ISLAMIAH COLLEGE(AUTONOMOUS), VANIYAMBADI
COURSE OUTCOME FOR FOUNDATION COURSE- URDU

SEMESTER I

CO	Course Name :Urdu Paper I	CODE: U8FUR101	Credit : 5
CO1	Understand National Integration and inculcate moral & Human values within themselves.		
CO2	Develop their creative thinking and writing in prose.		
CO3	Able to write and use the language correctly.		
CO4	Develop skill in writing and communicating to other personalities like Officials, Newspaper Editors, Municipal Commisioner through letter.		
CO5	Develop the correct Grammar sense		
CO6	Able to understand adjectives in Urdu		
CO7	Understand the differences between Masculine and feminine		

SEMESTER II

CO	Course Name: Urdu Paper II	CODE: U8FUR201	Credit : 5
CO1	Inculcate moral and ethical values through Ancient & Medieval poets like Mirza Ghalib, Meer Taqi Meer, Allama Iqbal etc.,.		
CO2	Develop skill to translate from one language to another through translation practice.		
CO3	Able to communicate effectively.		
CO4	Able to learn translation of technical terms and face interviews for the post of Urdu translators.		
CO5	Able to appreciate modern poetry		
CO6	Understand and evaluate the Poetry of Masters		
CO7	Read and write the poetry		

SEMESTER III

CO	Course Name: Urdu Paper III	CODE: U8FUR301	Credit : 4
CO1	Identify the History of Urdu Literature & Language.		
CO2	Understand the History of development of Urdu Language & Literature.		
CO3	Recognize and understand the meaning of Idioms & Proverbs and its usage.		

CO4	Determine correct grammar sense.
CO5	Understand and promote communal harmony, Humanity and patriotism through writing General Essays.

SEMESTER III – NON-MAJOR PAPER I

CO	**Course Name: BASIC URDU - I**	**Code :U8URNM 31**	**Credit : 1**
CO1	Understand basics of Urdu		
CO2	Identify Numbers and different names in Urdu		
CO3	Usage of prepositions in Urdu		
CO4	Compile sentences with root verbs		
CO5	Identify Urdu Alphabets		

SEMESTER IV

CO	Course Name: Urdu Paper IV	Code : U8FUR401	Credit : 4
CO1	Understand and inculcate loyalty, human values through short stories.		
CO2	Correct grammar sense and its usage.		
CO3	Develop Typing skills in Urdu.		
CO4	Able to communicate effectively.		
CO5	Develop the correct Grammar sense		

SEMESTER IV – NON-MAJOR PAPER II

CO	Course Name: BASIC URDU -I I	Code :U8URNM 41	Credit : 1
CO1	Identify future tense and usage of adjectives.		
CO2	Recognise Simple past tense, present tense and future tense in Urdu		
CO3	Identify genders in Urdu		
CO4	Develop translation skills with simple sentences from English to Urdu		
CO5	Develop translation skills with simple sentences from Urdu to English		

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COURSE OUTCOME FOR FOUNDATION COURSE – ARABIC

SEMESTER -I

CO	Course Name: Arabic Paper I	Code: U8FAR101	Credit :5
CO1	Distinguish different alphabet		
CO2	Develop the skill of basic Arabic words		
CO3	Develop the correct pronunciations		
CO4	Develop the skill of reading		
CO5	Develop the skill of writing		
CO6	Able to learn adjectives in Arabic		
CO7	Able to learn possessive pronouns		

SEMESTER -II

CO	Course Name: Arabic Paper II	Code: U8FAR201	Credit : 5
CO1	Make simple phrases		
CO2	Identify Arabic nouns between masculine and feminine gender		
CO3	Understand the Arabic pronouns		
CO4	Understand vocabularies related to spoken Arabic		
CO5	Make nominal sentences in Arabic		
CO6	Identify possessiveness		
CO7	Learn demonstrative pronouns		

SEMESTER -III

CO	Course Name: Arabic Paper III	Code: U8FAR301	Credit : 4
CO1	Understand the concept of basic Arabic grammar		
CO2	Make basic verbal sentences in Arabic		
CO3	Understand pre position in Arabic		
CO4	Converse the simple nominal and verbal sentences in Arabic		
CO5	Translate some Arabic passages from prose		
CO6	learn (fa`il) the subject of a verbal sentences		
CO7	Distinguish comparative and superlative degrees of the adjective		

SEMESTER –III- Non- Major

CO	Course Name: Basic Arabic I	Code: U8ARNM31	Credit : 1
CO1	Read the Arabic alphabet		
CO2	Write Arabic alphabet		
CO3	Learn basic Arabic words		
CO4	Learn the basic Arabic sentences		
CO5	Learn the basic Expression of Arabic		

SEMESTER -IV

CO	Course Name: Arabic Paper IV	Code: U8FAR401	Credit :4
CO1	Use the vocabularies and phrases in their own sentences		
CO2	Describe Vocabularies related to Communicative Arabic		
CO3	Converse in different occasions		
CO4	Develop the translation skill		
CO5	Understand the imperative form of verb		
CO6	Learn the dual form in the accusative and genitive cases		
CO7	Develop the activity of good manners in life		

SEMESTER –IV- Non- Major

CO	Course Name: Basic Arabic II	Code: U8ARNM41	Credit : 1
CO1	Understand basic Arabic Nouns		
CO2	Understand Basic Arabic Verbs		
CO3	Form small nominal sentences		
CO4	Form small verbal sentences		
CO5	Communicate in Arabic very simple manner		

COURSE OUTCOME FOR FOUNDATION COURSE - HINDI

SEMESTER I

CO	Course Name :Hindi Paper – I	Code : U8FHD101 |Credit : 5
CO1	Understand National Integration (Dinakar) and inculcate moral and human values within themselves through prose.	
CO2	Develop their creative thinking and writing in prose.	
CO3	Identify, write and use the language correctly and develop the correct grammar sense.	
CO4	Improve letter writing skills.	
CO5	Effectively face interviews for the post of Hindi translators by understanding translation of technical terms and phrases.	
CO6	Understand and develop writing Gender and Number correctly	
CO7	Understand and use Causative Verbs effectively.	

SEMESTER II

CO	Course Name : Hindi Paper – II	Code : U8FHD201 |Credit : 5
CO1	Understand and promote communal harmony, humanity and patriotism through One Act Plays.	
CO2	Understand and inculcate loyalty, human values through short stories\	
CO3	Develop skill to translate from one language to another through translation practice	
CO4	Improve effective Communication skill through Dialogue Writing	
CO5	Develop the correct grammar sense	
CO6	Improve word power by understanding synonyms.	
CO7	Understand and use Abstract Nouns effectively.	

SEMESTER III

CO	Course Name : Hindi Paper – III	Code : U8FHD301 |Credit : 4
CO1	Understand and inculcate moral and ethical values through Ancient & Medieval poets like Thiruvalluvar and Kabeer.	
CO2	Critically evaluate Modern Fiction and develop interest in Novel.	

CO3	Recognize and understand the meaning of idioms & proverbs and its usage.
CO4	Develop and use correct applied grammar sense.
CO5	Understand and analyze the socio-cultural & political background of History of Hindi Literature.

SEMESTER -IV

CO	Course Name : Hindi Paper – IV	Code : U8FHD401 | Credit : 4
CO1	Understand, evaluate and enjoy modern poetry.	
CO2	Understand importance of Vigyapan today.	
CO3	Develop and use of correct applied grammar sense.	
CO4	Understand and develop typing skills in Hindi.	
CO5	Understand and analyze life and works of poets and authors of Adhunik Kaal.	

SEMESTER III – Non Major

CO	Course Name : BASIC HINDI – I	CODE : U8HDNM31|CREDITS - 1
CO1	Understand Basics of Hindi	
CO2	Know numbers and different names in Hindi	
CO3	Understand usage of prepositions in Hindi.	
CO4	Identify sentences with root verbs.	
CO5	Understand Present Tense and its continuous Tense.	

SEMESTER IV – Non Major EC – Hindi

CO	CODE : U8HDNM41	BASIC HINDI – II CREDITS - 1
CO1	Understand Future Tense and usage of Adjectives.	
CO2	Understand Simple Past Tense (without 'NE') and Numbers (VACHAN)	
CO3	Understand Simple Past Tense (with 'NE') and Gender in Hindi.	
CO4	Develop translation skills with simple sentences from English to Hindi.	
CO5	Develop translation skills with simple sentences from Hindi to English.	

COs	Course Name: Tamil Paper - I	Code: U8FTA 101	Credit : 5
CO1	Understand Ancient literature and Culture of Sangam age through 'Kurunthogai' and 'Purananooru'.		
CO2	Learn and inculcate moral and ethical values through moral literature like 'Iniyavai Naarpathu', 'Aasara Kovai' and 'Naanmanikadigai'		
CO3	Learn History of Sangam literature.		
CO4	Develop Self-confidence with Tamil Prose.		
CO5	Develop skill in writing and communicating to other personalities through language skills.		
CO6	Understand Individual human discipline through the History of Tamil Moral literature.		
CO 7	Gain skill to appear TNPSC competitive exams.		

Semester II

COs	Course Name: Tamil Paper - II	Code: U8FTA 201	Credit : 5
CO1	Understand Devotion from Devotional literature.		
CO2	Learn moral and ethical values through 'Silapathikaram'.		
CO3	Gain skill of using Internet.		
CO4	Develop skills to become a speaker.		
CO5	Understand the History of Devotional Tamil Literature.		
CO6	Understand the culture of society through the History of Tamil Epics.		
CO 7	Develop Individual human discipline through The famous Tamil epic 'Kambaramayanam'.		

Semester III

COs	Course Name: Tamil Paper - III	Code: U8FTA 301	Credit : 4
CO1	Learn modern Tamil poetry.		
CO2	**U**nderstand the Tamil short stories.		
CO3	Develop the self confidence through Tamil Prose		
CO4	**D**evelop interest in Tamil plays.		
CO5	Develop skills in writing and communicating to other personalities.		

Semester IV

COs	Course Name: Tamil Paper - IV	Code: U8FTA 401	Credit : 4
CO1	**U**nderstand Devotional literature.		
CO2	**U**nderstand Prabandas (Sitrilakkiyangal).		
CO3	Develop self confidence via Prose.		
CO4	Discuss 'Islamic Tamil Literature'.		
CO5	Acquire language skill and history of Tamil literature.		

Semester III

COs	Course Name: Ariviyal Tamil - I	Code: U8TANM 31	Credit : 1
CO1	Gain knowledge in Science Tamil.		
CO2	Understand Era of Tamil Language and Literature.		
CO3	Acquire the skill of reading the Science Tamil Books.		
CO4	**U**nderstand Ancient Tamilians and their Environment.		

Semester IV

COs	Course Name: Ariviyal Tamil - II	Code: U8TANM 41	Credit : 1
CO1	Discuss Science literature in Tamil language.		
CO2	Understand Bharathi and Science Tamil.		
CO3	Describe growth of Science Tamil.		
CO4	Get insight into the Science Tamil and thoughts of Manavai Musthapa.		
CO5	Discuss about Impact of Science and Tamil language.		

P.G. & RESEARCH DEPARTMENT OF HISTORY

Degree / Programme: B.A. / HISTORY

Course Outcomes (Cos):

First Year U.G / I Semester

Cos	Course Name: **HISTORY OF INDIA UPTO 712 A. D.**	Code: **U8HI1001**	Credit: 5
CO1	Identify the sources for the study of Ancient Indian history.		
CO2	Understand the pre-history of India.		
CO3	Evaluate the impact of the Vedic culture.		
CO4	Understand the importance of Jainism and Buddhism.		
CO5	Assess the impact of Alexander's invasion on India.		
CO6	Explain the culture of the Mauryan empire.		
CO7	Analyze the golden age of Guptas.		

Cos	Course Name: **HISTORY OF TAMIL NADU UPTO 1336 A.D.**	Code: **U8HI1002**	Credit: 3
CO1	Identify the sources for the study of Ancient Tamil Nadu.		
CO2	Analyze the Social, Cultural, Economic and Political life of the Sangam age.		
CO3	Evaluate the contribution of Pallavas to Art, Architecture and Social life of the Tamils.		
CO4	Asses the contribution of Pandyas in Administration Art and Architecture.		
CO5	Understand the features of Administration, Art and Architecture of Imperial Cholas.		

Cos	Course Name: **INTRODUCTION TO TOURISM**	Code: U**8HIAL11**	Credit: 4
CO1	Understand the concept of Tourism to promote regional tourism.		
CO2	Identify the forms and types of Tourism.		
CO3	Understand the determinants of Tourism.		
CO4	Analyze the role of national/international organizations in tourism.		
CO5	Discuss the role of Indian Government in the promotion of Tourism.		

Cos	Course Name: **INTELLECTUAL HISTORY OF THE 20TH CENTURY INDIA**	Code: U**8HIAL12**	Credit: 3
CO1	Understand the ideology of Nationalist Freedom Fighters.		
CO2	Identify the aims and goals of the founding fathers of Independent India.		
CO3	Understand the relevance of Muslim Political identity and the needs of the minority Muslim population.		
CO4	Compare the relevance of Communist thought in the era of globalization and liberalization.		
CO5	Realize the humane values responsible for establishing a social and just society.		

First Year U.G / II Semester

Cos	Course Name: **HISTORY OF INDIA FROM 712 A.D TO 1526 A.D.**	Code: **U8HI2001**	Credit:4
CO1	Understand the history of the medieval southern states.		
CO2	Evaluate the market reforms of Alauddin Khilji.		
CO3	Assess the art and architecture of Delhi Sultans.		
CO4	Analyze the impact of Vijayanagar empire.		
CO5	Discuss the history and culture of Bahmani kingdom		

Cos	Course Name: **HISTORY OF TAMIL NADU FROM 1336 A.D to 1806 A.D.**	Code: **U8HI2002**	Credit :3
CO1	Understand the contributions of Vijayanagar empire to Tamil Society.		
CO2	Analyze the impact of Madurai sultanate on socio-cultural life of the Tamil people.		
CO3	Identify the Contribution of Nayaks to Art and Architecture.		
CO4	Assess the regional politics of 18^{th} Century Tamil Nadu.		
CO5	Discuss the advent of Europeans in Tamil Nadu.		

Cos	Course Name: **TOURISM RESOURCES OF INDIA**	Code: U**8HIAL21**	Credit: 4
CO1	Understand the tourism resources of India.		
CO2	Identify the important National Parks and Wildlife sanctuaries in India.		
CO3	Identify the important Bird Sanctuaries and Waterfalls of India.		
CO4	Understand the various hill stations and beaches of India.		
CO5	Assess the cultural value reflected through Fairs and Festivals of India.		

Cos	Course Name: **INTELLECTUAL HISTORY OF 20^{TH} CENTURY TAMIL NADU**	Code: **U8HIAL22**	Credit:3
CO1	Assess the political values and Social Justice in Tamil Nadu.		
CO2	Evaluate the Harmony and Brotherhood as a social value in Tamil Nadu.		
CO3	Identify the impact of socialist thoughts in economic and social life in Tamil Nadu.		
CO4	Understand the literary and cultural progress in Tamil Nadu.		
CO5	Identify the contribution of Scientists to Tamil Nadu.		

II Year U.G / III Semester

Cos	Course Name: **HISTORY OF INDIA**	Code: **U8HI3001**	Credit:5

	FROM 1526 A.D. TO 1707 A. D.		
CO1	Identify the sources for the study of Mughal India.		
CO2	Understand the Administrative Policy of Great Mughals.		
CO3	Assess the Socio-Cultural life of the peoples under the Mughals.		
CO4	Explain the economic life of the people under the Mughals.		
CO5	Discuss the Art and Architectural contributions of Great Mughals.		
CO6	Discuss the rise and growth of Sikh and Maratha powers.		
CO7	Understand the establishment and expansion of Vijayanagar and Bahmani rule.		

Cos	Course Name: **HISTORY OF TAMIL NADU 1806A.D. TO 2010 A.D.**	Code: **U8HI3002**	Credit:3
CO1	Understand the land revenue -system in Tamil Nadu.		
CO2	Evaluate the socio-religious reform movements in Tamil Nadu.		
CO3	Discuss the evolution and impact of Dravidian movement in Tamil Nadu.		
CO4	Analyze the various phases of freedom movement in Tamil Nadu.		
CO5	Identify the various development activities in post-independence Tamil Nadu.		

Cos	Course Name: **TOURISM IN SOUTH INDIA**	Code: **U8HIAL31**	Credit:4
CO1	Understand the Tourist potential of Historical attractions in South India.		
CO2	Identify the importance of cultural values in the promotion of tourism in South India.		
CO3	Assess the importance of Fairs and Festivals in the promotion of tourism.		
CO4	Explain the difference between religious and spiritual tourist potential in South India.		
CO5	Evaluate the importance of Ecological sustainability in the promotion of tourism.		

Cos	Course Name: **STUDIES ON STATES AND GOVERNMENTS**	Code: **U8HIAL32**	Credit:3
CO1	Understand the concept of State and different types of States.		
CO2	Discuss the meaning of constitution and identify different types of Constitution.		
CO3	Explain the functions of the executive in the State.		
CO4	Evaluate the types of legislature and the process of legislation.		
CO5	Analyze the necessity and work of the Judiciary.		

Second Year U.G / IV Semester

Cos	Course Name: **HISTORY OF INDIA FROM 1707 A. D. TO 1857 A. D.**	Code: **U8HI4001**	Credit: 5
CO1	Understand about the successors of Great Mughals.		
CO2	Assess the factors that motivated the advent of Europeans.		
CO3	Discuss about the various administrative reforms introduced by the British.		
CO4	Gain knowledge of reforms introduced by the British Government.		
CO5	Evaluate the factors responsible for the outbreak of 1857 Revolt.		
CO6	Analyze the causes for the downfall of Mughals.		

CO7	Explain the impact of Industrial revolution in India.

Cos	Course Name: **INDIA AND HER NEIGHBOURS**	Code: **U8HI4002**	Credit:3
CO1	Understand the factors influencing formulation of Foreign policy		
CO2	Evaluate the India's relationship towards China and Nepal.		
CO3	Analyze the frontier disputes between India and its neighbours.		
CO4	Assess India's Foreign policy towards the Indo-china and Bhutan.		
CO5	Discuss the role of India in the regional cooperation.		

Cos	Course Name: **TRAVEL AGENCY MANAGEMENT**	Code: U**8HIAL41**	Credit: 4
CO1	Understand the historical evolution of Travel Agency Business.		
CO2	Discuss the various national and international federations of Travel Agencies.		
CO3	Explain the functions of Travel Agency.		
CO4	Evaluate the various operational procedures in Travel Agency Business.		
CO5	Identify the various employment opportunities in Travel Agency.		

Cos	Course Name: **CONSTITUTIONAL HISTORY OF INDIA**	Code: U**8HIAL42**	Credit:3
CO1	Understand the circumstances for passing of various acts.		
CO2	Explain the history of Constitutional Developments in India under the British.		
CO3	Identify gradual decentralization of powers in India is realized		
CO4	Assess the various Government of India Acts.		
CO5	Evaluate the Indian Constitution and its values.		

Cos	Course Name: **HISTORY OF INDIA FROM 1857 A.D. TO 1947 A.D.**	Code: **U8HI5001**	Credit: 5
CO1	Explain the first war of India's Independence.		
CO2	Understand about the socio-religious movements in India.		
CO3	Analyze the impact of socio-religious movements in India.		
CO4	Evaluate the factors behind the Indian National Movement.		
CO5	Identify the phases of Indian National Movement.		
CO6	Discuss about the various movements of Indian Freedom Struggle.		
CO7	Identify the provincial Governments before the dawn of India's Independence.		

Cos	Course Name: **HISTORY OF THE ARABS FROM 500 A.D. TO 750 A. D.**	Code: **U8HI5002**	Credit: 5
CO1	Understand the geographical features and factors for the Jahiliya Period.		
CO2	Explain the life and teachings of Prophet Muhammad (PBUH).		
CO3	Identify the socio-political and religious institutions established by Prophet		

	Muhammad (PBUH).
CO4	Evaluate the administration of Pious Caliphate.
CO5	Discuss about the establishment of Umayyad Dynasty.
CO6	Analyze expansion of Islamic Empire up to Umayyads.
CO7	Assess the causes for the downfall of Umayyads.

Cos	Course Name: **HISTORY OF U.S.A. FROM COLONISATION TO 1865 A.D.**	Code: **U8HI5003**	Credit: 5
CO1	Understand the English colonization of America.		
CO2	Analyze the formation of USA.		
CO3	Evaluate the stalwarts of USA.		
CO4	Gain Knowledge about the expansionist wars in USA.		
CO5	Evaluate the policies of USA in territorial expansion.		
CO6	Explain the form of Slavery in USA.		
CO7	Discuss about the Civil Wars in USA up to 1865 A.D.		

Cos	Course Name: **HISTORY OF EUROPE FROM 1453 A. D. TO 1789 A. D.**	Code: **U8HI5004**	Credit:5
CO1	Understand the sources and stimuli of progress in Europe.		
CO2	Discuss about from Dark Age to the period of Enlightenment.		
CO3	Explain about the Reformation and Counter Reformation in Europe.		
CO4	Understand the emergence of Despotism through Nation states.		
CO5	Identify the age of Benevolent Despotism in Europe.		
CO6	Discuss about the dawn of democracy in Europe.		
CO7	Evaluate the age of reason and decline of enlightened despotism in Europe.		

Cos	Course Name: **HISTORY OF JAPAN FROM 1853 A.D. TO 2000 A.D.**	Code: **U8HI5005**	Credit: 2
CO1	Evaluate the influences for the opening of Japan to the West and its impact.		
CO2	Understand the role of Meiji Restoration in enhancing the economic stature of Japan.		
CO3	Assess the imperial design and its role in the fall of Japan.		
CO4	Understand the reconstruction of Japan after Second World War.		
CO5	Analyze the foreign policy of Japan and its role in economic sustainability.		

Cos	Course Name: **SELECT CONSTITUTIONS (UK, USA, SWITZERLAND, CHINA & JAPAN)**	Code: **U8HI5006**	Credit:2
CO1	Understand the features of the constitution of USA.		
CO2	Evaluate the importance of convention-based constitution in UK.		
CO3	Understand the provisions of the constitution of Switzerland.		
CO4	Identify the features of the constitution of Japan.		
CO5	Discuss the constitution of China.		

Cos	Course Name: **GENERAL KNOWLEDGE**	Code: **U8HISB51**	Credit:1
CO1	Understand the profile of States.		
CO2	Explain the basis of Indian Economy.		
CO3	Identify the salient features of Indian Constitution.		
CO4	Discuss the fundamentals of Indian Geography.		
CO5	Understand the contribution of cultural academies in the field of fine arts.		

Cos	Course Name: **HISTORY OF INDIA FROM 1947 A.D. TO 2014 A.D.**	Code: **U8HI6001**	Credit: 5
CO1	Evaluate Nehru's contribution for free India.		
CO2	Analyze India's domestic policy.		
CO3	Discuss the foreign policy of India under Jawaharlal Nehru.		
CO4	Understand the relationship between India and Pakistan.		
CO5	Discuss the Programmes introduced during P.V. Narasimha Rao to Manmohan Sigh first UPA.		
CO6	Explain the challenges facing India.		
CO7	Assess the recent developmental policies of India.		

Cos	Course Name: **HISTORY OF ARABS FROM 750 A.D. TO 1258 A.D.**	Code: **U8HI6002**	Credit:5
CO1	Discuss the unique features of Abbasid Dynasty.		
CO2	Explain the reigns of Harun al-Rasheed and al-Mamun.		
CO3	Evaluate the causes and impacts of Crusades on world affairs.		
CO4	Assess the contribution of Fatimids of Egypt to the world.		
CO5	Understand the contribution of Moors of Spain to society and culture.		
CO6	Identify the contribution of Abbasid Dynasty to Humanity.		
CO7	Analyze the causes for the downfall of Abbasids.		

Cos	Course Name: **HISTORY OF USA FROM 1865 A.D. TO 2014 A.D.**	Code: **U8HI6003**	Credit: 5
CO1	Understand the efforts taken for Reconstruction and its impact.		
CO2	Assess the progressivism in economic prosperity of United States.		
CO3	Explain the efforts to overcome Great Depression in USA.		
CO4	Understand the role of USA in Cold War.		
CO5	Understand the emergence of unipolar world.		
CO6	Explain the role of USA in Gulf War.		
CO7	Assess the post-Gulf War foreign policy of USA.		

Cos	Course Name: **HISTORY OF EUROPE FROM**	Code: **U8HI6004**	Credit: 5

	1789 A.D. TO 2000 A.D.		
CO1	Understand the driving forces for Democracy.		
CO2	Explain the circumstances for the rise and fall of Napoleon Bonaparte.		
CO3	Understand the era of Metternich.		
CO4	Understand the Nationalism as a force for Unification of Germany and Italy.		
CO5	Assess the vulnerability of Imperialistic competition among the Nations.		
CO6	Explain the causes and results of World Wars.		
CO7	Analyze the Formation and work of European Union.		

Cos	Course Name: **HISTORY OF CHINA FROM 1900 A. D. TO 2000 A. D.**	Code: **U8HI6005**	Credit:2
CO1	Understand the causes for Chinese Revolution of 1911.		
CO2	Discuss the role Sun Yat Sen in modernizing China.		
CO3	Explain the Victory of Mao Tse Tung and his Communist principles over Nationalism of Sun Yat Sen.		
CO4	Understand the Cultural Revolution of China as a great power in global politics.		
CO5	Assess the foreign policy of China in World Affairs.		

Cos	Course Name: **MUSLIM CONTRIBUTION TO HUMANITY**	Code: **U8HI6006**	Credit:2
CO1	Understand the significance of the branches of study as discussed in Quran.		
CO2	Assess the contribution of Muslims to the field of Medicine.		
CO3	Understand the contribution of Muslim Scientists to physical Sciences.		
CO4	Evaluate the contribution of Muslims to Astronomy and Mathematics.		
CO5	Explain the contribution of Muslim Social scientists.		

Cos	Course Name: **COMPETITIVE EXAMINATIONS**	Code: **U8HISB61**	Credit:1
CO1	Identify various competitive examinations.		
CO2	Able to face various competitive examinations		
CO3	Determine the various State Government Job opportunities and their eligibility criteria.		
CO4	Prepare for the various Job opportunities in the field of education.		
CO5	Identify the various preparation techniques for competitive examinations.		

First Year P.G / I Semester

Cos	Course Name: **SOCIO CULTURAL HISTORY OF INDIA UP TO 1206 A. D.**	Code: **P8HI11001**	Credit: 5
CO1	Explain the sources for the study of Ancient Indian History.		
CO2	Understand the features of the early Indian civilizations.		
CO3	Compare and contrast the Indus Valley civilization and Vedic Culture.		

CO4	Identify the cultural condition during Mauryan kingdom.
CO5	Assess the Gupta's cultural Florescence.
CO6	Examine the conditions of India on the eve of Arab Conquest.
CO7	Discuss the conditions of India between 8th and12th Centuries A.D.

Cos	Course Name: **SOCIAL AND CULTURAL HISTORY OF TAMIL NADU UP TO 1565 A. D.**	Code: **P8HI1002**	Credit: 5
CO1	Explain the sources for the study of the History of Tamil Nadu		
CO2	Understand the antiquity and progressive nature of the Sangam Age.		
CO3	Analyze the social condition of the post-Sangam Age.		
CO4	Explain the pluralistic nature of Tamil Nadu during the Pallavas.		
CO5	Assess the contribution of Pandya's rule in Tamil Nadu.		
CO6	Evaluate the commercial and administrative expertise of the Imperial Cholas.		
CO7	Discuss the contribution of Vijayanagara Empire to Art and Architecture.		

Cos	Course Name: **HISTORY OF ANCIENT CIVILIZATIONS**	**Code: P8HI1003**	Credit: 4
CO1	Understand the origin, growth, nature and scope of different ancient civilizations.		
CO2	Explain the rise of Mesopotamian Civilization.		
CO3	Evaluate features of Egyptian and Persian civilizations.		
CO4	Compare and contrast the Chinese civilizations with the Japanese civilizations.		
CO5	Assess the features of Greek and Roman Civilizations.		

Cos	Course Name: **ISLAMIC HISTORY FROM 500 A. D. TO 750 A. D.**	**Code:P8HI1004**	Credit:4
CO1	Understand the socio - political condition of the Arabia before Islam.		
CO2	Explain the contribution of Prophet Muhammad (PBUH) to humanity.		
CO3	Discuss the simple life and judicious administration of the pious caliphate.		
CO4	Analyze the cultural progress made during the Umayyad Dynasty.		
CO5	Understand the rise and fall of Umayyad Dynasty.		

Cos	Course Name: **TRAVEL MANAGEMENT**	Code: **P8HIE101**	Credit: 4
CO1	Explain the changing trends in travels and the modes of Travel.		
CO2	Discuss the role and functions of Travel Agency.		
CO3	Understand the required documents to travel abroad.		
CO4	Evaluate the various formalities followed in the business of Travel.		
CO5	Explain the formalities to be followed in the Airline ticketing.		

Cos	Course Name: **FUNDAMENTALS OF DEFENCE AND STRATEGIC STUDIES**	Code: **P8HIE102**	Credit: 4
CO1	Understanding the war strategies and necessity to be prepared to face calamities.		

CO2	Explain the evolution of warfare.
CO3	Evaluate the importance of International Relations for Strategic Defence.
CO4	Assess the significance of peace in the world.
CO5	Discuss the functions of international Organisations for world peace.

First Year P.G / II Semester

Cos	Course Name: **SOCIO CULTURAL HISTORY OF INDIA FROM 1206 A.D TO 1857 A. D.**	Code: **P8HI2001**	Credit: 5
CO1	Explain the Sources for the study of Medieval Indian History.		
CO2	Understand the social condition during the Delhi Sultanate.		
CO3	Understand the multi-faceted nature and pluralistic tendencies of India.		
CO4	Evaluate the compassionate teachings propagated by Bhakti and Sufi saints.		
CO5	Assess the synthesis between North and South India and appreciate the plural India.		
CO6	Discuss the Mughal culture to understand the assimilation of different cultures.		
CO7	Discuss the impact of European penetration on India.		
Cos	Course Name: **SOCIAL AND CULTURAL HISTORY OF TAMIL NADU FROM 1565 A. D. TO 2000 A. D.**	Code: **P8HI2002**	Credit: 5
CO1	Discuss the social condition of Tamil Nadu during the Nayaks and Marathas.		
CO2	Understand the impact of Socio-Religious reform movements.		
CO3	Assess the role of Tamil Nadu in freedom struggle.		
CO4	Explain the introduction of Western Education and its impact.		
CO5	Evaluate the role and impact of Modern Education in Tamil Nadu.		
CO6	Evaluate the role of Dravidian Ideology in Tamil Nadu politics.		
CO7	Discuss the administration of Dravidian parties in Tamil Nadu.		

