLOBAL MEDIA**
CO1	Examine global journalism as a newly emerging reality – it's implications, strengths and weakness
CO2	Examine the journalistic scene in S. Asia
CO3	Learning about the Internet as a news medium
CO4	Equipping students with basic skills required for internet reporting and editing
PAPER 5	**NEWS MEDIA MANAGEMENT**
CO1	The learner would be aware of the structure, functioning and responsibilities of managements of media organizations
CO2	To create awareness of laws governing media organizations and their complexities in a globalized world in the wake of an information explosion.
PAPER 6	**CONTEMPORARY ISSUES**
CO1	Sensitize the learner to the environment around them
CO2	Developing a perspective towards issues related to the marginalized sections of the society.

COURSE OUTCOMES

BSC (BIO-TECHNOLOGY)

F. Y. B.Sc.	
SEM-I	
PAPER 1 Course Title: Basic Chemistry-I Course Code: USBT 101	
CO1	The learner would be able to understand the basic concept of Chemistry
CO2	The learner would be able to comprehend the Nomenclature and Classification of Inorganic Compounds.
CO3	The learner would be able to understand Nomenclature and Classification of Organic Compounds
CO4	The learner would be able to comprehend the Nature of Ionic Bond, Structure of NaCl, KCl and CsCl, factors influencing the formation of Ionic Bond.
CO5	The learner would be able to understand Nature of Covalent Bond, Structure and Shapes of different molecules
CO6	The learner would be able to understand Nature of Coordinate Bond.
CO7	The learner would be able to understand Non- Covalent Bonds
CO8	The learner would be able to discuss Theory of Hydrogen Bonding and Types of Hydrogen Bonding.
CO9	The learner would be able to understand the Chemistry of Water and concept of Acids, Bases.
CO10	The learner would be able to develop skills in preparation of solution of different concentrations.
CO11	The learner would be able to impart hands on skill in Preparation of Buffers Solutions.
PAPER 2 Course Title: Basic Chemistry-II Course Code: USBT 102	
CO1	The learner would be able to understand the concept of Types of Isomerism.
CO2	The learner would be able to comprehend the concept of Geometrical Isomerism and Optical Isomerism.
CO3	The learner would be able to discuss Difference between Configuration and Conformation.
CO4	The learner would be able to evaluate different Projection Formulae
CO5	The learner would be able to impart knowledge of Titrimetric Analysis.
CO6	The learner would be able to develop Titration Skills.
CO7	The learner would be able to understand different types of Titrations.
CO8	The learner would be able to comprehend the concept

	of Gravimetric Analysis.
CO9	The learner would be able to develop Skills in Separation Methods.
CO10	The learner would be able to understand the technique in handling Column Chromatography, TLC, Paper Chromatography.
CO11	The learner would be able to comprehend the fundamentals and applications of Colorimetry.
CO12	The learner would be able to understand the Applications of different analytical Techniques.
PAPER 3 Course Title: Basic Life Sciences-I : Biodiversity and Cell Biology Course Code: USBT 103	
CO1	The learner gains the knowledge of Chemical and Biological evolution.
CO2	The learner understands the diversity of Microbes, Plants and Animals
CO3	The learner acquires the knowledge of ultrastructure of prokaryotic cells and its organelles.
CO4	The learner understands about the ultrastructure of the Eukaryotic cell and its organelles and functions.
CO5	The learner would be able to identify different types of bacteria.
CO6	The learner understands the concept of growth kinetics and classification of viruses.
PAPER 4 Course Title: Basic Life Sciences-II : Microbial Techniques Course Code: USBT 104	
CO1	The learner would be able to understand functions and applications of Microscopes.
CO2	The learner would be able to impart the knowledge of basic staining techniques
CO3	The learner understands Sterilization techniques.
CO4	The learner acquires the knowledge of types of sterilization and disinfectants used.
CO5	The learner gains the knowledge of nutritional requirements for growth of Microorganisms.
CO6	The learner understands different types of media and concept of growth phases.
PAPER 5 Course Title: Basic Biotechnology-I : Introduction to Biotechnology Course Code: USBT 105	
CO1	The learner understands various branches in Biotechnology.
CO2	The learner acquires the knowledge of Traditional and Modern Biotechnology.
CO3	The learner gains the knowledge of Genetically modified Plants.
CO4	The learner understands Ethics in Biotechnology.
CO5	The learner would be able to learn Food technology and Food quality enhancement.
CO6	The learner acquires the knowledge of Fermentation technology and its applications.

PAPER 6 Course Title: Basic Biotechnology-II: Molecular Biology Course Code: USBT 106	
CO1	The learners would be able to understand Semi Conservative DNA replication.
CO2	The learner would analyze the difference between Prokaryotic replication and Eukaryotic replication.
CO3	The learner would analyze the difference between Physical Chemical and Biological Mutagens.
CO4	The learner would interpret DNA repair mechanisms.
CO5	The learner would be able to understand Experimental evidences for DNA and RNA as Genetic Material .
CO6	The learner would be able to understand the mechanism of identifying the recombinant clones.
CO7	To understand the different types of Cloning vectors.
	PRACTICAL: 1 Course Code: USBTP 101
CO1	The learner would be able to develop skills in preparation of solution of different concentrations.
CO2	The learner would be able to impart hands on skill in Preparation of Buffers Solutions
CO3	The learner would be able to develop skills in Characterization of Organic Compounds containing only C, H, O elements
	PRACTICAL: 2. Course code: USBT102
CO1	The learner would be able to understand components and working of different types of microscopes.
CO2	The learner would be able to understand special staining techniques.
	PRACTICAL: 3 Course code: USBTP103
CO1	The learner would be able to understand the process of lactic acid determination, analysis of milk and extraction of casein from milk.
CO2	The learner would be able to examine fermentative production of alcohol.
CO3	The learner would be able to perform agarose gel electrophoresis of the genomics & plasmid DNA
	SEM-II
	PAPER 1 Course Title: Bioorganic Chemistry Course Code: USBT201
CO1	The learner would be able to understand Structures, Classification and Characterisation of Carbohydrates and Lipids.
CO2	The learner would be able to comprehend the Chemical/Physical Properties of Carbohydrate.
CO3	The learner would be able to understand the Chemical Reactions for Detection of Mono., Di and Polysaccharides
CO4	The learner would be able to discuss the structure and functions of Cholesterol
CO5	The learner would be able to comprehend the Classification, Preparation and Properties of Amino Acids.
	PAPER 2 Course Title: Physical Chemistry Course Code:USBT202
CO1	The learner would be able to understand the basic

	concept of Thermodynamics.
CO2	The learner would be able to discuss the laws of thermodynamics
CO3	The learner would be able to understand the concept of Entropy
CO4	The learner would be able to discuss the Carnot cycle for Ideal Gas.
CO5	The learner would be able to understand the Rate of Reaction, Rate Constant.
Paper 3. Course Title:Physiology and Ecology. Course code: USBT203	
CO1	The learner will gain the knowledge of Physiological process in Plants
CO2	The learner will be able to understand different Plant hormones and Secondary metabolites in plants
CO3	The learner will gain the knowledge of Physiological process in Animals
CO4	The learner will understand the mechanism of respiration and structure, functions and constituents of blood
CO5	The learner would be able to understand Biotic and Abiotic Factors.
Paper 4. Course Title: Life Sciences-II. Course code:USBT204	
CO1	The learner will understand the Principle of Dominance and Segregation.
CO2	The learner will be able to explain the process of epistasis.
CO3	The learner will also differentiate between the incomplete Dominance and Co dominance.
CO4	The learner will be able to understand Bacteriophage Lytic and Lysogenic cycle
CO5	The learner will gain the knowledge of Mechanism of genetic exchange in bacteria
Paper 5. Course Title: Biotechnology-I Course code: USBT205	
CO1	The learner will understand the technique of Plant tissue culture.
CO2	The learner will also understand Culture Medium and Nutritional requirements for tissue culture.
CO3	The learner will acquire the knowledge of Nutritional and Physiological Growth Factors for cell culture.
CO4	The learner will acquire the knowledge of Communication Skills.
CO5	The learner will be able to understand Scientific Writing and Plagiarism.
Paper 6 Course Title: Biotechnology-II Course code: USBT206	
CO1	The learner will be able to explain the Definition, Classification, Nomenclature, Chemical Nature, and Properties of Enzymes.
CO2	The learner will be able to differentiate between Competitive enzymes and Un Competitive enzymes and Non Competitive enzymes.
CO3	The learner will be able to understand antigen and antibody interactions
CO4	The learner will acquire the knowledge of

	Monoclonal Antibodies, Vaccines and Toxoid.
CO5	The learner would be able to impart knowledge of Importance of Statistics in Biology.
Practical 1. Course code: USBTP201	
CO1	The learner would be able to develop skills in estimation of Protein by Biuret method and Lowry method
CO2	The learner would be able to determine enthalpy of dissolution of salt like KNO3.
CO3	The learner would be able to understand the Study the reaction between NaHSO3 and KMnO4 and balancing the reaction in acidic, alkaline and neutral medium
Practical 2. Course code: USBTP202	
CO1	The learner would be able to examine human blood groups.
CO2	The learner would be able to understand mitosis and meiosis
CO3	The learner would be able to examine problems in Mendelian genetics
PRACTICAL: 3 Course Code:USBTP203	
CO1	The learner would be able to understand the working and use of various instruments used in Biotechnology laboratories.
CO2	The learner would be able to understand aspetic transfer techniques, surface sterilisation and inoculation techniques for callus culture.
S.Y. B.Sc.	
SEM-III	
PAPER 1 Course Title: Biophysics Course Code:USBT301	
CO1	The learner would be able to understand the Properties of Light
CO2	The learner would be able to understand the Properties of Lasers and Applications of Laser.
CO3	The learner would be able to understand the concept of Electromagnetic Radiations.
CO4	The learner would be able to relate principles of Physics to applications and techniques in the field of Biology such as Spectroscopy
CO5	The learner would be able to discuss the types of Microscopy.
PAPER 2 Course Title: APPLIED CHEMISTRY –I Course Code:USBT302	
CO1	The learner would be able to develop an understanding of the different aspects of Organic Chemistry
CO2	The learner would be able to understand the different types of organic reactions.
CO3	The learner would be able to discuss the Role of Metal Ions in Biological Systems
CO4	The learner would be able to comprehend the Metal Coordination in Biological Systems
CO5	The learner would be able to discuss functions of Metal Complexes in Medicines

	PAPER 3 Course Title: Immunology Course Code:USBT303
CO1	The learner would be able to understand the role of different types of cells, effector molecules and effector mechanisms in immunology.
CO2	The learner would be able to understand cell receptors i.e T- cell and B- cell receptor.
CO3	The learner would be able to understand the Principles underlying various immuno techniques
CO4	The learner would be able to analyse the alternatives to Antigen-Antibody reactions
	PAPER 4. Course Title: Cell biology & cytogenetics. Course code: USBT304
CO1	The learners would be able to understand cytoskeleton And its major Functions
CO2	The learner would analyze the structure, assembly disassembly and composition of Cytoskeleton.
CO3	The learner would analyze the difference between active transport and passive transport
CO4	The learner would be able to examine the difference between change in chromosome number and chromosome structure.
CO5	The learner would be also to understand mechanism of sex determination
CO6	The learner would interpret the role of plasma membrane
	PAPER 5. Course Title: Molecular Biology. Course code: USBT305
CO1	The learner would be able to discuss the mechanisms associated with Gene expression at the level of Transcription.
CO2	The learner would be able to understand the mechanisms associated with Gene expression at the level of Translation
CO3	The learner would be able to understand the nature of genetic code.
CO4	The learner would be able to understand the mechanisms associated with Regulation of Gene Expression in Prokaryotes & Eukaryotes
	PAPER 6. Course Title: Bioprocess Technology. Course code: USBT306
CO1	The learner would be able to develop an understanding of the various aspects of Bioprocess Technology
CO2	The learner would be able to develop skills associated with screening of industrially important strains.
CO3	The learner would be able to understand principles underlying design of fermenter and fermentation process
CO4	The learner would be able to analyse In-vivo and In- vitro assay of industrial products
	PAPER 7. Course Title: Research Methodology. Course code: USBT307
CO1	The learner would be able to understand the basic principles of Research Methodology & identify Research Problems
CO2	The learner would be able to understand a general definition of Research Design.