Cos	Course Name: **HISTORY OF MEDIEVAL CIVILIZATIONS**	Code: **P8HI12003**	Credit: 4
CO1	Understand the emergence of Christianity.		
CO2	Assess the development of science during Islamic Civilization.		
CO3	Explain the merits and demerits of feudalism.		
CO4	Discuss the life-style of medieval cities in Europe.		
CO5	Identify the system of education in Medieval Universities of Europe.		

Cos	**Course Name: ISLAMIC HISTORY FROM A. D. 750 TO 1258 A. D.**	**Code: P8HI2004**	Credit: 4
CO1	Understand the importance of Abbasid's revolution and the rise of Abbasid Caliphs.		
CO2	Evaluate the causes of Crusades and its impact.		
CO3	Assess the cultural contribution of the Fatimids of Egypt.		

CO4	Evaluate the contribution of Moors of Spain.
CO5	Explain the contribution of Arabs to Science.

Cos	Course Name: **HOTEL MANAGEMENT**	Code: **P8HIE201**	Credit:4
CO1	Explain the types of services in Hotels as per star ratings.		
CO2	Discuss the Frontline Operational procedures, manners and etiquette followed by the Front office staffs in the Hotel Industry.		
CO3	Evaluate the importance of Housekeeping in Hotel Business.		
CO4	Explain the types of Food and Beverage services available in the Hotel.		
CO5	Understand the various departmental functions in Hotel Business.		

Cos	Course Name: **FUNDAMENTALS OF NATIONAL SECURITY**	Code: **P8HIE202**	Credit: 4
CO1	Explain the importance of National Power in determining National Security.		
CO2	Understand the Foreign Policy and Defence Policy in influencing National Security.		
CO3	Discuss the different approaches to achieve National Security.		
CO4	Evaluate India's Strategic environment and its relevance.		
CO5	Analyze India's relationship with neighbouring countries.		

Second Year P.G / III Semester

Cos	Course Name: **SOCIO CULTURAL HISTORY OF INDIA FROM 1857 A.D TO 2010 A.D.**	**Code:** P**8HI13001**	Credit: 5
CO1	Understand recommendations of various commissions for the development of higher education system in India		
CO2	Explain the socio-religious reform movements and its impact on the society in British India.		
CO3	Analyze the rise of important peasant movements in 19th and 20th Century India.		
CO4	Evaluate the origin and growth of trade union movements in India		
CO5	Assess the art, architecture and academies for the promotion of indigenous arts.		
CO6	Compare and contrast the socio-cultural condition of British India and free India.		
CO7	Discuss the growth and development of fine arts in Independent India.		

Cos	Course Name: **HISTORY OF MODERN CIVILIZATIONS**	**Code: P8HI3002**	Credit: 5
CO1	Discuss the causes and results of Renaissance.		
CO2	Explain the transformation of Europe from the darkness to enlightenment.		
CO3	Assess the impact of French and Industrial Revolution on the world.		
CO4	Evaluate the impact of colonialism and imperialism.		
CO5	Understand the role of UNO in World Peace.		
CO6	Discuss the causes, course and results of Cold War.		
CO7	Explain the Scientific Developments of 19th and 20th centuries.		

Cos	Course Name: **HISTORIOGRAPHY**	**Code: P8HI3003**	Credit:4
CO1	Understand the nature and scope of History.		
CO2	Analyze the relationship of History with allied disciplines.		
CO3	Understand the Historiography of different parts of the world.		
CO4	Explain the ancient and medieval Indian Historiography and the different trends.		
CO5	Understand modern trends in Indian Historiography and their influence.		

Cos	Course Name: **HISTORY OF OTTOMAN EMPIRE**	**Code: P8HI13004**	Credit: 4
CO1	Explain the origin and growth of Ottoman Empire.		
CO2	Evaluate the administration of Ottoman empire and its foreign relations.		
CO3	Understand the importance of Suleiman the magnificent and his administrative reforms.		
CO4	Assess the administration and development of art and architecture during Sultan Murad period.		
CO5	Discuss the development of Art & architecture of Ottoman period.		

Cos	Course Name: **EPIGRAPHY AND NUMISMATICS**	**Code: P8HIE301**	Credit: 4
CO1	Understand the basic knowledge of Numismatics and Epigraphy		
CO2	Explain the different types of coins in Ancient India.		
CO3	Analyze the coins of various south and western dynasties.		
CO4	Assess the early Indian scripts and evolution of different scripts.		
CO5	Discuss about the identifying and studying of different Inscriptions.		

Cos	Course Name: **FUNDAMENTALS OF GEOGRAPHY**	**Code: P8HIE302**	Credit:4
CO1	Understand the Geographical features of India.		
CO2	Explain the importance of agriculture in economy of India.		
CO3	Assess the Mineral Wealth and resources of India		
CO4	Evaluate the Industrial growth of India.		
CO5	Analyze the role of Human Resource in Indian Economic development.		

Second Year P.G / IV Semester

Cos	Course Name: **RESEARCH METHODOLOGY**	**Code: P8HI4001**	Credit:5
CO1	Understand the nature and scope of Research with relevance to objectivity.		
CO2	Explain the factors influencing the selection of topic.		
CO3	Discuss the techniques involved in Data Analysis.		
CO4	Analyze the role of Data interpretation in thesis writing.		
CO5	Understand the drafting of thesis in a systematic and structured manner.		
CO6	Evaluate the skills in compiling and presenting the thesis.		

CO7	Explain the importance of citations in research.

Cos	Course Name: **PRINCIPLES OF ARCHAEOLOGY**	**Code: P8HI4002**	Credit:5
CO1	Discuss the significance of Archaeology.		
CO2	Understand the methods of data collection in Archaeology.		
CO3	Explain the preservation methods of archaeological Remains.		
CO4	Evaluate the contribution of the eminent Archeologists in India.		
CO5	Explain the historical background of Archaeology in India.		
CO6	Discuss the Archaeological awareness among the people.		
CO7	Discuss about the different excavated sites in India.		

Cos	Course Name: **HISTORY OF ENGLAND FROM 1603 A.D TO 1945 A. D.**	**Code: P8HI14003**	Credit: 4
CO1	Explain the growth of parliamentary system in England.		
CO2	Understand the various constitutional Experiments in England.		
CO3	Discuss the formation of party system and parliamentary constitution in India.		
CO4	Analyze the emergence of Prime Ministership and Cabinet System in England.		
CO5	Analyze the importance of the reformation of parliamentary system of Government.		

Cos	**Course Name: MUSLIMS CONTRIBUTION TO HUMANITY**	**Code: P8HI4004**	Credit: 4
CO1	Explain the importance of science as discussed in Quran.		
CO2	Assess the contribution of Muslims to the field of Medicine.		
CO3	Evaluate the role of Muslim scientist in the field of Physical sciences.		
CO4	Discuss the services of Muslim scientists to Astronomy and Mathematics.		
CO5	Explain the influences of Muslim social scientists on Historiography.		

Cos	Course Name: **GROWTH OF PANCHAYATI RAJ INSTITUTION IN INDIA (WITH SPECIAL REFERENCE TO TAMIL NADU)**	**Code: P8HIE401**	Credit: 4
CO1	Understand the genesis and growth of self-governing village institutions in India.		
CO2	Explain the recommendations of various committees for the development of Panchayati Raj institutions in India.		
CO3	Assess the provisions of the Acts passed before 1994.		
CO4	Evaluate the features of the Tamil Nadu Panchayat's Act 1994.		
CO5	Discuss the functions of Finance Commission and State Election Commission.		

Cos	Course Name: **FUNDAMENTALS OF INDIAN ECONOMY**	**Code: P8HIE402**	Credit: 4
CO1	Understand the means and ways of measuring Economic Development.		
CO2	Analyze the significance of Planning in Indian Economic Development.		
CO3	Explain the survey of Demographic features of India.		
CO4	Discuss the interlinking Agriculture and industry.		
CO5	Assess the role of reforms in empowering the Indian economy.		

Cos	Course Name: **INTRODUCTION TO JOURNALISM**	**Code: P8HINM41**	**Credit: 2**
CO1	Explain the nature and scope of Journalism.		
CO2	Understand the evolution and the establishment of press in India.		
CO3	Explain the functions of News and News Reporting.		
CO4	Discuss the qualities required for an Editor.		
CO5	Discuss the presentation techniques in news writing.		

M.Phil. History Course Outcomes

SEMESTER I

Cos	**Course Name: RESEARCH METHODOLOGY**	**Code: MPH8H101**	**Credit: 5**
CO1	Explain the different trends and methods in Research		
CO2	Identify and formulate the research problem.		
CO3	Able to collect data from different source repositories		
CO4	Analyze the collected data in an objective manner.		
CO5	Able to successfully document their findings.		
CO6	Able to adopt an ethical approach to Research.		
CO7	Develop a spirit of inquiry		

Cos	**Course Name: HISTORIOGRAPHY**	**Code: MPH8H102**	**Credit: 5**
CO1	Explain the nature and functions of History		
CO2	Understand the relationship of History with other disciplines.		
CO3	Discuss the value of History and understand the consequences of misinterpretation of History.		
CO4	Gain Knowledge about the Historical Writing from earliest days to medieval period.		
CO5	Understand the recent trends in Historical Writing.		
CO6	Explain the different schools of thought in History.		
CO7	Understand the importance of Objectivity in History.		

Cos	**Course Name: HISTORY OF**	**Code: MPH8H103**	**Credit: 5**

	MODERN TAMIL NADU FROM 1900 A.D. TO 2000 A.D.		
CO1	Understand the sources available for the study of 19th c. Tamil Nadu.		
CO2	Discuss the early resistance to British in Tamil Nadu.		
CO3	Explain the progress of National movement in Tamil Nadu.		
CO4	Estimate the participation of freedom fighters of Tamil Nadu.		
CO5	Assess the developments in Tamil Nadu during the Dravidian Rule.		
CO6	Evaluate the progress of Tamil Nadu since independence.		
CO7	Understand the recent developments in Tamil Nadu.		

DEPARTMENT OF ENGLISH

B.A. ENGLISH

COURSE OUTCOME

Semester -I

COs	Course Name: ENGLISH PAPER – I	Code: U8FEN101	Credit : 4
CO1	Gain the linguistic competence in different contexts		
CO2	Understand the situational dialogues		
CO3	Review the production and receptive skills		
CO4	Enhance the language to suit the context in Restaurant, airport, telephone banking and getting driving license		
CO5	Adapt to the global economy and the current markets		

COs	Course Name: INDIAN LITERATURE IN ENGLISH	Code: U8EN1001	Credit : 5
CO1	Gain the glimpse of 18^{th} century		
CO2	Enhance the Indian writers' Literary sense		
CO3	Understand the works of social reformists		
CO4	Create awareness about women's emancipation		
CO5	Build the understanding and awareness, education and literary expression in communication		
CO6	Categorize the different psychological aspects of minds of the region		
CO7	Propose to write research papers for presentations		

COs	Course Name: FICTION	Code: U8EN1002	Credit : 3
CO1	Understand the notable 19th century creation of literary work		
CO2	Develop literary emotional responses		
CO3	Apply industrialization's social problems' remedies of 19th to the present day		
CO4	Compare the urbanization of the working classes of the past and present century		
CO5	Organize an ideal social set up inferred from the ideas of the writers.		

COs	Course Name: LITERARY FORMS	Code:U8ENAL11	Credit : 4
CO1	Understand the definitions of literary forms		
CO2	Apply literature terminology in genres		
CO3	Analyze the language structure and context		
CO4	Understand and appreciate the literary reforms		
CO5	Explore literary elements in a text		

Cos	Course Name: THE HISTORY OF ENGLISH LITERATURE-I (1350-1850)	Code:U8ENAL12	Credit : 3
CO1	Discuss the development of the literary periods		
CO2	Understand the past history of all sections of the society from gentry to humble craftsmen		
CO3	Demonstrate the syntactic structure of selected passages for assignment		
CO4	Discover the past literary knowledge and sense with present time		
CO5	Evaluate the historical significance to the real time experience.		

Semester -II

COs	Course Name: ENGLISH PAPER II	Code: U8FEN201	Credit : 5
CO1	Develop skills on linguistics competence		
CO2	Practice production and receptive skills		
CO3	Acquire skill to read the selected passages aloud fluently		
CO4	Build the core values of human society and leading the humanistic life		
CO5	Get insight into the global economy and the current markets		
CO6	Differentiate speaking from writing scenario		
CO7	Establish command in any work place		

COs	Course Name: ENGLISH PROSE	Code: U8EN2001	Credit : 4
CO1	Compare and contrast the works of different writers		
CO2	Analyze the themes of different authors		
CO3	Build human relationships for prospective development		
CO4	Infer from the text that desire and happiness are just a little proportion		
CO5	Interpret nationalism through prose		

COs	Course Name: ENGLISH DRAMA	Code: U8EN2002	Credit : 3
CO1	Explore the writing style of playwrights		
CO2	Develop the techniques of characterization		
CO3	Analyze the devices used in drama		
CO4	Formulate the themes used in drama		
CO5	Compare the works of playwrights		

COs	Course Name: THE SOCIAL HISTORY OF ENGLAND	Code:U8ENAL21	Credit : 4
CO1	Explore the transforming influences of pre-history to the present modern history of England		
CO2	Understand the economic impact on English Society through literature		
CO3	Practice the present work culture compared with the past knowledge		
CO4	Discuss varieties of technological advancements of the past to present		
CO5	Transmit the accumulated knowledge from present to future		

COs	Course Name: THE HISTORY OF ENGLISH LITERATURE- II (1851-1950)	Code:U8ENAL22	Credit : 3
CO1	Analyze different historical events		
CO2	Understand the history of English literature		
CO3	Classify the ideas of different authors		
CO4	Comprehend literary terminologies		
CO5	Create awareness about critical approaches		

Semester -III

COs	Course Name: ENGLISH PAPER -III	Code: U8FEN301	Credit : 5
CO1	Apply philosophy for greater benefits		
CO2	Understand the importance of nature surrounding us		
CO3	Promote linguistics competence in writing.		
CO4	Acquire the core values of human society and leading the humanistic life		
CO5	Adapt to the global economy and the current markets		
CO6	Demonstrate opinion very precisely to the work environment		
CO7	Compose ideas through speaking and writing the work related articles.		

COs	Course Name: ENGLISH POETRY	Code: U8EN3001	Credit : 5

CO1	Comprehend the different themes and periods of the poets
CO2	Explain the use of figurative language as medium to set the tone
CO3	Develop the creative process by comparing two or more works of different poets
CO4	Get insight into the thought that every individual or thing is a significant contributor of the society
CO5	Compare the past literary knowledge with present time
CO6	Construct meters to write small couplets
CO7	Develop the device to structure a stanza

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COs	**Course Name: SHAKESPEARE**	**Code: U8EN3002**	**Credit : 3**
CO1	Label the different facets of dramas of Elizabethan age		
CO2	Explore the Shakespearean style of expression		
CO3	Interpret the structures of Shakespearean theatre		
CO4	Develop the creative process by comparing two or more works of different dramatists		
CO5	Acquire the writing skills in poetry and drama		

COs	**Course Name: THE HISTORY OF ENGLISH LANGUAGE**	**Code: U8ENAL31**	**Credit : 4**
CO1	Express linguistic competence in societal development		
CO2	Develop skill in situational dialogues		
CO3	Measure the evolution of English words		
CO4	Construct the life through the language		
CO5	Interpret the grammar usage of the past		

COs	**Course Name: ENGLISH FOR COMMUNICATION**	**Code:U8ENAL32**	**Credit : 3**
CO1	Apply speaking and writing skills		

CO2	Express fluency and comprehension of the language
CO3	Apply perfect usage of grammar in the right context
CO4	Extend the use of vocabulary
CO5	Develop critical reading and writing skills.

Semester -IV

COs	**Course Name: ENGLISH PAPER IV**	**Code: U8FEN401**	**Credit : 5**
CO1	Discuss linguistic competence		
CO2	Describe professional ethics in work place.		
CO3	Practice production and receptive skills.		
CO4	Enhance the language to suit in different context		
CO5	Adapt the language to the global economy and the current markets		
CO6	Demonstrate opinions very precisely to the work environment		
CO7	Compose ideas through speaking and in writing work related articles		

COs	**Course Name: ENGLISH LANGUAGE TEACHING**	**Code: U8EN4001**	**Credit : 5**
CO1	Reflect the individual's personality through language		
CO2	Understand meaning from the context		
CO3	Use 44 sounds of the language		
CO4	Compare different teaching methods		
CO5	Develop the concepts through the help of technology		
CO6	Calculate the outcome of teaching materials		
CO7	Prepare the lesson plan to different age group		

COs	**Course Name: AMERICAN LITERATURE -I**	**Code: U8EN4002**	**Credit : 3**
CO1	Create an awareness of historical, cultural and formal issues in American society		

CO2	Make proficient with complex literary texts
CO3	Develop the critical approaches when dealing with text
CO4	Assess the features of American dream
CO5	Report on cultural development of the American society

COs	**Course Name: AN INTRODUCTION TO AMERICAN CULTURE**	**Code:U8ENAL41**	**Credit : 4**
CO1	Recall the traditional values of 200 years of American Culture		
CO2	Contrast the cultural diversity values and equal opportunities		
CO3	Identify and discusses the role of gender, race and ethnicity.		
CO4	Enhance various themes of American works		
CO5	Focus on using conventional grammar and writing style		

COs	**Course Name: COMPUTER LITERACY**	**Code:U8ENAL42**	**Credit : 3**
CO1	Execute hardware and software operations		
CO2	Identify components of the computer		
CO3	Develop writing and speaking skills using latest apps		
CO4	Apply logical skills of the language by using technology		
CO5	Able to choose the exact software to complete the task.		

Semester -V

COs	Course Name: ENGLISH PHONETICS	Code: U8EN5001	Credit : 5
CO1	Recognize knowledge and awareness of English Phonetics		
CO2	Summarize technical terms for describing the English pronunciation.		
CO3	Compose and produce phonemic transcriptions and intonation patterns.		
CO4	Acquire pronunciation skills		
CO5	Evaluate expertise in English Language teaching		
CO6	Calculate the outcome of language speed in a controlled environment		
CO7	Prepare a lesson plan for speaking activity		

COs	Course Name: AMERICAN LITERATURE – II	Code: U8EN5002	Credit : 5
CO1	Identify the key features of prose		
CO2	Role play the theme of a poem		
CO3	Respond to the major critical approaches of literary interpretation.		
CO4	Organize the cultural developments of colonial America		
CO5	Understand the major conventions, tropes and themes		
CO6	Analyze the psychological evolution of the writers		
CO7	Interpret man's harmony with his immediate environment		

COs	Course Name: AMERICAN LITERARY HISTORY	Code: U8EN5003	Credit : 5
CO1	Demonstrate a broad knowledge of major and minor authors of America		
CO2	Perform the skills in analysis, interpretation and research.		
CO3	Able to write major literature with clarity, creativity and persuasiveness		
CO4	Review the significance of literature and literary form.		
CO5	Rate literature's value as a creative endeavor.		
CO6	Measure the political writing of different authors		

CO7	Compare the historical elements in various work of art

COs	**Course Name: INTRODUCTION TO LITERARY CRITICISM**	**Code: U8EN5004**	**Credit : 5**
CO1	Recognize relevance and value of theoretical models in literary study		
CO2	Classify the important theoretical methodologies		
CO3	Evaluate a literary text by close reading		
CO4	Catalogue the character, voice, narrative and genre		
CO5	Appraise the historical and cultural materialist approaches to literary text.		
CO6	Create basic idea to measure the authenticity of the work		
CO7	Evaluate the poetic creation of old and modern poets		

COs	**Course Name: 20TH CENTURY LITERATURE – I**	**Code: U8EN5005**	**Credit : 2**
CO1	Understand the key ideas and texts and intellectual shifts in reading the culture, language and literature.		
CO2	Record ideas and concepts of 20th century criticism		
CO3	Quantify ideas associated with movements like structuralism, post structuralism and feminism.		
CO4	Deal with changing notions of the relationship between humans and nature		
CO5	Assess the social, historical, cultural and literary contexts.		

COs	Course Name: AFRICAN-AMERICAN LITERATURE	Code: U8EN5006	Credit : 2
CO1	Describe unique literary voice of African American writers		
CO2	Understand spirit, spirituality and the oral tradition.		
CO3	Compare key African American writers.		
CO4	Apply the African centered approach to studying literature.		
CO5	Discuss the impact of racism, sexism and economic exclusion of African American literature.		

COs	Course Name: ENGLISH FOR COMPETITIVE EXAMINATIONS-I	Code: U8ENSB51	Credit : 1
CO1	Comprehend English language		
CO2	Identify the errors in writing		
CO3	Correct sentences grammatically.		
CO4	Differentiate the spoken and written context		
CO5	Implement the nuances of official writing creatively		

Semester -VI

COs	Course Name: JOURNALISM AND MASS COMMUNICATION	Code: U8EN6001	Credit : 5
CO1	Describe oral presentations on a variety of topics in public settings		
CO2	Apply basic and advanced human communication theories and models to academic and professional situations.		
CO3	Make business and professional presentations to internal and external audiences.		
CO4	Prepare a media report of official events		
CO5	Measure the information related to an event		
CO6	Compose variety of mass media writing products.		
CO7	Create and design emerging blogs, digital audio, social media..etc		

COs	Course Name: 20TH CENTURY LITERATURE – II	Code: U8EN6002	Credit : 5

CO1	Understand the key ideas, texts and intellectual shifts in knowing the culture, language and literature.
CO2	Explain the ideas and concepts of 20th Century Criticism
CO3	Sketch the ideas associated with movements like structuralism, post structuralism and feminism.
CO4	Deal with changing notions of the relationship between humans and nature
CO5	Report on holistic understanding of 20th Century Literature
CO6	Measure the syntactic order of different authors
CO7	Evaluate the geographical situation of the selected work

COs	**Course Name: COMMON WEALTH LITERATURE**	**Code: U8EN6003**	**Credit : 5**
CO1	Design the geography of commonwealth literature		
CO2	Explain the functions of commonwealth literature		
CO3	Differentiate major characteristics of Commonwealth literature/issues common to the writers		
CO4	Establish Major themes and literary trends in commonwealth literature		
CO5	Investigate the problem of language in creative writing in the Commonwealth literature		
CO6	Assess the past and the present trend change due to social development		
CO7	Evaluate the syntactic structure employed by the writers		

COs	Course Name: GENDER STUDIES	Code: U8EN6004	Credit : 5
CO1	Understand the key concepts, terminology and theoretical frameworks central to the interdisciplinary field of Gender Studies		
CO2	Identify various spheres of human endeavor.		
CO3	Review about people, culture and society		
CO4	Sketch the psychological thought process of the society		
CO5	Discuss the societal awareness of a particular geographical region		
CO6	Analyze forces shaping individuals' experiences as well as social structure.		
CO7	Interpret the strands of feminist thought and envision the multidisciplinary dialogue.		

COs	Course Name: CREATIVE WRITING	Code: U8EN6005	Credit : 2
CO1	Understand the effective use of the conventions of the English language		
CO2	Discuss the texts function across a range of genres, context and cultures.		
CO3	Represent cultures and encounters between cultures		
CO4	Analyze the writing, reading and research.		
CO5	Evaluate a new leadership in writing		

COs	Course Name: SOFT SKILLS	Code: U8EN6006	Credit : 2
CO1	Comprehend English in the context of acquisition of soft skills		
CO2	Acquire soft skills in writing views.		
CO3	Inspect grammatically, the language usage in a sentence.		
CO4	Develop importance for the received pronunciation		
CO5	Justify the day affairs well with the knowledge of soft skills.		

COs	Course Name: ENGLISH FOR COMPETITIVE EXAMINATIONS-II	Code: U8ENSB61	Credit : 1
CO1	Comprehend the general writing skills		
CO2	Prepare to appear competitive exams		
CO3	Construct correct sentences and right vocabulary		
CO4	Establish the importance for the received pronunciation		
CO5	Integrate the day affairs well with knowledge of language skills.		

DEPARTMENT OF ENGLISH

M.A. ENGLISH LITERATURE
COURSE OUTCOME
Semester –I

Cos	Course Name: CHAUCER AND ELIZABETHAN AGE	Code: P8EN1001	Credit : 5
CO1	Describe the components of literary ages		
CO2	Identify the dramatic and theoretical development		
CO3	Compare the societal development of past and present		
CO4	Acquire the knowledge and structure of the work		
CO5	Apply the literary text to present work		
CO6	Compare technique, culture and language		
CO7	Investigate Psychological development of the people and society		

Cos	Course Name: THE NEO CLASSICAL AGE	Code: P8EN1002	Credit : 5
CO1	Estimate the components of Neo Classical age		
CO2	Enhance the India writers' Literary sense		
CO3	Sketch the works of social reformist		
CO4	Compare literary criticism of the past and the present		
CO5	Adapt to life form in literature and its perspectives		
CO6	Interpret the inspirations from the Classical works		
CO7	Investigate the awareness, education and literary expression in communication		

Cos	Course Name: THE ROMANTIC AND THE VICTORIAN AGES	Code: P8EN1003	Credit : 4
CO1	Explain the use of notable 19th century creation of literary work		
CO2	Understand the poetic devices and techniques		
CO3	Analyze the poems and prose critically		
CO4	Compare the urbanization of the working classes of the past and present century		
CO5	Organize an ideal social set up from the ideas of the writers.		

COs	Course Name: TWENTIETH CENTURY LITERATURE	Code: P8EN1004	Credit : 4
CO1	Explain the key ideas and texts and intellectual shifts in reading the culture, language and literature.		
CO2	Comprehend the ideas and concepts of 20th century criticism		
CO3	Apply the language structure and analyzing the context critically		
CO4	Analyze the trial and tribulations of life		
CO5	Investigate language in organized and precise manner		

COs	Course Name:CREATIVE WRITING	Code: P8ENEP11	Credit : 4
CO1	Analyze the linguistic development of the language		
CO2	Develop skills in more meaningful way		
CO3	Able to revise, edit and draft the passages		
CO4	Compile journals and magazines		
CO5	Compose the professional letters		

COs	Course Name: ENGLISH FOR COMMUNICATION	Code: P8ENEP12	Credit : 4
CO1	Exhibit linguistic competence		
CO2	Practice production and receptive skills		
CO3	Access the people in a polite manner		
CO4	Gain pre-reading and the meaning in academic materials		
CO5	Synthesize the ideas in comprehension		

Semester –II

COs	Course Name: ENGLISH LANGUAGE AND LINGUISTICS	Code: P8EN2001	Credit : 5
CO1	Assess the history of English language through different periods		
CO2	Explain deeper understanding in language development		
CO3	Comprehend in studying the language scientifically		
CO4	Execute 44 sounds of the language		
CO5	Compare different scientific teaching methods		
CO6	Evaluate the different language structures		
CO7	Investigate the current status of English in Indian scenario		

COs	Course Name: INDIAN LITERATURE IN ENGLISH	Code: P8EN2002	Credit : 5
CO1	Discuss the prominent works of Indian writing in English		
CO2	Develop the Indian writers' Literary sense		

CO3	Understand the ethos of Indian writing
CO4	Evaluate the writing style of Indian writers
CO5	Understand the works of social reformist
CO6	Comprehend the uniqueness of Indian Literature in English
CO7	Evaluate the innovative techniques of Indian writers

COs	**Course Name: SHAKESPEARE**	**Code: P8EN2003**	**Credit : 4**
CO1	Recall the Elizabethan age		
CO2	Identify the writers of Elizabethan age		
CO3	Demonstrate the features of Elizabethan theatre		
CO4	Develop the creative process by comparing two or more works of different dramatists		
CO5	Evaluate the critical writing skills		

COs	**Course Name: AMERICAN LITERATURE**	**Code: P8EN2004**	**Credit : 4**
CO1	Explain American historical, cultural and formal issues		
CO2	Comprehend knowledge about American literary world		
CO3	Develop the critical approaches when dealing with text		
CO4	Compare the features of individual works		
CO5	Interpret the working knowledge of the cultural and historical contexts		

COs	**Course Name: NEW LITERATURE IN ENGLISH**	**Code: P8ENEP21**	**Credit : 4**
CO1	Estimate the knowledge in modern literature		
CO2	Get exposure to millennial thinking		
CO3	Develop the creative process by comparing two or more works of different poets		
CO4	Get insight into the thought that every individual or thing is a significant contributor of the society		
CO5	Discover how the past literary knowledge makes sense with present time		

COs	Course Name: BUSINESS WRITING IN ENGLISH	Code: P8ENEP22	Credit : 4
CO1	Comprehend the language between the lines		
CO2	Express the views precisely in writing and speaking		
CO3	Construct grammatically correct sentences.		
CO4	Draft business emails in different situations		
CO5	Publish the academic papers of specialization		

Semester –III

COs	Course Name: COMMON WEALTH LITERATURE	Code: P8EN3001	Credit :5
CO1	Acquire the knowledge about the history of commonwealth literature		
CO2	Express the geographical, political and linguistic connotations.		
CO3	Introspect the colonial history of commonwealth countries		
CO4	Differentiate major characteristics of Commonwealth literature/issues common to the writers		
CO5	Establish Major themes and literary trends in commonwealth literature		
CO6	Develop the creative process by comparing two or more works of different writers		
CO7	Evaluate critical theories.		

COs	Course Name: LITERARY THEORY AND CRITICISM-I	Code: P8EN3002	Credit : 5
CO1	Understand the value of theoretical models in literary study		
CO2	Understand the important theoretical methodologies		
CO3	Assess close reading and criticizing the literary text.		
CO4	Catalogue the character, voice, narrative and genre		
CO5	Assess the historical and cultural materialist approaches to literary text.		
CO6	Interpret the character, voice, narrative and genres		
CO7	Outline the recent trends and theories of literary criticism.		

COs	Course Name: ENGLISH LANGUAGE TEACHING	Code: P8EN3003	Credit : 4
CO1	Develop speaking and writing skills		
CO2	Develop fluency and comprehension of the language		
CO3	Apply grammar in the right context		
CO4	Review the methods of teaching language		
CO5	Realize the importance of technology to teach English		

COs	Course Name: CONTEMPORARY LITERARY THEORIES	Code: P8EN3004	Credit : 4
CO1	Estimate various critical theories		
CO2	Apply critical theories in literature		
CO3	Analyze the features of different critical theories		
CO4	Measure the word and its meaning from the context		
CO5	Evaluate critical thinking through theories		

COs	Course Name: TECHNICAL WRITING	Code: P8ENEP31	Credit : 4
CO1	Comprehend English in the context of technical usage		
CO2	Understand the features of technical writing		
CO3	Interpret technical writing from literary writing		
CO4	Promote academic writing		
CO5	Classify the purpose of technical writing		

COs	Course Name: RESEARCH METHODOLOGY	Code: P8ENEP32	Credit : 4
CO1	Explain the nuances of research		
CO2	Understand different approaches of research		
CO3	Develop critical thinking while reading a text		
CO4	Interpret the research in literature and language		
CO5	Design the topic in research arena		

Semester –IV

COs	Course Name: LITERARY THEORY AND CRITICISM-II	Code: P8EN4001	Credit : 5
CO1	Rate the relevance and value of theoretical models in literary study		
CO2	Classify important theoretical methodologies		
CO3	Measure the meaning in reading and criticizing the literary text.		
CO4	Catalogue the character, voice, narrative and genre		
CO5	Appraise the historical and cultural materialist approaches to literary text.		
CO6	Interpret the character, voice, narrative and genres		
CO7	Investigate the historical and cultural materialist approaches to text.		

COs	Course Name: SOFT SKILLS	Code: P8EN4002	Credit : 5
CO1	Understand the values of soft skills		
CO2	Discuss the importance of etiquettes		
CO3	Execute public speaking skills		
CO4	Perform scientific psychological personality and self-discovery		
CO5	Respond to strength, weakness, opportunities and threats in setting short and long-term goals		
CO6	Demonstrate the procedure of group discussion		
CO7	Create the day affairs well with the knowledge of soft skills.		

COs	Course Name: JOURNALISM AND MASS COMMUNICATION	Code: P8EN4003	Credit : 4
CO1	Compare the effective uses of media		
CO2	Apply basic and advanced human communication theories and models to academic and professional situations.		
CO3	Develop innovative ideas journalism		
CO4	Able to write a variety of mass media products.		
CO5	Create and design emerging blogs, digital audio, social media..etc		

COs	Course Name: WOMEN'S WRITING IN ENGLISH	Code: P8EN4004	Credit : 4
CO1	Label Women's writing genre		
CO2	Review the origin of women's writing		
CO3	Discuss the themes of women writers		
CO4	Analyze the style of different writers		
CO5	Evaluate the strands of feminist thought and envisions themselves as participants in a multidisciplinary dialogue.		

COs	Course Name: ANATOMY OF LITERATURE	Code: P8ENEP41	Credit : 4
CO1	Understand the anatomy of prose		
CO2	Discuss the types of poetry		
CO3	Interpret the point of view in novel		
CO4	Compare the forms of drama		
CO5	Evaluate the critical writing		

COs	Course Name: INTERPRETATION OF LITERATURE	Code: P8ENEP42	Credit : 4
CO1	Understand major literary terms		
CO2	Compare different genres of literature		
CO3	Interpret the point of view in short story		
CO4	Compare the forms of one-act plays		
CO5	Understand data-gathering process		

COs	Course Name: COMPUTER LITERACY IN TEACHING	Code: P8ENNM41	Credit : 2
CO1	Understand the basics of hardware and software		
CO2	Apply the components of the computer effectively		
CO3	Develop writing and speaking skills using latest mobile applications		
CO4	Apply logical skills of the language using technology		
CO5	Evaluate the knowledge of literature through search engines		

DEPARTMENT OF ENGLISH

CERTIFICATE COURSE IN SPOKEN ENGLISH

COs	**Course Name: CERTIFICATE COURSE IN SPOKEN ENGLISH**	**Code: ENCT01**	**Credit : 3**
CO1	Gain the knowledge of grammar in Speaking and Writing context.		
CO2	Transmit the message clearly through speaking and in listening with the help of stress and tones of the language.		
CO3	Publish an article with the simple grammar structure.		
CO4	Evaluate Speaking, Reading, Listening and Writing in Study or at Workplace.		
CO5	Gain skills in writing academic papers, essays and assignments.		

DEPARTMENT OF BUSINESS ADMINISTRATION

COURSE OUTCOMES

SEMESTER – I			
CO	**Course Name : PRINCIPLES OF MANAGEMENT**	**Code : U8BA1001**	**Credit : 5**
CO1	Acquire knowledge about the four management functions of planning, organizing, directing and controlling.		
CO2	Gain knowledge on types of plans		
CO3	Gain knowledge on decision making process and types of decisions.		
CO4	Understand the line, line and staff and committee organization.		
CO5	Understand the matrix organisation and project organisation		
CO6	Gain knowledge on staffing.		
CO7	Able to describe the control process.		
CO	**Course Name : BUSINESS ORGANISATION**	**Code : U8BA1002**	**Credit : 3**
CO1	Get enlightened with nature and scope of business organisation.		
CO2	Get familiarized about various forms of business organisation.		
CO3	Gain knowledge about Industrial location.		
CO4	Able to understand the importance of corporate social responsibility.		
CO5	Understand business combination - causes and types.		
CO	**Course Name : BUSINESS MATHEMATICS AND STATISTICS - I**	**Code : U8BAAL11**	**Credit : 4**
CO1	Understand the concept and need of statistics		
CO2	Classify the significance of diagrams and graphs.		
CO3	Understand the use of measures of central tendency.		
CO4	Construct mean and standard deviation.		
CO5	Solve the problems of simple interest, compound interest and annuities		
CO6	Solve the problems in differentiation and derivatives.		
CO	**Course Name : FUNDAMENTALS OF COMPUTER**	**Code : U8BAAL12**	**Credit : 3**
CO1	Understand the fundamental concepts of computer.		
CO2	Gain knowledge on input and output devices.		
CO3	Get exposure to MS-Office.		
CO4	Develop the competence of database communication and networking.		
CO5	Understand Internet Applications, e-mail and searching the Web.		

SEMESTER – II			
CO	**Course Name : MANAGERIAL COMMUNICATION**	**Code : U8BA2001**	**Credit : 4**
CO1	Apply basic business concept of written communication in various related business issues.		
CO2	Gain knowledge in the effective communication and to draft the layout for a business letter.		
CO3	Gain knowledge in corresponding towards bank, insurance, agency, shareholders and directors.		
CO4	Able to prepare reports, minutes and agenda of a meeting.		
CO5	Acquire knowledge on the modern media of communication		
CO	**Course Name : BANKING AND FINANCIAL SYSTEM**	**Code : U8BA2002**	**Credit : 3**
CO1	Able to classify the types of Banks.		
CO2	Elucidate the broad functions of banks.		
CO3	Understand the concept of Social Responsibility of Banks.		
CO4	Describe the financial system.		
CO5	Identify the financial services.		
CO	**Course Name : BUSINESS MATHEMATICS AND STATISTICS-II**	**Code : U8BAAL21**	**Credit : 4**
CO1	Identify the types of matrices.		
CO2	Solve simultaneous equations.		
CO3	Solve the correlation and regression problems.		
CO4	Understand and measure the trends.		
CO5	Construct Index Numbers.		
CO	**Course Name : TRAINING AND DEVELOPMENT OF EMPLOYEES**	**Code : U8BAAL22**	**Credit : 3**
CO1	Understand the concepts, principles and process of training and development		
CO2	Assess training needs and design training programmes in an organisation.		
CO3	Understand career planning and development, Process and Methods.		
CO4	Gain knowledge on Management Development Programme		
CO5	Understand the role of Training Institutes in India.		

SEMESTER – III			
CO	**Course Name : FINANCIAL ACCOUNTING**	**Code : U8BA3001**	**Credit : 5**
CO1	Understand the accounting concepts and conventions.		
CO2	Understand the golden rules of Accounting		
CO3	Record Journal entries, prepare ledger accounts and trial balance.		
CO4	Prepare subsidiary books.		
CO5	Able to understand depreciation methods.		
CO6	Gain Knowledge in the preparation of financial statement.		
CO7	Prepare accounting statements from incomplete data.		
CO	**Course Name : PRODUCTION MANAGEMENT**	**Code : U8BA3002**	**Credit : 3**
CO1	Understand the production concepts, objectives, scope and its functions.		
CO2	Identify and analyse the production planning and control.		
CO3	Acquire knowledge on production process and design for plant location.		
CO4	Understand the work and methods of analysis methods.		
CO5	Apply the techniques of quality control.		
CO	**Course Name : STRATEGIC MANAGEMENT**	**Code : U8BA3003**	**Credit : 4**
CO1	Understand the concepts, tools and techniques of strategic management		
CO2	Develop analytical and conceptual skills		
CO3	Acquire knowledge on Corporate Strategies.		
CO4	Understand the strategic leadership styles.		
CO5	Understand the Implementation of Strategy.		
CO	**Course Name : OPERATIONS RESEARCH**	**Code : U8BAAL31**	**Credit : 4**
CO1	Gain knowledge on scope and characteristics of OR models and their formulations		
CO2	Acquire knowledge on transportation and assignment problems.		
CO3	Understand game theory and solving games.		
CO4	Solve sequencing problems.		
CO5	Solve CPM and PERT problems.		
CO	**Course Name : TOTAL QUALITY MANAGEMENT**	**Code : U8BASB31**	**Credit : 2**
CO1	Understand the principles, practices and application in Total Quality Management.		
CO2	Understand the analysis of statistical quality control.		
CO3	Identify and analyse major decisions and problems in quality management.		
CO4	Understand the concept of Total Productive Maintenance		
CO	**Course Name : MANAGERIAL ECONOMICS**	**Code : U8BAAL32**	**Credit : 4**
CO1	Gain knowledge about the concepts of economics and managerial economics.		

CO2	Understand about the demand analysis and consumer behaviour.		
CO3	Gain knowledge about the cost concepts and production function.		
CO4	Understand about the Market forms.		
CO5	Gain theoretical knowledge about the Pricing methods.		
CO	**Course Name : E-BUSINESS**	**Code : U8BANM31**	**Credit : 3**
CO1	Understand the innovative use of e-business in competitive environment.		
CO2	Discuss the importance of internet in business growth.		
CO3	Explain the importance of ethical issues related to E-Commerce.		
CO4	Gain knowledge on networking and its classification.		
CO5	Acquire knowledge on E-Payment and E-Security.		

SEMESTER-IV			
CO	**Course Name : MANAGEMENT ACCOUNTING**	**Code : U8BA4001**	**Credit : 5**
CO1	Describe the concept of management accounting, its advantages and disadvantages.		
CO2	Classify the ratios and its merits		
CO3	Solve the problems on Fund Flow Statement.		
CO4	Solve the problems on Cash Flow Statement.		
CO5	Prepare purchase budget, production budget, cash budget and flexible budget		
CO6	Identify the concept of marginal costing and CVP Analysis.		
CO7	Describe the application of Marginal Costing		
CO	**Course Name : MATERIALS MANAGEMENT**	**Code : U8BA4002**	**Credit : 3**
CO1	Gain knowledge on the importance of materials management.		
CO2	Understand the concept of inventory control technique.		
CO3	Gain knowledge on the methods of purchasing in the factory.		
CO4	Understand store keeping and materials handling.		
CO5	Identify the rating procedures for vendors.		
CO	**Course Name : BUSINESS ENVIRONMENT**	**Code : U8BA4003**	**Credit : 4**
CO1	Gain knowledge on business environment and its importance.		
CO2	Understand the political issues and legal issues in business		
CO3	Gain knowledge on social beliefs, customs and cultural heritage.		
CO4	Discuss micro economic and macro economic concepts.		
CO5	Explain the role of various financial service institutions.		
CO	**Course Name : ORGANISATIONAL BEHAVIOUR**	**Code : U8BAAL41**	**Credit : 4**
CO1	Identify the need, scope and theories of organisation.		
CO2	Understand the implications of individual and group behaviour in organizational context.		
CO3	Gain knowledge on work environment, leadership styles and motivational techniques of employees		
CO4	Identify the organizational change and steps in managing change.		

CO5	Understand the climate and culture in an organization		
CO	**Course Name : FINANCIAL MANAGEMENT**	**Code : U8BAAL42**	**Credit : 4**
CO1	Describe the concepts of financial management and its functions.		
CO2	Apply working capital management techniques.		
CO3	Identify the sources of finance and describe the concept of cost of capital and its classifications.		
CO4	Understand leverages and decisions on capital structure.		
CO5	Able to compute capital budget.		
CO	**Course Name : CONSUMER BEHAVIOUR**	**Code : U8BANM41**	**Credit : 3**
CO1	Identify the scope and need for studying consumer behaviour		
CO2	Construct models of consumer behaviour		
CO3	Identify the major internal factors influences in consumer behaviour.		
CO4	Recognise social and ethical implications of marketing actions on consumer behaviour		
CO5	Distinguish between high and low involvement decision making.		
CO	Course Name : TALLY - PRACTICAL	Code : U8BASB41	Credit : 2
CO1	Understand the computerised accounting methods.		
CO2	Able to create the ledger & group ledger.		
CO3	Understand the various vouchers preparation.		
CO4	Develop skills to prepare the Trading, Profit and Loss Account and Balance Sheet.		

SEMESTER-V			
CO	**Course Name : HUMAN RESOURCE MANAGEMENT**	**Code : U8BA5001**	**Credit : 5**
CO1	Acquire knowledge on HRM, its scope and functions.		
CO2	Understand the HR planning and Job evaluation		
CO3	Explain the recruitment and selection of employees.		
CO4	Acquire knowledge on various interview techniques.		
CO5	Gain knowledge on training and career development		
CO6	Explain the concepts of performance appraisal and welfare measures.		
CO7	Understand human resource audit, nature and approaches		
CO	**Course Name : BUSINESS LAW**	**Code : U8BA5002**	**Credit : 5**
CO1	Gain knowledge of general contract.		
CO2	Explain offer, acceptance and consideration.		
CO3	Understand the capacity of parties in contract.		
CO4	Acquire knowledge on performance and discharge of contract.		
CO5	Indentify the solutions to the breach of contract.		
CO6	Understand Special contracts.		
CO7	Assess and apply Sale of Goods Act		

CO	Course Name : COST ACCOUNTING	Code : U8BA5003	Credit : 5
CO1	Understand to prepare cost sheet.		
CO2	Identify the advantages of cost accounting.		
CO3	Identify the accounts of stock levels		
CO4	Describe the pricing methods of material issues.		
CO5	Classify the methods of wage payment and incentive plan.		
CO6	Classify the different types of overhead		
CO7	Identify the allocation of overhead.		
CO	**Course Name : ENTREPRENEURIAL DEVELOPMENT**	**Code : U8BA5004**	**Credit : 5**
CO1	Demonstrate the ability of self-analysis as an entrepreneur.		
CO2	Demonstrate the ability to find an attractive market.		
CO3	Understand the concept of entrepreneurship and entrepreneurial culture		
CO4	Identify the traits of a good entrepreneur.		
CO5	Understand the concept of project appraisal.		
CO6	Able to develop a business plan.		
CO7	Gain knowledge about Franchising.		
CO	**Course Name : MARKETING MANAGEMENT**	**Code : U8BA5005**	**Credit : 2**
CO1	Understand the marketing concepts and its evolution.		
CO2	Analyse the market segmentation, targeting and positioning.		
CO3	Know the consumer behaviour and decision making process.		
CO4	Make decision on product and price.		
CO5	Discuss the channels of distribution and promotion mix.		
CO	**Course Name : RETAIL MANAGEMENT**	**Code : U8BA5006**	**Credit : 2**
CO1	Understand the scope and significance of retail industry.		
CO2	Gets enlightened on retail strategies.		
CO3	Identify the opportunities and threats.		
CO4	Gain knowledge on all areas of retail business operations.		
CO	**Course Name : EXPORT MANAGEMENT**	**Code : U8BASB51**	**Credit : 1**
CO1	Identify the problems of export.		
CO2	Understand the role, functions of Government Institutions in promoting export.		
CO3	Describe the methods of payments and export procedures		
CO4	Prepare the export documents.		
SEMESTER-VI			
CO	**Course Name : INDUSTRIAL RELATIONS**	**Code : U8BA6001**	**Credit : 5**
CO1	Gain knowledge on the nature, importance and scope of Industrial Relations.		
CO2	Understand the objectives and functions of trade unions.		
CO3	Discuss the types, causes and prevention of strikes and lockouts.		
CO4	Explain the Industrial Dispute Act.		
CO5	Acquire knowledge on collective bargaining.		
CO6	Understand the health, safety and welfare of Indian Factories Act.		
CO7	Comprehend the Workmen's Compensation Act and role of International Labour Organisation		

CO	**Course Name : ADVERTISING AND SALESMANSHIP**	**Code : U8BA6002**	**Credit : 5**
CO1	Understand the basic concepts and functions of advertising		
CO2	Describe the method of allocating advertising budget.		
CO3	Identify the qualities of a good advertisement copy.		
CO4	Explain the various methods of advertising.		
CO5	Measure the effectiveness of advertising.		
CO6	Understand the responsibilities and qualities of salesman.		
CO7	Able to Plan, select, train and motivate the sales force in an organisation.		
CO	**Course Name : GROUP PROJECT**	**Code : U8BA6003**	**Credit : 5**
CO1	Understand the gap between industry and institution.		
CO2	Gain on the field experience		
CO3	Identify contemporary problems faced by the industry.		
CO4	Able to prepare a report on business problems of an establishment.		
CO5	Identify opportunities for placement		
CO6	Gain practical exposure to become future professional / Entrepreneur.		
CO7	Involve in Group Discussions		
CO	**Course Name : MARKETING RESEARCH**	**Code : U8BA6004**	**Credit : 5**
CO1	Gain knowledge on objective and uses of marketing research.		
CO2	Understand the components of marketing research.		
CO3	Explain the marketing research process and research design.		
CO4	Describe the methods of collection of data.		
CO5	Discuss the methods of Interview and observation.		
CO6	Classify the types of sampling.		
CO7	Identify the various application of product and advertising research.		
CO	**Course Name : COMPUTER APPLICATION IN BUSINESS**	**Code : U8BA6005**	**Credit : 2**
CO1	Understand the basics of MS-Office.		
CO2	Documentation through MS- Word.		
CO3	Calculations through MS-Excel.		
CO4	Presentation through MS-Power Point.		
CO	**Course Name : COMPANY LAW**	**Code : U8BA6006**	**Credit : 2**
CO1	Explain the concept and formation of companies.		
CO2	Identify Memorandum and Articles of Association and prepare prospectus		
CO3	Understand the various types of shares and debentures.		
CO4	Discuss the various types of meetings.		
CO5	Gain knowledge on winding up of companies.		

CO	**Course Name : MS-OFFICE (PRACTICAL)**	**Code : U8BASB61**	**Credit : 1**
CO1	Gain practical knowledge to MS- Word.		
CO2	Gain practical knowledge to MS-Excel.		
CO3	Gain practical knowledge to MS- Power Point.		

PG & RESEARCH DEPARTMENT OF COMMERCE

COs	Sub Code: U8CO1001	Subject: Financial Accounting I
	Credits:5	**Hrs./Week:5**
CO1	Pass Journal Entries, Prepare Ledger Accounts and Trial Balance	
CO2	Prepare Trading a/c, Profit & Loss a/c and Balance Sheet	
CO3	Prepare Depreciation Account	
CO4	Calculate Average Due Date	
CO5	Compute Fire Insurance Claims	
CO6	Prepare Statement of Affairs and Statement of Profit or Loss in Single Entry Method	
CO7	Identify profits using Conversion Method	

COs	Sub Code: U8CO1002	Subject: Business Organisation
	Credits:3	**Hrs./Week:4**
CO1	Understand the concept of business and its activities.	
CO2	Equip the students to gain knowledge on size of business.	
CO3	Understand the different forms of business organization.	
CO4	Discuss emerging opportunities in business.	
CO5	Understand of business combination and trade association.	

COs	Sub Code: U8COAL11	Subject: Business Communication
	Credits:4	**Hrs./Week:5**
CO1	Know the basics of Communication	
CO2	Chart out Business Letters	
CO3	Prepare Correspondence in Real-time Business Situations	
CO4	Understand the Tactics of Collection of Dues and Handling Circulars	
CO5	Discuss CV Development and Application for Jobs	

COs	**Sub Code: U8COAL12**	**Subject: Business Economics I**
	Credits:3	**Hrs./Week:4**
CO1	Understand the basic elements of micro and macro economics aspects	
CO2	Understand the utility, law of diminishing marginal and equi marginal utility	
CO3	Describe the law of demand, factors, demand forecasting and types	
CO4	Understand the production function, law of variable of proportions and break even analysis.	
CO5	Know the law of supply, elasticity of supply and determinants	

COs	**Sub Code: U8CO2001**	**Subject: Financial Accounting II**
	Credits:4	**Hrs./Week:4**
CO1	Prepare Branch Account	
CO2	Prepare Departmental Trading and Profit and Loss a/c	
CO3	Distinguish Hire Purchase and Instalment Purchase System	
CO4	Pass Journal Entries and Prepare Ledger Accounts in Hire Purchase System	
CO5	Prepare relevant accounts in admission, retirement of partners and dissolution of firm	

COs	**Sub Code: U8CO2002**	**Subject: Business Management**
	Credits:3	**Hrs./Week:4**
CO1	Define the basic concepts and principles of Management	
CO2	Illustrate various steps involved in the process of Planning, Forecasting, Decision-Making, Delegation and Managerial Control	
CO3	Differentiate Management from Administration, Formal Organisation from Informal Organisation, Decentralisation from Delegation	
CO4	Summarise Contributions of Peter Ferdinand Drucker and Mary Parker Follett	
CO5	Understand the importance of Staffing and Motivation Theories	

COs	Sub Code: U8COAP21	Subject: Business Computer Applications
	Credits:4	**Hrs./Week:4**
CO1	Understand basic concepts of Computers and Generations of Computer	
CO2	Identify different components of a computer system: Storage Devices, Input Devices & Output devices	
CO3	Prepare and present the business documents using Word Document	
CO4	Prepare and present the business documents using using Excel Sheet	
CO5	Prepare PPT- Power Point presentation using various Transitions, Animations and other layouts.	

COs	Sub Code: U8COAL22	Subject: Business Economics II
	Credits:3	**Hrs./Week:4**
CO1	Understand the market structure, classification and its functions	
CO2	Understand theories of profit, rent, risk, uncertainty, profit maximization and sales maximization.	
CO3	Provide an idea regarding National income and its difficulties, measurement of national income, GDP,NDP and NNP	
CO4	Understand pricing fiscal policies and monetary policy	
CO5	Describe the concept of international trade, balance of trade and balance of payments.	

COs	Sub Code: U8CO3001	Subject: Corporate Accounting I
	Credits:5	**Hrs./Week:5**
CO1	Understand the shares, debentures and its issue procedure.	
CO2	Understand the concept of redemption of preference shares and debentures.	
CO3	Gain knowledge on profit prior to incorporation.	
CO4	Exposure to company final account as per revised schedule VI.	
CO5	Understand about business combination and corporate restructuring.	
CO6	Prepare amalgamation and absorption accounts as per Indian Accounting	

	Standards.
CO7	Describe the alteration of share capital and internal reconstruction.

COs	**Sub Code: U8CO3002**	**Subject: Principles of Marketing**
	Credits:4	**Hrs./Week:4**
CO1	Define the concept of Marketing and differentiate between Marketing and Selling	
CO2	Discuss Marketing Environment and factors influencing it	
CO3	Describe the factors influencing Consumer Behaviour and the Process of PLC	
CO4	Discuss the Bases of Pricing and Channels of Distribution	
CO5	Understand the importance of Advertising, Sales Promotion and Personal Selling.	

COs	**Sub Code: U8CO3003**	**Subject: Modern Banking**
	Credits:4	**Hrs./Week:4**
CO1	Understand the Types and Functions of Commercial Banks and Development Banks in India	
CO2	Analyse the Relationship between Banker and Customer	
CO3	Discuss the Functions of Central Banks	
CO4	Analyse the recent Trends in Banking Sector	
CO5	Comprehend various Technological Developments in Banking Sector	

COs	**Sub Code: U8CONM31**	**Subject: Business Regulatory Framework**
	Credits:3	**Hrs./Week:4**
CO1	Acquire the basic knowledge and understand the technical aspects of Indian Contract Act,1872	
CO2	Examine the capacities of parties to enter into a valid Contract and laws relating to a minors	
CO3	Acquire the knowledge about the law relating to indemnity and guarantee and Sale of Goods Act	
CO4	Focus on the duties and rights of the Bailor and Bailee and Agent and Principal	

CO5	Describe the law of Agency

COs	Sub Code: U8COAL31	Subject: Business Statistics I
	Credits:4	**Hrs./Week:5**
CO1	Define the basic concepts in Statistics	
CO2	Describe data presentation and measures of Central Value	
CO3	Analyse Probability, Permutations and Combinations	
CO4	Define the concepts in Operations Research	
CO5	Prepare solutions for Linear Programming Problems	

COs	Sub Code: U8COAL32	Subject: Elements of Insurance
	Credits:3	**Hrs./Week:4**
CO1	Gain knowledge on Indian Insurance Industry	
CO2	Understand the existence of Life Insurance and learn its benefits	
CO3	Compute the claims in respect of Fire Insurance	
CO4	Compute the claims in respect of Marine Insurance	
CO5	Prepare Motor Accident Insurance Claims	

COs	Sub Code: U8COSBP3	Subject: Introduction to Tally
	Credits:2	**Hrs./Week:4**
CO1	Understand the Tally Software & Computerized Accounting	
CO2	Prepare Journal, Ledger and Trail Balance using Tally Software.	
CO3	Create, Edit & Delete Company information using Tally Software.	
CO4	Prepare necessary Ledger Accounts, Groups and Inventory information using Tally ERP 9.	
CO5	Pass Voucher Entries for the daily business transactions of a business in Tally.	

COs	Sub Code: U8CO4001	Subject: Corporate Accounting II

	Credits:5	**Hrs./Week:5**
CO1	Understand the valuation of goodwill.	
CO2	Understand the valuation of shares.	
CO3	Gain an idea of liquidation of companies.	
CO4	Prepare Liquidator's Final Statement of Accounts	
CO5	Prepare the accounts of banking companies.	
CO6	Analyse the holding company accounts.	
CO7	Gain knowledge on preparation of accounts of insurance companies.	

COs	**Sub Code: U8CO4002**	**Subject: Modern Marketing**
	Credits:4	**Hrs./Week:4**
CO1	Define Marketing and Discuss the approaches to its study	
CO2	Understand Marketing Concepts and MIS	
CO3	Discuss Sales Forecasting, its types and influencing factors	
CO4	Discuss the concept, need and functions of Branding and Packaging	
CO5	Describe E-Marketing, Direct Marketing, Service Marketing and Green Marketing	

COs	**Sub Code: U8CO4003**	**Subject: Company Law**
	Credits:4	**Hrs./Week:4**
CO1	Describe the characteristics of a company , its different kinds and the functions, duties, and liabilities of a promoters	
CO2	Gain knowledge about the memorandum of Association ,Articles of Association and Prospectus of a Company	
CO3	Acquire the basic knowledge about the Shares and Debentures	
CO4	Identify the qualifications, appointment o f Directors and their powers, duties and liabilities and their removal and retirement	
CO5	Understand the essential of a valid Meeting and Resolutions of a Company	

COs	Sub Code: U8CONM41	Subject: Business Environment
	Credits:3	**Hrs./Week:4**
CO1	Understand basic concepts of Business Environment	
CO2	Identify different models of economic system	
CO3	Understand different corporate social responsibilities of business towards different stakeholders	
CO4	Understand political and legal environment affecting the existence of business.	
CO5	Analyse the recent trends in Global Environment	

COs	Sub Code: U8COAL41	Subject: Business Statistics II
	Credits:4	**Hrs./Week:5**
CO1	Describe the Properties of Correlation Coefficient	
CO2	Distinguish Correlation Analysis from Regression Analysis	
CO3	Evaluate the various types of Index numbers	
CO4	Understand the Statistical Quality Control and Forecasting	
CO5	Analyse the Transportation and Assignment Problems	

COs	Sub Code: U8COAL42	Subject: Goods & Services Tax
	Credits:3	**Hrs./Week:4**
CO1	Understand the fundamentals of Taxation.	
CO2	Describe the meaning and objectives of Goods and Services Tax	
CO3	Define the different sections in CGST Act	
CO4	Understand the exempted goods and exempted services under GST Act.	
CO5	Describe the provisions relating to levy and collection of GST	

COs	Sub Code: U8COSBP4	Subject: Tally Accounting
	Credits:5	**Hrs./Week:5**
CO1	Develop the basic accounting skills by training them in preparation of final accounts	
CO2	Prepare Receivables and Payables Management by using Tally Accounting Software	
CO3	Prepare various types of Budgets and reporting	
CO4	Prepare GST Accounting using Tally Accounting Software	
CO5	Pass Voucher Entries (GST Billing) of daily transactions in a business	

COs	Sub Code: U8CO5001	Subject: Cost Accounting I
	Credits:5	**Hrs./Week:5**
CO1	Understand and explain the nature and scope of cost accounting.	
CO2	Differentiate Financial Accounting Vs Cost Accounting	
CO3	Prepare Cost Sheet, Tenders and Quotations	
CO4	Describe Inventory Control and Perpetual Inventory System	
CO5	Determine the pricing and issue of Materials	
CO6	Compute remuneration and incentives to Labourers	
CO7	Discuss Primary and Secondary Distribution of Overheads	

COs	Sub Code: U8CO5002	Subject: Management Accounting I
	Credits:5	**Hrs./Week:5**
CO1	Identify the scope and importance of Management accounting	
CO2	Differentiate Management accounting and Financial accounting	
CO3	Analyse the Financial Statements	
CO4	Compute different types of ratios	
CO5	Prepare Financial Statements using Ratios	

CO6	Prepare Fund Flow Statement
CO7	Prepare Cash Flow Statement

COs	**Sub Code: U8CO5003**	**Subject: Income Tax Law & Practice I**
	Credits:5	**Hrs./Week:5**
CO1	Define the basic Concepts in Income Tax	
CO2	Determination of Residential Status for any kind of Person	
CO3	Compute Income from Salaries	
CO4	Compute Income from House Property	
CO5	Compute Profits and Gains of Business	
CO6	Describe conditions for claiming Depreciation	
CO7	Determine Professional Income in different Professions	

COs	**Sub Code: U8CO5004**	**Subject: Auditing**
	Credits:5	**Hrs./Week:5**
CO1	Gain knowledge on Auditing, Audit Note Books and Audit Working Papers	
CO2	Understand the fundamentals of Internal Control, Internal Check and Internal Audit.	
CO3	Examine the Procedures related to Vouching, Depreciation and Reserves	
CO4	Describe the valuation and verification process of Assets and Liabilities	
CO5	Prepare Audit Report	
CO6	Perform HRD Audit	
CO7	Describe the functions of Comptroller and Auditor General of India.	

COs	**Sub Code: U8CO5005**	**Subject: Human Resource Management**
	Credits:2	**Hrs./Week:4**
CO1	Understand the concepts of Human Resource Management	

CO2	Describe Human Resource Planning
CO3	Understand the Sources of Recruitment and Selection Procedure
CO4	Evaluate the Different Techniques of Training & Analyse the methods of Performance Appraisal
CO5	Understand the various ways of solving the employee grievances

COs	**Sub Code: U8CO5006**	**Subject: Service Marketing**
	Credits:2	**Hrs./Week:4**
CO1	Understand and explain the nature and scope of services marketing.	
CO2	Develop marketing strategies for various services marketing-mix measures.	
CO3	Demonstrate how pricing concepts may be applied in marketing of services.	
CO4	Understand Distribution and Promotion of Services.	
CO5	Explain how wide range of services be marketed.	