CO3	The learner would be able to identify the overall process of designing a research study from its inception to its report
	PRACTICAL:1 Course Code: USBTP301
CO1	The learner would be able to develop the skills in Extraction of Plasmid DNA and Separation by Agarose Gel Electrophoresis
CO2	The learner would be able to comprehend the Verification of Beer-Lambert's Law
CO3	The learner would be able to develop the skills in Organic Estimation.
	PRACTICAL: 2 Course code: USBTP302
CO1	The learner would be able to understand the immuno electrophoresis process.
	The learner would be able to examine western blotting technique
	PRACTICAL: 3 Course code: USBTP303
CO1	The learner would be able to understand lab scale production of penicillin (by static & shaker method)
CO2	The learner would be able to understand the process of estimation of alcohol by Dichromate method.
	SEM-IV
	PAPER 1 Course Title: Biochemistry Course Code: USBT401
CO1	The learner would be able to discuss the Metabolic Pathways of Carbohydrates.
CO2	The learner would be able to discuss Electron Transport System and Oxidative Phosphorylation.
CO3	The learner would be able to discuss the Metabolic Pathways of Amino Acids.
CO4	The learner would be able to understand the Urea Cycle and Breakdown of Glucogenic and Ketogenic Amino Acids.
CO5	The learner would be able to understand the Mobilization and Transport of Fatty Acids.
	PAPER 2 Course Title: Applied Chemistry-II Course Code:(USBT402)
CO1	The learner would be able to develop an understanding of the different aspects of Organic and Green Chemistry.
CO2	The learner would be able to understand the different types of organic reactions.
CO3	The learner would be able to understand the Criteria for Ideal Synthesis; Selectivity and Yield.
CO4	The learner would be able to develop Skills in Microwave Assisted Organic Synthesis.
CO5	The learner would be able to discuss the Need and Relevance of Green Chemistry.
	PAPER 3 Course Title: Medical Microbiology Course Code:(USBT403)
CO1	The learner will be able to gain insight into Disease Factors and Host Parasite Relationship.
CO2	The learner will be able to understand various patterns of infection and types of infections.
CO3	The learners will be able to list the factors playing a role in causing a disease.

CO4	The learner will acquire the knowledge of various aspects of Systemic Infections including Causative Agents, Symptoms and Prophylaxis.
CO5	The learner will be able to understand Characteristics, Virulence- Pathogenesis and Immunity of Gastrointestinal tract infections.
PAPER 4 Course Title: Environmental Biotechnology. Course code: (USBT404)	
CO1	The learner will be able to gain an understanding of the causes, types & control methods for environmental pollution.
CO2	The learner would be able to understand global environmental problems and issues.
CO3	The learner would be able to analyse the application of different life forms in environmental remediation
PAPER 5. Course Title: Bioinformatics and Biostatistics. Course code: (USBT405)	
CO1	The learner would be able to gain an understanding of the basic concepts of Bioinformatics**.**
CO2	The learner would be able to understand the tools used in Bioinformatics
CO3	The learner would be able to gain an understanding of the basic concepts of Biostatistics.
CO4	The learner would be able to apply the various statistical tools for analysis of biological data**.**
PAPER 6. Course Title : Molecular Diagnostics. Course code: (USBT406)	
CO1	The learners would be able to understand Extraction, Isolation and Detection of DNA, RNA and Proteins.
CO2	The learner would analyze the clinical applications of Southern, Northern, Western and FISH**.**
CO3	The learner would analyze the difference between PCR and RT- PCR.
CO4	The learner would interpret PCR - General Principle Components of a Typical PCR Reaction**.**
CO5	The learner would be able to understand the importance of RFLP in Understanding Sickle cell Anemia.
CO6	The learner would be able to understand mechanism of Ethical, Social and Legal Issues to Molecular- Genetic Testing
PAPER 7. Course Title : Entrepreneurship development. Course code: (USBT407)	
CO1	The learner will be develop an understanding of the systematic process and to select and screen a business idea.
CO2	The learner would be able to design strategies for successful implementation of ideas
CO3	The learner would be able to write a business plan.
CO4	The learner would be able to understand the marketing plans for an entrepreneurship.

	and Biological Synthesis of Silver Nanoparticles and its Characterisation by UV- VIS Spectrophotometer
T.Y.B.Sc	
SEM-V	
PAPER 1 Course Title: Biochemistry Course Code:USBT501	
CO1	The learner would be able to understand prokaryotic and eukaryotic cell cycles.
CO2	The learner would be able to understand cell signalling and the cell transduction process.
CO3	The learner would be able to analyse stages of cell development, mechanisms of cell differentiation and pattern formation in developmental biology.
CO4	The learner would be able to understand cancer as a microevolutionary process.
CO5	The learner would be able to analyse Cancer and virus cancer diagnosis and chemotherapy.
PAPER 2 Course Title: Medical Microbiology & instrumentation Course Code: USBT502	
CO1	The learner would be able to understand term virology i.e study of viruses.
CO2	The learner would be able to examine classification of antibacterial agents and discovery and designs of antimicrobial agents.
CO3	The learner would be able to understand the use and misuse of antimicrobial agents.
CO4	The learner would be able to understand principle, instrumentation, working and application of different spectroscopy.
CO5	The learner would be able to understand bio analytical techniques.
PAPER 3 Course Title: Genomes and molecular biology Course Code: USBT503	
CO1	The learner would be able to develop an understanding of the methodology of Genetic engineering of plants and its applications.
CO2	The learner would be able to develop an understanding of different methods of Transgenic animals and fish.
CO3	The learner would be able to understand tools of Molecular Biology which are used in recombination

	technology.	
CO4	The learner would be able to understand Gene sequencing and editing.	
PAPER 4	**Course Title: Marine Biotechnology**	**Course Code:USBT504**
CO1	The learner would be able to develop an understanding of the Marine ecosystem and its functioning and Bioprospecting.	
CO2	The learner would be able to develop an understanding of extraction of pharmaceutical compounds and enzymes from marine flora and fauna.	
CO3	The learner would be able to understand Marine Sources as Healthy Foods or Reservoirs of Functional Ingredients and Marine Bioactives as Potential Nutraceuticals.	
CO4	The learner would be able to understand Marine Bioresources, use of Marine Secondary Metabolites and production of Cosmetic from marine resources.	
Applied Component	**Course Title: Biosafety**	**Course Code:USBT505**
CO1	The learner would be able to develop an understanding of Biological Risk Assessment and biosafety.	
CO2	The learner would be able to understand Good laboratory Practices.	
CO3	The learner would be able to understand methods of detection and testing of contaminants.	
CO4	The learner would be able to develop an understanding of concepts on biosafety in Biotechnology.	
	PRACTICAL: 1 Course Code: USBT P 501-502	
CO1	The learner will be able to understand the principle, working and applications of Affinity chromatography, ion exchange chromatography, Size exclusion chromatography.	
CO2	The learner will acquire the knowledge of different antibiotic sensitivity test by using various microbial cultures.	
	PRACTICAL: 2 Course Code: USBT P 503-504	
CO1	The learner will acquire the practical knowledge of Gene extraction technique.	
CO2	The learner will understand the technique of extracting alkaloids and carotenoids from marine organisms.	
	PRACTICAL: 3 Course Code: USBT 505	
CO1	The learner will understand importance of validation and calibration of Micropipette and pH meter.	
CO2	The learner will develop the knowledge of performing food adulteration tests.	
	SEM-VI	
PAPER 1	**Course Title: Biochemistry**	**Course Code: USBT 601**
CO1	The learner would be able to understand Protein structure, Protein Denaturation and Folding.	
CO2	The learner will acquires the knowledge of	

	Carbohydrate biosynthesis and its regulation.	
CO3	The learner would be able to develop an understanding of Mechanism of action of group I and II Hormones.	
CO4	Acquires the knowledge of Minerals and Vitamins.	
PAPER 2 Course Title: Industrial Microbiology Course Code: USBT 602		
CO1	The learner would be able to understand the different milk flora, processing and dairy technology.	
CO2	The learner would be able to develop an understanding skills of Down-stream processing.	
CO3	The learner would be able to develop an understanding techniques of Bacterial and fungal fermentation.	
CO4	The learner would be able to understand Quality control and Quality Assurance of GMP	
PAPER 3 Course Title: Basic pharmacology and Neurochemistry Course Code: USBT 603		
CO1	The learner would be able to develop an understanding Mechanism of drug action, Effective dose and Lethal dose.	
CO2	The learner would be able to develop an understanding mechanism of drug absorption and distribution.	
CO3	The learner would be able to understand toxins regulation of toxins and poison.	
CO4	The learner would be able to understand Anatomy and functioning of the brain and Neuronal pathways.	
PAPER 4 Course Title: Environmental Biotechnology Course Code: USBT 604		
CO1	The learner would be able to develop an understanding renewable energy source – solar energy, wind power, geothermal energy and hydropower, biomass energy and Biofuel.	
CO2	The learner would be able to develop an understanding biological process for industrial effluent treatment.	
CO3	The learner would be able to understand Wastewater treatment with help of biosorption by bacteria, fungi and algae.	
CO4	The learner would be able to understand biodegradation of waste from industry.	
Applied Component: Course Title: Agri-Biotechnology Course Code: USBT 605		
CO1	The learner would be able to develop the knowledge of Agriculture and Agriculture systems and technology.	
CO2	The learner would be able to understand Physiological and molecular responses of different types of plant stresses.	
CO3	The learner would be able to understand uses of Genetic markers in plant breeding.	
CO4	The learner would be able to develop an understanding of Biofertilizers and Biopesticides.	
PRACTICAL: 1 Course Title: Course Code: USBT P 601-602		
CO1	The learner will be able to understand technique of microbial analysis and identify normal microbial	

	flora.	
CO2	The learner will develop the knowledge of determining blood glucose and serum cholesterol.	
	PRACTICAL: 2 Course Code: USBT P 603-604	
CO1	The learner will acquire the knowledge of effect of heavy metals on microorganisms.	
CO2	The learner will study physico-chemical parameters of water samples.	
	PRACTICAL: 3 Course Code: USBT P 605	
CO1	The learner will be able to understand isolation technique for bacteria.	
CO2	The learner will acquire the knowledge of estimation of antioxidant enzymes.	

COURSE OUTCOMES

M.Sc. Chemistry	
SEM-I	
PAPER 1	**Course Title: Physical Chemistry Course Code: PSCH101**
CO1	After successfully completing this course on **Thermodynamics**, Learners understand principles of thermodynamics, Maxwell equation and its application to ideal gases. Joule Thomson effect and its applications. Learners will also understand laws of thermodynamics, especially the third law in detail , entropy change for phase transition, absolute entropy, residual entropy etc.
CO2	By studying the course on **Basics of Quantum Mechanics,** the learner understands the limitations of classical mechanics and how it is possible to explain the behaviour of subatomic particles with the application of quantum mechanics . They will learn about Schrodinger's wave equation and its interpretation, particle waves, wave functions, properties of wave function.They will also be able to learn about Operators,Eigen function and Eigen values and solve problems on it; derive Schrodinger's time independent wave equation. They will be able to understand the concept of particle in one , two and three dimensional box , separation of variables, quantization and introduction of quantum numbers; Harmonic Oscillator, Hermite Polynomials.
CO3	After completing this course on **Chemical Dynamics** students have knowledge of steady state approximation, microscopic reversibility, detailed balanced chain reaction,some inorganic reactions like decomposition of phosgene, decomposition of ozone etc. they will also understand theories of reaction mechanism, explosion limits, kinetics of polymerisation reactions in details and theories of reactions in gas phase .
CO4	After studying the topic of **Electrochemistry,** the learner is able to understand the advanced concepts of electrochemistry like Debye Huckel theory of activity coefficient, Debye Huckel limiting law, electrolytic conductance and ionic interaction, Debye- Falkenhagen effect and Wieneffect. The learner will be able to derive the Debye Huckel Onsager equation. He will also get knowledge of different types of Fuel cells like alkaline fuel cell, solid -oxide fuel cell etc. The student will also get introduced to Biochemistry . He will be able to understand cells and membranes, membrane potential and theory of membrane potential. interfacial electron transfer in biological systems, enzymes as electrodes. He will be able to derive the Goldmann equation. The student will be able to solve numerical and theoretical problems from all topics of each unit
PAPER 2	**Course Title: Inorganic Chemistry Course Code: PSCH102**
CO1	After studying Chemical bonding students will get knowledge of hybridization involving sigma bonding, VBT, MOT and importance of weak forces of attraction such as hydrogen bonding etc.

CO2	In Molecular symmetry and Group theory unit students learn aboutthe symmetry operations and applications of group theory.
CO3	In the Solid state Chemistry unit students learn about electronic structure of solids, band theory, methods of preparation of inorganic solids and nanomaterials along with applications.
CO4	In characterization of coordination compounds students get the ideaof the preparation of coordination compounds and how their characterization is done.
PAPER 3 Course Title: Organic Chemistry Course Code: PSCH103	
CO1	In the topic **Physical Organic Chemistry,** the students learn about the fundamentals of rate, equilibrium constant, transition state,activated complex and its nature, reactivity, selectivity, Curtin-Hammett principle, microscopic reversibility and kinetic Vs. thermodynamic control of organic reactions; various methods of determining reaction mechanism; factors affecting the acidity and basicity of acids and bases.
CO2	In the topic **Nucleophilic Substitution Reactions**, the students are able to clear their ideas about SN1, SN2, SNi, SET, NGP participation and the factors affecting these reactions; Aromatic nucleophilic substitution reactions like SN1, Ipso, benzyne, cine, tele and vicarious substitution. Students will also learn about Ester Hydrolysis and their various types.
CO3	In the topic **Aromaticity**, the students learn about basics of aromaticity, various criteria for aromaticity, application of HMO Theory, Huckel rules, Frost-Musulin diagram; aromatic, homoaromatic and antiaromatic ; and aromaticity of various types of compounds like metallocenes, azulenes, annulenes, aromatic ionsand Fullerenes.
CO4	In the topic **Stereochemistry**, the students learn about Chirality, Symmetry elements; stereochemistry of- molecules with tri-and tetra-coordinate centers, molecules with two or more chiral centres; axial and planar chirality and the concept of Prochirality.
CO5	In the topic **Oxidation and Reduction**, the students learn about Oxidation, Dehydrogenation by using metal and organic reagents; Oxidation of alcohols to aldehydes and ketones by using chromium reagents and other name oxidations; Oxidations involving C-C bondcleavage, replacement of H by O; reduction of CO to -CH2 in aldehydes and ketones; Reduction by using metal hydrides, hydrazine, dissolving metals in liq. NH3.
PAPER 4 Course Title: Analytical Chemistry Course Code: PSCH104	

CO1	LANGUAGE OF ANALYTICAL CHEMISTRY: outcome: It prepares the learner completely for his entry in industrial and corporate sector .the learner is made fully aware of the common analytical problems faced in production and quality control .The learner is given detailed knowledge of the various instrumental and non-instrumental methods used in industries and research analytical laboratories the determinate and indeterminate errors discussed involved and their calculations makes the student full aware of the statistical methods used for quality control in industries the discussion in the topic Accreditation and safety in laboratories prepares the learner to work in analytical laboratories in the industrial sector. TQM total quality management is a management topic gives the learner clear idea of the pattern of working in corporate sector the frequently used techniques, in corporates for continuous improvement in quality .processes and systems of 5s .Kaizen and Six sigma are discussed in detail to make the learner aware of the atmosphere and ambience of corporate sector.
CO2	CALCULATIONS BASED ON CHEMICAL PRINCIPLES : outcome :the learner will be able to prepare any type of solution required for analysis from ppb ppm to large concentrations, fully understanding the theoretical aspect behind the calculation used in the preparation The theoretical concepts of stoichiometry of the reactions ,formation constant ,stability constant are clearly discussed to give the learner a holistic information about chemical calculations
CO3	OPTICAL METHODS: The main objective of coaching this course is to impart knowledge in students about basic principle, instrumentation, and application of Recapitulation and FT Technique, Molecular Ultraviolet and Visible Spectroscopy, Applications of Ultraviolet and Visible spectroscopy, Infrared Absorption Spectroscopy. This enables learners to understand the function of various instruments and its application in chemical industries.
CO4	THERMAL METHODS: Thermal Methods: The main objective of coaching this course is to impart knowledge in students about basic principle, instrumentation, application , types of thermal methods, comparison between TGA and DTA, Differential Scanning Calorimetry, automation in chemical analysis, need for automation, Objectives of automation, An overview of automated instruments and instrumentation, process control analysis, flow injection analysis, discrete automated systems, automatic analysis based on multi-layered films, gas monitoring equipment and Automatic titrators. This enables learners to understand the function of various instruments and its application in chemical industries.

SEM-II	
PAPER 1 Course Title: Physical Chemistry Course Code: PSCH201	
CO1	After studying this module of **Chemical Thermodynamics II** students shall be able to: know the concept of fugacity, determine the coefficient of fugacity, understand the concept of partial molal quantities for real solutions and derivation of Gibbs Duhem Margules equation , know the thermodynamics of surfaces, understand relation between surface tension and adsorption and derivation of Gibbs and BET adsorption equations, understand free energy changes accompanying biochemical reactions.
CO2	After studying this module of **Quantum Chemistry II** students shall be able to: write the Schrödinger equation for Rigid Rotator, solve the Schrödinger equation for Rigid Rotator, write the Schrödinger equation for Hydrogen atom ,solve the Schrödinger equation for Hydrogen atom,write the radial wave-function of electronic hydrogen atom Schrödinger equation, write the expressions for the total wave function for 1s,2s, 2p and 3d orbitals of hydrogen, study the application of the Schrödinger equation to two electron system.
CO3	After studying this module **Chemical Kinetics and Molecular Reaction Dynamics**, student shall be able to- learn about Solution Kinetics, learn about ionic reactions, learn about effect of solvent on the rate of ionic reaction, know about ionic strength, learn about the effect of solvent on the rate of the reaction, derive the relationship between the rate constant of the reaction and dielectric constant of the solvent, learn about primaryand secondary salt effects, study of free energy changes accompanying biochemical reactions, specificity of enzyme substrate reactions and their catalytic power, learn the derivation of the Michaelis-Menten equation in understanding enzyme kinetics and its applications, also learn the Lineweaver-Burk and Eadie Analyses , learn the importance and significance of Vo, Km, Vmax , understand the Inhibition of Enzyme action i.e. Competitive, Noncompetitive and Uncompetitive Inhibition , study the Kinetics of reactions in solid states such as rate laws .
CO4	After the course on **Solid State Chemistry** the student will be able to- understand the origin and nature of defects in crystals, learn types of crystal defects and Stoichiometry, learn thermodynamics of formation of defects and mathematical derivation to find concentration of defects.
CO5	After the course on **Phase equilibria** the student will be able to- understand the main definitions of terms and thermodynamic derivation of phase rule equation,Read the information given in various phase diagrams, learn the applications of phase rule to two component systems like solid-gas and solid – liquid systems, understand Composition and temperature diagrams defined in binary systems , learn the formations of congruently-incongruently melted intermediate compounds and solid solutions , understand composition - temperature diagrams defined in ternary systems.

PAPER 2	Course Title:Inorganic Chemistry Course Code: PSCH202
CO1	In this unit students will study Inorganic reaction mechanism where rateof reaction, factor affecting it and techniques for its determination. Ligand substitution reactions and redox reaction along with
	stereochemistry of substitution reactions of octahedral complexes isstudied.
CO2	In this unit Organometallic Chemistry of Transition metals is studied forsome compounds with their preparation and properties, structure and bonding of some organometallic compounds is studied on the basis of VBT and MOT.
CO3	Learner will get knowledge of environmental chemistry with respect to heavy metals toxicity along with radioactive materials and their effect on living things.
CO4	In Bio-inorganic Chemistry unit students will get knowledge ofbiological oxygen carriers, copper containing enzymes, nitrogen fixation, metal ion transport and cis-platin related compounds with their applications.
CO5	
PAPER 3 Course Title: Organic Chemistry Course Code: PSCH203	
CO1	In the topic **Alkylation of Nucleophilic Carbon Intermediates**, the students will learn about Carbanions, formation and alkylation of enolates,alkylation of aldehydes, ketones, esters, amides and nitriles; Reactions of Carbon nucleophiles with carbonyl groups, their mechanism, a few name reactions like Aldol condensation, Robinson annulation, Knoevengel reaction, Mannich reaction.
CO2	In the topic **Reactions and Rearrangements**, the students shall learn about mechanisms, stereochemistry and applications of reactions like Baylis-Hilman reaction, McMurry coupling, Corey-Fuchs reaction, etc.; rearrangements like Hoffman, Curtius, Lossen, Schmidt, Wolff, etc.
CO3	In the topic Introduction to **Molecular Orbital Theory for Organic Chemistry**, the students will learn about molecular orbitals of various alkene systems; concepts of FMO, HOMO-LUMO, Application of FMOconcepts to organic reactions.
CO4	In the topic **Applications of UV and IR Spectroscopy**, the students willget clear ideas about fundamentals of UV and IR spectroscopy, factors affecting the position and intensity of uv bands, calculation of absorption maxima by using Woodward-Fischer rules; characteristics and factors affecting vibrational frequencies and study of vibrational frequencies of organic compounds.
CO5	From the topic **NMR Spectroscopy and Mass Spectrometry**, the students shall learn about the fundamentals, principles, theory,applications in structural elucidation, factors affecting the values of H1-NMR, 13C, and Mass spectrometry (m/z) and various terminologies involved in them.
PAPER 4 Course Title: Analytical Chemistry Course Code: PSCH204	
CO1	Recapitulation of basic concepts in chromatography:outcome:The basic concepts of chromatography ,detectors used in GC andLC their comparison and applications are clarified is to the learner very well

	outlining to the learner the principles of a very versatile method of separation and analysis Outcome of the topic on gas chromatography is that it gives a overview of all the advanced and modern systems of injection.detectors such as mass spectrometric used in GC to the learner which will help them in handling the instrument easily HPLC:outcome:All the sophisticated and recent applications ,systems used commercially available columns are discussed which will update the learner about the industrial applications of HPLC
CO2	X RAY Spectroscopy:outcome: XRay Diffraction and absorption methods are discussed in detail which totally equips the learner for its usecommercially Mass spectroscopy:outcome :since it the most widely used technique when accurate results are required .the topic gives a good overview to thelearner about its instrumentation electron impact ,chemical and field ionisation mass analysers and its applications Radioanalytical methods :outcome:It prepares the learner to takeup further studies in Forensic sciences since it has vast applications in forensic studies the topic discusses in detail isotope,single and double dilution method applications to enhance the knowledge of the learner
CO3	Surface Analytical Techniques: the core purpose of coaching this courseis to impart knowledge in students in the subject of Introduction, Principle, Instrumentation and Applications of Scanning Electron Microscopy (SEM), Scanning Tunneling Microscopy (STM), Transmission Electron Microscopy (TEM) Electron Spectroscopy (ESCA and Auger), Atomic Spectroscopy. AAS, Atomic Spectroscopy.
CO4	Electroanalytical Methods: the core purpose of coaching this course is to impart knowledge in students in the subject of Ion selective potentiometry and Polarography, Ion selective electrodes and their applications, ion selective field effect transistors, biocatalytic membrane electrodes and enzyme-based biosensors. In the subject of Polarography, Coulometry and Electrogravimetry students learn Ilkovic equation, derivation starting with Cottrell equation, effect of complex formation on the polarographic waves. Introduction, principle, instrumentation, factors affecting the nature of the deposit, applications.
CO5	
SEM-III	
PAPER 1 Course Title: Theoretical Organic Chemistry Course Code: PSCH301	

CO1	After studying this course the learner will be able to: Predict the pathwayof reaction mechanism and the stability of intermediates.
CO2	Study the stereochemistry of pericyclic reactions
CO3	Determine the point group based on symmetry elements and carry out conformational analysis of ring compounds.
CO4	Understand the photochemical reactions with special reference tocleavage of carbonyl compounds and photochemistry of olefins.
CO5	
PAPER 2 Course Title: Synthetic Organic Chemistry Course Code: PSCH302	
CO1	After studying this course the learner will be able to: Write mechanism for various name reactions including multicomponent reactions and click reactions.
CO2	Predict the product formed in the above reactions.
CO3	Methods for the preparation of synthetically important compoundsinvolving radicals.
CO4	Methods for the preparation of synthetically important compoundsinvolving enamines and ylides.
CO5	Understand and explore the applications of various metals and non-metals in organic synthesis.
PAPER 3 Course Title: Natural Product & Spectroscopy Course Code: PSCH303	
CO1	After studying this course the learner will be able to: Know the basic structure elucidation of carbohydrates, natural organic pigments,insect pheromones and alkaloids.
CO2	Understand the synthetic strategies towards the synthesis of bioactive molecules.
CO3	Develop a problem solving approach towards structure elucidation from spectral data.
PAPER 4; Course Title: Medicinal, Biogenesis & Green Chemistry; Course Code: PSCHOEC-I 304	
CO1	After studying this course the learner will be able to: Know basic terms involved in medicinal chemistry,procedures involved in drug design & factors affecting the activity and potency of a particulardrug.
CO2	Understand the effect of structure-activity relationship of drug function and the concept of pro-drug.
CO3	Biogenesis and biosynthesis of natural products,general pathway ofamino acid biosynthesis.
CO4	Summarize the twelve principles of green chemistry and study their applications in synthetic organic chemistry.
SEM-IV	