COs	**Sub Code: U8COSB51**	**Subject: E-Commerce**
	Credits:1	**Hrs./Week:2**
CO1	Define E-Commerce and its advantages and limitations	
CO2	Understand various E-Commerce Models	
CO3	Describe Mobile Platform, Cloud Computing, Intranet and Extranet	
CO4	Outline the scope, process and benefits of Online Shopping	
CO5	Evaluate the future prospects of E-Commerce	

COs	**Sub Code: U8CO6001**	**Subject: Cost Accounting II**
	Credits:5	**Hrs./Week:5**
CO1	Prepare Job and Batch Costing	
CO2	Prepare Contract Costing	
CO3	Prepare Process Costing	

CO4	Gain knowledge on Joint Product and By-Product
CO5	Prepare the accounts of Service Costing
CO6	Understand advantages and limitations of Standard Costing
CO7	Analyse Material, Labour and Overhead Variances

COs	**Sub Code: U8CO6002**	**Subject: Management Accounting -II**
	Credits:5	**Hrs./Week:5**
CO1	Understand the concepts, importance and methods of budgeting.	
CO2	Prepare various functional budgets	
CO3	Describe the meaning, advantages and limitations of Marginal Costing	
CO4	Apply PBP, ARR, NPV and IRR methods of Capital Budgeting for Decision Making	
CO5	Define the need and objectives of Working Capital	
CO6	Determine the Working Capital Needs	
CO7	Explain Responsibility Accounting and Management Audit	

COs	**Sub Code: U8CO6003**	**Subject: Income Tax Law & Practice II**
	Credits:5	**Hrs./Week:5**
CO1	Compute Income from Capital Gains	
CO2	Explain Deduction under Section 54	
CO3	Compute Income from Other Sources	
CO4	Apply Clubbing Provisions and Set-off and Carry Forward Provisions	
CO5	Determine the Total Income of Individuals	
CO6	Compute Tax Liability of an Individual	
CO7	Understand the procedure for Filing of Returns	

COs	Sub Code: U8CO6004	Subject: Financial Management
	Credits:5	**Hrs./Week:5**
CO1	Define the basic concepts in Financial Management	
CO2	Describe the Methods and Tools of Financial Management	
CO3	Understand the factors determining Cost of Capital	
CO4	Compute Cost of Capital	
CO5	Evaluate factors determining Capital Structure	
CO6	Understand the types and degree of Operating Leverage	
CO7	Describe various approaches to Capital Rationing	

COs	Sub Code: U8CO6005	Subject: Entrepreneurial Development
	Credits:2	**Hrs./Week:4**
CO1	Understand the concept of Entrepreneurship	
CO2	Describe the evolution and objectives of Entrepreneurship Development Programme	
CO3	Identify future business opportunities in different business environments	
CO4	Prepare Project Report	
CO5	Analyse the sources of finance available to Entrepreneurs	

COs	Sub Code: U8CO6006	Subject: Industrial Legislations
	Credits:2	**Hrs./Week:4**
CO1	Understand the Factories Act 1948	
CO2	Describe the Industrial Disputes Act 1947	
CO3	Define the Workmen Compensation Act 1923	
CO4	Gain knowledge on the Payment of Gratuity Act 1972.	
CO5	Discuss the Equal Remuneration Act 1976	

COs	Sub Code: U8COSBP6	Subject: Commerce Practical
	Credits:1	**Hrs./Week:2**
CO1	Fill up different forms related to Banking, Insurance, Cost Accounting, Income Tax and GST	
CO2	Prepare Office Communications such as Agenda, Minutes of the Meeting	
CO3	File electronically IT returns	
CO4	Register a firm under GST and file electronically its returns	
CO5	Draft an Advertisement copy	

MASTER OF COMMERCE

COs	Sub Code: P8CO1001	Subject: Marketing Management
	Credits :5	**Hrs./Week :6**
CO1	Define Marketing, Mass Marketing, Niche Marketing, Strategic marketing, Demarketing, Remarketing, Social Marketing, Green Marketing, Product, Product Line, Product Mix, Product Life Cycle, Brand, Branding, Packaging, Labeling, Price, Channels of Distribution, Direct Marketing and Online Marketing	
CO2	Trace the evolution of Marketing across ages through varying views on Marketing concept and highlight the Significance of Marketing and various Elements of Marketing Mix	
CO3	Discuss the Functions of Marketing, Branding, Packaging, Labeling, Pricing, Channels of Distribution and describe Product, kinds of Pricing and types of Channels of Distribution	
CO4	Illustrate various stages in Product Life Cycle, New Product Development, Pricing a product, Channel Design Decision Making, Channel Management Decision Making, Channel Integration Decision Making	
CO5	Enumerate Challenges in New Product Development	
CO6	Describe the Determinants of Product Line and Product Pricing	
CO7	Analyse the Benefits and Channels of Direct Marketing, Advantages, Disadvantages, Prospects and Challenges in Online Marketing	

COs	Sub Code: P8CO1002	Subject: Advanced Management Accounting
	Credits :5	**Hrs./Week :6**
CO1	Describe the scope and importance of Management Accounting and explain about the various Tools used in Decision Making Process	
CO2	Analyse the Cost-Volume-Profit Technique to determine Optimal Managerial Decision	
CO3	Discuss on the various decisions making like, Price, Make or Buy and Product Mix	
CO4	Understand the application of Fund Flow Statement in planning for intermediate as Long Term Finance	
CO5	Describe the uses of Cash Flow Statement and its preparation as per AS3	
CO6	Prepare a Master Budget and demonstrate an understanding of the relationship between the components	
CO7	Understand the concepts, importance and Methods of Budgeting and to focus on the various Types of Budgets	

COs	Sub Code: P8CO1003	Subject: Advanced Business Statistics I
	Credits :4	**Hrs./Week :6**
CO1	Understand the scope of Statistics and its Concepts	
CO2	Gain knowledge on Correlation Coefficient	
CO3	Gain knowledge about Regression and its Methods	
CO4	Analyse Multiple Correlation and Multiple Regression	
CO5	Apply the Quantitative Techniques	

COs	Sub Code: P8CO1004	Subject: Business Environment
	Credits :4	**Hrs./Week :6**
CO1	Understand the concepts of Business Environment	
CO2	Identify the Social Responsibility of Business to different stakeholders	
CO3	Analyse how Political and Legal Environment affects the functioning of business	

CO4	Understand the Labour Legislations, various Welfare Schemes and role of Trade Union
CO5	Understand the Global Environment of Business

COs	**Sub Code: P8COEP11**	**Subject: Business & Professional Communication**
	Credits :4	**Hrs./Week :6**
CO1	Learn Communication Basics	
CO2	Develop Correspondence Skills	
CO3	Prepare candidates for handling Interview Situations	
CO4	Introduce Professionalism in Communication	
CO5	Understand the Modern Communication	

COs	**Sub Code: P8COEP12**	**Subject: Corporate Laws**
	Credits :4	**Hrs./Week :6**
CO1	Explain the importance and objectives of Corporate Laws and rules regarding Consumer Protection Act,1986	
CO2	Gain knowledge on Consumer Protection Councils and its powers, duties and complaint procedures	
CO3	Study the various aspects of Foreign Exchange Management Act 2000 (FEMA) and law relating to Export of Goods and Services	
CO4	Describe the concepts of the Information Technology Act 2000 and Cybercrimes	
CO5	Understand and discuss about the Environment Protection Act 1986, kinds of Pollution and various powers of Pollution Control Board	

COs	**Sub Code: P8CO2001**	**Subject: Human Resource Management**
	Credits :5	**Hrs./Week :5**
CO1	Understand the concepts of Human Resource Management	
CO2	Familiar with the Functions of Human Resource Department	

CO3	Plan and Organise Human Resources
CO4	Understand the Sources of Recruitment
CO5	Describe the Selection Procedure
CO6	Evaluate the Different Techniques of Training
CO7	Analyse the Methods of Performance Appraisal

COs	**Sub Code: P8CO2002**	**Subject: Advanced Financial Management**
	Credits :5	**Hrs./Week :6**
CO1	Gain knowledge on functions of Finance Management.	
CO2	Analyse the long term Sources of Funds	
CO3	Describe the Operating Environment of Working Capital	
CO4	Discuss the Capital Structure and its Theories	
CO5	Understand the concepts of Financial Leverage	
CO6	Infuse knowledge on Working Capital Management.	
CO7	Discuss the Capital Budgeting.	

COs	**Sub Code: P8CO2003**	**Subject: Advanced Business Statistics II**
	Credits :4	**Hrs./Week :6**
CO1	Understand the Techniques of Probability	
CO2	Gain knowledge on Chi Square Test	
CO3	Analyse the F-Test and ANOVA.	
CO4	Describe the t-distribution	
CO5	Understand the idea regarding Assignment Problem	

COs	**Sub Code: P8CO2004**	**Subject: Financial Services**
	Credits :4	**Hrs./Week :5**

CO1	Understand Financial Services in India
CO2	Analyze the concept of Leasing and how to differentiate the Hire Purchase from Leasing.
CO3	Analyse the Factoring Services and its Types
CO4	Collect the data from the students pertaining to Venture Capital
CO5	Understand Fee Based and Advisory Financial Services

COs	**Sub Code:P8COEP21**	**Subject: Consumer Behaviour**
	Credits :4	**Hrs./Week :6**
CO1	Define Consumer Behaviour, Consumer Research, Motivation, Motives, Personality, Attitude, Perception, Consumer Imagery, Perceived Risk, Learning, Attitude, Reference Group, Family, Opinion Leader, Social Class, Social Class Mobility, Culture, Customs, Values, Beliefs, Sub-Culture, Customer Dissatisfaction	
CO2	Describe the impact of Individual Determinants like Consumer Motives, Personality, Attitude, Perception, Learning on Consumer Behaviour and Discuss strategies to cause favorable behavior from consumer	
CO3	Discuss the impact of Groups Determinants on Individual Consumer Behaviour like Family, Reference Groups, Opinion Leadership	
CO4	Deliberate Environmental Influences like Social Class, Culture and Sub-Culture on Individual Consumer Behaviour	
CO5	Enumerate the factors influencing Organisational Buying Behaviour and Chart out the steps in developing a Persuasive Communication	

COs	**Sub Code: P8COEP22**	**Subject: E-Commerce**
	Credits :4	**Hrs./Week :6**
CO1	Define E-commerce, E-Business, EDI, E-Marketing, Online Marketing, E-Advertising, E-Branding, E-CRM, E-Banking, Mobile Banking, Electronic Payment System and E-Communication	
CO2	Describe the various models of E-Commerce based on Transacting Parties and Transaction type with examples	
CO3	Elucidate the Benefits, Process, Components, Applications of EDI	

CO4	Analyse the importance of E-Marketing and E-CRM
CO5	Discuss the concepts of E-Banking and E-Communication

COs	**Sub Code: P8HR2001**	**Subject: Human Rights**
	Credits :0	**Hrs./Week :2**
CO1	Understand the of concept of Human Rights	
CO2	Develop strong understandings of International Human Rights.	
CO3	Describe the Social, Political and Legal Policies that relate to International Law.	
CO4	Gain knowledge on Human Rights Declaration by UN and UN Human Commissioner, Amnesty International, European Human Rights System, and African Human Rights System	
CO5	Comprehend the contemporary issues on Human Rights	

COs	**Sub Code: P8CO3001**	**Subject: Advanced Accounting I**
	Credits :5	**Hrs./Week :6**
CO1	Understand the concepts of Accounting Standards	
CO2	Prepare Company Final Account as per Revised Schedule VI	
CO3	Evaluate the value Goodwill and Shares under different methods	
CO4	Understand about Business Combination and Corporate Restructuring	
CO5	Prepare Accounting for Amalgamation and Absorption	
CO6	Acquire knowledge about Alteration of Share Capital and Internal Reconstruction	
CO7	Discuss the accounting for Price Level Changes	

COs	**Sub Code: P8CO3002**	**Subject: Advanced Cost Accounting I**
	Credits :5	**Hrs./Week :6**
CO1	Know the basic concepts in Cost Accounting and prepare Cost Sheets, Tenders and Quotations	
CO2	Prepare Material Costing and Methods of Pricing Material Issues	

CO3	Compute Labour Cost and knowing the Methods of Measuring Labour Turnover
CO4	Prepare the Apportionment and Allocation of Overheads
CO5	Describe the methods of Reapportionment of Overheads
CO6	Understand the need and objectives for Reconciliation
CO7	Prepare Reconciliation Statement

COs	**Sub Code: P8CO3003**	**Subject: Organisational Behaviour**
	Credits :4	**Hrs./Week :6**
CO1	Gain knowledge on the Organisational Behaviour	
CO2	Write down Motivation and its Theories	
CO3	Classify the types of groups in the organisation and factors causing Stress in the Work Place	
CO4	Impart knowledge on Leadership and Styles of Leadership	
CO5	Instill the knowledge on organizational Structure and Organisational Change	

COs	**Sub Code: P8CO3004**	**Subject: Research Methodology**
	Credits :4	**Hrs./Week :6**
CO1	Understand the basics of Research Methodology	
CO2	Analyse Data Collection and Sampling	
CO3	Gain knowledge on the Processing of Data	
CO4	Classify the Data Analysis through Statistical Tools	
CO5	Prepare Report Writing	

COs	**Sub Code: P8COEP31**	**Subject: Goods and Services Tax**
	Credits :4	**Hrs./Week :6**
CO1	Describe the Indian Taxation System and its impact on Indian Economy	

CO2	Prepare GST Registration and Records
CO3	Identify exempted Goods and Services
CO4	Classify GST Returns, TDS, Electronic Register, Assessment and Audit
CO5	Describe the Offences and Penalties, Prosecution, Refund, Search and Seizures

COs	**Sub Code: P8COEP32**	**Subject: Managerial Economics**
	Credits :4	**Hrs./Week :6**
CO1	Understand the Theories of Managerial Economics and its Factors	
CO2	Gain knowledge on Laws of variable proportions, Return to Scale and Large Scale Operation	
CO3	Develop an idea about Market Structure and its Functions	
CO4	Describe the Theories of Profit, Cost Volume Profit Analysis and BEP Analysis	
CO5	Provide an idea regarding National income, methods of computation and causes, consequences and remedies	

COs	**Sub Code: P8CO4001**	**Subject: Advanced Accounting II**
	Credits :5	**Hrs./Week :5**
CO1	Gain knowledge on Liquidation of Companies and its modes	
CO2	Prepare Liquidator Final Statement of Accounts	
CO3	Develop knowledge on concepts of Holding Company and its Accounts	
CO4	Prepare Accounts of Banking Companies as per Revised Format	
CO5	Prepare Accounts of Insurance Companies	
CO6	Understand Human Resource Accounting and Environmental Accounting	
CO7	Describe Social Responsibility Accounting and Accounting for Intangible Assets	

COs	**Sub Code: P8CO4002**	**Subject: Advanced Cost Accounting II**
	Credits :5	**Hrs./Week :5**

CO1	Gain knowledge on Job and Batch Costing
CO2	Prepare Contract Account
CO3	Prepare Process Costing
CO4	Know Accounting Treatment for Joint and By-products
CO5	Prepare Service Costing
CO6	Discuss the concepts of Standard Costing
CO7	Analyse Material, Labour and Overhead Variance

COs	**Sub Code: P8CO4003**	**Subject: Direct Taxes**
	Credits :4	**Hrs./Week :6**
CO1	Contrast the different basic concepts in Income Tax	
CO2	Compute Salary Income and Income from House Property	
CO3	Construct the Statements for Business Income, Professional Income and Capital Gains	
CO4	Compute the Income from Other Sources and Total Income of Individuals	
CO5	Identify the Assessment Procedure and Tax Planning	

COs	**Sub Code: P8CO4004**	**Subject: Security Analysis**
	Credits :4	**Hrs./Week :5**
CO1	Examine the importance, features of Investment Program and to find out the various Risks associated with an Investment	
CO2	Understand the scope, significance and approaches of security Analysis	
CO3	Describe about the Technical Analysis Vs Fundamental Analysis and effectiveness of various theories of Security Analysis	
CO4	Acquire the knowledge about the Valuation of Securities	
CO5	Explore the theory and practice of Portfolio analysis	

COs	**Sub Code: P8COEP41**	**Subject: Export Management**

	Credits :4	**Hrs./Week :5**
CO1	Understand the objectives, merits and demerits if Export Business and examine its role in Economic Development of a country	
CO2	Describe the important features of Exim Policy and its Highlights	
CO3	Identify the factors influencing Export Pricing Decisions	
CO4	Gain knowledge on export procedure and incentives available to Indian Exporters	
CO5	Examine the export financing and measures for Export Promotion	

COs	**Sub Code: P8COEP42**	**Subject: Entrepreneurial Development**
	Credits :4	**Hrs./Week :5**
CO1	Develop the skills of becoming good entrepreneurs and classify types of Entrepreneurs	
CO2	Describe the procedures relating to Starting an Enterprise	
CO3	Identify the role of Promotional and Developmental Institution in entrepreneurial growth	
CO4	Identify the role of financial institution in Entrepreneurial Growth	
CO5	Describe the various Government Policies and Benefits to Entrepreneurs	

COs	**Sub Code: P8CONM41**	**Subject: Computer Applications in Business**
	Credits :2	**Hrs./Week :4**
CO1	Understand basic concepts of Computers and Generations of Computer	
CO2	Present the business documents using Word Document	
CO3	Prepare PPT- Power Point presentation using various Transitions, Animations and other layouts.	
CO4	Prepare and present the computerized Accounting of various business transactions. through Excel Sheet	
CO5	Describe the basic concepts of E-Transactions – e-payments, online ticket booking, online shopping, online library etc.,	

MASTER OF PHILOSOPHY

Cos	Sub Code: MPH8CO01	Subject: Research Methodology
	Credits: 5	**Hrs./Week: 6**
CO1	Define Research, Research Objective, Hypothesis, Pilot Study, Sample and Sampling, various stages of a Research Process and designing Research Methodology	
CO2	Apply the Moral Principles and Code of Ethics in every stage of Research especially during Data Collection and report the findings of the Research honestly	
CO3	Identify Research Gap, Define research objectives and formulate Research Questions and Hypotheses	
CO4	Discuss various sources of Data & their Collection Methods and identify the best method for the concerned Research	
CO5	Decide the Sampling Size and Sampling Technique to be followed for Research and Design a Questionnaire	
CO6	Organise the data and present the data in the form of Tabulation, Graph, Diagrams and Pictures	
CO7	Interpret the results, Communicate the results and offer Suggestion through drafting a detailed Research Report	

COs	Sub Code: MPH8CO02	Subject: Advanced Financial Management
	Credits: 5	**Hrs./Week: 5**
CO1	Define Financial Management and discuss its Scope, Objectives and Functions	
CO2	Explain Capital Budgeting, Short Term Finance, Long Term Finance, Wealth Maximisation and Profit Maximisation, Working Capital	
CO3	Analyse kinds of Capital Investment proposals and the factors affecting them	
CO4	Describe the Sources & Types of Working Capital and its Determinants	
CO5	Compute Profitability, Turnover and Financial Ratios and utilize them to better understand the operations and financial position of a business	
CO6	Discuss various theories on Capital Structure, Compute Cost of Equity, Debentures, Preference Share Capital and use them to make sound decisions on Designing, Altering and	

	Managing the Capital Requirements of a business
CO7	Prepare Capital Budget Appraisal and estimate Working Capital Requirements

DEPARTMENT OF COMMERCE (COMPUTER APPLICATIONS)

SEMESTER I

COs	Course Name: Fundamentals of Accounting-I	Code: U8CA1001	Credit : 05
CO1	Comprehend the basic accounting skills like recording, classifying accounting Data.		
CO2	Prepare final accounts of individuals and Non-trading concerns.		
CO3	Compute depreciation under various methods of providing depreciation.		
CO4	Prepare insurance claims and find average due date.		
CO5	Acquire the skills to prepare statement of affairs from in-complete records.		
CO6	Prepare final accounts from in-complete records.		
CO 7	Analyse financial results of sole traders		

COs	Course Name: Principles of Management	Code: U8CA1002	Credit : 03
CO1	Understand the basic principles and concepts of management.		
CO2	Develop the skills to plan and make decisions.		
CO3	Acquire organising skills.		
CO4	Understand the concept of staffing and related functions.		
CO5	Comprehend the concept of controlling and coordination.		

COs	Course Name: Introduction to Information Technology	Code: U8CAAL11	Credit : 06
CO1	Understand the parts of Computer and its functioning.		
CO2	Understand the concept of operating systems		
CO3	Understand the applications of computer software.		
CO4	Gain knowledge of the benefits of networking and internet.		
CO5	Acquire knowledge of management information system.		
CO6	Create and send e-mail.		
CO 7	Acquire the knowledge of use of computers in office automation.		

COs	Course Name: Computer Applications in Business (Practical)	Code: U8CAAP11	Credit : 01
CO1	Develop the skills of creating, editing, for making documents using MS-Word.		
CO2	Insert pictures, objects, use the template and mail merge option.		
CO3	Create a worksheet using MS Excel.		
CO4	Prepare slides and prepare organisational charts using MS Power Point.		

SEMESTER II

COs	Course Name: Fundamentals of Accounting-II	Code: U8CA2001	Credit : 04
CO1	Acquire the skills to prepare accounts for different kinds of branches.		
CO2	Prepare accounts for various departments and finding profit separately for departments.		
CO3	Gain knowledge of the concept of hire purchase and instalment system.		
CO4	Able to prepare partnership accounts.		
CO5	Understand the accounting procedures for admission of a partner.		

COs	Course Name: Managerial Economics	Code: U8CA2002	Credit : 03
CO1	Understand the nature and scope of Managerial Economics.		
CO2	Acquire knowledge of demand, supply concepts and forecasting techniques.		
CO3	Understand the cost concepts and economies scale.		

CO4	Acquaint with the market structure, price and output determination.
CO5	Able to describe the concepts of trade cycles, inflation, fiscal & monetary policy etc.,

COs	**Course Name: Tally (THEORY)**	**Code: U8CAAL21**	**Credit : 06**
CO1	Understand the basic concept of computerized accounting.		
CO2	Create, alter and delete a company.		
CO3	Understand inventory system.		
CO4	Identify short cut keys and various vouchers		
CO5	Understand stock categories and inventory vouchers.		
CO6	Acquire knowledge of TDS, GST and preparation of reports.		
CO 7	Understand F11 and F12 configurations.		

COs	**Course Name: Tally (Lab)**	**Code: U8CAAP21**	**Credit : 01**
CO1	Understand Creation, Alteration and Deletion of Companies in tally.		
CO2	Create, Alter and Delete of accounting groups.		
CO3	Able to learn Creation, Alteration and deletion of ledgers.		
CO4	Prepare voucher entries in single entry mode.		
CO5	Develop skills of Printing of final accounts, statements of account and Balance Sheet.		

SEMESTER III

COs	**Course Name: Advanced Accounting-I**	**Code: U8CA3001**	**Credit : 05**
CO1	Understand accounting system for corporate entities.		
CO2	Prepare accounting entries for issue of shares, redemption of debentures and preference shares		
CO3	Compute profit prior to incorporation.		
CO4	Understand the methods of valuing goodwill.		
CO5	Understand the methods of valuing shares		
CO6	Acquire the knowledge of preparation of final accounts of companies as per the new format.		
CO7	Prepare accounting entries relating to the internal reconstruction.		
CO8	Prepare balance sheet after reduction of share capital.		

COs	Course Name: Commercial Law	Code: U8CA3002	Credit : 04
CO1	Understand the provisions of the Indian Contract Act.		
CO2	Understand the meaning of offer and acceptance.		
CO3	Acquaint with the competency to enter into contract		
CO4	Acquire knowledge of execution and various remedies available for breach of contract.		
CO5	Understand the provisions of Sale of Goods Act.		

COs	Course Name: Statistics - I	Code: U8CA3003	Credit : 04
CO1	Understand the concepts of Statistics and various methods of presentation of Statistical data.		
CO2	Able to present statistical data in diagrams and graphs.		
CO3	Able to measure central tendency, variations.		
CO4	Gain knowledge of calculation of measures of dispersion and skewness.		

COs	Course Name: Principles of Insurance	Code: U8CANM31	Credit : 02
CO1	Acquire the basic knowledge of insurance.		
CO2	Gain knowledge of legal framework of insurance.		
CO3	Understand different kinds of life insurance policies.		
CO4	Understand the categories of general insurance policies.		

COs	Course Name: Management Information System	Code: U8CAAL31	Credit : 04
CO1	Understand fundamental aspects of Management Information System.		
CO2	Describe use of MIS in Management.		
CO3	Discuss the use of MIS in decision making.		
CO4	Gain knowledge of different information systems.		
CO5	Understand the categories of Database & Data models.		

COs	Course Name: Database Management System	Code: U8CAAP31	Credit : 03
CO1	Understand the database management system and its uses.		

CO2	Gain knowledge of the usage of loops and functions.
CO3	Understand the basic concepts of DBMS.
CO4	Illustrate the essentials of SQL.
CO5	Acquire the knowledge of database connectivity and reports in Visual Basic application.

COs	**Course Name: Business Communication**	**Code: U8CASB31**	**Credit : 03**
CO1	Acquire basic knowledge of principles of business communication.		
CO2	Understand the various forms of communication		
CO3	Draft different categories of business letters.		
CO4	Prepare business reports and promotion material.		
CO5	Application of modern techniques of communication.		

SEMESTER IV

COs	**Course Name: Advanced Accounting-II**	**Code: U8CA4001**	**Credit : 05**
CO1	Understand acquisition of business.		
CO2	Compute purchase consideration under different methods.		
CO3	Prepare accounts of vendor company and purchasing company.		
CO4	Prepare profit and loss account and balance sheet of the banking companies.		
CO5	Consolidate the balance sheets of holding and subsidiary companies.		
CO6	Prepare the liquidator's final statements of account.		
CO 7	Understand the concept of inflation accounting and prepare income statement and balance sheet.		

COs	**Course Name: Company Law**	**Code: U8CA4002**	**Credit : 04**
CO1	Appreciate the basic aspects of Company Law.		
CO2	Gain knowledge of starting a company.		
CO3	Learn the contents of prospectus and types of securities offered.		
CO4	Comprehend the procedure for appointment of directors, their types, powers and duties.		
CO5	Learn the procedure for winding up of a company.		

COs	Course Name: Statistics-II	Code: U8CA4003	Credit : 04
CO1	Use software and packages for statistical analysis.		
CO2	Identify the types of correlation and its significance.		
CO3	Estimate the value of unknown variable using regression.		
CO4	Understand the components of time series and analyse the causes of variations in Time Series.		
CO5	Apply statistics in business and economics using index numbers.		

COs	Course Name: Consumer Welfare	Code: U8CANM41	Credit : 03
CO1	Discuss the classification of consumers.		
CO2	Understand the need for consumer awareness.		
CO3	Understand consumer disputes and functioning of redressal agencies.		
CO4	Evaluate consumer welfare measures taken by various bodies.		

COs	Course Name: Enterprise Resource Planning	Code: U8CAAL41	Credit : 04
CO1	Understand the basics of ERP and its components.		
CO2	Implement ERP.		
CO3	Understand functional modules of ERP.		
CO4	Obtain the knowledge of ERP techniques.		
CO5	Discuss the ERP packages like SCM, CRM SAP etc.,		

COs	Course Name: Visual Basic Programming (LAB)	Code: U8CAAP41	Credit : 03
CO1	Gain knowledge to develop an application using Visual Basic.		
CO2	Design application for student mark list.		
CO3	Use image box control with string functions.		
CO4	Use check box, flex grid control.		
CO5	Develop a programme for super market bill, Inventory maintenance.		

COs	Course Name: Principles of Marketing	Code: U8CASB41	Credit : 02

CO1	Discuss marketing role and importance.
CO2	Understand product planning, development and market segmentation and its benefits.
CO3	Gain knowledge of pricing policies and methods.
CO4	Acquire the knowledge of advertising sales promotion and personal selling.
CO5	Understand recent developments in marketing.

SEMESTER V

COs	**Course Name: COST ACCOUNTING**	**Code: U8CA5001**	**Credit : 05**
CO1	Understand basic techniques of costing		
CO2	Understand different methods of costing.		
CO3	Apply different techniques of costing to ascertain and analyse cost.		
CO4	Prepare cost sheet and stores ledger.		
CO5	Compute labour cost and material cost.		
CO6	Prepare overhead cost summary.		
CO 7	Prepare process cost accounts.		

COs	**Course Name: INCOME TAX LAW AND PRACITCE – I**	**Code: U8CA5002**	**Credit : 05**
CO1	Understand provisions of income tax.		
CO2	Understand powers of income tax authorities		
CO3	Discuss the concept of tax planning and tax evasion		
CO4	Compute income from salary.		
CO5	Identify allowances and perquisites.		
CO6	Compute income from house property		
CO 7	Prepare statement of income from business or profession.		

COs	**Course Name: PRACTICAL AUDITING**	**Code: U8CA5003**	**Credit : 05**
CO1	Understand the various aspects of auditing.		
CO2	Identify different procedures of auditing.		
CO3	Discuss the concepts of internal control.		

CO4	Understand the concepts of vouching.
CO5	Discuss qualification and disqualification of auditors.
CO6	Understand laws relating to appointment and removal of auditors.
CO 7	Compare audit of specialised organisations

COs	**Course Name: ENTREPRENEURIAL DEVELOPMENT**	**Code: U8CA5004**	**Credit : 05**
CO1	Understand the concept of Entrepreneurship.		
CO2	Evaluate entrepreneurial skills.		
CO3	Understand the procedure of starting and running a business.		
CO4	Discuss the basic problems of women entrepreneurship.		
CO5	Understand the concept of project management.		
CO6	Identify different forms of ownership.		
CO 7	Understand agencies promoting entrepreneurship.		

COs	**Course Name: COMPUTER APPLICATIONS IN FINANCE**	**Code: U8CA5005**	**Credit : 02**
CO1	Understand the basic knowledge of Finance		
CO2	Understand the functioning of Financial Institutions		
CO3	Develop skill of conducting business transactions through electronic means		
CO4	Understand basic concepts of screen based trading systems.		