PAPER 1 Course Title- Theoretical Organic Chemistry-II Course Code: PSCHO401	
CO1	After studying this course the learner will be able to: Correlate the effect of substituents on a substrate with its reactivity.
CO2	Understand the concept of molecular assembly and intermolecular bondin macromolecules and their effects with reference to catalytic activity.
CO3	Determine enantiomeric and diastereomeric compositions using various available methods,understand the properties of molecules by studying physical phenomena like Circular Dichroism (CD) and Optical Rotatory Dispersion (ORD).
CO4	Types of asymmetric synthesis,controlled by chiral auxiliary, chiral catalyst,chiral substrate & chiral reagent with examples.
CO5	Appreciate the importance and challenges in the asymmetric synthesis, exemplified by Felkin-Anh and chelation models & asymmetric aldol reactions.
PAPER 2 Course Title: Synthetic Organic Chemistry -II Course Code: PSCHO402	
CO1	Propose a retrosynthetic strategy for an organic compound. Give the forward synthesis, recognizable starting material and steps involved in the synthesis of compound
CO2	Know the current trends in synthesizing organic compounds. Explore the applications of modern and greener methods of organic synthesis.
CO3	Understand the application of transition metal reagents and catalysts in organic synthesis
CO4	Know the use of electrochemical methods for organic synthesis.
CO5	
PAPER 3 Course Title: Natural Products & Heterocyclic Chemist Course Code: PSCHO403	
CO1	After studying this course, the learner will be able to: Understand the occurrence & biological roles of steroids. vitamins, terpenoids and antibiotics.
CO2	Have an enhanced approach towards structural elucidation.
CO3	Apply the rules of IUPAC nomenclature and other methodologiestowards the nomenclature of heterocyclic compounds.

CO4	Understand the reactivity of various heterocyclic molecules and their importance towards synthesis of certain bioactive molecules.
PAPER 4 Course Title: Research Methodology Course Code: PSCHOOC-II404	
CO1	After studying this course, the learner will be able to:Know the basics of research methodology.
CO2	Get the technical know-how of research for developing a problem.
CO3	Write a research paper, study formats of existing research papers and review papers.
CO4	To increase the awareness about the importance of laboratory safety andthe safety protocols in R&D laboratories.

COURSE OUTCOMES

M.Sc. – Zoology

SEM - I		
Paper- 1	**Non-Chordates**	**Course code: PSZO101**
	The learner will be able to	
CO1	differentiate anatomical and physiological modifications of digestive and excretory systems of non-chordates like Protostomes and Deuterostomes	
CO2	differentiate anatomical and physiological modification in respiratory and circulatory systems of non-chordates like Protostomes and Deuterostomes.	
CO3	differentiate anatomical and physiological modifications of nervous systems, chemical co-ordination and reproductive systems of non-chordates.	
CO4	understand the evolution of non-chordates and their phylogenetic relationships by means of paleontological evidences	
Paper- 2	**Developmental Biology – I**	**Course code: PSZO102**
CO1	The learner will understand the mechanism of fertilization and its molecular events in non-chordates as well as the process of formation of germ layers and coelom in animals and understand the difference in these processes between Protostomes and Deuterostomes.	
CO2	Learners will gain knowledge about the basic concepts and aspects of embryogenesis and stem cell therapy.	
CO3	Learners will understand the mechanism of early development and able to correlate the various differences observed in the pattern of embryonic development in non-chordates as well as the role of certain genes in early development	
CO4	Learners will acquire knowledge about the diversities in reproduction and development in invertebrates and the process of regeneration in lower animals Learners will understand how principles of developmental biology can be applied in forensics and Integrated Pest Management	
Paper- 3	**Genetics and Evolution**	**Course code: PSZO103**
CO1	The learners will understand the genetic analysis at the gene, genome and population level. The learner would realize the flow of genetic information and complex networking of genes in biological system leading to major phenotypic changes.	
CO2	The learner will understand the molecular processes that occur in and between the cells. The learner will gain insight in most significant molecular and cell based methods used to expand the understanding of modern Biology	
CO3	Learner will be able to gain knowledge of altruism, co-evolution and the racial distribution of animals in evolutionary time scale	
CO4	The learner will be able to apply evolutionary principles to research and understand aspects of evolution.	

	Learner will be acquainted with techniques of dating fossils and formation of fossils The learner will understand the concept of frozen zoo and will foster the need of hour for conservation of endangered species
Paper 4	**Frontiers in Zoology** **Course code: PSZO104**
CO1	Learners will get the introductory knowledge of emerging areas correlated with Zoology with particular respect to biological clocks and their importance
CO2	Leaner would be able to explain the basic principles, applications of the major imaging and DNA bar coding techniques
CO3	Learner will get acquainted with brain regions that form the basis of emotions and stress. Leaner will also understand the health problems caused due to prolong emotion and stress on the body.
CO4	The learner will understand current challenges of climatic changes and environmental issues Learner will understand the importance of the sustainable development
SEM -II	
Paper 1	**Chordates** **Course code: PSZO20**
CO1	The learner will gain knowledge of ancestry, morphology and phylogeny of protochordates.
CO2	The learner will gain knowledge of ancestry, morphology and phylogeny of chordates
CO3	Learners would understand evolution, morphology and phylogeny of chordates.
CO4	Learners would obtain additional knowledge of diverse characteristics of various chordates such as Retrogressive metamorphosis, evolutionary significance of Dinosaurs, flight adaptations & migation in birds
Paper 2	**Developmental Biology – II** **Course code: PSZO202**
CO1	The learner will gain knowledge of generalized morphological account of male and female reproductive systems and accessory structures in chordates.
CO2	The learner will gain knowledge of reproductive physiology and associated biochemistry in chordates.
CO3	The learner will gain knowledge of details of germ cell migration and understand the importance of forms and functions of stem cells and their medico-therapeutic applications
CO4	The learner will be acquainted with environmental impact on development and evolution of animals and will also get insights of aging and senescence.
Paper 3	**Biochemistry and Biotechnology** **Course code: PSZO203**

CO1	Learners will gain knowledge of the fundamentals of chemical basis of life and the structures, interactions, and importance of complex biomolecules and their significance in living system.
CO2	Learners will gain knowledge of the bioenergetics and metabolic pathways of various biomolecules and the regulatory mechanisms underlying various metabolic pathways.
CO3	Learners will gain knowledge of the processes and techniques used in development of biotechnology products as well as of the processes for harnessing the of living systems for betterment of mankind.
CO4	Learners will gain knowledge on the application of biotechnology in various fields such as industry, medicines, agriculture and environment
Paper 4	**Research Methodology** **Course code: PSZO204**
CO1	Learner will be able to formulate and execute research problem from the concept research design
CO2	The learner will be able to effectively organize and present the data in tabular and graphical form and choose correct statistical test. They perform statistical analysis indifferent fields of research using various computer programs.
CO3	The learner will be able to document and communicate their research in scientific journals, thesis and dissertations and research reports.
CO4	The learners will be able to understand the different laboratory animals that are useful as a model system
SEM - III	
Paper-I BASICS OF INDUSTRIAL & ENVIRONMENTAL BIOTECHNOLOGY-I Course code: PSZOBT301	
CO1	The learners will gain knowledge about the implications of recombinant DNA technology in food and microbial technology with respect to synthesis of novel antibiotics and amino acids
CO2	The learners will gain knowledge about design of bioreactors and fermenters & downstream processing for large scale production of novel products from recombinant microorganisms animal cell culture
CO3	The learners will gain knowledge about monoclonal antibodies & therapeutic applications Sub-unit vaccines as well as live recombinant & Attenuated vaccines
CO4	The learners will get insights regarding to biomass utilization, bioremediation, degradation of xenobiotic compounds & genetic engineering of biodegradative pathways.

Paper-II GENETIC ENGINEERING TECHNIQUES AND ITS APPLICATIONS Course code: PSZOBT302	
CO1	The learners will gain knowledge about the basic tools & techniques of genetic engineering such as cloning Vectors and analysis of genome and proteome
CO2	The learners will gain knowledge about promoters of gene expression in prokaryotes and expression of cloned genes in prokaryotes in order to synthesize novel therapeutic products in microbial system
CO3	The learners will gain knowledge about application of computers in biological sciences and databases as well as use of expressed sequence tags and single nucleotide polymorphisms in the detection of diseases.
CO4	The learners will gain knowledge about transgenic animals and their applications as well as tissue engineering, xenotransplantation and antibody engineering as human therapies.
Paper-III GENERAL, PHYSICAL, CHEMICAL AND BIOLOGICAL OCEANOGRAPHY Course code: PSZOOCN303	
CO1	The learners will gain knowledge about terminology of submarine topography as general understanding of typical oceanographic research vessel and its equipment.
CO2	The learners will gain knowledge about various physical properties of sea water and ocean circulations
CO3	The learners will gain knowledge about general composition of sea water, dissolved gases & nutrients for primary productivity
CO4	The learners will gain knowledge about sea as a biological environment & ecological sub-divisions of marine environment & effect of physical factors on marine life.
Paper-IV PLANKTOLOGY, FISH, FISHERY SCIENCE AND AQUACULTURE Course code: PSZOOCN304	
CO1	The learners will gain knowledge about various schemes of classification & adaptations of marine plankton as well as vertical & diurnal migration of zooplankton
CO2	The learners will gain knowledge about fish classification as per Francis Day and FAO sheets as well as major commercial fisheries with respect some teleosts, elasmobranchs, crustacean & Molluscan resource organisms.

CO3	The learners will gain knowledge about fish stock improvement through selective hybridization as well as gene transfer technology in fish & protocols of developing transgenic fishes.
CO4	The learners will gain knowledge about history, scope and importance of aquaculture as well as different systems and types of aquaculture.
SEM - IV	
Paper-I BASICS OF INDUSTRIAL & ENVIRONMENTAL BIOTECHNOLOGY II Course code: PSZOBT401	
CO1	The learners will gain knowledge about microbial synthesis of Organic acids, antibiotics, bacterial polysaccharides such as Dextran, Xanthan, Alginate & commercial biodegradable plastic.
CO2	The learners will gain knowledge about bio-transformations, Biocatalyst (enzyme) immobilization, enzymes in diagnostic assays & biosensors .
CO3	The learners will gain knowledge about nitrogen fixation - microbial insecticides-Bt toxins, Developing insect resistant, virus resistant & herbicide resistant plant.
CO4	The learners will gain knowledge about bioabsorption of metals, phytoremediation & its use in biotechnology and bioleaching of metals
Paper-II GENOME MANAGEMENT, MANIPULATION, REGULATIONS AND PATENTS IN BIOTECHNOLOGY Course code: PSZOBT402	
CO1	The learners will gain knowledge about the Basic tools of genetic engineering, cloning vectors and various blotting techniques
CO2	The learners will gain knowledge about eukaryotic gene expression, cultured insect cells expression systems & mammalian cell expression systems.
CO3	The learners will gain knowledge about restriction fragment length polymorphism (RFLP), mapping human diseases, positional cloning with reference to a disease causing gene.
CO4	The learners will gain knowledge about patenting biotechnology inventions, Human gene therapy and regulation of environmental release of genetically engineered organism.
Paper-III GENERAL, PHYSICAL, CHEMICAL AND BIOLOGICAL OCEANOGRAPHY Course code: PSZOBT403	
CO1	The learners will get insights from studying how various oceanographic instruments works for collection of various samples and data apart from oceanographic Expeditions & the international law governing seas and oceans

CO2	The learners will get knowledge about the vertical circulation, waves, tides and ocean currents
CO3	The learners will get knowledge about impact of anthropogenic activities such as various kinds of pollution-affecting marine life and possible reclamation procedures.
CO4	The learners will get knowledge about various mineral resources including bioactive compounds from the sea as well as scientific and economical aspect of seabed exploration
Paper IV: PLANKTOLOGY, FISH, FISHERY SCIENCE AND AQUACULTURE Course code: PSZOOCN404	
CO1	The learners will get thorough understanding about marine bio-deterioration such as fouling and boring organisms & marine algae and plankton abundance in relation to fisheries
CO2	The learners will get thorough understanding about various aspects of fish population dynamics They will get exposure to socio-economic condition of fishermen
CO3	The learners will get knowledge about various statistical methods such as correctional analysis of length and weight and other morphometric measurements and biometric indices of fish.
CO4	The learners will get knowledge about hatchery and grow out practices for cultivable species of freshwater fishes & breathing fishes as well as integrated aquaculture and sewage fed fishery & culture of brackish water fishes.

COURSE OUTCOMES

DEPARTMENT OF Computer Science

Master of Computer Science Part 1	
SEMESTER-I	
PAPER 1: Algorithm for Optimization	
COURSE CODE: PSCS101	
CO1	You will be able to effectively implement optimization techniques to the existing algorithm to improve its performance.
CO2	You will be able to work in the areas of Machine Learning and Data Sciences Algorithms
CO3	Optimization with a focus on practical algorithms for the design of engineering systems
CO4	Exposure to multivariable calculus, linear algebra, and probability concepts.
CO5	Learn a wide variety of optimization topics, introducing the underlying mathematical problem formulations and the algorithms for solving them.
PAPER 2: Software Defined Networking	
COURSE CODE: PSCS102	
CO1	To make the students capable of understanding computer network basics.
CO2	To Obtain the knowledge of Software defined networks with understanding of data plane, control plane and application plane.
CO3	To apply network virtualization for industry standard solutions.
CO4	To improve skills in implementing network virtualization and Software Defined Network (SDN).
CO5	Learners will be able to understand basic concepts of Software Defined Networking and network virtualization.
CO6	Learners will be able to explore OpenFlow specifications to build Software defined networks.
CO7	Learners will be able to analyze and implement theories and practical related to Network management and Virtualization.
CO8	Learners will be able to apply knowledge of Software Defined Networking as per industry standards.
PAPER 3: Applied Signal and Image Processing	
COURSE CODE: PSCS103	
CO1	Introduce the concepts of signal processing terms and relate them to image processing
CO2	Learn about basic image processing techniques (e.g., noise removal and image enhancement)
CO3	Develop skills to design and implement algorithms for advanced image analysis
CO4	Apply image processing to design solutions to real-life problems
CO5	Understanding the terminologies of signal and digital image processing
CO6	Ability to apply various images, intensity transformations, and spatial filtering.
CO7	Knowledge of Perform frequency domain operations on images.
CO8	Apply image processing algorithms in practical applications.
CO9	Ability to apply image segmentation and extract image features.

PAPER 4: Advanced Database Techniques	
COURSE CODE: PSCS104	
CO1	To cover advanced topics of databases to become more proficient.
CO2	To provide students with theoretical knowledge and practical skills in advanced topics in database systems, big data and modern data-intensive systems
CO3	To Expand Students, view and introduce advanced topics and Business Intelligence.
CO4	To form professional competencies related to design and implementation of non-relational databases, including object-oriented, parallel and Distributed
CO5	Learners will be able to explore XML, and Mobile databases.
CO6	Learners will be able to deal with methods used for dealing with spatial and Temporal Databases.
CO7	Learner will have a solid grasp on business intelligence tools and XML.
SEMESTER-II	
PAPER 1: Applied Machine and Deep Learning	
COURSE CODE: PSCS201	
CO1	Developing projects in machine learning for industrial applications.
CO2	Understanding and implementing algorithms and techniques of Machine Learning useful in the field of Data Science, Image Processing, NLP, etc.
CO3	Understand core concepts of ML through implementations in python.
CO4	Working with diverse toolkits and packages useful for developing projects in ML
CO5	Implement and understand deep learning and ANNs useful for industry today
PAPER 2: Natural Language Processing	
COURSE CODE: PSCS202	
CO1	Understanding the importance and concepts of Natural Language Processing (NLP)
CO2	Applying algorithms available for the processing of linguistic information and computational properties of natural languages.
CO3	Knowledge on various morphological, syntactic, and semantic NLP tasks
CO4	Introducing various NLP software libraries and data sets publicly available.
CO5	Designing and developing practical NLP based applications
PAPER 3: Web Mining	
COURSE CODE: PSCS203	
CO1	To Understand the difference between Web Mining and Data mining.
CO2	To Understand the Basics and Needs of Web Mining.
CO3	To Understand Web-based Data.
CO4	To Understand Opinion Mining and Sentiment classification.
PAPER 4: Embedded and IoT Technology	
COURSE CODE: PSCS204	
CO1	The course is designed to enable students, to understand and implement IoT in industry
CO2	Design and executive projects in IoT with Automatic Identification and Data Capture
CO3	Understand basic components and functionalities of Embedded System including its hardware
CO4	Effectively achieve collaboration of various technologies in IoT and enable the same using software programming like Python, Embedded C etc.

CO5	Understand case studies in IoT and replicate the same for more detailed analysis of the IoT development.

Master of Computer Science Part 2	
SEMESTER-III	
Track-A: Advanced Computing	
PAPER 1: Elective-1: Advanced Computing (Web3 Technologies)	
COURSE CODE: PSCS3011	
CO1	To cover the technical aspects of cryptocurrencies, blockchain technologies, and distributed consensus.
CO2	To familiarize potential applications for Bitcoin-like cryptocurrencies
CO3	Optimization with a focus on practical algorithms for the design of engineering systems
CO4	To Basics of smart contracts, decentralized apps, and decentralized anonymous organizations (DAOs)
CO5	To know Solidity programming
CO6	Understand blockchain technology.
CO7	Develop blockchain-based solutions and write smart contracts using Hyperledger Fabric and Ethereum frameworks
CO8	Build and deploy blockchain applications for on-premise and cloud-based architecture.
CO9	Integrate ideas from various domains and implement them using blockchain technology from different perspectives
PAPER 1: Elective-2: Advanced Computing (Trends in Cloud Computing)	
COURSE CODE: PSCS3012	
CO1	Learners will be able to develop and launch applications in the cloud environment
CO2	Explore various frameworks and APIs that are used for developing cloud-based applications
CO3	Handling data in a Cloud environment
CO4	Design, develop & deploy real-world applications in the cloud computing platforms
CO5	Demonstrate the ability to access the various cloud platforms
CO6	Describe the standardization process of the cloud platform and various API's used in Cloud Computing
CO7	Describe the methods for managing the data in the cloud
CO8	Analyze and use of an appropriate framework and APIs for the task
CO9	Design dashboards for management across cloud-based service
Software Defined Networking	
Track-B: Security	
PAPER 2: Elective-1: Security (Cryptography and Cryptanalysis)	
COURSE CODE: PSCS3021	
CO1	To develop the foundation for the study of cryptography and its use in security.
CO2	To understand the application of Number Theory and Algebra for the design of cryptographic algorithms
CO3	To understand the role of cryptography in communication over an insecure channel.
CO4	To analyze and compare symmetric-key encryption and public-key encryption schemes based on different security models
CO5	Insights related to cryptography and cryptanalysis.

CO6	Analyze and use methods for cryptography.
CO7	Implement some of the prominent techniques for public-key cryptosystems and digital signature schemes
CO8	Understand the notions of public-key encryption and digital signatures and sketch their formal security definitions.
PAPER 2: Elective-2: Security (Cyber Security and Risk Assessment)	
COURSE CODE: PSCS3022	
CO1	Learn about an advanced concept related to penetration testing
CO2	Use of Kali Linux in performing penetration tests against networks, systems, and applications
CO3	Understand ways to protect system and digital assets
CO4	Selecting the most effective tools, to rapidly compromising network security to highlighting the techniques used to avoid detection
CO5	Develop skills to use kali Linux for penetration testing
CO6	Use open-source tools for Reconnaissance
CO7	Perform vulnerability assessment using popular tools
CO8	Learn about advanced ways to exploit web apps and cloud security
CO9	Apply techniques for privilege escalation and use exploitation tools.
Track-C: Computer Networking	
PAPER 3: Elective-1: Computer Networking (Server and Data Centric Networking)	
COURSE CODE: PSCS3031	
CO1	Identify important requirements to design and support a data center.
CO2	Determine a data center environment's requirements including systems and network architecture as well as services.
CO3	Evaluate options for server farms, network designs, high availability, load balancing, data center services, and trends that might affect data center designs.
CO4	Design a data center infrastructure integrating features that address security, performance, and availability.
CO5	Learners will be able to know basic concepts of Server and Data-Centric Networking
CO6	Learners will be able to know about the infrastructure of Data Centers.
CO7	Learners will be able to know about the security measures of Data Centers.
CO8	Learners will be able to know about network designing and virtualization.
PAPER 3: Elective-2: Computer Networking (Wireless Networking)	
COURSE CODE: PSCS3032	
CO1	To understand basic concepts of wireless networking.
CO2	To understand 4G, 5G Technologies and their working
CO3	To implement Wireless architecture practically.
CO4	To gain knowledge about sensors and their working.
CO5	Learners will be able to know advanced concepts of wireless technologies and recent trends in them
CO6	Learners will be able to implement wireless architecture practically.
CO7	Learners will achieve the basic knowledge required as per industry standards.
CO8	Learners will be able to know about wireless optical communication.
Track-D: Data Science	

PAPER 4: Elective-1: Data Science (Data Visualization)	
COURSE CODE: PSCS3041	
CO1	Familiarity with working with data analysis tools.
CO2	Ability to perform data wrangling for practical purposes.
CO3	Ability to solve real-world data analysis problems with thorough, detailed examples.
CO4	Ability to use Tableau to handle data from various sources and perform analysis of data.
CO5	Understands the fundamentals of Visualization.
CO6	Working with different Data Collection Structures.
CO7	Efficiently handle various source data using Tableau.
CO8	Data Visualization and Analysis can be performed using Tableau.
CO9	Handling and customizing Geospatial data using Tableau.
CO10	Creating a story using the dashboard to analyze data
PAPER 4: Elective-2: Data Science (Big Data Analytics)	
COURSE CODE: PSCS3042	
CO1	Exposure to the fundamentals of business intelligence and big data analytics.
CO2	Understand basic concepts in Big Data analytics and parallel data processing.
CO3	Understand Hadoop Technology and its applications.
CO4	Exposure to real-life applications and solving them using big data toolkits.
CO5	Understands big data and the technologies associated with it.
CO6	Identify Big Data and its Business Implications.
CO7	List and understands the components of Hadoop and the Hadoop Ecosystem.
CO8	Understands Map-Reduce Technology and its applications.
CO9	Understands handling of data using Spark Technology.
CO10	Understands the Hive, Sqoop, and Pig Technology.
SEMESTER-IV	
PAPER 1: Robotics (Online Mode)	
COURSE CODE: PSCS401	
CO1	Leverage the features of the Raspberry Pi OS
CO2	Discover how to configure a Raspberry Pi to build an AI-enabled robot
CO3	Interface motors and sensors with a Raspberry Pi
CO4	Code robot to develop engaging and intelligent robot behavior
CO5	Explore AI behavior such as speech recognition and visual processing
CO6	Knowledge about the fundamentals of Robotics and its applications
CO7	Ability to use Raspberry Pi for programming Robotics
CO8	Ability to apply robotics in speech and vision problems
PAPER 2: Advanced Deep Learning (Online Mode)	
COURSE CODE: PSCS402	
CO1	Understand the context and use of neural networks and deep learning
CO2	Understand the tools and libraries for deep learning
CO3	Have a working knowledge of neural networks and deep learning
CO4	Explore the parameters for neural networks
CO5	Identify emerging applications of deep learning
CO6	Knowledge of implementing neural network architectures for deep learning.
CO7	Skill to implement regularization and optimization of neural network

CO8	Ability to implement advanced networks like CNN, RNN and GAN
CO9	Implement deep learning for advanced applications like object identification, speech, and language

COURSE OUTCOMES

MSC Information Technology	
SEM-I	
PAPER 1 **Course Title:** Research in Computing **Course Code:** PSIT101	
CO1	solve real world problems with
CO2	To develop the ability to explore research techniques used for solving any real world or innovate problem.
PAPER 2 **Course Title:** Data Science **Course Code:** PSIT102	
CO1	Ability to apply IT in the field of Computational Research, Soft Computing, Big Data Analytics, Data Science, Image Processing, Artificial Intelligence, Networking and CloudComputing
CO2	Basic understanding of statistics
PAPER 3 **Course Title:** Cloud Computing **Course Code:** PSIT103	
CO1	To learn how to use Cloud Services.
CO2	Broadly educate to know the impact of engineering on legal and societal issues involved.
PAPER 4 **Course Title:** Soft Computing Techniques **Course Code:** PSIT104	
CO1	Basic concepts of Artificial Intelligence. Knowledge of Algorithms
CO2	Soft computing concepts like fuzzy logic, neural networks and genetic algorithm, where Artificial Intelligence is mother branch of all..
PRACTICAL: **Course Title:** Research in Computing **Course Code:** PSIT1P1	
CO1	solve real world problems
CO2	develop analytical skills by applying scientific methods
PRACTICAL: **Course Title** Data Science **Course Code:** PSIT1P2	
CO1	Gain practical, hands-on experience with statistics programming anguages and big data tools
CO2	Practice problem analysis and decision-making
PRACTICAL: **Course Title** Cloud Computing **Course Code:** PSIT1P3	
CO1	To implement Virtualization.
CO2	To build Private Cloud
PRACTICAL: **Course Title:** Soft Computing Techniques **Course Code:** PSIT1P4	
COL1	Identify and describe soft computing techniques and their roles in building intelligent machines
COL2	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems
SEM-II	
PAPER 1 : Course Title: Big Data Analytics **Course Code:** PSIT201	
CO1	To teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability
CO2	To enable students to have skills that will help them to solve complex realworld problems in for decision support.
PAPER 2 **Course Title:** Modern Networking Compilers **Course Code:** PSIT202	
CO1	To understand the state-of-the-art in network protocols, architectures and applications
CO2	Develop new protocols in networking
PAPER 3 **Course Title:** Microservices Architecture **Course Code:** PSIT203	
CO1	Develop web applications using Model View Control..