COs	**Course Name: WEB TECHNOLOGY (PRACTICAL)**	**Code: U8CAPR51**	**Credit : 02**
CO1	Gain basic knowledge on HTML and Java Script		
CO2	Gain experience of developing Web Page		
CO3	Develop programming skills		
CO4	Apply the use of Web technology in Business		

COs	Course Name: QUANITATIVE APTITUDE & REASONING	Code: U8CASB51	Credit : 01
CO1	Gain basic knowledge of Quantitative Techniques		
CO2	Compute the roots and Averages		
CO3	Understand reasoning and logical reasoning		
CO4	Develop problem solving and reasoning skills		

SEMESTER VI

COs	Course Name: ACCOUNTING FOR DECISION MAKING	Code: U8CA6001	Credit : 05
CO1	Understand the basic principles of management accounting		
CO2	Discuss applications of management accounting		
CO3	Understand techniques of financial statements analysis		
CO4	Understand the application of ratio analysis		
CO5	Prepare funds flow statement.		
CO6	Prepare cash flow statement as per AS 3.		
CO 7	Develop skills to prepare various types of budget.		

COs	Course Name: Income Tax Law & Practice -II	Code: U8CA6002	Credit : 05
CO1	Gain knowledge of income tax law relating to computation of tax.		
CO2	Compute long term and short term capital gains.		
CO3	Compute income from other sources.		
CO4	Understand the concept of gross total income and net income.		
CO5	Compute amount of deductions allowable from gross total income.		
CO6	Understand the assessment procedure.		
CO 7	Apply Income Tax Laws to find tax liability of Individuals		

COs	Course Name: BANKING LAW & PRACTICE	Code: U8CA6003	Credit : 05
CO1	Understand the provisions of banking law.		
CO2	Discuss the functioning of central bank.		

CO3	Understand the functioning of commercial banks
CO4	Analyse relationship between banker and customers.
CO5	Evaluate banking reforms in India
CO6	Understand banking in IT era
CO 7	Discuss negotiable instruments

COs	**Course Name: Multimedia Theory & Practice**	**Code: U8CA6004**	**Credit : 02**
CO1	Understand practical applications of multimedia.		
CO2	Acquire hands on training with hardware of multimedia.		
CO3	Understand functioning of Multimedia Audio.		
CO4	Discuss the concept of Multimedia Text and Animations.		
CO5	Use of Multimedia Graphics and Videos.		

COs	**Course Name: HUMAN RESOURCE MANAGEMENT**	**Code: U8CA6005**	**Credit : 02**
CO1	Understand the basic concepts of Human Resource Management.		
CO2	Apply the basics of planning for human resources.		
CO3	Use the methods of improving human resources.		
CO4	Apply techniques of evaluation of human resources.		
CO5	Understand position movement of employees.		

COs	**Course Name: Project – (Commerce)**	**Code: U8CAPJ61**	**Credit : 05**
CO1	Understand the gap between Academics and Industry		
CO2	Understand functioning of different categories organizations		
CO3	Assess usage of computers in organisations		
CO4	Understand functioning of stock markets.		

CO5	Identify E-Commerce Transactions.
CO6	Prepare project report.
CO 7	Develop solutions to business problems

COs	**Course Name: E-COMMERCE AND ITS APPLICATIONS**	**Code: U8CASB61**	**Credit : 01**
CO1	Gain the knowledge of E-Commerce		
CO2	Understand the mechanisms of E-Commerce		
CO3	Conduct business transactions through electronic means		
CO4	Comprehend on upgrading of traditional and contemporary Commerce		

DEPARTMENT OF COMMERCE (FINANCE & ACCOUNTS)

Course Outcomes (COs):

COs	**Course Name: Financial Accounting - I**	**Code: U8FA1001**	**Credits:5**
CO1	Understand the accounting concepts and conventions to maintain the business transactions.		
CO2	Assess the rectification of errors.		
CO3	Prepare of final accounts and the bank reconciliation statement.		
CO4	Evaluate the business implications of financial statement information.		
CO5	Explain the various techniques and methods of deprecation.		
CO6	Obtain the skill for preparing average due date and account current.		
CO7	Gain the knowledge on single entry system.		

COs	**Course Name: Industrial Law**	**Code: U8FA1002**	**Credit:3**
CO1	Explain the various aspects of factories act.		
CO2	Equip with the knowledge on workmen compensations.		
CO3	Understand the wages act & gratuity act.		
CO4	Acquire the knowledge on industrial disputes and its settlement.		
CO5	Comprehend the knowledge on EPF and ESI & other schemes.		

COs	Course Name: Business Communication	Code: U8FAAL11	Credit:4
CO1	Understand the concept and importance of communication.		
CO2	Outline the various aspects of business communication.		
CO3	Acquire knowledge on the business correspondences.		
CO4	Classify the kinds of business letters and its practical use.		
CO5	Gain knowledge on prepare the application letter and resumes.		

COs	Course Name: Indian Economy	Code: U8FAAL12	Credit:3
CO1	Understand the concept of growth and development, and factors influence the economic development of a nation.		
CO2	Get enlightened planning in India and its impact on economy.		
CO3	Assess the agricultural contribution towards GNP and employment.		
CO4	Gain knowledge of the industrial economy and its causes for sickness.		
CO5	Evaluate the new economic policy in the back drop of liberalization, privatization and globalization.		

COs	Course Name: Financial Accounting - II	Code: U8FA2001	Credit:4
CO1	Acquire the knowledge for preparing various types of branch accounts.		
CO2	Able to transform the accounting knowledge in departmental accounting.		
CO3	Prepare accounts in hire purchase and installment system.		
CO4	Understand of partnership accounting.		
CO5	Assess on treatment of goodwill, retirement and dissolution of a partnership firm.		

COs	Course Name: Financial Markets	Code: U8FA2002	Credit:3
CO1	Describe the various financial systems in India.		
CO2	Gain the knowledge of the procedure on new issue market.		
CO3	Understand the idea about stock exchange and its role.		

CO4	Analyze the trading of stock exchange.
CO5	Outline the concepts of derivatives & its function.

COs	**Course Name: Business Law**	**Code: U8FAAL21**	**Credit:4**
CO1	Identify the essentials of contract and competent to contract.		
CO2	Assess the performance of contract that enables how to make a contract and breach the contract.		
CO3	Recognize the concept and rights and duties of indemnity, guarantee, bailment, pledge, pawnor, pawnee, bailor, bailee.		
CO4	Distinguish the agent, personal liability of agent and termination of agent.		
CO5	Understand the sale of goods act and to discriminate sale and agreement to sell.		

COs	**Course Name: Goods and Services Tax**	**Code: U8FAAL22**	**Credit:3**
CO1	Understand the framework of taxation and GST.		
CO2	Identify the SGST and other added tax.		
CO3	Outline the role of central government in GST framework.		
CO4	Comprehend the knowledge on various slab rates under GST.		
CO5	Obtain the knowledge of the GST network, e-filling procedure and other guidelines.		

COs	**Course Name: Corporate Accounting - I**	**Code: U8FA3001**	**Credit:5**
CO1	Understand the feature of shares and debentures		
CO2	Acquire the knowledge of accounting procedure on issue of shares.		
CO3	Gain the knowledge on recent trends on issue of debenture and its readmission.		
CO4	Discuss the acquisition of business		
CO5	Prepare the profit prior to incorporation and company final accounts.		
CO6	Identify the accounting procedure of holding company.		
CO7	Recognize the procedure of preparing inflation accounting.		

COs	Course Name: Business Management	Code: U8FA3002	Credit:3
CO1	Understand the management function and its importance.		
CO2	Describe the importance of planning and its process.		
CO3	Gain the knowledge of organizational structures.		
CO4	Outline the authority and responsibility in an organization and its requirement.		
CO5	Obtain the knowledge to become a good leader.		

COs	Course Name: Business Statistics - I	Code: U8FAAL31	Credit:4
CO1	Understand and apply of statistical tools in business and economics.		
CO2	Prepare the collection, tabulate and classify various statistical data.		
CO3	Illustrate the data with diagrammatic and graphical representation.		
CO4	Assess the central tendency and their application in business.		
CO5	Able to understand dispersion and skewness.		

COs	Course Name: Elements of Insurance	Code: U8FAAL32	Credit:3
CO1	Develop knowledge of insurance for an individual and business.		
CO2	Compare and contrast the principles of insurance.		
CO3	Able to adopt procedure for effecting life insurance.		
CO4	Understand the various types of insurance.		
CO5	Comprehend the role of insurance industries in India.		

COs	Course Name: Business Economics - I	Code: U8FA3003	Credit:4
CO1	Able to gear up business economics and its applications.		
CO2	Gain knowledge on demand and supply concept, law of demand and elasticity of demand.		
CO3	Analyze demand forecasting and factors involved in it.		

CO4	Understand the cost, revenue concepts and break even analysis.
CO5	Demonstrate concept of production function, law of variable proportions, law of returns to scale and economies of scale.

COs	**Course Name: Modern Banking**	**Code: U8FA3004**	**Credit:4**
CO1	Gain the knowledge on banking & financial system in India.		
CO2	Recognize the role of RBI In banking system.		
CO3	Comprehend the idea about commercial bank and its products.		
CO4	Acquire knowledge about recent development in banking sector.		
CO5	Able to use of mobile banking and its services.		

COs	**Course Name: E - Commerce**	**Code: U8FASB31**	**Credit:2**
CO1	Outline E-Commerce and its merits.		
CO2	Understand the scope and growth of E-Commerce in India.		
CO3	Able to use the internet and its application in mobile commerce.		
CO4	Compare E-Marketing, E-Advertising and E-Payment.		
CO5	Recognize the cyber crime law and Information Technology Act 2000.		

COs	**Course Name: Corporate Accounting - II**	**Code: U8FA4001**	**Credit:5**
CO1	Assess the accounting treatment on valuation of goodwill and shares.		
CO2	Prepare the internal reconstruction and revaluation of shares.		
CO3	Understand the preparation of liquidator's final statements.		
CO4	Analyze and preparation of bank account.		
CO5	Acquire knowledge about amalgamation and absorption.		
CO6	Gain knowledge about the accounting procedure regarding reconstruction of company.		
CO7	Identify the causes of non-performing assets.		

COs	Course Name: Banking Law & Practice	Code: U8FA4002	Credit:3
CO1	Understand banker and customer relationship.		
CO2	Create the various types of bank Accounts and its opening procedure.		
CO3	Discuss about negotiable instruments and its features.		
CO4	Gain knowledge about crossing and endorsement.		
CO5	Compare the role of paying and collecting bankers.		

COs	Course Name: Business Statistics - II	Code: U8FAAL41	Credit:4
CO1	Understand and apply different methods of sampling and survey of inquiry.		
CO2	Outline the correlation analysis and its application in business.		
CO3	Explain regression and its application in business.		
CO4	Assess the changes in price or quantity of good in respect of one period to another.		
CO5	Apply the time series analysis in prediction of the future.		

COs	Course Name: Islamic Economics	Code: U8FAAL42	Credit:3
CO1	Understand the preamble of Islamic economics and differentiate the Islamic economics with conventional economics.		
CO2	Outline principles of Islamic economics.		
CO3	Appreciate Islamic consumer and production behaviors.		
CO4	Identify the income and wealth distribution under Islamic system.		
CO5	Gain knowledge about Islamic cooperation, institutions and Islamic business ethics.		

COs	Course Name: Business Economics - II	Code: U8FA4003	Credit:4
CO1	Understand various market structures viz., perfect competition, monopoly, monopolistic competition and oligopoly.		
CO2	Discuss the profit concepts and theories.		
CO3	Able to know about pricing policy and methods.		
CO4	Plan the capital budgeting and project profitability.		
CO5	Assess the national income and government policies such as industrial policy and national income.		

COs	Course Name: Entrepreneurial Development	Code:U8FA4004	Credit:4
CO1	Understand the significance of entrepreneurship in economic development.		
CO2	Gain analytical knowledge on preparation of project and its report.		
CO3	Comprehend the process of starting small scale industries.		
CO4	Examine the various incentives and subsidies provided by the government.		
CO5	Identify the entrepreneurship development programmes.		

COs	Course Name: Investment Management	Code: U8FASB41	Credit:2
CO1	Understand theory relevant to determining investment risk and return.		
CO2	Acquire the knowledge on various sources of investment.		
CO3	Plan to invest in alternative investment.		
CO4	Gain practical knowledge on fundamental analysis of investment.		
CO5	Able to develop portfolio and risk management.		

COs	Course Name: Income Tax Law & Practice - I	Code: U8FA5001	Credit:5
CO1	Understand the fundamentals of income tax and its terminologies.		
CO2	Identify the residential status of an assessee.		
CO3	Comprehend to calculate the income under the head salary.		
CO4	Outline the exemptions under income tax.		
CO5	Gain knowledge of calculating income under the head house property.		
CO6	Comprehend knowledge on the allowable and disallowable expenses and provisions relating to income from business and profession.		
CO7	Gain the knowledge on depreciation concept under income tax act 1961.		

COs	Course Name: Cost Accounting - I	Code: U8FA5002	Credit:5
CO1	Outline the concepts of cost and financial accounting.		
CO2	Prepare of cost sheet in its practical point of view.		
CO3	Understand the cost components such as ABC and EOQ.		
CO4	Analyze the level of stock.		

CO5	Assess the price of materials under various methods.
CO6	Calculate labour turnover, idle time and overtime and earnings of wages.
CO7	Understand overheads viz., allocation, absorption and apportionment of overhead cost.

COs	**Course Name: Management Accounting**	**Code: U8FA5003**	**Credit:5**
CO1	Understand the concepts of management accounts and its techniques.		
CO2	Compare management accounting with other accountings.		
CO3	Compile the financial statement analysis.		
CO4	Gain the knowledge of the importance of ratio analysis in business.		
CO5	Prepare the fund flow and cash flow statements.		
CO6	Plan the preparation of budget and budgetary control techniques.		
CO7	Calculate the capital budgeting policy.		

COs	**Course Name: Human Resources Management**	**Code: U8FA5004**	**Credit:5**
CO1	Comprehend human resource management function and to tackle various issues.		
CO2	Explain the role and qualities of a human resource manager.		
CO3	Understand the job analysis, process of recruitment and steps in selection process.		
CO4	Plan the policies to acquire, develop, motivate and retain human resources by training.		
CO5	Outline the need and importance of employees training and development.		
CO6	Assess of employees to fix pay, compensation, profit sharing , fringe benefits etc.		
CO7	Explain the dynamics of industrial relations and to manage them i.e., maintaining and retaining process.		

COs	**Course Name: Marketing Management**	**Code: U8FA5005**	**Credit:2**
CO1	Understand the marketing concepts and its environment.		
CO2	Outline the concepts of consumer behavior and its theories.		
CO3	Acquire knowledge on product planning and product life cycle.		
CO4	Explain the pricing and methods of promotions.		
CO5	Gain the knowledge on choice of channels of distribution.		

COs	Course Name: Business Environment	Code: U8FA5005	Credit:2
CO1	Comprehend the various forms of business environment.		
CO2	Gain knowledge on the role of social environment in business.		
CO3	Assess the various legal environments in business.		
CO4	Understand the impact of economic environment in business.		
CO5	Apply the financial system and its environment in business.		

COs	Course Name: Fundamentals of Islamic Finance	Code: U8FASB51	Credit:1
CO1	Understand the concepts of Islamic law or Shari'ah.		
CO2	Evaluate the major prohibitions in Islamic finance (riba, gharar, maysir and qimar).		
CO3	Acquire the knowledge of Islamic law of contracts.		
CO4	Gain knowledge on various classification of contract under Shari'ah.		
CO5	Obtain knowledge of principles of Islamic financial system.		

COs	Course Name: Income Tax Law & Practice - II	Code: U8FA6001	Credit:5
CO1	Able to calculate of income under capital gains and its provisions.		
CO2	Prepare short term and long term capital gains.		
CO3	Gain the knowledge of incomes which are treated as income from other sources.		
CO4	Plan the permissible deduction under income from other heads		
CO5	Compute the clubbing of income, set off and carry forward of losses.		
CO6	Evaluate the assessment of individual and firms' gross total income.		
CO7	Understand the various deductions applicable for assessee.		
CO8	Acquire knowledge of Income tax authorities and procedure of filling of return.		

COs	Course Name: Cost Accounting - II	Code: U8FA6002	Credit:5
CO1	Gain the knowledge on job and batch costing.		
CO2	Plan the contract costing and its stages.		
CO3	Understand the process costing and it s importance		
CO4	Outline the operating cost in service industries.		
CO5	Calculate the operating cost and transport costing.		
CO6	Prepare marginal costing and its technique.		
CO7	Analyze breakeven point and margin of safety		
CO8	Calculate variance analysis and standard costing.		

COs	Course Name: Financial Management	Code: U8FA6003	Credit:5
CO1	Gain knowledge and skills in financial management and value of risk.		
CO2	Evaluate the process of investment decision making in business.		
CO3	Appraise the different methods of project profitability.		
CO4	Estimate the cost of capital of a company.		
CO5	Identify the different capital structure available to a company.		
CO6	Outline company pays its dividends to shareholders.		
CO7	Explain the theories of dividend policy practices.		
CO8	Calculate the working capital and its sources.		

COs	Course Name: Tally & Computer Applications (Lab)	Code: U8FA6004	Credit:5
CO1	Work with MS-Word and MS-Excel and its environment.		
CO2	Enter and format data.		
CO3	Create the power point presentations with animations and designs.		
CO4	Use the computerized accounting.		
CO5	Gain knowledge of creation of company, ledger and group.		
CO6	Able to create voucher entries and ledger for accounting.		

CO7	Create voucher entries and ledger for inventory.
CO8	Analyze the different reports of accounts and inventories.

COs	**Course Name: Practical Auditing**	**Code: U8FA6005**	**Credit:2**
CO1	Understand the role of auditor in business world.		
CO2	Identify the importance of audit programme and internal control system.		
CO3	Compare verification and valuation of assets.		
CO4	Outline the functions, duties and rights of company auditor.		
CO5	Gain knowledge of vouching and their importance and overview of auditing		

COs	**Course Name: Company Law**	**Code: U8FA6006**	**Credit:2**
CO1	Understand the revised company act 2013 and its provision.		
CO2	Gain knowledge on promoters and their role.		
CO3	Apply the procedure of companies' registration and its process.		
CO4	Evaluate the role of capital and issue of share procedure in company.		
CO5	Recognize the procedure of winding up of company and its legal process.		

COs	**Course Name: Islamic Banking Products & Services**	**Code: U8FASB61**	**Credit 1**
CO1	Understand the mechanism of resource mobilization, fund utilization by Islamic banks.		
CO2	Identify different types of Islamic credit card offered by Islamic banks.		
CO3	Able to enlighten the concept and structure of various Islamic banking products.		
CO4	Analyze the issues related to Islamic mode of financing and its application.		
CO5	Acquire the knowledge of other services and activities by Islamic banks.		

PG & RESEARCH DEPARTMENT OF MATHEMATICS

Course Outcomes for Bachelor of Science in Mathematics (COs)

COs	Course Name: **Algebra and Trigonometry**	Code: **U8MS1001** | Credit :7
CO1	Acquire the knowledge of solving the polynomial equations.	
CO2	Understand the summation of Binomial, Exponential and logarithmic series.	
CO3	Evaluate the Eigen values and Eigen vectors.	
CO4	Comprehend the expansions of trigonometric functions.	
CO5	Understand the hyperbolic and inverse hyperbolic functions.	
CO6	Analyse relation between Hyperbolic and Inverse Hyperbolic functions.	
CO7	Discuss approximate solutions of Polynomials by Newton's Method and Horner's Method.	
COs	Course Name: **Numerical Methods –I**	Code: **U8MSAL11** | Credit :6
CO1	Understand the basic concepts of forming difference table and operators.	
CO2	Gain knowledge of the interpolation for equal intervals.	
CO3	Apply the various interpolation for unequal intervals.	
CO4	Acquire the knowledge of inverse interpolation.	
CO5	Determine the solutions of simultaneous linear equations.	
CO6	Understand the Stirling's formula and Bessel's formula.	
CO7	Discuss the lagrange's method and Reversion of series method.	
COs	Course Name: **Computational Laboratory -I**	Code: **U8MSPR11** | Credit :1
CO1	Identify the roots of polynomial equations.	
CO2	Add up the infinite series.	

CO3	Gain the knowledge of handling matrices and also to enumerate the rank of matrix.	
CO4	Evaluate the determinant.	
CO5	Appreciate the Eigen values and Eigen vectors.	
COs	Course Name: **Problem Solving Techniques -I**	Code: **U8MSAP11** | Credit :1
CO1	Compute the expressions	
CO2	Understand the operations on vectors	
CO3	Compute operations on sets	
CO4	Determine the permutations and combinations	
CO5	Approximate the polynomial interpolation	

COs	Course Name: **Calculus & Solid Geometry**	Code: **U8MS2001** | Credit :6
CO1	Acquire the knowledge of differentiation, partial differentiation and various techniques of integration, applications of differentiation and the method of calculating maxima and minima.	
CO2	Understand the concept of asymptotes and the basic notion of tracing some standard curves	
CO3	Learn the properties of definite integrals	
CO4	Formation of reduction formulae, Bernoulli formula and Beta , Gamma functions	
CO5	Get in-depth knowledge of sphere, cone, cylinder and their properties	
CO6	Evaluate radius of curvature in Cartesian and polar coordinates	
CO7	Evaluate double and triple integrals.	
COs	Course Name: **Numerical Methods –II**	Code: **U8MSAL21** | Credit :6
CO1	Compute derivatives by Newton's forward and backward differences	
CO2	Understand Trapezoidal rule and Simpson's $1/3^{rd}$ and $3/8^{th}$ rule.	
CO3	Interpolate the function using difference tables	
CO4	Evaluate derivatives and integration using numerical methods	
CO5	Determine the solutions of ordinary differential equations	
CO6	Evaluate the roots of algebraic and transcendental equations by various method.	
CO7	Evaluate the linear homogeneous difference equation.	
COs	Course Name: **Computational Laboratory –II**	Code: **U8MSPR21** | Credit :1
CO1	Understand the techniques of differentiation	
CO2	Evaluate the integration	
CO3	Determine the limits	
CO4	Understand the concept of radius of curvature	
CO5	Visualize the mathematical objects in 2D and 3D	

COs	Course Name: **Problem Solving Techniques –II**	Code: **U8MSAP21** | Credit :1
CO1	Gain the knowledge of handling matrices	
CO2	Test the consistency of system of equations	
CO3	Evaluate the integration	
CO4	Determine the area and volume	
CO5	Visualize the 2D and 3D objects mathematically	
COs	Course Name: **Differential Equations**	Code: **U8MS3001** | Credit :5
CO1	Enrich the basic concepts of differential equations and partial differential equations.	
CO2	Apply differential equations in various fields.	
CO3	Acquire the knowledge of method of variation of parameters	
CO4	Understand the Legendre's linear equation and other types	
CO5	Evaluate various types of solution of differential equations	
CO6	Indentify the linear and non linear differential equations	
CO7	Analyse the different techniques in solving partial differential equations.	

COs	Course Name: **Vector Analysis & Fourier Series**	Code: **U8MS3002** | Credit :3
CO1	Understand the concept of differentiation of vectors	
CO2	Acquire skills about the line integral, surface integral and volume integral.	
CO3	Get in-depth knowledge of Fourier series.	
CO4	Analyse the properties of Fourier series	
CO5	Solve the linear differential equations with constant coefficients	
CO6	Compute orthogonality of vectors	
CO7	Use vectors operations in solving geometrical problem	
COs	Course Name: **Allied Mathematical Statistics – I**	Code: **U8MSAL31** | Credit :6
CO1	Represent and interpret statistical data through diagrams and graphs	
CO2	Determine various statistical constants	
CO3	Understand the concept of curve fitting, correlation and regression	
CO4	Learn the theory of attributes and times series analysis	
CO5	Acquire skills to apply the theory of probability.	
CO6	Determine the correlation and rank correlation.	
CO7	Able to predict the future data using regression.	
COs	Course Name: **Allied Practical- Mathematical Statistics-I**	Code: **U8MSAP31** | Credit :1
CO1	Determine the measures and Dispersion	
CO2	Compute correlation coefficient	
CO3	Evaluate the regression equations	
CO4	Fit the curve by the method of least square	
CO5	Approximate the Binomial, Poisson and Normal distributions.	

COs	Course Name: **Special Transforms –I**	Code: **U8MS4001** | Credit :5
CO1	Gain in-depth knowledge of Laplace transform.	
CO2	Create a platform for pursuing higher studies in applied mathematics	
CO3	Apply Laplace transform for solving wave equations.	
CO4	Use Laplace transform for solving differential equations.	
CO5	Solve the linear differential equations with constant coefficients	
CO6	Determine inverse Laplace transform	
CO7	Evaluate real time problems using Laplace transform.	
Cos	Course Name: **Special Transforms –II**	Code: **U8MS4002** | Credit :3
CO1	Evaluate the Fourier transforms of some functions	
CO2	Discuss the Fourier transform pair.	
CO3	Analyse the properties of Fourier transform	
CO4	Compute Z – transforms	
CO5	Apply the Z- transform to solve difference equations	
CO6	Able to determine the Inverse Z – transform	

COs	Course Name: **Allied Mathematical Statistics – II**	Code: **U8MSAL41** | Credit :6
CO1	Understand the concept of random variables and some important distributions of random variables.	
CO2	Impart the knowledge of some special discrete and continuous distributions.	
CO3	Apply the various tests of significance for attributes.	
CO4	Understand the concepts of analysis of variance.	
CO5	Expose three important applications based on chi-square distribution.	
CO6	Plans the design of experiments.	
CO7	Apply various testing procedures in carrying out hypothesis testing	
COs	Course Name: **Allied Practical- Mathematical Statistics-II**	Code: **U8MSAP41** | Credit :1
CO1	Apply the large sample test	
CO2	Test for independence of attributes	
CO3	Learn the confidence interval based on normal and students t test	
CO4	Designing ANOVA	
CO5	Solve CRD, RBD and LSD	
COs	Course Name: **Modern Algebra –I**	Code: **U8MS5001** | Credit :4
CO1	Reviews the basic mathematical structures.	
CO2	Understand the basic concept of groups and related topics.	
CO3	Understand the idea about homomorphism, isomorphism structures.	
CO4	Get the basic knowledge of ring and its related topics.	
CO5	Impart knowledge of groups and rings	
CO6	Cognizance on pure mathematics	
CO7	Analyse the concept of Automorphism.	

COs	Course Name: **Real Analysis –I**	Code: **U8MS5002** | Credit :4
CO1	Revise the concepts of real number system and real valued functions.	
CO2	Determine the bounds of real intervals	
CO3	Evaluate the convergence and divergence of sequences.	
CO4	Finds the limits in metric spaces.	
CO5	Compute the summation of series.	
CO6	Understand the concept of continuity.	
CO7	Identify open and closed sets.	
COs	Course Name: **Complex Analysis - I**	Code: **U8MS5003** | Credit :4
CO1	Understand the concept of Analytic function	
CO2	Derive the necessary and sufficient conditions for the existence of Analytic functions	
CO3	Derive Cauchy Riemann equations	
CO4	Determine the Harmonic conjugate of Analytic functions	
CO5	Analyse the concept of mapping and transformations	
CO6	Discuss the preservation of cross ratio under bilinear transformation.	
CO7	Analyse transformations in complex plane	

COs	Course Name: **Statics**	Code: **U8MS5004** | Credit :4
CO1	Understand the concepts of fixed objects.	
CO2	Discuss parallel forces and moments	
CO3	Determine the resultant of a couple and a force.	
CO4	Evaluate the equilibrium of a particle on a rough inclined plane	
CO5	Apply the concept of centre of gravity in real world situation	
CO6	Determine the principle of virtual work for a system of coplanar forces.	
CO7	Apply to the concept of principle of virtual work in real life problem.	
COs	Course Name: **Operations Research –I**	Code: **U8MS5005** | Credit :4
CO1	Gain the knowledge of situations in which linear programming techniques can be applied	
CO2	Understand the fundamental concepts and general mathematical structures of linear programming models	
CO3	Solve linear programming problem using graphical and simplex methods.	
CO4	Apply the various methods of solving managerial problems using Transportation and Assignment problems	
CO5	Understand the principles of two-person zero sum games and to apply various methods to select and execute various optimal strategies to win the game	
CO6	Solve Linear programming problem by simplex techniques.	
CO7	Apply transportation techniques in solving travelling sales men problem.	
COs	Course Name: **Graph Theory**	Code: **U8MS5006** | Credit :4
CO1	Understand fundamental concepts in graph theory	
CO2	Acquire knowledge of Connectedness and Components	
CO3	Gain the skills to apply for solving mathematical problems	
CO4	Understand the Eulerian and Hamiltonian Graphs	
CO5	Compute the adjacency and incidence matrix	
CO6	Discuss the characterization of trees and centre of a tree.	

CO7	Analyse the properties of Planarity	
COs	Course Name: **Financial Mathematics**	Code: **U8MSSB51** | Credit :1
CO1	Calculate percentage	
CO2	Evaluate profit and loss in business problems	
CO3	Compute Ratio and Proportion of mixtures.	
CO4	Determine the simple interest.	
CO5	Analyse the compound interest.	
COs	Course Name: **Modern Algebra –II**	Code: **U8MS6001** | Credit :4
CO1	Determine linear dependence and independence of vectors	
CO2	Understand the Structure of dual space and inner product space.	
CO3	Compute the characterization roots.	
CO4	Evaluate the trace and transpose of higher order matrices	
CO5	Transform matrices to canonical forms.	
CO6	Convert Matrices to its triangular form	
CO7	Able to find the basis for vector space.	

COs	Course Name: **Real Analysis –II**	Code: **U8MS6002** | Credit :4
CO1	Revise the basic set theory	
CO2	Identifies the connectedness and completeness properties of sets	
CO3	Analyse the compactness of metric spaces	
CO4	Prove various fundamental theorems	
CO5	Identify the properties of Riemann integrals	
CO6	Evaluate limits applying L hospital Rule	
CO7	Determine convergence and uniform convergence.	
COs	Course Name: **Complex Analysis –II**	Code: **U8MS6003** | Credit :4
CO1	Understand the behaviour of complex valued functions	
CO2	Analyse the complex integral and analyse its properties	
CO3	Prove Cauchy's Theorems in different regions	
CO4	Derive Cauchy's integral formula	
CO5	Determine Taylor's and Laurent's series expansions	
CO6	Evaluate Complex integrals using Residue Theorem	
CO7	Compute the Residues.	
COs	Course Name: **Dynamics**	Code: **U8MS6004** | Credit :4
CO1	Understand the concepts of moving objects	
CO2	Analyse the behaviour of elastic bodies in real life problem.	
CO3	Impart the knowledge on various types of impact of smooth spheres	
CO4	Understand the concepts of simple harmonic motions	
CO5	Establish the moment of inertia of physical objects using Parallel and Perpendicular axes theorems.	
CO6	Acquire the knowledge in motion under the action of central forces	

CO7	Determine the motion of rigid body about a fixed axis.	
COs	Course Name: **Operations Research –II**	Code: **U8MS6005** | Credit :4
CO1	Develop the replacement, recruitment and promotion problems	
CO2	Gain in-depth study of inventory control (both Deterministic and Probabilistic)	
CO3	Understand the methods of solving real time problems using network scheduling by PERT / CPM	
CO4	Get the knowledge of solving managerial problems using various techniques in operations research	
CO5	Create interest in Management studies	
CO6	Discuss queuing theory with finite and infinite capacities	
CO7	Discuss the inventory control with price breaks.	
COs	Course Name: **Mathematics for Competitive Examinations**	Code: **U8MSSB61** | Credit :4
CO1	Improve the mental ability of the students	
CO2	Acquire the knowledge in sequences and series	
CO3	Understand the concept of sets and functions	
CO4	Apply various method for computing mental ability problem	
CO5	Ability to face the competitive and professional examinations	

COs	Course Name: **LATEX Lab**	Code: **U8MSPR61** | Credit :1
CO1	Understand about the mathematics document preparation	
CO2	Analyse the Software facility available for tedious computations	
CO3	Prepare documents using Latex	
CO4	Able to construct structures, tables inclusion, Header, Footer, Bibliography management, etc.	
CO5	Prepare articles for publication.	