COURSE OUTCOMES

CO2	Create MVC Models and write code that implemeNT.
PAPER 4	**Course Title:** Image Processing **Course Code:** PSIT204
CO1	Understand the relevant aspects of digital image representation and their practical implications.
CO2	Understand 2-D convolution, the 2-D DFT, and have the abitilty to design systems using these concepts
PRACTICAL:	**Course Title:** Big Data Analytics **Course Code:** PSIT2P1
CO1	Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics.
CO2	Interpret business models and scientific computing paradigms, and apply software tools for big data analytics
CO3	Achieve adequate perspectives of big data analytics in variousapplications like recommender systems, social media applications etc.
PRACTICAL:	**Course Title:** Modern Networking **Course Code:** PSIT2P2
CO1	Demonstrate in-depth knowledge in the area of Computer Networking
CO2	To demonstrate scholarship of knowledge through performing in a group to identify, formulate and solve a problem related to Computer Networks
PRACTICAL:	**Course Title:** Microservices Architecture **Course Code:** PSIT2P3
CO1	Develop web applications using Model View Control.
CO2	Create MVC Models and write code that implements business logic within Model methods, properties, and events.
PRACTICAL:	**Course Title:** Image Processing **Course Code:** PSIT2P4
CO1	Understand the relevant aspects of digital image representation and their practical implications.
CO2	Understand 2-D convolution, the 2-D DFT, and have the abitilty to design systems using these concepts.
SEM-III	
PAPER 1 :	**Course Title:** Technical Writing and Entrepreneurship Development **Course Code:** PSIT301
CO1	Develop technical documents that meet the requirements with standard guidelines. Understanding the essentials and hands-on learning about effective Website Development.
CO2	Write Better Quality Content Which Ranks faster at Search Engines. Build effective Social Media Pages
PAPER 2	**Course Title:** Cloud Application Development **Course Code** PSIT302c
CO1	To develop and deploy Microservices for cloud
CO2	To understand Kubernetes and deploy applications on Azure Kubernetes Service
PAPER 3	**Course Title:** Cloud Management **Course Code:** PSIT303c
CO1	Different CPU, Memory And I/O Virtualization Techniques That Serve In Offering Software, Computation
CO2	Cloud Storage Technologies And Relevant Distributed File Systems, Nosql Databases And Object Storage;.
PAPER 4	**Course Title:** Data Center Technologies **Course Code:** PSIT304c
CO1	Identify important requirements to design and support a data center.
CO2	Determine a data center environment's requirement including systems and network architecture as well as services.

COURSE OUTCOMES

PRACTICAL: Course Title: Project Documentation **Course Code:** PSIT3P1	
CO1	The learners are expected to develop a project beyond the undergraduate level. Normal web sites, web applications, mobile apps are not expected
CO2	The learner is supposed to prepare the synopsis and documentation
PRACTICAL: Course Title: Cloud Application Development **Course Code:** PSIT3P2c	
COL1	Develop the Microservices for cloud and deploy them on Microsoft Azure.
COL2	Understand and build the DevOps way.
PRACTICAL: Course Title: Cloud Management **Course Code:** PSIT3P3c	
CO1	Understand the concepts of VMM, SDN, NAS , HyperV etc.
CO2	Understand SCCM and Demonstrate the use of Configuration Manager
PRACTICAL: Course Title: Data Center Technologies **Course Code:** PSIT3P4c	
CO1	Understand basic concepts in Virtualization
CO2	Understand Data center Migration and Fabric Building
SEM-IV	
PAPER 1 : Course Title: Blockchain **Course Code:** PSIT4P1	
CO1	The students would understand the structure of a blockchain and why/when it is better thana simple distributed database
CO2	Analyze the incentive structure in a blockchain based system and critically assess its functions, benefits and vulnerabilities
PAPER 2 Course Title: Cyber Forensics **Course Code:** PSIT402d	
CO1	Investigate the cyber forensics with standard operating procedures.
CO2	Recover the data from the hard disk with legal procedure.
PAPER 3 Course Title: Server Virtualization on VMWare Platform **Course Code:** PSIT403c	
CO1	Identify the need for Server Virtualization
CO2	Describe how VMware's products help solve business and technical challenges with regard to Server Virtualization
PAPER 4 Course Title: Storage as a Service **Course Code:** PSIT404c	
CO1	Study storage technologies: SAN, NAS, IP storage etc., which will bridge the gap between the emerging trends in industry and academics
CO2	Study and understand the management of Storage Networks
PRACTICAL: Course Title: Blockchain **Course Code:** PSIT	
CO1	Understand what constitutes a "smart" contract, what are its legal implications and what it can and cannot do, now and in the near future
CO2	The students would understand the structure of a blockchain and why/when it is better thana simple distributed database.
CO3	Develop blockchain DApps.
PRACTICAL: Course Title: Cyber Forensics **Course Code:** PSIT4P2d	
CO1	Able to investigate internet frauds done through various gadgets like mobile, laptops, tablets and become a forensic investigator.
CO2	Acquire the knowledge of network analysis and use it for analysing the internet attacks
PRACTICAL: Course Title: Server Virtualization on VMWare Platform **Course Code:** PSIT4P3c	
CO1	Understand VMWare VSphere 67, Install ESXi and Configure VSphere Centre
CO2	Demonstrate the use of VSphere Update Manager and Create a VSphere Network
PRACTICAL: Course Title: Storage as a Service **Course Code:** PSIT404c	
CO1	Understand different techniques of storage and RAID Technologies

COURSE OUTCOMES

CO2	Understand different intelligent storage technologies. Also, understand the benefits of Fibre Channel Storage Networks along with iSCSI.

COURSE OUTCOMES

DEPARTMENT OF Computer Science

Master of Computer Science Specialization in Data Science Part 1	
SEMESTER-I	
Programming Paradigm	
COURSE CODE: PSDS101	
CO1	To understand the basic building blocks of programming Languages.
CO2	To Learn and understand various programming paradigms
CO3	To understand the basic logic of programming
Database Technologies	
COURSE CODE: PSDS102	
CO1	The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS
Fundamentals of Data Science	
COURSE CODE: PSDS103	
CO1	To provide strong foundation for data science and application in area related to it and understand the underlying core concepts and emerging technologies in data science
Statistical Methods for Data Science	
COURSE CODE: PSDS104	
CO1	To present the mathematical, statistical and computational challenges of building neural networks
CO2	To study the concepts of deep learning
CO3	To enable the students to know deep learning techniques to support real-time application
SEMESTER-II	
Artificial Intelligence and Machine Learning	
COURSE CODE: PSDS201	
CO1	To provide the foundations for AI problem-solving techniques and knowledge representation formalisms
CO2	Understanding Human learning aspects.
CO3	Understanding primitives in learning process by computer.
CO4	Understanding nature of problems solved with Machine Learning
Soft Computing	
COURSE CODE: PSDS202	
CO1	Soft computing concepts like fuzzy logic, neural networks and genetic algorithm, where Artificial Intelligence is mother branch of all.
CO2	All these techniques will be more effective to solve the problem efficiently

Algorithms for Data Science	
COURSE CODE: PSDS203	
CO1	The course is aimed at focusing on the principles of data reduction and core algorithms for analyzing the data of data science
CO2	providing many opportunities to develop and improve programming skills
CO3	Applying algorithms to real world data set
C04	The course is aimed at focusing on Imparting design thinking capability to build big-data
Optimization Techniques	
COURSE CODE: PSDS204	
CO1	To familiarize the students with some basic concepts of optimization techniques and approaches.
CO2	To formulate a real-world problem as a mathematical programming model.
CO3	To develop the model formulation and applications are used in solving decision problems.
CO4	To solve specialized linear programming problems like the transportation and assignment Problems

Master of Computer Science Specialization in Data Science Part 2	
SEMESTER-III	
Advanced Machine Learning	
COURSE CODE: PSDS301	
CO1	Understanding Human learning aspects.
CO2	Understanding primitives for learnable computers.
CO3	Understanding real world problems solved with Advanced Machine Learning.
Predictive Modeling and Analytics	
COURSE CODE: PSDS302	
CO1	Develop an understanding of regression analysis and model building.
CO2	Provide the ability to develop relationship between variables
CO3	Investigate possible diagnostics in regression techniques.
CO4	Formulate feasible solution using regression model for real-life problems
Data Engineering	
COURSE CODE: PSDS303	
CO1	To develop the skills of managing the data with respect to knowledge generation.
CO2	Provide the ability to design the data engineering process
CO3	To propose the data reliability models
CO4	To define how to use Machine learning models
Deep Reinforcement Learning	
COURSE CODE: PSDS304a	
CO1	To present the mathematical, statistical and computational challenges of building

	neural networks
CO2	To study the concepts of deep learning
CO3	To enable the students to know deep learning techniques to support real-time applications
Healthcare Analytics	
COURSE CODE: PSDS304b	
CO1	To empower healthcare providers with effective analytical methods and tools that enable and assist them.
Social Media Analytics	
COURSE CODE: PSDS304c	
CO1	To understand all the different parts of a problem and then be able to find improvement points from facts in the past, and to predict the future outcome of present decisions
SEMESTER-IV	
Data Protection	
COURSE CODE: PSDS401	
CO1	To understand the data protection and various case related to it around the world.
Marketing Analytics	
COURSE CODE: PSDS402	
CO1	To understand and apply marketing analytics to different real-world scenarios.

MA English (Regular) Part One- SEM-I

Title of the Course: Literary Theory and Criticism

Course code- PAENG101

Paper I: Title: Aristotle to Formalism

1) The learners were introduced to a wide range of critical methods and literary theories.

2) The learners enabled to use the various critical approaches and advanced literary theories.

3) The analytical skills were enhanced.

4) They could mobilize various theoretical parameters in the analysis of literary and cultural texts.

Course: Linguistic and Stylistic Analysis of Texts.

Course Code: UAENG102& UAENG 202

Paper -III

Course Outcomes:

1. The learners understood the concept of style in literature.

2. The learners understood the linguistic basis of literary criticism (stylistics as an input to literary criticism).

3. The learners understood the concept of discourse and the principles of discourse analysis.

4. The learners understood the use of stylistic approach in teaching literature.

Course: Fiction Papers V Course Code : PAENG103 & PAENG 203

Course Outcomes:

1) The learners were familiarized with different genres in fiction.
2) The learners were familiarized with different types of fictional narratives.

3) The learners were provided with an idea of the growth of fiction over the period of the last three centuries.
4) The learners became aware of the social, cultural and psychological implications of fiction

Course: Drama (Optional) Paper XII - Course Code: PAENG303 & PAENG403

Course Outcomes:

1) The students were introduced to a wide range of theatrical practices around the world.

2) The students were introduced to various theories of drama

3) The learners understood the elements of drama and theatre

4) The learners understood various theatrical movements.