Course Outcomes for Master of Science in Mathematics (COs)

COs	Course Name: **Algebra-I**	Code: **P8MS1001**	Credit :5
CO1	Understand concept of groups and linear transformations		
CO2	Develop working knowledge on class equation, solvability of groups, Sylow's theorems in finite groups		
CO3	Acquire the knowledge of direct products and finite abelian groups		
CO4	Compute the Jordan and Canonical forms of matrices		
CO5	Understand various properties of Matrices		
CO6	Analysis the properties of Trace and Transpose		
CO7	Determine Nilpotent Transformations		
COs	Course Name: **Real Analysis –I**	Code: **P8MS1002**	Credit :5
CO1	Understand the concept of functions of bounded variation		
CO2	Identify of continuity, differentiability and Riemann integration of real value functions		
CO3	Impart the knowledge of sequences and series of function and their limits		
CO4	Analyse Infinite Series and Infinite products		
CO5	Acquire knowledge of Sequences of functions		
CO6	Understand the concept of Cesaro summation		

CO7	Discuss various limit theorem		
COs	Course Name: **Ordinary Differential Equations**	Code: **P8MS1003**	Credit :4
CO1	Understand linear dependence and independence		
CO2	Solve the differential equations by using Annihilator method		
CO3	Reduce the order of a Homogeneous equation and solve Legendre equation		
CO4	Identify the regular singular points and analyse various properties of Bessel's functions.		
CO5	Apply the method of successive approximations and prove the existence theorem		
CO6	Determine Exact equation and Lipschitz condition		
CO7	Evaluate algebra of constant coefficient		
COs	Course Name: **Mechanics**	Code: **P8MS1004**	Credit :4
CO1	Study the mechanical systems, constraints, virtual work, energy and momentum		
CO2	Derive the Lagrange's equation determine its solution		
CO3	Understand Hamilton's principle and derive Hamilton's equation		
CO4	Acquire the knowledge in Hamilton's principle and derive Hamilton-Jacobi equation		
CO5	Discuss the special transformation and Lagrange and Poisson brackets		
CO6	Determine the relationship between Lagrange and poisson bracket		
CO7	Analysis the concept separability		
COs	Course Name: **Resources Management Techniques**	Code: **P8MSEP11**	Credit :4
CO1	Solve integer linear programming problems using various techniques		
CO2	Understand the concept of unconstrainted and constrained optimizations		
CO3	Analyse the Non-linear programming method		

CO4	Solve business problems using revised simplex method		
CO5	Analyse parametric linear programming and goal programming		
CO6	Determine Degeneracy and its solutions		
CO7	Compares various simplex techniques		
COs	Course Name: **Graph Theory**	Code: **P8MSEP12**	Credit :4
CO1	Understand the concept of Graphs, Sub graphs and Trees		
CO2	Acquire knowledge in Euler's tours and Hamilton Cycles		
CO3	Evaluate the edge chromatic number and prove the Vizing's theorem		
CO4	Compile Ramsey's theorem, Brook's theorem and Chromatic polynomials		
CO5	Analyse the Five colour theorem and Four colour conjecture		
CO6	Derive Euler's formula		
CO7	Develop plane and planar Graphs.		
COs	Course Name: **Algebra-II**	Code: **P8MS2001**	Credit :5
CO1	Understand the concept extension field of polynomials and transcendence of e		
CO2	Evaluate the roots of polynomials		
CO3	Analyse the elements of Galois theory		
CO4	Acquire the knowledge of finite fields		
CO5	Prove several theorem on algebraic structures by radicals		
CO6	Discuss the concept of solvability		
CO7	Evaluate the norms		
COs	Course Name: **Real Analysis -II**	Code: **P8MS2002**	Credit :5
CO1	Understand of functions of several variables		
CO2	Acquire the knowledge of Lebesgue measure		

CO3	Derive implicit function and solve Extremum problem		
CO4	Revise the concept of inner and outer measure		
CO5	Use multivariable differential in solving Extremum problem.		
CO6	Analyse the fundamental theorems		
CO7	Discuss the metric space L2[a,b]		
COs	Course Name: **Partial Differential Equations**	Code: **P8MS2003**	Credit :4
CO1	Analyse the partial differential equations using Charpit's method		
CO2	Evaluate Partial Differential equations		
CO3	Derive the solution of Laplace equation using Cylindrical and spherical polar coordinates		
CO4	Compute the solution of Diffusion equation using Cylindrical and spherical polar coordinates		
CO5	Discuss the Uniqness theorem and derive Duhamel's Principle		
CO6	Evaluate D'Alembert's solution		
CO7	Determine the Solution of wave equation		
COs	Course Name: **Advanced Numerical Analysis**	Code: **P8MS2004**	Credit :4
CO1	Compute the transcendental and polynomial equations		
CO2	Understand the system of linear algebraic equations		
CO3	revise interpolation and extrapolation		
CO4	Solve real time problems using numerical differentiation and integration		
CO5	Solve ordinary differential equations by single-step and multi-step methods		
CO6	Evaluate Double integrals		
CO7	Compute the undetermined coefficients		

COs	Course Name: **Operations Research**	Code: **P8MSEP21**	Credit :4
CO1	Analyse various inventory control Modules		
CO2	Understand the concept of Network Techniques		
CO3	Discuss the maintenance Models in Replacement.		
CO4	Understand inventory control and functional role of inventory.		
CO5	Analyze various performance measures of a queueing system.		
CO6	Discuss Failure Mechanism of items		
CO7	Analyse Replacement of items that deteriorates with time		
COs	Course Name: **Algebraic Number Theory**	Code: **P8MSEP22**	Credit :4
CO1	Understand the concepts of rings and fields		
CO2	Acquire the deep knowledge of conjugates, discriminants, Norms and Trace.		
CO3	Analyse the Quadratic fields and cyclotomic fields		
CO4	Determine irreducibles fields		
CO5	Discuss the Ramanujan-Nagell Theorem		
CO6	Analyse the norms of an ideal		
CO7	Evaluate the prime factorization of ideals		
COs	Course Name: **Complex Analysis-I**	Code: **P8MS3001**	Credit :5
CO1	Understand the index of a point with respect to a closed curve and higher order derivatives		
CO2	Understand the concept of maximum principle		
CO3	Proves various complex structure theorems		
CO4	Determine Taylor's and Laurent's series.		
CO5	Understand harmonic functions and power series expatiations.		
CO6	Compute infinite products of various functions		

CO7	Derive Jensen's formula and prove Hadamard's theorem		
COs	Course Name: **Topology**	Code: **P8MS3002**	Credit :5
CO1	Acquire the knowledge of basic topological structure		
CO2	Identify the continuous functions based on topology.		
CO3	Analyse connected spaces and sub spaces		
CO4	Acquire knowledge about the compact spaces		
CO5	Analyse the separation axioms and the countability axioms		
CO6	Prove various theorem on Topology		
CO7	Determines the limit points		
COs	Course Name: **Probability Theory**	Code: **P8MS3003**	Credit :4
CO1	Understand the random events, probability axioms and random variables.		
CO2	Evaluate marginal distribution, conditional distribution and joint distributions		
CO3	Derive the characteristic functions of independent random variables and multi dimensional random variables.		
CO4	Derive normal , Gamma, Beta and Laplace distributions		
CO5	Prove various statistical concepts		
CO6	Derive limits theorem		
CO7	Compile weak law of large numbers		
COs	Course Name: **Differential Geometry**	Code: **P8MS3004**	Credit :4
CO1	Analyse tangent normal, curvature, torsion.		
CO2	Acquire knowledge of the surface of revolution, Helicoids and Metrics.		
CO3	Understand the concept of Geodesics, its canonical equations normal properties.		

CO4	Proves Gauss Bonnet theorem.		
CO5	Evaluate the second fundamental form.		
CO6	Analyse minimal surfaces and ruled surfaces		
CO7	Derive principle curvature, lines of curvature		
COs	Course Name: **Tensor Analysis and Relativity Theory**	Code: **P8MSEP31**	Credit :4
CO1	Understand systems of different orders.		
CO2	Discuss various kinds of tensors like mixed tensor, Zero tensor and algebra of tensors.		
CO3	Acquire the knowledge of ether theory and derive the Maxwell's Equation.		
CO4	Compute momentum, energy, Force and mass		
CO5	Analyse Hamiltonian with Lagrangian formulation		
CO6	Discuss Rocket with constant acceleration		
CO7	Analyse the principle of Equivalence		
COs	Course Name: **Fuzzy Sets and their Applications**	Code: **P8MSEP32**	Credit :4
CO1	Understand the basic concepts of Fuzzy Sets and the difference between the Fuzzy sets and Crisp sets		
CO2	Analyse the Fuzzy sets and additional properties of α cuts		
CO3	Discuss the operations on Fuzzy sets and Fuzzy complements		
CO4	Acquire the knowledge of various norms on Fuzzy sets and combination of operations		
CO5	Visualize the Fuzzy sets as Fuzzy numbers		
CO6	Analyse the Linguistic variables		
CO7	Construct the Fuzzy Sets using direct and indirect methods with one expert and multiple experts		

COs	Course Name: **Complex Analysis-II**	Code: **P8MS4001**	Credit :5
CO1	Understand Equicontinuity, normality and compactness		
CO2	Analyse the zeros of zeta function and the functional equation.		
CO3	Discuss the use of the reflection principle and Boundary behaviours.		
CO4	Compute the simply periodic functions and doubly periodic functions		
CO5	Derive Weiestrass rho function.		
CO6	Discuss Harmonic curves of complex structure.		
CO7	Evaluate Branch points		
COs	Course Name: **Functional Analysis**	Code: **P8MS4002**	Credit :5
CO1	Analyse the Banach spaces along with its definition and examples		
CO2	Understand the natural embedding of N in N**		
CO3	Discuss Banach spaces with the Hilbert spaces.		
CO4	Acquire the open mapping theorem, orthonormal complements and orthonormal sets.		
CO5	Understand various operators adjoint, self adjoint normal and unitary		
CO6	Derive Gelfand- Neumark theorem		
CO7	Prove structures theorems		
COs	Course Name: **Mathematical Statistics**	Code: **P8MS4003**	Credit :4
CO1	Understands the notion of a sample and sampling.		
CO2	Use chi square distribution, t- distribution and z-distribution in solving statistical problem		
CO3	Classify data usage the contingency tables.		

CO4	Evaluate the consistent estimates and unbiased estimates		
CO5	Derive Auxiliary theorems, Wald's fundamental identity		
CO6	Discuss Sequential Probability Ration Test		
CO7	Carryout hypothesis testing		
COs	Course Name: **Fluid Dynamics**	Code: **P8MS4004**	Credit :4
CO1	understand the concept of kinematics of fluids in motion		
CO2	Identify real fluids with the ideal fluids		
CO3	Analyse examples related to the equations of continuity and acceleration of a fluid		
CO4	Derive the equations of the motion of fluid.		
CO5	Compile the sources, sinks and doublets in three dimensional flows.		
CO6	Analyse two dimensional flows, the stream function, 2D image systems and Milne Thompson circle theorem		
CO7	Discuss the viscous flows the coefficient of viscosity and the laminar flow		
COs	Course Name: **Number Theory & Cryptography**	Code: **P8MSEP41**	Credit :4
CO1	Discuss the elementary number theory		
CO2	Analyse an insight on cryptography, some simple cryptosystems and Enciphering matrices		
CO3	Understand the Quadratic, Residues and reciprocity		
CO4	Develops the idea of Public Key Cryptography, RSA, discrete law.		
CO5	Solve problems using the continued fraction method and the quadratic Sieve method		
CO6	Analyse Knapsact, zero knowledge		
CO7	Discuss Fermat factorization and factor bases		
COs	Course Name: **Applied**	Code: **P8MSEP42**	Credit :4

	Abstract Algebra		
CO1	Analyse Lattices and its properties.		
CO2	Identifies the switching circuits and its applications		
CO3	Understands the concepts of finite fileds		
CO4	Create good idea of finite fields and polynomials		
CO5	Understand coding theory, linear codes.		
CO6	Analyse factorization of polynomials		
CO7	Understand the concept linear codes		
COs	Course Name: **Mathematical Software**	Code: **P8MSNM41**	Credit :2
CO1	Understand about the mathematics document preparation		
CO2	Analyse the Software facility available for tedious computations		
CO3	Prepare documents using Latex		
CO4	Able to construct structures, tables inclusion, Header, Footer, Bibliography management, etc.		
CO5	Compute the problem of Algebra and arithmetic using MATLAB		
CO6	Understand the MATLAB programming		

Course Outcomes for Master of Philosophy in Mathematics (COs)

COs	Course Name: **Algebra and Analysis**	Code: **MPH8MS01**
CO1	Understand and follow the Moral Justification of Research, Information & communication technology issues and code of ethics.	

CO2	Analyse the Tensor product of Modules and Algebras	
CO3	Acquire the knowledge of primary decomposition of Modules and local properties of rings	
CO4	Discuss Chain conditions, Noetherian Rings and artin rings	
CO5	Understand the concepts of measurability and the sets of measure zero	
CO6	Analyse L^p spaces	
CO7	Discuss Invention theorem and Plancheral theorem	
CO8	Determine the analytical Classes of Fourier transforms	
COs	Course Name: **Topology and Differential Equations**	Code: **MPH8MS02**
CO1	Use the tools from abstract algebra to study topological spaces	
CO2	Analyse algebraic invariant that classify topological spaces up to geomorphismand up to homotopyequilances	
CO3	acquire the knowledge the stability of the dynamical system using stability manifold theorems.	
CO4	Visualize the rubber sheet geometry such as geometry of simplicial complexes	
CO5	Gain in-depth knowledge of linear and non linear dynamical system governing differential equations	
CO6	the stability of the dynamical systems	
CO7	Analyses the Global existence of the dynamical system	
COs	Course Name: **Probability Models and Applications**	Code: **MPH8MS03**
CO1	Understand the concept of stochastic process and to apply the limit theorems.	
CO2	Analysis the statistical problem by using Poisson process	
CO3	Apply the limit theorem in renewal process to understand the patterns	
CO4	Acquire the knowledge of ageing problems.	
CO5	Determine the time of replacement	
CO6	Solves problems related to machine replacement	

CO7	Determine the reliability bonds	
COs	Course Name: **Banach Algebra**	Code: **MPH8MS03**
CO1	Gain in-depth knowledge in the concept spectrum of an operator	
CO2	Able to connect the topological and algebra concept by a single elegant structure , Banach algebra	
CO3	Determine the formula for spectral radius of an element of a Banach Algebra.	
CO4	Discuss the Gelfand mapping on commutative Banach Algebra	
CO5	Analyse the structure of commutative Banach Algebra through Gelfand mapping	
CO6	Use involutions in Banach Algebra to establish the Gelfand-Neumark theorem	
CO7	Determine the Stone Cech compactification of a completely regular spaces	
COs	Course Name: **Fuzzy Sets and their Applications**	Code: **MPH8MS03**
CO1	Understand the basic concepts of Fuzzy Sets and the difference between the Fuzzy sets and Crisp sets	
CO2	Analyse the Fuzzy sets and additional properties of α cuts	
CO3	Discuss the operations on Fuzzy sets and Fuzzy complements	
CO4	Acquire the knowledge of various norms on Fuzzy sets and combination of operations	
CO5	Visualize the Fuzzy sets as Fuzzy numbers	
CO6	Analyse the Linguistic variables	
CO7	Construct the Fuzzy Sets using direct and indirect methods with one expert and multiple experts	
COs	Course Name: **Lie Groups and Ordinary Differential**	Code: **MPH8MS03**

	Equations	
CO1	Acquire the knowledge of Lie Groups	
CO2	Discuss the Lie Group of transformations	
CO3	Prolong the point transformation to extended infinitesimal transformation	
CO4	Analyse Lie Algebra generated by infinitesimal transformation	
CO5	Reduce the order of ordinary differential equations	
CO6	Identify the invariant solutions of differential equations using infinitesimals	
CO7	Determine the Adjoint operator related to differential equations to find the optimal invariant solutions.	

PG & RESEARCH DEPARTMENT OF PHYSICS

COURSE OUTCOME

Degree: B.Sc. PHYSICS

Course Name: Properties of Matter and Acoustics Code: U8PY1001 Credit: 05

CO1	Understand the fundamentals of elasticity of material and their determination
CO2	Apply principles of viscosity and their determination
CO3	Analyse various viscometers and the effect of temperature and pressure on viscosity
CO4	Acquire the knowledge on concepts of surface tension and factors affecting it
CO5	Able to understand the different sources of generating waves and their properties
CO6	Understand the production methods of ultrasonic waves, their applications and basics concepts in acoustics
CO7	Acquire the knowledge of acoustical design of auditorium and noise reduction

Course Name: General Physics Practical I Code: U8PYPR11 Credit: 03

CO1	Perform experimental determination of Young's modulus and surface Tension
CO2	Able to measure the frequency of a tuning fork
CO3	Evaluate the specific heat capacity of the given liquid
CO4	Determine the refractive index of a liquid and focal length of the material of a convex lens
CO5	Calibrate the low range voltmeter and studies diode characteristics

Course Name: Allied Physics I Code: U8CHAL11 Credit: 06

CO1	Understand the fundamental properties of matter like elasticity, viscosity and surface tension
CO2	Apply the basic ideas of heat transfer in liquids and their determination
CO3	Explore the concepts of basic electrical instruments and magnetism
CO4	Explain magnetic effect of electric current in various configurations of conductors
CO5	Understand the production methods of ultrasonic waves, their applications and basics concepts in acoustics
CO6	Acquire the knowledge of acoustical design of auditorium and noise reduction
CO7	Able to distinguish between interference and Diffraction
CO8	Acquire the knowledge of polarization and nature of light

Course Name: Allied Physics Practical I Code: U8CHAP11 Credit: 01

CO1	Perform experiments on Young's modulus and surface tension
CO2	Determine the frequency of tuning fork
CO3	Evaluate the specific heat capacity of a liquid
CO4	Able to measure the refractive index of a material

CO5	Calibrate low range voltmeter using potentiometer

Course Name: Thermal Physics Code: U8PY2001 Credit: 04

CO1	Apply the principles of thermometry and calorimetry along with the determination of Specific heat capacity of a substance
CO2	Understand the fundamental laws of thermodynamics and Maxwell's thermodynamic relations
CO3	Revise the basic concepts of low temperature physics and their significant role in applied physics in instrumentation
CO4	Apply principles of thermal conduction in materials and its determination
CO5	Use the principles governing radiation process and its techniques

Course Name: General Physics Practical II Code: U8PYPR21 Credit: 03

CO1	Perform experiments on rigidity modulus for a wire
CO2	Determine the coefficient of viscosity of a given liquid
CO3	Determine the specific heat capacity of a given substance
CO4	Measure the refractive index of the material of the glass
CO5	Able to estimate the temperature coefficient of resistance of a coil

Course Name: Allied Physics II Code: U8CHAL21 Credit: 06

CO1	Classify the cathode rays and positive rays and concepts of vector atom model
CO2	Understand the basic ideas of particle accelerator
CO3	Analyse concepts of cosmic rays and elementary particles
CO4	Explain fundamental Laws of electromagnetism
CO5	Asses the transient circuit viz RL, RC
CO6	Understand the basic concepts in crystallography and block diagram of fibre optic communication system
CO7	Gain the knowledge on working principles of electronic components

CO8	Evaluate the fundamentals of digital electronics.

Course Name: Allied Physics Practical II Code: U8CHAP21 Credit: 01

CO1	Perform experiments on Young's modulus and rigidity modulus for the given material
CO2	Determine the frequency of AC main.
CO3	Perform the experiment on specific heat capacity
CO4	Able to determine the wavelength of spectral lines.
CO5	Calibrates low range ammeter

Course Name: Classical Mechanics and Relativity Code:U8PY3001 Credit: 05

CO1	Recapitulate the fundamental concepts of moment inertia for different shapes and basic concepts of simple harmonic motion.
CO2	Understand the theory of centre of gravity, centre of pressure and equations determining continuous flow
CO3	Revise the basic ideas of constraints and applications of Lagrange's equations to explain the dynamics of systems.
CO4	Explore the Hamiltonian formulation and their applications to describe the behaviour of pendulums and linear harmonic oscillator
CO5	Review the fundamental postulates of Relativity
CO6	Gain the knowledge of Length contraction, Time dilation and Mass variation.
CO7	Formulate Lorentz transformation equations.
CO8	Evaluate Einstein's mass energy relation and its equivalence

Course Name: General Physics Practical III Code:U8PYPR31Credit: 03

CO1	Perform experiments on Young's modulus and rigidity modulus of a material.
CO2	Determine frequency of fork and AC mains
CO3	Calculate the refractive index of material and thickness of the wire.

CO4	Able to construct low range power pack
CO5	Estimate current and voltage sensitiveness
CO6	Calibrate a low range ammeter using potentiometer

Course Name: Optics Code:U8PY4001 Credit: 05

CO1	Apply the fundamentals of spherical and chromatic aberration and their defects
CO2	Analyse basic ideas on dispersion and instrumentation based on dispersion phenomenon.
CO3	Gain the knowledge on interference and experiments based on interference
CO4	Evaluate concepts on diffraction and experiments based on diffraction
CO5	Apply the principles of polarization and theory of different polarized light.
CO6	Estimate the specific rotatory power of a given sugar solution
CO7	Asses different polarized lights

Course Name: General Physics Practical IV Code:U8PYPR41 Credit: 03

CO1	Determine the young's modulus
CO2	Find acceleration due to gravity at a place
CO3	Analyse spectra of the given source
CO4	Construct regulated power supply using Zener diode
CO5	Measure the current and voltage sensitiveness of BG
CO6	Compute the resistance and specific resistance of a material

Course Name: Electricity and Electromagnetism Code:U8PY5001 Credit: 05

CO1	Understand the fundamental laws of electrostatics and their applications.
CO2	Demonstrate working and applications of capacitors
CO3	Articulate the knowledge of magnetic effect of electric currents

CO4	Understand the fundamentals of electromagnetic induction and its significance
CO5	Explain and differentiate the fundamentals of DC and AC circuits and their working
CO6	Understand the Maxwell's equation and their application
CO7	Identify the propagation of electromagnetic waves
CO8	Apply Gauss's Law in electrostatics to solve problems

Course Name: Atomic Physics Code:U8PY5002 Credit: 05

CO1	Understand the basic concepts of discharge phenomenon through gases.
CO2	Classify various phenomenon of electron ejection- Photoelectric emission, Field emission
CO3	Evaluate different Atom models
CO4	Identify various quantum numbers and selection rules
CO5	Distinguish Zeeman and Anomalous Zeeman effect
CO6	Communicate the influence of electric and magnetic fields on atomic states
CO7	Analyse the importance of X-rays and its use in the interpretation of different spectra

Course Name: Applied Electronics Code:U8PY5003 Credit: 05

CO1	Acquire fundamentals of semiconductor theory and semiconductor devices.
CO2	Understand the working principles of Hartley, Colpitts, Phase Shift and Wien's bridge oscillators.
CO3	Identify the different types of wave shaping circuits
CO4	Design circuits using multivibrator
CO5	Develop digital circuits using op-amps
CO6	Gain the knowledge of optoelectronic devices
CO7	Analyse the fundamental concepts in electronic communication.

Course Name: Digital Electronics Code:U8PY5004 Credit: 05

CO1	Understand the basics of logic gates and their importance.
CO2	Solve the logic equations applying logic gates
CO3	Identify the fundamentals of sequential logic circuits and electronic counters.
CO4	Identify the principles of memory devices and their significance.
CO5	Understand electronic timers and distinguish D/A and A/D convertors.
CO6	Develop a digital logic circuit to solve real life problems
CO7	Stimulate and implement combinational and sequential circuits

Course Name: Main Physics Practical V Code:U8PYPR51 Credit: 02

CO1	Determine of Young's modulus by Koenig's method and to prove parallel axes theorem using bifilar pendulum.
CO2	Measure radius of curvature and refractive index of the lens material.
CO3	Analyse of earth's magnetic induction using deflection magnetometer.
CO4	Evaluate dispersive power of a prism and Cauchy's constant using spectrometer.
CO5	Calibrate of high range voltmeter and conversion of milli ammeter into voltmeter by potentiometer.
CO6	Compute internal resistance of a cell and comparison of capacitance using BG.
CO7	Evaluate different parameters of transistor, FET and construction of Hartley oscillator.

Course Name: Practical VI-Electronics Experiments I Code:U8PYPR52 Credit: 02

CO1	Construct logic gates using discrete components.
CO2	Design NAND and NOR as universal logic gates.
CO3	Apply techniques of simplifying logic equation using Karnaugh map.
CO4	Verify De Morgan's theorem.

CO5	Construct Inverter, Non-Inverter, Adder, Subtractor using OP-AMP.
CO6	Design half adder, full adder, half subtract or and full subtractor using NAND.
CO7	Formulate programme for Addition, Subtraction, Multiplication & Division using 8085.

Course Name: Maintenance and Servicing of Home Appliance

Code:U8PYSB51 Credit: 01

CO1	Gain knowledge of working principle of transformer
CO2	Perform repair of automatic iron, fan and lamps.
CO3	Analyse the mechanism of washing machine, microwave oven, induction stove and reverse osmosis.
CO4	Understand basic units of personal computers and principles of cellphone technology.
CO5	Communicate the working principle of refrigerator, air condition and water heaters.

Course Name: Nuclear and Particle Physics Code:U8PY6001 Credit: 05

CO1	Revise concepts of nuclear models.
CO2	Explain principles of radioactivity.
CO3	Compare and analyse working of particle accelerators.
CO4	Identify various radiation detectors.
CO5	Understand basic ideas and principles behind nuclear reactions.
CO6	Classify elementary particles and fundamental interactions.
CO7	Evaluate conservation laws and symmetries of nuclear particles.

Course Name: Wave Mechanics and Special functions Code:U8PY6002 Credit: 05

CO1	Revise the fundamental principles of quantum mechanics.

CO2	Explain about the importance and applications of Schrodinger wave equation in solving quantum mechanical problems.
CO3	Explain the types and properties of matrices for acquiring skills to solve linear equations.
CO4	Use basic ideas of vector analysis.
CO5	Analyse special functions for solving differential equations.
CO6	Compare electron transport phenomena-Tunnelling effect.
CO7	Formulate ideas on dual nature of matter.

Course Name: Numerical methods and Fundamentals of "C"

Code:U8PY6003 Credit: 05

CO1	Compute simultaneous linear equations by Gauss elimination method and Gauss Jordan method
CO2	Evaluate simultaneous equations by iteration methods.
CO3	Solve higher order differential equations.
CO4	Acquire knowledge about numerical integration.
CO5	Compute unknowns using Lagrange forward and inverse interpolation Newton's interpolation formula.
CO6	Identify the fundamental concepts of C programme.
CO7	Formulate and analyse C programmes for various mathematical operations.

Course Name: Microprocessor and its Application-8085 Code:U8PY6004 Credit: 05

CO1	Understand the fundamental architecture of microprocessor 8085.
CO2	Revise basic ideas of functioning and programming of 8085.
CO3	Apply the knowledge in time delay cycle.
CO4	Create simple circuits for interfacing using 8085.
CO5	Explain various techniques and applications of 8085.
CO6	Explore the memory devices of microprocessor 8085

CO7	Implement the knowledge to design circuits for real life technology.

Course Name: Main Physics Practical VII Code:U8PYPR61 Credit: 02

CO1	Determine the Young's modulus by Koenig's uniform bending method
CO2	Measure the earth's magnetic induction using vibration magnetometer
CO3	Evaluate resistance and specific resistance using Carey foster's bridge.
CO4	Explore dispersive power of a grating and wavelength of prominent colours of mercury spectrum
CO5	Analyse the emf of a thermocouple and conversion of milli ammeter into ammeter using potentiometer.
CO6	Evaluate the absolute capacitance of a capacitor using BG.
CO7	Design circuits using transistor, UJT and construction of Colpitts oscillator.

Course Name: Practical VIII-Electronics Experiments II Code:U8PYPR62 Credit: 02

CO1	Construct 4 Bit binary adder, subtractor and binary counter
CO2	Design BCD counter.
CO3	Compare multiplexer, demultiplexer.
CO4	Design the Astable multivibrator using Timer- 555
CO5	Formulate conversion of numbers using 8085.
CO6	Generate different wave forms using 8085

Course Name: Television Maintenance & Troubleshooting Code:U8PYSB61 Credit: 01

CO1	Gain knowledge of colour coding and servicing of PCB.
CO2	Analyse fundamentals of power supply and frequency tuner.
CO3	Revise the construction and working of monochrome picture tube.
CO4	Discuss the construction and working of colour picture tube and various

	colour TV system.
CO5	Compile ideas of antenna in signal transmission and reception.

COURSE OUTCOME

Degree: M.Sc., Physics

Course Name: Mathematical Physics Code: P8PY1001 Credit: 05

CO1	Revise the knowledge of linear operators
CO2	Understand the tensor and solve the second rank Cartesian problems
CO3	Acquire knowledge of methods to solve linear differential equations
CO4	Analyse complex variable, Cauchy's theorem and integral formulae
CO5	Evaluate Laplace transforms, One-dimensional Green's function, Reciprocity theorem
CO6	Solve Cauchy's problem for the wave or diffusion equation using the Fourier transform
CO7	Understand the various groups, subgroups and conjugate classes, C2V and C3V, Application to infrared and Raman active vibrations of XY3 type molecules

Course Name: Classical Mechanics and RelativityCode: P8PY1002 Credit: 5

CO1	Revise the knowledge of the Newtonian, the Lagrangian and the Hamiltonian formulations and their applications
CO2	Gain the concepts of imposing constraints on a system in order to simplify the methods for solving problems
CO3	Understand the fundamental approach to apply Lagrange's equations
CO4	Acquire the knowledge of Mechanics of rigid body
CO5	Understand the fundamental approach to apply Hamiltonian formulation
CO6	Understand the linear approximation to any dynamical system near equilibrium and solve the wave equation for small oscillations.
CO7	Recapitulate the special theory of relativity and understand the Minkowski's four dimensional space

Course Name: Quantum Mechanics ICode: P8PY1003 Credit: 04

CO1	Understand the inadequacies of classical mechanics in explaining microscopic phenomena.
CO2	Interpret wave function of quantum particle and quantum theory formulation is introduced through Schrodinger equation
CO3	Understand the behaviour of quantum particle encountering a i) barrier, ii) potential, the student gets exposed to solving non-relativistic hydrogen atom
CO4	Acquire knowledge about unitary transformation and able to analyse Schrodinger and Heisenberg interaction pictures
CO5	Analyse the Harmonic Oscillators by applying the concepts of Time independent degenerate and non- degenerate perturbations theory
CO6	Gain the knowledge about spin, angular momentum states , addition rules and identical particles

Course Name: General Physics Experiments I Code:P8PYPR11 Credit: 4

CO1	Determine the Young's modulus by elliptical and Hyperbolic fringes
CO2	Evaluate Stefan's constant
CO3	Measure the band gap of thermistor and semiconductor
CO4	Calculate Rydberg's Constant- Hydrogen spectrum
CO5	Determine viscosity of the given material using Meyer's Oscillation disc
CO6	Examine the FP-etalon
CO7	Evaluate the charge of an electron using e/m method
CO8	Determine the coefficient of linear expansion of material using Air wedge method

Course Name: Electronic Devices and Application Code: P8PYE101 Credit: 4

CO1	Understand the fabrication of IC and Logic families, this will give knowledge of many circuits

CO2	Acquire the knowledge of photometry in optoelectronic devices and conversion of light to electrical energy
CO3	Develop ideas on fundamental of 555 timer and its applications
CO4	Design and analyse the fundamentals of OP-AMP
CO5	Apply the theory in building modulation and demodulation circuits; Transmitters and Receivers for AM and FM.

Course Name: Computational Methods and Programming Code: P8PYE102 Credit: 4

CO1	Solve nonlinear algebraic equations, Bisection and Newton-Raphson methods
CO2	Solve Simultaneous linear equations by different method
CO3	Understand Interpolation, Curve fitting, Cubic line fitting
CO4	Apply Trapezoidal rule - Simpson's rule and Euler methods
CO5	Write Programmes to computationally solve the mathematical equation

Course Name: Statistical Physics Code: P8PY2001 Credit: 5

CO1	Acquire the knowledge of thermodynamics and difference between temperature and heat.
CO2	Understand the Phase transformation and Thermodynamic behaviour
CO3	Distinguish the ensembles in micro and macro state
CO4	Apply the equi-partition theorem and counts correctly the number of degrees of freedom
CO5	Comprehend Bose Einstein statistic for ideal gas to understand the thermodynamic properties
CO6	Understand Fermi Dirac statistic for Fermions
CO7	Formulate the behaviour of molecule at very low temperature

Course Name: Electromagnetic Theory Code: P8PY2002 Credit: 5

CO1	Analyse the mathematical terms of Laplace equation and boundary value problem
CO2	Discuss the properties of the dynamic charges and its distribution in magnetostatics.
CO3	Evaluate the Faraday's laws of induction and Maxwell equations
CO4	Formulate ideas on the Propagation of electromagnetic fields in Maxwell equations
CO5	Discuss waveguides in different mode of transmission
CO6	Communicate on conservation laws for charges and electromagnetic fields
CO7	Compare oscillating electric dipole and electromagnetic oscillator

Course Name: Quantum Mechanics- II Code: P8PY2003 Credit: 4

CO1	Formulate ideas on born approximation transformation and concepts of scattering theory
CO2	Use perturbation theory to solve problems in quantum mechanics
CO3	Apply relativistic approach for solving problems in quantum dynamics
CO4	Revise the applications of Dirac equations
CO5	Evaluate and interprets the interpretation of electromagnetic and Dirac field quantization

Course Name: Electronics Practical I Code:P8PYPR21 Credit: 4

CO1	Analyse attenuation characteristics and design of the phase shift Oscillator and Wein bridge oscillator using op-amp
CO2	Construct the inverting, Non-inverting amplifier – Voltage follower summing, difference, average amplifier – differentiator and integrator using op-amp
CO3	Generate Square wave, Saw-tooth wave and Triangular wave ,Schmitt Trigger, Monostable multivibrator using op-amp

CO4	Design the Astable, monostable multivibrator and Schmitt trigger using Timer- 555
CO5	Configure D/A converter - Binary weighted method - R-2R Ladder method using op-amp
CO6	Construct the Half adder, Half subtractor, Full adder and Full subtractor using IC7400

Course Name: Advanced SpectroscopyCode:P8PYE201Credit: 4

CO1	Classify the Vibrations of diatomic and simple polyatomic molecules, Interpretation of vibrationspectra
CO2	Discuss rotational Raman spectra, Phase transitions – Resonance Raman Scattering
CO3	Formulate ideas on NMR – Bloch equations, Nuclear Quadrupole energy levels for axial and non axial symmetry
CO4	Identify ESR Hyperfine Structure, Recoilless emission and absorption in Mossbauer Effect
CO5	Revise coherent anti stoke Raman Scattering and Supersonic beams

Course Name: Astrophysics Code:P8PYE202 Credit: 4

CO1	Compile basic ideas of stellar structure and evolution
CO2	Prepare and applies the fundamental ideas of nuclear astrophysics
CO3	Acquire basic ideas on stellar objects and stellar explosions
CO4	Access study of gravitational collapse and relativistic astrophysics
CO5	Explain black holes and neutron stars.

Course Name: Condensed Matter Physics – ICode:P8PY3001 Credit: 5

CO1	Understand the crystal structure, Reciprocal lattice and Diffraction condition
CO2	Identify the vibration of mono and diatomic one dimensional lattice
CO3	Analyse the fundamentals of free electron theory based on classical and

	quantum approach
CO4	Compare the electron movement using band theory of solids, study of Fermi surface
CO5	Formulate ideas on super conductivity and its applications
CO6	Compare TYPE I and TYPE II super conductor
CO7	Discuss Kronick-Penny model and Hall effect.

Course Name: Nuclear and Particle Physics Code: P8PY3002 Credit: 5

CO1	Demonstrate the characteristics of nuclear forces
CO2	Analyse the basic models of nucleus
CO3	Understand the scattering and partial wave analysis of cross section, Energy level of nuclei-level width and de-excitation
CO4	Compute the total decay rate-- selection rules for beta and gamma decay
CO5	Evaluate Hadrons and Leptons-Symmetry and conservation laws
CO6	Revise nuclear isomerism, conservation of parity and pair production.
CO7	Explain Quark model, Gell Mann Okubo mass formula

Course Name: Crystal Physics and CrystallographyCode:P8PY3003 Credit: 4

CO1	Explain the crystal structure in X-ray diffraction
CO2	Rate the different type of diffraction techniques
CO3	Analyse the crystal structure, phase transition, labelling the structure based on symmetry operation
CO4	Identify the characteristic peaks of different crystals using refinement method
CO5	Compare and studies the different growth methods of crystals

Course Name: General Physics Experiments II Code:P8PYPR31 Credit: 4

CO1	Understand the characteristic of GM counter, inverse square law, absorption coefficient
CO2	Determine the wavelength using Michelson Interferometer
CO3	Measure thickness measurement using Michelson Interferometer
CO4	Analyse molecular spectra, ALO, CN band.
CO5	Determine the Susceptibility of the material by Guoy's and Quincke's method
CO6	Evaluate the Velocity and Compressibility of a liquid using Ultrasonic Interferometer
CO7	Measure Dielectric constant using microwave test bench

Course Name: Synthesis and Characterization of Nanomaterials
Code:P8PYE301 Credit:4

CO1	Explain the emergence and challenges of nanoscience and nanotechnology
CO2	Analyse study the different dimension of the nanomaterial
CO3	Explore the concept of nucleation, importance of nano dots
CO4	Apply the different synthetic routesof nanomaterial
CO5	Select and design nanomaterial in device manufacturing

Course Name: Embedded System Code:P8PYE302 Credit: 4

CO1	Revise and understand the pin configuration of 8051, Interrupts
CO2	Discuss the instruction set, Data and Bit manipulation instructions,
CO3	Analyse the working of different interfacing unit with 8051
CO4	Use the architecture of PIC18/24, Programming, RAM &ROM allocation - timer programming, MP – LAB
CO5	Discuss ARM architecture, internal memories - Peripherals

Course Name: Condensed Matter Physics – IICode:P8PY4001 Credit: 5

CO1	Understand the concepts of Dielectrics and its dependency on temperature

	and frequency
CO2	Analyse the piezoelectric and ferroelectric materials based on the concepts of Dielectrics
CO3	Classify magnetism in Rare earth ion, Quenching of orbital angular momentum, Adiabatic demagnetization.
CO4	Apply the concept of spin wave, magnons and Domain wall energy to understand magnetic behaviour of substances
CO5	Evaluate the concepts of Electronic transition in metals
CO6	Interpret the dynamics of surface morphology
CO7	Discuss the optical reflectance of materials using Kramers- Kronig relation

Course Name: Research Methodology Code:P8PY4002 Credit: 4

CO1	Understand the various kinds of research objectives, research process, research designs and sampling
CO2	Identify the research problems and the techniques involved in problems
CO3	Apply the various principles for research design.
CO4	Understand the different data collection method
CO5	Learn statistical methods to solve the research problems
CO6	Apply the International method of Thesis writing

Course Name: Microprocessors and Microcontroller Code: P8PYE401 Credit:4

CO1	Analyse the fundamental architecture of microprocessor 8085
CO2	Explain the interface of the memory device in microprocessor 8085
CO3	Formulate ideas on the fundamental architecture of microprocessor 8086
CO4	Write the data transfer instructions, loop and string instructions
CO5	Explore the Internal and External memories in 8051,Able to write basic assembly language programming

CO6	Communicate on traffic light control temperature controller and DMA.
CO7	Discuss architecture of 8051 and basic assembly language programming.

Course Name: Practical-IV Microprocessor Experiments &Computer Programming
Code: P8PYPR41 Credit: 4

CO1	Formulate a programme to convert BCD to binary, Binary to BCD, Hex to ASCII using 8085 &8051
CO2	Write programme for Square and square root of BCD and HEX numbers 8 bit and 16 bit using 8085 &8051
CO3	Formulate a programme for Addition, subtraction, Multiplication and division using 8086 &8051
CO4	Implement ascending order / descending order using 8085 & Microcontroller
CO5	Execute time delay subroutine and a clock programme using 8051
CO6	Construct Analog to digital conversion using DAC comparator and MPU system
CO7	Able to interface a stepper motor to the MPU system and design clockwise, anticlockwise, full stepping and half stepping rotation

Course Name: Digital Communications Code:P8PYE402 Credit: 4

CO1	Explore the Digital Communication Systems, Bandwidth-S/N and Sampling Theorem
CO2	Acquire knowledge in PCM Generation and Reconstruction
CO3	Apply digital modulation techniques to study ASK,FSK, BPSK, QPSK
CO4	Explain baseband transmission and optimal reception of digital signal
CO5	Understand the conditional entropy and redundancy and variable length coding

Course Name: Bio Medical Instrumentation Code:P8PYNM41 Credit: 4

CO1	Acquire basic ideas of transducer and sensor

CO2	Explore the functioning of digital instrumentation
CO3	Gain the knowledge of analytical instruments
CO4	Analyse various instruments used in medical field for data interpretation
CO5	Understand the fundamental ideas of radiology and X-ray machine

COURSE OUTCOME

Degree: M. Phil., Physics

Course Name: Research Methodology Code: MPH8PY01 Credit: 5

CO1	Develop an understanding on various kinds of research, objectives of doing research, research process, research designs and sampling
CO2	Acquire skills on qualitative and quantitative research data analysis and adequate knowledge on measurement & scaling techniques
CO3	Gain adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis
CO4	Understand the procedures of data analysis and hypothesis testing procedure
CO5	Acquire knowledge of various funding agencies for research in India
CO6	Develop ideas on important issues in research ethics
CO7	Inculcate the awareness on ethical use, document and integrated sources for logical format of writing thesis, paper and drafting report

Degree: M. Phil., Physics

Course Name: Advanced Physics Code: MPH8PY02 Credit: 5

CO1	Solve relativistic quantum mechanical equations, namely, Klein-Gordon equation and Dirac equation, explain the formalism of relativistic quantum field theory

CO2	Understand the types of problems that may be solved using Monte Carlo and Molecular Dynamics, and those where these methods are ineffective
CO3	Develop insights into typical considerations needed in a computational physics project, including parameter space exploration, estimation of run time, etc
CO4	Explore electrons and holes behave in semiconductors and classify solid state matter according to their band gaps
CO5	Understand Debye equation and calculates dielectric relaxation time .and to draw the plane diagram using Cole-Cole, Cole-Davidson plots
CO6	Explain the importance of solid-state physics in the modern society
CO7	Interpret Cole-Cole, Cole-Davidson plots

PG & RESEARCH OF CHEMISTRY

BACHELOR OF SCIENCE-CHEMISTRY

SEMESTER - I

COs	**Course Name: General Chemistry I**	**Code: U8CH1001**	**Credit: 7**
CO1	Explain the atomic structure and chemical properties of the elements based on their position in the periodic table.		
CO2	Identify the physical and chemical properties of common organic functional groups.		
CO3	Classify the types of organic compounds and able to name by IUPAC format		
CO4	Understand the physical properties of solids, liquids, gases and solutions.		
CO5	Acquire the knowledge of Quantum chemistry and the significance of wave functions		
CO6	Classify the types of organic reactions and methods to determine organic reaction mechanism.		
CO7	Apply qualitative analysis to detect the functional groups experimentally.		

COs	**Course Name: Inorganic qualitative**	**Code: U8CHPR11**	**Credit: 1**
CO1	Outline chemistry as the study of the composition, structure, properties and reaction matter.		
CO2	Identify the methods and the instruments that can be used to study chemistry.		
CO3	Identify the methods and apparatus that can be used to find out ions in the solution.		
CO4	Analyze the presence of anion and cation in the simple inorganic salt.		
CO5	Prepare different inorganic compounds.		

COs	**Course Name: Allied Chemistry - I**	**Code: U8BIAL11 /U8PYAL11**	**Credit: 6**
CO1	Gain the knowledge of metallurgical processes used to extract metals from ores.		
CO2	Analyse various periodic properties of elements.		
CO3	Understand the concepts of inductive effect and resonance effect.		
CO4	Acquire knowledge about optical isomerism and geometrical isomerism		
CO5	Describe the first order rate reaction and hydrolysis of ester.		
CO6	Gain the knowledge of geometry of small molecules.		
CO7	Differentiate between Homogeneous ad heterogeneous catalysis		

COs	**Course Name: Allied Chemistry Practical - I**	**Code: U8BIAP11/ U8PYAP11**	**Credit: 1**
CO1	Acquire skill to determine the amount of substance present in the given solution volumetrically.		
CO2	Able to prepare standard solutions of prescribed normality.		

SEMESTER - II

COs	Course Name: General chemistry- II	Code: U8CH2001	Credit: 6
CO1	Understand the interactions between, matter, and energy at the atomic and molecular levels and also the ionic and covalent characters of ions and molecules.		
CO2	Predict the geometry of the molecule using various theories.		
CO3	Gain knowledge on the preparation, properties, acidity and uses of alkynes and cycloalkanes.		
CO4	Apply the principles of thermodynamics to various types of systems and surroundings.		
CO5	Understand the properties of alkali metals and alkaline earth metals.		
CO6	Determine the bond dissociation energy, variation of heat of reaction with temperature using Kirchoff's equation.		
CO7	Acquire knowledge in various types of polymerization techniques.		

COs	Course Name: Inorganic qualitative analysis - II	Code: U8CHPR21	Credit: 1
CO1	Identify the methods and apparatus that can be used to find out ions in the solution.		
CO2	Analyze the presence of anions and cations in the mixture of inorganic salt qualitatively.		
CO3	Able to eliminate interfering anionic radicals in mixture analysis.		
CO4	Gain knowledge in qualitative analysis to detect and separate the metal ions.		

COs	Course Name: Allied Chemistry - II	Code: U8BIAL21/ U8PYAL21	Credit: 6
CO1	Gain the knowledge of industrial applications such as paints, matchstick and Fertilizers		
CO2	Gain knowledge about the biomolecules such as carbohydrates, amino acid, RNA and DNA.		
CO3	Acquire knowledge about electrochemistry and its prevention		
CO4	Understand the action of drugs such as antibiotics, antiseptics, anesthetics		
CO5	Explain extraction techniques such as chromatography and their types		
CO6	Classify the various types of sugars and elucidate their structures		
CO7	Determine the equivalent conductance of electrolytes and perform conductometric titrations		

COs	Course Name: Allied Practical-II	Code: U8BIAP21/ U8PYAP21	Credit:1
CO1	Understand the techniques involve in analysis organic compounds.		
CO2	Gain knowledge of functional group analysis such as aldehyde, ketone, phenol and carboxylic acid.		
CO3	Acquire skill to analyse the presence of saturation, unsaturation and special elements such as nitrogen, sulphur, halogens in an organic compound		

SEMESTER - III

COs	Course Name: General chemistry- III	Code: U8CH3001	Credit:7
CO1	Acquire the knowledge of solution preparation using different concentration terms.		
CO2	Understand the aromaticity of organic compound and electrophilic substitution reactions.		
CO3	Gain knowledge in the second law of thermodynamics and Carnot's cycle.		
CO4	Draw the structures of all types of Boranes and understand the preparation and properties of Boranes.		
CO5	Able to calculate the entropy change with changes in Temperature, Pressure and volume.		
CO6	Understand the Hoffmann and saytzeff's rule for elimination reaction of alkyl halides.		
CO7	Able to solve the numerical problems related to Free energy and work functions		

COs	Course Name: Volumetric Estimation -I	Code: U8CHPR31	Credit: 1
CO1	Gain the practical knowledge and skill in various types of volumetric titrations like Acidimetry, Iodometry, etc.		
CO2	Acquire the skill to determine the amount of solute present in a solution.		

SEMESTER - IV

COs	Course Name: General Chemistry- IV	Code: U8CH4001	Credit: 7
CO1	Get insight of p-block elements such as nitrogen and oxygen family.		
CO2	Understand the concept of nucleophilic substitution reactions of aromatic compound.		
CO3	Able to prepare derivatives of phenol and understand the acidic properties of phenols.		
CO4	Deduce equations of Third law of thermodynamics and partial molar properties.		
CO5	Gain the knowledge of the compounds of Xenon and their structures.		
CO6	Determine thermodynamic parameters of ideal gases.		
CO7	Understand the mechanisms of etherification.		

COs	Course Name: Practical-IV Volumetric Estimation -II	Code: U8CHPR41	Credit: 1
CO1	Gain the knowledge and practical skills in Complexometry, Dichrometry and Precipitation titrations.		
CO2	Titrate metal ions in water using EDTA titrations		

MASTER OF SCIENCE - CHEMISTRY

SEMESTER - I

COs	Course Name: Inorganic Chemistry I	Code: P8CH1001	Credit: 5
CO1	Understand solid state chemistry including the properties associated with it like electrical, magnetic and optical characters.		
CO2	Gain knowledge of inorganic polymers including their properties, structure, type and applications.		

CO3	Get enlightened about metal clusters, types and bonding of Boron hydrides and Carboranes.
CO4	Apply the factors affecting the stability of complexes in Spectrometric, Polarographic and Potentiometric methods.
CO5	Acquire knowledge in Stereochemical aspects such as ORD & CD and about the applications of crown ethers/porphyrins/Schiff's bases.
CO6	Determine stability constants by various electrochemical methods and apply in metallurgy.
CO7	Synthesise silicates, Ferrites and Garnets

COs	**Course Name: Organic Chemistry I**	**Code: P8CH1002**	**Credit: 5**
CO1	Acquire the knowledge about the concepts of stereochemistry		
CO2	Understand the concepts of conformation analysis and their applications in the		
CO3	Carry out the nucleophilic substitution reactions of aliphatic compounds.		
CO4	Understand the mechanism of the aromatic electrophilic substitution reactions.		
CO5	Gain the knowledge of kinetic and non kinetic effect of determining reaction mechanism.		
CO6	Able to carry out substitution reactions in simple heterocyclic compounds		
CO7	Solve simple problems by Hammett and Taft equations		

COs	**Course Name: Physical Chemistry - I**	**Code: P8CH1003**	**Credit: 4**
CO1	Understand the significance and determination of thermodynamic parameters and the rules in thermodynamics		
CO2	Able to gain knowledge on various theories of chemical kinetics.		
CO3	Able to derive equations in chemical kinetics.		
CO4	Understand the concepts of group theory and learn the mathematical aspects.		
CO5	Able to apply the concepts of group theory in simple molecules.		
CO6	Derive group multiplication table and carry out similarity transformation		
CO7	Interpret electronic spectra of simple molecules		

COs	**Course Name: Organic Chemistry Practical**	**Code: P8CHPR11**	**Credit: 4**
CO1	Gain the knowledge of preparation techniques of some organic compounds		
CO2	Able to extract natural products from their sources		
CO3	Identify chromophores by simple spectroscopic instruments		
CO4	Analyse simple organic substances by Gas Chromatography		
CO5	Determine the purity of organic compounds by Chromatography		
COs	**Course Name: Colorimetry & Kinetic Studies**	**Code: P8CHEP11**	**Credit: 4**
CO1	Acquire the practical knowledge of preparation of Various Inorganic complexes.		
CO2	Analyse the colorimetric analysis of Iron, Nickel, Manganese and Copper.		
CO3	Acquire the practical knowledge of determining relative acidity and thermodynamic parameters using kinetic studies.		
CO4	Analyse the kinetic of inversion of sucrose by polarimetry technique.		
CO5	Solve the problems related to the second order and Zero order reactions of chemical		

COs	Course Name: Applied Catalysis	Code: P8CHEP12	Credit: 4
CO1	Calculate the various thermodynamic parameters		
CO2	Apply the concepts of acid and base catalysis to various chemical reactions		
CO3	Understand the materials and their functions involved in Heterogeneous catalysis		
CO4	Understand the principles of photocatalysis and apply to various photochemical applications		
CO5	Get the insight of the mechanism and the various factors influencing enzyme catalaysis		

SEMESTER II

COs	Course Name: Inorganic Chemistry II	Code: P8CH2001	Credit: 5
CO1	Understand the theory of coordination including Crystal Field Theory and its limitation.		
CO2	Apply the theory of molecular orbitals and term states.		
CO3	Classify the types of electron transfer reactions.		
CO4	Understand the origin of nuclear forces in the universe and background of radiation.		
CO5	Differentiate the types of nuclear reactions and understand the medical applications of nuclear chemistry.		
CO6	Compare the spectra of metals in complexes		
CO7	Convert nuclear isotopes and understand the functioning of nuclear reactors.		

COs	Course Name: Organic Chemistry II	Code: P8CH2002	Credit: 5
CO1	Carry out the addition to carbon-carbon multiple bonds		
CO2	Gain the knowledge of various types of elimination reaction		
CO3	Perform the molecular rearrangements and understands their synthetic utility.		
CO4	Apply the basics concepts of oxidation and reduction to various reagents.		
CO5	Understand the application of carbene and nitrene in organic reaction		
CO6	Apply specific reagents to execute chemical reactions.		
CO7	Apply the stereochemical principles to organic reactions.		

COs	Course Name: Physical Chemistry II	Code: P8CH2003	Credit: 5
CO1	Identify the different regions of electromagnetic radiation and its interaction with matter leading to different regions of spectroscopy		
CO2	Derive equations in surface chemistry and study the kinetics of surface chemical reactions.		
CO3	Understand the kinetics of complex reactions and their mechanisms.		
CO4	Apply the basics of Quantum chemistry and understand the relevance of Schrodinger equation for particle in one, two, and, three dimensional boxes.		
CO5	Able to derive quantum chemical equations and carry out quantum chemical calculations.		
CO6	Understand the concepts of fast reactions and apply them to relaxation methods		
CO7	Derive quantum numbers and understand their physical significance.		

COs	Course Name: Human Rights	Code: P8HR2001	Credit: 0
CO1	Understand the concept of Human Rights and its importance in our country.		

CO2	Acquire knowledge of the various agencies working for Human Rights in the National and International level.
CO3	Earn the confidence by learning the laws of Human Rights in India and other
CO4	Acquire the capacity to lead any organization after the completion of the Post-Graduation studies
CO5	Able to work in law enforcing agencies connected with Human Rights

COs	**Course Name: Physical Practical I**	**Code: P8CHPR21**	**Credit: 4**
CO1	Understand experimentally the phase diagram and its construction.		
CO2	Explain the distribution of benzoic acid between benzene and aqueous system by deriving distribution coefficient.		
CO3	Gain the skills in the absorption studies and finding the concentration of adsorbate molecules		
CO4	Determine the molecular weight of organic substance by Rast's method		
CO5	Analyse the effect of electrolytes and determine the strength of electrolytes		

COs	**Course Name: Analysis of Organic & Inorganic Mixture**	**Code: P8CHEP21**	**Credit: 4**
CO1	Carry out the analysis of the mixture of organic compounds.		
CO2	Gain the knowledge of functional group analysis such as aldehyde, ketone, phenol and carboxylic acid		
CO3	Separate inorganic radicals and identify them.		
CO4	Determine boiling point and melting point for components and melting point for derivatives.		
CO5	Estimate the hardness of water by using EDTA.		

COs	**Course Name: Medicinal Chemistry**	**Code: P8CHEP22**	**Credit: 4**
CO1	Design the various drugs based on the mode of action and structure		
CO2	Classify the various drugs based on their action		
CO3	Prepare various analgesics and classify them		
CO4	Understand to synthesize the analogues of various drugs by understanding the structure activity relationship		
CO5	Understand the mode of action of various drugs		

SEMESTER III

COs	**Course Name: Inorganic Chemistry III**	**Code: P8CH3001**	**Credit: 5**
CO1	Understand the synthesis, structure and bonding in Organometallic chemistry		
CO2	Understand the Catalytic applications of Organometallic compounds		
CO3	Discuss about photo substitution /photoredox and isomerisation processes initiated by light and substitution reaction of complexes.		
CO4	Apply the Important softwares in chemistry.		
CO5	Design a drug molecule using various software packages and free online available resources.		

CO6	Carry out various reactions with metal complexes photochemically.
CO7	Predict the various factors in quantum chemistry and electrochemistry

COs	**Course Name: Organic Chemistry III**	**Code: P8CH3002**	**Credit: 5**
CO1	Understand the fundamental aspects of all the spectroscopic techniques and their applications in organic chemistry.		
CO2	Apply the Mass spectrometry and its applications to various organic compounds.		
CO3	Understand the structure elucidation methods of alkaloids and steroids		
CO4	Acquire knowledge of the structural elucidation, synthesis and applications of various natural products.		
CO5	Understand the fundamentals of aromaticity and photochemistry of various organic compounds.		
CO6	Explain the factors in various spectroscopic techniques.		
CO7	Solve problems and derive structure from spectrochemical data.		

COs	**Course Name: Physical Chemistry III**	**Code: P8CH3003**	**Credit: 4**
CO1	Understand the various approximation methods applicable for simple atoms Like H		
CO2	Understand the Concepts of Ionic activity and activity coefficients and derive Debye Huckel and Onsager equations.		
CO3	Apply the Basic concepts of Electrical double layer theory to various models.		
CO4	Understand the kinetics and mechanism of addition and ionic polymerization and calculates the Mn and Mw for polymers.		
CO5	Develop problem solving skills in spectroscopy		
CO6	Apply the effect of ionization to conductivity studies		
CO7	Determine the molecular weight of polymers		

COs	**Course Name: Inorganic Practical**	**Code: P8CHPR31**	**Credit: 4**
CO1	Estimate the amount of Copper in a mixture of Solution containing two ions like Zinc and Nickel by gravimetry.		
CO2	Prepare Copper and Cobalt complexes.		
CO3	Separate Copper and Nickel and estimate them by volumetry and gravimetry		
CO4	Separate iron and magnesium and estimate them.		
CO5	Prepare metal complexes with poly dendate ligands		

COs	**Course Name: Conductometric Titration & Organic Estimation**	**Code: P8CHEP31**	**Credit: 4**
CO1	Gain the skills for carrying out the conductometric titrations between acids and bases.		
CO2	Interpret the IR and Raman Spectra of various compounds.		
CO3	Acquire the basic knowledge of conductometric titrations involving various electrolyte		
CO4	Verify the Ostwalds Dilution law and Debye Huckel Onsagar equation experimentally.		
CO5	Estimate the various organic compounds in the laboratory and find the Saponification and Iodine values of Fats and Oils.		

COs	Course Name: Industrial Chemistry Practical's or In Plant Training	Code: P8CHEP32	Credit:4
CO1	Estimate the Natural products which are industrially useful and check the purity of various raw materials.		
CO2	Estimate and check the purity of industrially manufactured products.		
CO3	Able to carry out experiments in quality control labs R&D labs.		
CO4	Able to maintain effluent treatment plants and other largescale industries.		

SEMESTER IV

COs	Course Name: Inorganic chemistry IV	Code: P8CH4001	Credit: 5
CO1	Apply princples of inorganic chemistry to UV-Visible and X-ray spectroscopy.		
CO2	Understand the selection rules and use of symmetry consideration in deducing the spectra of Inorganic system under IR and Raman spectroscopy.		
CO3	Decipher the peaks in NMR/NQR and Mossbauer spectra.		
CO4	Understand the chemistry of lanthanides and Actinides and study the biomedical applications of nano chemistry.		
CO5	Analyze the importance of inorganic system in biological aspects of human life.		
CO6	Prepare the compounds of lanthanides and actinides.		
CO7	Apply the principles of coordination chemistry to biological systems.		

COs	Course Name: Organic chemistry IV	Code: P8CH4002	Credit: 5
CO1	Understand the modern synthetic methods and methodology for various organic compounds.		
CO2	Develop the ability to carry out reterosynthetic analysis by studying the synthesis of various organic compounds.		
CO3	Acquire knowledge of various reactions and reagents in synthetic organic chemistry.		
CO4	Understand the synthesis and reactions of various heterocyclic compounds.		
CO5	Gain knowledge about the chemistry of free radicals in various organic reactions.		
CO6	Able to synthesize simple organic molecules with commercial reagents.		
CO7	Able to carry out various reactions by free radicals		

COs	Course Name: Physical chemistry IV	Code: P8CH4003	Credit: 4
CO1	Understand the various mechanisms of electrode reactions		
CO2	Understand the objectives of statistical thermodynamics, Maxwell – Boltmann distribution law.		
CO3	Compare Fermi-Dirac and Bose –Einstein statistics with Maxwell- Boltzmann distribution law		
CO4	Apply the principles of absorption and emission radiation comprising Fluorescence and Phosphorescence.		
CO5	Develop skills in Photovoltoic, Photogalvanic and Photoelectrochemical cells.		
CO6	Apply the principle of electrode reaction to electrochemical inorganic systems.		
CO7	Carry out various photophysical processes and understand the kinetics of reactions.		