MA English (Regular) Part One- SEM-II

Title of the Course: Literary Theory and Criticism

Course code- PAENG101

Paper II: Title: Structuralism onwards

Course Outcomes:

1) The students were familiarized with the trends and cross-disciplinary nature of literary theories

2) They got acquainted with the modern critics Roland Barthes and Jean Baudrillard.

3) The learners were introduced to the Reader Response and New Historicism.

4) They could mobilize various theoretical parameters in the analysis of literary and cultural texts.

Course: Linguistic and Stylistic Analysis of Texts.

Paper - IV

Course Outcomes:

1. The learners understood the impact of stylistic analysis on academic writing.

2. The learners understood some major concepts in narratology.

3. The learners understood the linguistic basis of literary criticism (stylistics as an input to literary criticism).

4. The learners understood the concept of discourse and the principles of discourse analysis.

Course: Fiction Papers- VI

Course Outcomes:

1) The learners were familiarized with different genres in fiction.
2) The learners were familiarized with different types of fictional narratives.
3) The learners were provided with an idea of the growth of fiction over the period of the last three centuries.
4) The learners became aware of the social, cultural and psychological implications of fiction

Course: Drama (Optional) Paper – XIV

Course Outcomes:

1) The students were introduced to a wide range of theatrical practices around the world.

2) The students were introduced to various theories of drama

3) The learners understood the elements of drama and theatre

4) The learners understood various theatrical movements.

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MA POLITICAL SCIENCE

Course outcome

MA 101

Political theory MA-1 Semester 1	
Module-1: Meaning and Approaches	The learners are intellectually equipped to judge the institutions, polity, and socio-political structure with the yardstick of normatism as well as empiricism. This has led to enhancement of students ability to appraise the political system.
Module-2: Democracy	The most cherished principle of today's modern world is democracy. It is not only a form of government but also a way of life as well as order of a society. The students are taught various shades of democratic modes. The learners are able to rationally understand the importance of democracy and citizenship.
Module-3: Citizenship	The concept of citizenship is least discussed and has remained highly neglected. It is important to deal with the nuances of various types of citizenship at PG level. Therefore, we have incorporated the topics like Republic and liberal Universal and differentiated Citizenship and have tried to correlate it with globalization.
Module-4 Modernity and Post modernity	The concept of modernity has evoked an intrinsic urge for unraveling critical investigation of dogmatic principles. It has led to the development of social science in a rights perspective. In recent years the concept like Post-modernism, Deconstruction' Poststructuralism and Critical Theory has also gained popularity amongst scholars and the academia's of repute. Since the entire discourse of humanities has been tuned on the line of modernism and post - modernism we teach it to the students with reference to contemporary philosophers

MA English (Regular) Part Two- SEM-III & IV

SEM-III
Title of the Course: Elective - I
Course code- PAENG301

Paper I - A**:** Poetry from Chaucer to the Present

Course Outcomes:

1) To familiarize the students with the major representative poets of every age and movements therein.
2. To help them study different genres of poetry in the context of socio- cultural background of the age

Course: Gendered Perspectives on Literature
Course Code: PAENG 302 -Paper -II-A
Course Outcomes:

1. To open up avenues in gender studies, including women's studies, by acquainting learners with their complexities and diversity, especially in the constructs of gender and sexuality
2. To encourage learners to interrogate rigid frameworks of gender construction while sensitizing them to the process of socialisation and naturalization of gender
3. To enable learners to critically evaluate literary texts from a multivalent gender perspective
4. To explore the thematic and aesthetic concerns in identifying subversive strategies employed by literary writers

Course: Twentieth Century American Literature Paper-III-B
Course Code: PAENG 303
Course Outcomes:

1. To acquaint the learners of literature with the various genres and literary terms of twentieth century American Literature
2. To sensitize them to the themes and styles of modern and postmodern American Literary works
3. To introduce them to the socio-cultural milieu of twentieth century America through literary texts
4. To enhance their understanding of multicultural sensibilities by introducing them to the literary works representing them
5. To facilitate cross-cultural perspectives and discussions on American Literature of multiple ethnicities
6. To enable them to write projects and research papers on American literature

Course: Shakespeare
Course Code: PAENG 304
Course Outcomes:

1. To familiarize the learner with timeless dimensions of Shakespeare's works.
2. To help the learner understand the contemporary relevance of Shakespeare with reference to modern versions and films based on his plays.
3. To sensitize the learner to development of the genres of comedy, tragedy and history

plays in the Elizabethan era.
4. To acquaint the learner with changing responses to Shakespeare's plays

Course : **Indian Writing in Translation**
Course Code: PAENG 305
Course Outcomes:

To offer an exhaustive study of Indian literatures in the various Indian languages through English translation.
2. To acquaint the students with major movements, trends and tendencies beside major authors and literary texts in multiple languages in India through English translation.
3. To equip the students with enough knowledge about literary translations in English from Indian languages and help them understand and overcome the problems and issues of literary translation.
4. To familiarize the students with the history of translation in India from the Post-Independence to contemporary times and enable them to writer research papers in the same with new views and perspectives.

MA English (Regular) Part TWO- SEM-IV

Title of the Course: Translation: Theory and Practice

Course code- PAENG306

Course Outcomes:
To develop an understanding of translation theories
2. To develop an understanding the role of a translator
3. To understand problems and issues related to translation
4. To develop the skill of translation of different types of discourse
5. To develop career as a translator

Title of the Course: Political Reading of Literature

Course code- PAENG 307

Course Outcomes:

To historicize literature as an institution embedded in cultural politics
2. To highlight how literary texts, mediate dominant ideologies of their times
3. To examine how literary texts indirectly function as an instrument of power

Title of the Course: Project Based Courses [Topics/Areas]
Gendered Reading of Literature
Course code- PAENG 308

Course Outcomes:

1) To evaluate the critical competence, logical reasoning and scholarly composition of the students at the end of the M.A. Programme.
2) To have sound theoretical knowledge so that they can apply it to a particular area of study selected from the Project Based Course.
3) To develop the skills of identifying an area of investigation, reviewing literature, analysing

concepts, comparing alternative theories and perspectives.

4) To understand the difference between primary and secondary sources in the area of their research, collecting and organising data and articulating their arguments coherently and clearly.

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MA POLITICAL SCIENCE

Course outcome

MA 101

Political theory MA-1 Semester 1	
Module-1: Meaning and Approaches	The learners are intellectually equipped to judge the institutions, polity, and socio-political structure with the yardstick of normatism as well as empiricism. This has led to enhancement of students ability to appraise the political system.
Module-2: Democracy	The most cherished principle of today's modern world is democracy. It is not only a form of government but also a way of life as well as order of a society. The students are taught various shades of democratic modes. The learners are able to rationally understand the importance of democracy and citizenship.
Module-3: Citizenship	The concept of citizenship is least discussed and has remained highly neglected. It is important to deal with the nuances of various types of citizenship at PG level. Therefore, we have incorporated the topics like Republic and liberal Universal and differentiated Citizenship and have tried to correlate it with globalization.
Module-4 Modernity and Post modernity	The concept of modernity has evoked an intrinsic urge for unraveling critical investigation of dogmatic principles. It has led to the development of social science in a rights perspective. In recent years the concept like Post-modernism, Deconstruction' Poststructuralism and Critical Theory has also gained popularity amongst scholars and the academia's of repute. Since the entire discourse of humanities has been tuned on the line of modernism and post - modernism we teach it to the students with reference to contemporary philosophers

102 M.A. Political Science-Paper II (Indian Government and Politics)-Sem 1

After completion of this course:

CO1: The learner would be able to understand the role of Indian state in post-independence era in the process of nation building.

CO2: The learner would get introduced to various political parties, their ideological bases and programs and their role in politics of India.

C03: The learner will comprehend the issues of caste, class, gender and tribe in the Indian politics.

CO4:4 The learner would be able to analyse the issue, dimensions and challenges of regional autonomy.

103 M.A. Political Science-Paper III (Public Administration)-Sem 1

After completion of this course:

CO1: The learner would be able to understand the meaning, and changing nature of the discipline, in addition the contemporary debates about the subject.

CO2: The learner would get introduced to various theories and approaches to the study of Public Administration like classical, bureaucratic, structural-functional, Marxian, public choice.

C03: The learner will understand the details of Indian personnel administration like recruitment, training, code of conduct, administrative ethics.

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CO4: The learner would be able to evaluate the challenges of transparency and accountability of the administration and cognizant about the Indian ombudsman institutions like Lokpal and Lokayukta.

104 M.A. Political Science- Paper IV (International Relations)- Sem I

After completion of this course:

CO1 : The learner would be able to understand the core aspects of International Relations that guide the World order.

CO2 : The learner would be introduced to various concepts like world order, conflict resolution and peacekeeping, concept of power, its determinants, diplomacy, MNCs and its role, arms control and disarmament and their role in International Relations.

CO3: The learner will comprehend the issues of changing world order, new emerging world order, threats to security, importance of protecting national interest through diplomacy, etc in International relations.

CO4: The learner will be able to analyse the underlying issues, dimensions, challenges of measures like Arms control and disarmament and India's nuclear policy.

MA-Sem-2 **201 POLITICAL THEORY**	
Module-1: rights	Political value like right has been very important in order to protect the aspirations of the common people. The students are able to not only understand the meaning of rights but are now proficient to fight for its implementation.
Module-2 : equality	Equality is also an important political value. Students are now able to understand the difference between equal treatment and equality of treatment. This will help them to develop an egalitarian perspective
Module-3: Justice	Justice is fulfillment of legitimate expectation of common people. A separate module has enabled the students to understand the benefits therein.
Module-4 : Coercion and consent	This is the most crucial topic because a thorough inquiry of coercion and consent will develop an internal quest for intervention and enquiry.

202 M.A. Political Science-Paper II (Comparative Politics)-Sem 2

After completion of this course:

CO1: The learner would be able to comprehend the nature scope and global context of the Comparative Politics.

CO2: The learner would be able to grasp the nuances of the concept and changing nature of the modern state.

C03: The learner will be able to analyse the political institutions of constitution and democratic and non-democratic political systems.

CO4:4 The learner would be able to appraise the political processes in the form of political party, pressure groups, civil society and social movements.

203 M.A. Political Science- Paper VII (International Relations)- Sem II

After completion of this course:

CO1 : The learner would be able to understand the core approaches of International Relations like Liberalism, Realism and Constructivism. These basic approaches will build the theoretical foundation of International Relations.

CO2 : The learner would be introduced to various approaches like Marxist approach, Critical Theory and Feminist approach that would enhance their overall theoretical perspective.

CO3: The learner will comprehend the issues of International Political economy and would have an indepth analysis of Bretton Woods institution, Impact of Globalisation and Regional organisations and its growing importance.

CO4: The learner will be able to analyse the underlying issues, dimensions, challenges of issues in Human security like poverty, Development, Hunger, Violation of Human Rights, Crisis of Refugees, Migration etc

204 M.A. Political Science-Paper IV (Indian Constitution)-Sem II

After completion of this course:

CO1: The learner would be able to comprehend the role of Indian Constitution in the process of bringing socio economic changes in India.

CO2: The learner would be able to grasp the nuances of the peculiar federal structure as adopted by the Indian Constitution and its consequences.

C03: The learner will be able to enquire into the framework of the parliamentary form and institutions in India.

CO4:4 The learner would be able to analyse the dynamics of state and local politics in India.

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Kirti. M. Doongursee College, Autonomous

MA – Political Science 2022-23

Course outcomes

MA- Semester II

105 M.A. Political Science-Paper V (Political Theory - II)-Sem 2

After completion of this course:

CO1: The learner would be able to understand the basic concept of rights along with its various theories. The module will also help students to critically discuss the problems in idea of rights-group vs individual rights.

CO2: The learner would get introduced to the most cherished principle of today's modern world .i,e equality. The learners are able to rationally understand the importance of contestations of equality, equality of treatment and equality of resources and outcomes.

C03: The concept of justice has evoked an intrinsic urge for unraveling its true meaning. The learner will be able to comprehend the idea of justice through the prism of thoughts of various political thinkers such as John Rawls, Robert Nozick, Amartya Sen, Iris Young and Micheal Sandel.

CO4: The learner would be able to analyse the concept of coercion and consent under the tools of power, authority, legitimacy and hegemony.

106 M.A. Political Science-Paper V (Comparative Politics)-Sem 2

After completion of this course:

CO1: The learner would be able to understand the true meaning of Comparative politics. Being one of the youngest offshoots of political science, this module will help the students to grasp nature, scope of comparative politics along with old and new institutionalism and understanding comparative politics in global context.

CO2: The learner would get introduced to the development of modern state, a topic that has always piqued curiosity amongst learners. The state will be studied in a comparative framework along with understanding state and nation and post-colonial state.

C03: The learners are intellectually equipped to judge the institutions, polity, and socio-political structure. Here the learners will get a chance to constructively discuss various components of polity, i.e democratic and non-democratic systems as well as constitution.

CO4: The learner would be able to analyse the concept of political process and the pillars that strengthen it namely - Political Party and Pressure groups, Public Opinion and Mass media, Civil Society and Social Movements.

107 M.A. Political Science-Paper VII (APPROACHES AND EMERGING ISSUES ININTERNATIONAL RELATIONS)-Sem 2

After completion of this course:

CO1 : The learner would be able to understand various approaches to International Relations that includes liberalism, realism, constructivism etc.

CO2 : This module is an intellectual continuation of the first one in which learner would be introduced to Marxist approaches, Critical Theory, Feminist approach.

CO3: The learner will comprehend the issues of international political economy and globalization focusing majorly on Bretton Woods Institutions – evolving role, Content and impact of globalization and Regional blocs, regional organisations and Free Trade Agreements.

CO4: The learner will be able to analyse the underlying issues, dimensions, challenges of issues in human security such as poverty, refugees, human rights, environmental issues etc.

107 M.A. Political Science-Paper VIII (Indian Constitution)-Sem 2

After completion of this course:

CO1 : The learner would be able to understand importance of Constitution as Instrument of Socio-Economic Change in the country. The learner will be introduced to Making of the Indian Constitution, salient features, Preamble, Fundamental Rights, Directive Principles of State Policy, Fundamental Duties and Constitutional amendments.

CO2 : This module will help the learner to constructively discuss Federalism in India which remains highly debated. Federal structure, Re-organisation of the states and Emerging trends in centre-state relations will be discussed herein.

CO3: The learner will comprehend the importance of Parliamentary Institutions, i.e, Union Executives: President, Prime Minister and the Council of Ministers, Role and significance of the Parliament, Judicial independence and judicial activism, debate between Judiciary and Parliament.

CO4: The learner will be able to analyse the State and local government to its totality through Governor, Chief Minister and the Council of Ministers, Panchayati0 raj and the Seventy-third constitutional amendment, Municipal government and the Seventy-fourth constitutional amendment.

Semester 3- Course Outcomes

CODE NO: PAPOLE 312 (INTRODUCTION TO METHODS IN RESEARCH) Course Outcomes:

CO1 : The learner would be able to understand Concepts and vocabulary utmost important while starting any kind of research such as Scientific method: basic assumptions, Limitations of scientific method and alternatives, Hypotheses, theories, models, classifications, ideal types, Theoretical or empirical, Inductive or Deductive, Quantitative qualitative, Normative or Positive, feminist perspectives. Above mentioned terms are the key ingredients in research methodology.

CO2 : The learner would be introduced to various types of research ranging from qualitative to quantitative, mixed method as well as grounded studies.

CO3: The learner will comprehend numerous methods of research such as historical, case-study and comparative.

CO4: The learner will be able to analyze Types of Data, data collection methods and writing techniques.

CODE NO: PAPOLE 314 (STATE POLITICS IN INDIA) Course Outcomes:

CO1 : The learner would be able to understand Indian union and its various facets ranging from origins of the federal system, colonial legacy, Reorganisation of states in independent India to Recent demands for smaller states.

CO2 : The learner would be introduced to Pluralism, Identities and National Integration that define the true diversity of our country.

CO3: The learner will comprehend Federalisation of the Party System giving learners a wide scope to discuss the Indian political party system right from One- party dominance to coalition politics.

CO4: The learner will be able to analyze Issues in Regional Politics cropping up due to multiple reasons such as backwardness, development, inter-state disputes etc.

CODE NO: PAPOLE 325 (FOREIGN POLICY OF INDIA) Course Outcomes:

CO1 : The learner would be able to understand the glorious evolution of India's foreign policy spanning from the liberal phase through the realist and neo-liberal phase and its impact.

CO2 : The learner would be introduced to the process that goes into making a successful foreign policy and the role of legislation, executive, and non-state actors.

CO3: The learner will comprehend the most crucial aspect of Foreign policy namely National Security doctrine and its various facets.

CO4: The learner will be able to analyze India's Economic Power and "Soft" Power executed through multiple instruments ranging from trade to culture.

CODE NO: PAPOLE 333 (URBAN GOVERNANCE IN MAHARASHTRA) Course Outcomes :

CO1 : The learner will be introduced to Urban governance: meaning and evolution, urbanisation in Maharashtra, changing nature of urban demography, migration, Institutional arrangements in Maharashtra and Role of non-state actors in urban governance.

CO2 : Maharashtra being a highly urbanized state often faces the challenges pertaining to Land and Housing. Here the learner can understand various Housing policy, Issue of Slums and Slum rehabilitation.

CO3: The learner will comprehend selective utilities core to urban centers such as Health Policy, Policy for water sector, Transport sector and Waste management.

CO4: The learner will be able to analyze Law and Order situation and its management.

CODE NO: PAPOLE340 (SOCIAL MOVEMENTS IN INDIA) Course Outcomes :

CO1 : The learner will be introduced to Conceptual Framework behind numerous social movements that include Traditional movements, New Social Movements , Social movements and politics of change.

CO2 : The learner will be familiarized with Rural Social Movements that include Farmers' movements, Mobilisation of agricultural workers and rural labour, Movements of the adivasis and ethnic minorities. All of the above movements have been crucial to Indian politics.

CO3: The learner will comprehend Urban Working Class Movements and its complexities and aspects.

CO4: The learner will be able to analyze the rise of New Social Movements in the Indian political discourse which includes Women's movement, Dalit Movement, Environmental and Human Rights movements.

Semester 4- Course Outcomes

CODE NO: PA POL I 403 (THE UNITED NATIONS)

CO1 : The learner will be introduced to United Nations, its evolution, multiple approaches and its predecessor League of Nations.

CO2 : The learner will be familiarized to the core of United Nations, i.e The United Nations Charter, General Assembly, Security Council, International Court of Justice and role of Secretary General.

CO3: The learner will comprehend role of United Nations in maintaining world peace and security as well as giving equal weightage to protection of human rights, health and education.

CO4: The learner will be able to analyze the changing nature of United Nation in 21st Century and reforms suggested to adapt according to the changing times.

Skill Based Courses- CODE NO.: PA POL S 401

(APPLICATION OF COMPUTER IN RESEARCH IN SOCIAL SCIENCES)

CO1 : The learner will be introduced to basics of computer such as hardware, software, internet etc.

CO2 : The learner will be able to understand Computer Application in Research in Social Sciences through various tools like Microsoft Office: Word, Excel and Power Point, Specialised Application Software, Research Design: Dissertation and thesis writing, Presentation techniques.

CO3: The learner will be intellectually equipped to strengthen their Computer Skills and knowledge to search for online Resources web-skills, e-resources, data sharing etc.

CO4: The learner will be made aware of Computer Security and Ethics ,Threats to Computer/Data Security, Cyber-security and Ethical Hacking and Plagiarism.

MA

MICROECONOMICS

(SEM-I) (2020-21)

After completion of this course, following will be gained by Learner:

1) It helps learner to acquire information and enrich them about the celebrated economists Roy, Shepherd's Lemma, Slustky and their contribution. It also gives them an idea of its consumer's behaviour.
2) It gives an idea of production, cost and supply. Learners while working in corporate can contribute about profit maximisation, cost minimization and returns to scale.
3) Marginalist approach from Marshall to Schumpeter develops the role of welfare economics, role of time in price determination and so on. This can add on to knowledge for entrepreneurship and innovation.
4) Learners got to know about monopoly market. This enriched their knowledge about various concepts introduced in economics like features, price-output determination, degrees and regulation.

MA

MICROECONOMICS

(SEM-II) (2020-21)

After completion of this course, following will be gained by Learner:

1) In this module, learners are introduced with Game theory, Uncertainty and Risk Aversion. It helps understanding choice in situations among competing players in market.

2) Oligopoly model and its features explained with the help of different model such as Cournot and Betrand will give them better idea to behave in this kind of market especially while framing price policy. Each attempts to maximize profits by choosing how much to produce.

3) While learning about markets limitations such as moral hazard, adverse selection and asymmetric information explained with the help of market for lemons will give them an idea about mislead in market. They will less likely to get affected as consumer with this knowledge base.

4) Alternative theories of the firms such as Morris Model, Williamson Model help to understand purpose of firm and managerial discretion of firm

MA PART-I SEMESTER-I

MACROECONOMICS-I(2020-21)

After completion of this course, the learners would be ableto :

1. Understand measurement of national income and its components.
2. Analyze the effectiveness of monetary policy and fiscal policy on national output through IS-LM framework.
3. Interpret Mundell-Fleming model in the context of IS-LM-BP model.
4. Examine microeconomic foundations of Macroeconomics.

MA PART-I SEMESTER-II

MACROECONOMICS-II(2021-21)

1. The learners would be able to examine the relationship between market imperfection and flexible prices in the economy.
2. The learners would develop an understanding of what role government budget plays under different schools of thought.
3. The learners would make the notions of Disequilibria and hysteresis clearer.
4. The learners would be able to trace relationship between inflation targeting and exchange rate more vividly. Besides, they would develop their understanding of concepts of dynamic inconsistency, rules versus discretion.

MA ECONOMICS

COURSE OUTCOME (2021-22) [Sem: III&IV]

SEM:III

INTERNATIONAL TRADE: THEORY AND POLICY:

1. It gives an idea to about need and role of International Trade and its gain from trade. An overview of different classical trade theory model gives a clear picture of reason and benefits of trade for different countries.
2. The importance of an understanding of International Economics has grown particularly with the advocacy of the benefits of trade by various neo classical theories such as Heckscher-Ohlin, Krugman's model etc.
3. This will guide for the different trade model. It make us understand the varied trade policies such as Stopler-Samuelson Theorem etc.
4. Instruments of Trade Policy and Regionalism such as SAARC, ASEAN help them to know about Regional Trade Agreements and also about controversies in Trade Policy. It make us understand the varied trade policies. This is particularly helpful for developing economies.

ECONOMICS OF LABOUR MARKETS:

1. Introduce the concepts of labour markets & its features.
2. Learn about basic the concepts and terminologies of demand and supply of labour.
3. Develop skills to find out the present and future trends in labour market in India.
4. Apply knowledge to analyse the real-life problems of labour in formal & informal sector.

TRADE UNIONS AND INDUSTRIAL RELATIONS IN INDIA:

1. To provide a basic conceptual understanding of the economics of trade unions and industrial relations in India.
2. Learn about the empirical relevance of theories with suitable examples from a practical industrial relations viewpoint.
3. Develop skills to interpret the Approaches to Industrial Relations: Macro Approaches System Approach and Class Conflict Approach.

4. Apply knowledge to Labour Legislation affecting industrial relations: Statutory and Non-Statutory measures to settle industrial disputes.

AGRICULTURAL DEVELOPMENT AND POLICY:

1. To impart knowledge on applications of economic theories in agricultural sector
2. To make students understand the linkage between agriculture and other sectors of the economy.
3. To impart knowledge on new developments in the policy paradigms related to agricultural sector.
4. Establishment and maintaining of social contacts in agricultural production, services, consultation and education, agricultural and rural policies and interest group representation.

BANKING THEORY AND POLICY:

1. Understand different aspects of commercial banking.
2. Analyze risk- taking the approach of the banking sector and issues of financial stability.
3. Evaluate the banking regulatory framework of the banking system with reference to prudential indicators.
4. Apply the theoretical framework of competition and efficiency to banking sector reforms initiated in the post reforms period.

SEM:IV

ECONOMICS OF HUMAN DEVELOPMENT:

1. Awareness on the concepts and dimensions of Human Development
2. Enables to understand the relevance of Human Development Indices
3. Develop an individual philosophy on personalresponsibility to make wise choices leading to success.
4. This elective has a relatively strong applied component specifically in relation to India

DEMOGRAPHY: THEORY AND POLICY:

1. It provides knowledge on the interrelationship between the population and economic development.
2. It equips students with the knowledge on fertility.
3. It makes us aware about concept and measurements of morality
4. One can understand the concept, pattern and theories of Migration