COs	Course Name: Project work	Code: P8CHPJ41	Credit: 4
CO1	Understand the role of quality control laboratories in leading chemical industries		

CO2	Compile the details of industrial manufacturing of various chemical products.
CO3	Acquire knowledge of the research work carried out in leading R&D laboratories attached to chemical industries.
CO4	Acquire the ability for getting employment opportunities in industries.
CO5	Understand the fundamentals of methodology of research.

COs	**Course Name: Organic Chemistry**	**Code: P8CHEP41**	**Credit: 4**
CO1	Carry out the preparative techniques of organic compounds.		
CO2	Carry out two stage preparation of organic compounds from simple starting materials.		
CO3	Interpret the spectra of organic compounds obtained by the various methods.		
CO4	Develop the ability to elucidate the structure of organic compounds from their spectra.		
CO5	Prepare aromatic compounds from common chemicals.		

COs	**Course Name: Preparation of domestic**	**Code: P8CHEP42**	**Credit: 4**
CO1	Understand the preparation and manufacturing details of chemicals used in the domestic houses.		
CO2	Prepare Cosmetic chemicals in small scale.		
CO3	Prepare disinfectants and perfumes.		
CO4	Acquire self-employment skills.		

COs	**Course Name: Potentiometry and Spectral Interpretation**	**Code: P8CHNMP4**	**Credit: 2**
CO1	Gain the practical skill to determine the strength and pH of solutions potentiometrically.		
CO2	Able to interpret the spectra of simple molecules and identify the compounds.		
CO3	Understand the principles of potentiometry and conductometry		
CO4	Able to carry out estimations with dichromates and permanganates.		

MASTER OF PHILOSOPHY IN CHEMISTRY

COs	**Course Name: Research Methodology**	**Code: MPH8CH01**	**Credit: 5**
CO1	Justify research and identify areas of research based on ethical issues.		
CO2	Understand the research in scientific methods and research process.		
CO3	Able to design the research work by selecting a suitable problem.		
CO4	Gain the knowledge about methods of data collection and the techniques of data presentation.		
CO5	Acquire the knowledge of uses of computers in research, search engines and common software for documentation and presentation.		
CO6	Able to carry out the error analysis and also design methods to control error.		
CO7	Understand how to write a research paper and thesis.		

COs	Course Name: Advanced Chemical Analysis	Code: MPH8CH02	Credit: 5
CO1	Gain knowledge on the principle and functioning of various instruments used in analytical chemistry.		
CO2	Understand the principle of various spectroscopic techniques and apply them in the structural elucidation.		
CO3	Gain knowledge on the applications of spectroscopy in chemistry.		
CO4	Elucidate the structure of Organic and Inorganic molecules by correlating the data from various spectroscopic techniques.		
CO5	Apply the spectroscopy in stereochemistry.		
CO6	Understand the concepts of symmetry elements and point groups		
CO7	Acquire skill to determine the configuration and conformation of molecules.		

DEPARTMENT OF BIOTECHNOLOGY

COs	Course name : Molecular Biology And Genetics	Code: U8BT1001	Credit 7
Upon completion of this course, students will be able to			
CO1	Gain the knowledge on functional and structural organization of prokaryotic and eukaryotic cells.		
CO2	Acquire a complete knowledge about structure and functions of plant and animal cells.		
CO3	Recognize the types and functions of RNAs in animal, plant and microbial cells and their role in a cell		
CO4	Gain the specific knowledge about the physical and chemical nature of DNA		
CO5	Recall the essential concepts of replication of DNA in Prokaryotes and Eukaryotes.		
CO6	Attain complete knowledge on how the principles of genetics and Mendalian' laws are applied in both plants and animals will be imparted.		
CO7	Imbibe the concept of microbial genetics and the microbial structural organization.		

CO's	Course name: Molecular Biology And Genetics – Practical	Code: U8BTPR11	Credit 1
CO1	Understand the mechanism of Microscopy and the magnification as well as resolution capacity.		
CO2	Measure the size of the microbial cells using micrometry.		
CO3	Isolate DNA from plant and animal tissues		
CO4	Study and interpret the genetic traits of students.		
CO5	Observe the stages of mitotic cell division in onion root cells.		

CO's	Subject: Principles of Biochemistry	Sub Code: U8BTAL11	Credit 6
CO1	Gain the knowledge of basic principles of biochemistry		
CO2	Classify the different biomolecules (proteins, lipids, and carbohydrates) found in living cells.		

CO3	Understand the structure of different biomolecules (proteins, lipids, and carbohydrates)
CO4	Know the biochemical properties of different biomolecules (proteins, lipids, and carbohydrates)
CO5	Gain knowledge on double helical structure of DNA.
CO6	Understand the types of RNA and its functions.
CO7	Discuss the functions and deficiency of vitamins.

CO's	**Course name : Principles of Biochemistry – Practical**	**Code: U8BTAP11**	**Credit 1**
Upon completion of this course, students will be able to			
CO1	Assess the pH of various biological samples and prepare the biological buffers.		
CO2	Analyse qualitatively the glucose, protein and lipid.		
CO3	Infer glucose level in blood samples.		
CO4	Separate the amino acids by paper and thin layer chromatography.		
CO5	Estimate the proteins from the samples by Lowry's method.		

CO's Course : Microbiology Code: U8BT2001 Credit 6

CO1 Understand the different era of microbiology.

CO2 Discus the contributions of microbiologists.

CO3 Develop the knowledge and concept of a microbial classification.

CO4 Understand the basic and ultra structure of bacteria.

CO5 Broaden the knowledge of viruses and fungi.

CO6 Develop the theoretical knowledge of bacterial cultural methods and types of media.

CO7 Understand the principles of physical and chemical method of sterilization.

CO8 Understand the principles of various staining techniques of bacteria.

CO's	Course name: Microbiology Practical	Code: U8BTPR21	Credit 1
Upon completion of this course, students will be able to			
CO1	Formulate the composition of culture media of different types.		
CO3	Assess bacterial contamination in air and water samples.		
CO4	Acquire the skills of different culture techniques.		
CO5	Perform different staining techniques to observe and identify the microbes.		
CO6	Analyse the microbial load in milk by Methylene blue reduction test		

CO's	Course name: Allied - Biodiversity	Code: U8BTAL21	Credit 6
Upon completion of this course, students will be able to			
CO1	Understand the biodiversity at different levels		
CO2	Know the value of biodiversity and its conservation.		
CO3	Assess the human impact on biodiversity and threat to ecological interaction of plants and animals.		
CO4	Acquire knowledge on ecological mapping of landscape.		
CO5	Understand the value of national and international protected area of biodiversity.		
CO6	Gain the conservation technique for threatened species.		
CO7	Understand the importance of protecting flora and fauna.		
CO8	Gain the knowledge on Environmental policies legislation and conservation of biodiversity		

CO	Course name: Biodiversity Practical	Code: U8BTAP21	Credit 1

CO1	Record the plant, animal and microbial diversity in the college campus.
CO2	Identify and differentiate the Phyto and Zoo planktons
CO3	Understand the diversity and distribution of mouth parts of insects
CO4	Comprehend the importance of economically distinguished plants and animals

CO	**Course name: Environmental Studies**	**Code: U8ENV201**	**Credit 6**
CO1	Develop the concept of Environmental sustainability		
CO2	Understand the various types of ecosystems and its ecological significance.		
CO3	Differentiate the various ecosystems in the natural environment		
CO4	Develop the knowledge of renewable and non renewable resources, land resources and degradation		
CO5	Understand the water conservation methods		
CO6	Acquire the knowledge of endangered and endemic species in India		
CO7	Develop the knowledge of causative agents of pollution, human health and control measures		
CO8	Understand the Environmental Protection Act, Forest Conservation Act. and Tribal Rights and Ethics.		

CO's	**Course name: Immunology**	**Code: U8BT3001**	**Credit 7**
CO1	Acquire the knowledge on the cells and organs of Immune system.		
CO2	Understand the concepts of CMI and AMI.		
CO3	Gain the knowledge on the types of antigen-antibody reaction.		
CO4	Understand the functions of lymphocytes in the body immune responses.		
CO5	Acquire the principles of Immunological techniques.		

CO6	Gain knowledge about the Immunization methods and the types of Vaccines.
CO7	Understand the roles and properties of different vaccination materials.
CO8	Understand the Immune system in transplantation and graft rejection.

CO's	**Course name: Immunology - Practical**	**Code: U8BTPR31**	**Credit 1**
Upon completion of this course, students will be able to			
CO1	Enumerate Blood cells – RBC and WBC		
CO2	Understand the blood transfusion probability of different persons with different blood types		
CO3	Handle the various Immunological test instruments.		
CO4	Identify the infection in the blood by the WBC count techniques.		

CO	**Course name: Biostatistics**	**Code: U8BTAL31**	**Credit 6**
Upon completion of this course, students will be able to			
CO1	Understand the basics of statistics with reference to biology.		
CO2	Apply the biostatistical tools for Epidemiology.		
CO3	Collect data of variables and apply various statistical tools to interpret the data		
CO4	Represent the data graphically and diagrammatically.		
CO5	Apply mathematical concepts and principles to perform computations.		
CO6	Identify distribution form relating to the variable/variables		
CO7	Apply hypothesis testing via some of the statistical distributions		
CO8	Interpret results of commonly used statistical analyses.		

CO	Course name: Biostatistics - Practical	Code: U8BTAP31	Credit 1
CO1	Measure the central tendencies and its deviation of various biological data.		
CO2	Find out the Correlation and regression coefficients for biological data.		
CO3	Compute statistical problems using computer.		
CO4	Characterize data and understand different sampling methods.		

CO	Course name: Bioinstrumentation	Code: U8BT4001	Credit 7
CO1	Attain the knowledge of instruments required for testing biological parameters.		
CO2	Understand the working principle of advanced molecular instruments.		
CO3	Acquire the knowledge of working principle and application of various microscopes in microbial and molecular studies.		
CO4	Understand the working principle of advanced microscopes – TEM and SEM.		
CO5	Apply the principles of centrifuge types and its applications in the separation of cellular inclusions.		
CO6	Understand the working and operating principle of UV and visible spectrophotometer.		
CO7	Gain the knowledge of chromatographic techniques		

CO	Course name: Bioinstrumentation - Practical	Code: U8BTPR41	Credit 1
CO1	Observe and measure the microbial samples.		
CO2	Learn the DNA and RNA isolation techniques.		
CO3	Separate the amino acids and plant pigments by chromatographic techniques.		
CO4	Quantify the DNA and RNA using UV spectrophotometer.		

CO	Course name: Food Processing Technology	Code: U8BTAL41	Credit 6
CO1	Understand the need to improve the nutritional quality in foods.		
CO2	Gain the knowledge of techniques to preserve the various food products		
CO3	Acquire the knowledge of the storage methods of cereals.		
CO4	Get the knowledge of storing the fruits and vegetables and non-alcoholic beverages		
CO5	Develop the knowledge of fruits and vegetable processing techniques		
CO6	Acquire the knowledge of novel sensory evaluation method of fruits and vegetable products		
CO7	Define the quality control chart for food products		
CO8	Understand the importance of HACCP, GMPs.		

CO	Course name: Food Processing Technology - Practical	Code: U8BTAP41	Credit 1
CO1	Evaluate the different parameters to check the quality of fats and oils.		
CO2	Demonstrate the pasteurization and homogenization procedure of milk.		
CO3	Discuss the canning procedure of food items and fermented food.		
CO4	Develop the skill of preparation and processing of tomato and mango pulp.		
CO5	Process the mushroom for ready marketing and it will be helpful for self-employment		
CO6	Acquire the skill of waxing the fruits to maintain the quality and avoid fruit degradation.		

CO	Course name: Applied Biology I	Code: U8BIAL31 and U8CHAL31	Credit 6
CO1	Understand the significance of vermicomposting to improve soil fertility.		
CO2	Gain knowledge of vermiculture and its application in green farming		
CO3	Understand the scope of labour oriented and money-spinning industry - sericulture		

CO4	Cultivate mulberry leaves
CO5	Develop the knowledge of aquaculture techniques to culture cultivable organisms of freshwater, estuarine and marine.
CO6	Acquire the skill of apiculture and preparation of honey bee hives.
CO7	Establish home based mushroom cultivation

CO	**Course name: Applied Biology - Practical I**	**Code: U8BIAP31 and U8CHAP31**	**Credit 1**
CO1	Analyse the morphological features of earth worm.		
CO2	Gain entrepreneurship in vermicomposting.		
CO3	Understand the life cycle of silk worm – *Bombyx mori* and uses of silk		
CO4	Design the fish tanks and the honey hives		
CO5	Understand the nutritional value of mushroom and other insect derived commercial products.		

CO	**Course name: Applied Biology II-**	**Code: U8BIAL41 and U8CHAL41**	**Credit 6**
CO1	Understand the importance of different biofertilizers.		
CO2	Understand the role of microbes to develop biofertilizers.		
CO3	Gain the knowledge on mass culture production of Biofertilizers.		
CO4	Understand the herbal products used in various ailments and disorders.		
CO5	Describe the microbes involved in fermentation.		
CO6	Acquire knowledge of microbial production of antibiotics, vaccine and hormones.		
CO7	Discuss the food spoilage of meat, milk, vegetables and dairy products and suggest the quality		
CO8	Develop the skill of bioremediation techniques and treatment of industrial waste.		

CO	Course name: Applied Biology Practical II	Code: U8BIAp41 and U8CHAP41	Credit 1
CO1	Identify the medicinal plants for various ailments.		
CO2	Understand the importance of ecology and the adaptation developed by the vertebrate animals		
CO3	Measure the atmospheric pressure in different stages of the environment		
CO4	Measure the refractive indices for identification and determination of sugar content.		

CO	Course name: Industrial Biotechnology	Code: U8BT5001	Credit 5
CO1	Understand the fermentation process and its products.		
CO2	Comprehend the microbial strain improvement.		
CO3	Gain indepth knowledge in bioreactor and its type.		
CO4	Understand the steps involved in microbial production of alcohol, organic acids, solvents, antibiotics, aminoacids, enzymes and vitamins.		
CO5	Understand the role of microbes in agriculture with special reference to SCP, BGA and GMCs.		
CO6	Abstract the cultivation of various products of microbial and fungal origin.		
CO7	Describe the process of biofuels.		
CO8	Understand the significance of prebiotic and probiotics.		

CO	Course name: Medical Biotechnology	Code: U8BT5002	Credit 5
CO1	Explain the physiology of various systems of human body.		
CO2	Get insight into bacterial, fungal and protozoan diseases in human.		
CO3	Discuss the fact of infections and genetic disorders at molecular level.		
CO4	Understand the molecular diagnostic technique for genetic disorder.		
CO5	Understand the production of monoclonal antibodies and its applications.		
CO6	Gain the knowledge of recombinant vaccine production.		
CO7	Compare the various blood cells and hematological parameters.		

CO	Course name: r-DNA Technology	Code: U8BT5003	Credit 5
CO1	Understand the basic steps involved in molecular cloning.		
CO2	Know the stages of Down Stream Processing of r-DNA products.		
CO3	Understand and classify the various cloning vectors.		
CO4	Discuss the role of expression vectors in pro and eukaryotes.		
CO5	Focus enzymes involved in r-DNA technology		
CO6	Understand the gene transfer and blotting techniques.		
CO7	Understand the molecular markers involved in DNA finger printing		
CO8	Illustrate the recombinant DNA products and gene therapy		

CO	Course name: Bioinformatics	Code: U8BT5004	Credit 5
CO1	Know the generation of computers		

CO2	Write programming languages
CO3	Know the usages of internet and internet service providers
CO4	Understand computer topology and protocols.
CO5	Describe the computer networking
CO6	Discuss the sequence databases – EMBL, DDBJ, GenBank, PIR, SWISSPROT, CSD, PDB, NCBI, EXPASY.
CO7	Understand and interpret the sequence alignments.

CO	**Course name:** **Industrial And Medical Biotechnology - Practical V**	**Code:** **U8BTPR51**	**Credit** **2**
CO1	Determine the bacterial growth curve.		
CO2	Produce and demonstrate the immobilization of yeast cells.		
CO3	Produce wine using fermentor.		
CO4	Isolate the phytochemicals using TLC		
CO5	Estimate the human blood glucose level.		
CO6	Diagnose the typhoid fever adopting the WIDAL test		
CO7	Determine the antigen titre with ELISA test.		

CO	**Course name: r-DNA And Bioinformatics – Practical VI**	**Code: U5BTPR52**	**Credit 2**
CO1	Amplify the gene of interest using PCR technique		
CO2	Demonstrate the restriction digestion.		
CO3	Perform restriction and ligation of DNA		

CO4	Retrieve sequences from NCBI
CO5	Align the retrieved sequences using various bioinformatic tools

CO	**Course name: Basic Endocrinology**	**Code: U8BTSB51**	**Credit 1**
CO1	Understand the concepts of hormone secretion and classification		
CO2	Understand the metabolic function of thyroid and parathyroid.		
CO3	Gain the knowledge of role of pancreas in controlling diabetics.		
CO4	Understand the disorders of adrenal hormones		
CO5	Develop the understanding of reproductive hormones.		

CO	**Course name: Environmental Biotechnology**	**Code: U8BT6001**	**Credit 5**
CO1	Discuss the various environmental pollutions and its control measures.		
CO2	Gain knowledge on remediation of environmental pollutants.		
CO3	Understand the process of waste water treatment.		
CO4	Describe the eco-management and environmental pollution act.		
CO5	Understand the hazards and its safe disposal.		
CO6	Explain the management of solid municipal wastes.		
CO7	Discuss the management of biomedical wastes.		

CO	**Course name: Aquaculture Biotechnology**	**Code: U8BT6002**	**Credit 5**
CO1	Gain knowledge about the significance of aquaculture at global and national scenario.		
CO2	Understand the selection criteria for cultivable species of fish.		

CO3	Differentiate the various types of aquaculture.
CO4	Analyze the concept of mono, poly and composite culture of fish.
CO5	Acquire the knowledge on basic nutritional requirements of cultivable fish.
CO6	Understand the principles of fish cell culture and development of cell lines
CO7	Describe the applications of biotechnology in fish disease diagnosis.

CO	**Course name: Animal Biotechnology**	**Code: U8BT6003**	**Credit 5**
CO1	Gain knowledge of growth media of animal cell culture.		
CO2	Illustrate the role of CO_2 and the media application in culture of animal cells.		
CO3	Understand the basics of organ and stem cell culture		
CO4	Discuss the principle and concept of cryopreservation.		
CO5	Understand the knowledge of gene transfer techniques.		
CO6	Gain the knowledge of applications of transgenic animals		
CO7	Describe the *in-vitro* testing of drugs using cell lines.		
CO	**Course name: Plant Biotechnology**	**Code: U8BT6004**	**Credit 5**
CO1	Understand the basic concept of plant tissue culture.		
CO2	Gain knowledge on micropropagation of plants and plantlets.		
CO3	Understand the importance of agrobacterium in plant genetic engineering.		
CO4	Classify the morphological and genetic markers used in plant breeding.		
CO5	Recall the production of disease resistant varieties of plants.		
CO6	Understand the concept of golden rice and the mechanism involved in delaying fruit ripening.		

CO7	Explain the role of genetic engineering for extended shelf-life of fruits.

CO's	Course name: Environmental And Aquaculture Biotechnology - Practical VII	Code: U8BTPR61	Credit 2
CO1	Estimate the different parameters of water samples such as dissolved oxygen, salinity, pH, CO_2 etc.		
CO2	Assess the microbial contamination of water through BOD.		
CO3	Analyze the quality of air, water and soil by microbial population determination tests.		
CO4	Identity commercially important fin and shell fish.		
CO5	Acquire skill to prepare artificial feed for fish and prawn.		
CO6	Diagnose white spot syndrome in shrimp using PCR kit.		

CO's	Course name: Plant And Animal Biotechnology - Practical VIII	Code: U8BTPR62	Credit 2
CO1	Prepare plant tissue culture media		
CO2	Perform the sterilization of surface of seeds		
CO3	Know the technique of micropropagation		
CO4	Prepare culture media and balanced salt solution under aseptic condition		
CO5	Understand the basics of cell culture technique		

CO's	Course name: Nano Biotechnology	Code: U8BTSB61	Credit 1
CO1	Synthesize the idea of Nano scale and nanoparticles		
CO2	Synthesize the Nano materials by various established sources.		
CO3	Understand the characterization of nanoparticles using spectroscopic techniques		
CO4	Get insight into the applications of nanobiotechnology		

CO's	Course name: Advanced Biochemistry	Code: P8BT1001	Credit 5
CO1	Get insight on the basic and advanced biochemistry by studying metabolism of carbohydrates.		
CO2	Imbibe the cyclic reactions in sugar molecules.		
CO3	Understand the sequence of carbohydrate metabolic reactions.		
CO4	Gain knowledge on Lipid metabolism and biosynthesis.		
CO5	Explain energy generation by lipids in the absence of carbohydrates.		
CO6	Signify the structure and classification of amino acids and proteins and metabolic functions.		
CO7	Define the value of nitrogen bases in designing structure and forms of DNA and RNAs'		
CO8	Explain the mechanism of enzyme action in metabolic pathways		
CO's	**Course name: Advanced Biochemistry Practical**	**Code: P8BTPR11**	**Credit 4**
CO1	Perform qualitative measure of carbohydrates in different samples.		
CO2	Develop skill of estimating DNA and RNA in the samples.		
CO3	Extract DNA from the plant tissue, a technique prelude to the r-DNA technology by which hybrid plants can be generated.		
CO4	Separate and identify the different sugars by thin layer chromatography (TLC)		
CO5	Analyse the carbohydrates and amino acids from the samples to detect their presence.		
CO6	Analyse the urine sample to detect various parameter and determine physiological condition of the blood.		

CO's	Course name: Molecular Biology	Code: P8BT1002	Credit 5

CO1	Acquire depth knowledge in DNA Denaturation and Renaturation and extrachromosomal DNAs.
CO2	Understand the nature of prokaryotic and eukaryotic chromosomal structure and extra genomic DNA.
CO3	Explain the modes and methods of replication in prokaryotic cells.
CO4	Illustrate the eukaryotic replication and enzymes of replication
CO5	Understand the complete mechanism of transcription pro and eukaryotes.
CO6	Decipher the genetic code in both prokaryotic and eukaryotic genetic organization.
CO7	Understand the mechanism of gene repair, gene regulation - Operon concepts and feedback inhibition.

CO's	**Course name**: **Molecular Biology Practical**	**Code: P8BTPR12**	**Credit 4**
CO1	Develop the skill of squash preparation of onion root tip and grasshopper testis		
CO2	Fractionate the sub cellular organelles of the cell by centrifugation techniques		
CO3	Isolate DNA of bacterial cell and study the microbial genetics.		
CO4	Analyse the DNA and RNA quantitatively to determine DNA and RNA content of the samples.		
CO5	Demonstrate cytogenetic by conjugation and transformation studies.		
CO6	Demonstrate the restriction digestion technique.		
CO7	Perform cytological and microbial techniques		

CO's	**Course name**: **Bioprospecting Technology**	**Code: P8BTEP11**	**Credit 4**
CO1	Classify the crude drugs and the commercial significance of herbal products.		
CO2	Develop the knowledge of herbal products and drugs of carbohydrate, lipids and proteins derived products.		

CO3	Analyze drug adulteration and its evaluation.
CO4	Focus the attention of application of patents and the legal implications in establishing patent rights
CO5	Gain the knowledge on rights of farmers and understand the IPR and WTO regime GATT and TRIPS applications.
CO6	Understand the applications of patent law in biotechnological inventions.
CO7	Understand the general requirements of patent law and patentability of microorganisms

CO's	**Course name**: **Bioinstrumentation**	**P8BTEP12**	**Credit 4**
CO1	Gain the knowledge of working principle of various instruments of biotechnologically important.		
CO2	Develop the skill of bio techniques and bio medical instrumentation		
CO3	Expand the knowledge on light microscopy and understand the electron microscopy operational mechanism.		
CO4	Understand the skills of genetic engineering tools - microinjection, Electroporation etc.		
CO5	Comprehend the radioactive techniques and used in biotechnology to measure the various experimental outcome.		
CO6	Gain the extended knowledge on separation techniques - chromatography and electrophoresis.		
CO7	Understand the operational skills of spectroscopic techniques in research and industrial units		
CO's	**Course name**: **Plant Biotechnology**	**P8BT2001**	**Credit 5**
CO1	Transform the knowledge of plant tissue culture from laboratory to field		
CO2	Improve the understanding of vector mediated gene transfer techniques.		
CO3	Acquire the knowledge of improving transgenic plants development and provide the opportunity for self-employability		
CO4	Understand the manipulations in the metabolic engineering mechanisms to generate various secondary metabolites		

CO5	Acquire the technique to generate various products of plant based engineering
CO6	Understand the molecular markers are exploited to aid the plant breeding techniques
CO7	Comprehend to amplify the genes of our interest by PCR by utilizing molecular markers

CO's	**Course name**: **Plant Biotechnology Practical**	**P8BTPR21**	**Credit 4**
CO1	Develop the skill of safety practices for plant cell, plant growth in the laboratory		
CO2	Able to maintain cultures aseptically in the laboratory.		
CO3	Prepare the tissue culture media and plant growth regulators stocks		
CO4	Develop the skill of propagation of plantlets by direct organogenesis		
CO5	Develop the skills of propagating plantlets by indirect organogenesis technique		
CO6	Isolate the protoplast by mechanical and enzymatic method for the vegetative propagation		
CO7	Demonstrate the production of synthetic seeds.		

CO's	**Course name**: **Animal Biotechnology**	**P8BT2002**	**Credit 5**
CO1	Upgrade the economic traits by difference types of breeding techniques		
CO2	Identify the genetic disorders in animals		
CO3	Acquire the knowledge of embryo transfer and develops transgenic animals		
CO4	Develop the skill of media preparation for animal cell culture, preservation and characterization of animal cells.		
CO5	Explain the skill of preservation and maintenance of animal cell lines		
CO6	Describe the bacterial and viral parasitic diseases of animals and analyze the types of recombinant vaccines.		
CO7	Understand the rapid diagnosis techniques of genetic diseases and ethical issues in biotechnology.		

CO's	Course name: Animal Biotechnology Practical	P8BTPR22	Credit 4
CO1	Develop the skill of sterilization techniques for animal cell culture.		
CO2	Demonstrate the preparation of cell culture media and cell line culture		
CO3	Isolate the liver parenchyma cells by enzymatic methods.		
CO4	Demonstrate the cryopreservation technique to keep the cells alive for the animal cell studies.		
CO5	Determine the toxicity of cell by MTT assay.		
CO6	Perform the Isolation of DNA of animal origin to develop the skill of genetics and molecular studies		
CO7	Develop the skill of RNA isolation from animal tissue.		

CO's	Course name: Molecular Genetics	P8BTEP21	Credit 4
CO1	Analyze the gene transfer methods in bacteria		
CO2	Understand the gene transfer process by the vector bacterial plasmids		
CO3	Compare the types of bacterial transposons		
CO4	Analyze the score of linkage testing and genetic disorders		
CO5	Understand heritability measurement and mapping		
CO6	Detect the mutant types.		
CO7	Explain the type of mutants and mutagenesis.		

CO's	Course name: Herbal Biotechnology	P8BTEP22	Credit 4
CO1	Define the herbal drug and the source of herbal raw materials		
CO2	Identify the medicinal plants a per the WHO guideline		
CO3	Prepare the herbal drugs by artificial and natural methods		

CO4	Compare the various parameters applicable to herbal drugs
CO5	Formulate the herbal drugs and standardizing them.
CO6	Analyze the bioactive components and phytochemical standardization of herbal extracts
CO7	Standardize the raw herbal drugs by various techniques

CO's	**Course name**: **Immunotechnology**	**P8BT3001**	**Credit 5**
CO1	Acquire the knowledge of the immune system, immunity and the organs		
CO2	Understand the types of antigen and antibody.		
CO3	Gain knowledge on antigen and antibody reactions.		
CO4	Understand the importance of vaccines to improve the immune system of the body		
CO5	Understand the importance of Immunotechniques - ELISA and RIA		
CO6	Explain the immunodefiency and connecting measures available		
CO7	Understand the principles of immunization and analyze the role of immune cells in allergies.		

CO's	**Course name**: **Immunotechnology–Practical**	**P8BTPR31**	**Credit 4**
CO1	Prepare antigens by heat and chemical treatment required for the immunological tests.		
CO2	Test the antigen and antibody reaction by single radical immune diffusion.		
CO3	Detect DNA of minute quantity in the sample by ELISA technique.		
CO4	Separate protein from the samples of blood and other samples by SDS – PAGE		
CO5	Demonstrate the immunological technique - double diffusion.		
CO6	Isolate the coli form microbes from the sewage.		

CO's	Course name: Microbial Technology	P8BT3002	Credit 5
CO1	Understand to identify, purify and preserve the microorganisms.		
CO2	Classify the microorganisms by staining method		
CO3	Explain the cytological observation of microbes using microscopical display of microbes		
CO4	Gain the extended knowledge on gene transfer methods among the bacterial population		
CO5	Understand the genetic constitution in organisms and gene expression		
CO6	Gain knowledge in the exploitation of microbes in food and beverage industries		
CO7	Acquire the knowledge on the production of organic acids and vitamins by microbial employment and explain the solid waste and waste water treatment of microbial influence		
CO's	**Course name: Microbial Technology Practical**	**P8BTPR32**	**Credit 4**
CO1	Develop the skill to isolate and identify the microbes in ETP		
CO2	Identify and enumeration of bacteria and fungi from soil, water and air.		
CO3	Determine the group of bacteria by staining techniques		
CO4	Demonstrate the IMViC test for bacterial identification		
CO5	Identify the fungal stains to demonstrate the quality of food		
CO6	Analyze the microbial population in blood and urine to determine the infection		
CO7	Demonstrate the antimicrobial assay to establish the causative agent of infection		

CO's	Course name: Industrial Biotechnology	P8BTEP31	Credit 4
CO1	Discuss the manufacturing commercial products of enzymes, Aminoacids, vitamins and antibiotics		
CO2	Understand the skill of exploiting the industrially important microbes		
CO3	Compare the steps involved in industrial fermentation process		

CO4	Distinguish the various microbial culture methods
CO5	Elaborate the fermentation process to produce alcoholic beverages, wine and enzymes.
CO6	Improve the skill of mass production of Biofertilizers, single cell protein.
CO7	Understand the improvement of nutritional value of seeds

CO's	**Course name**: **Enzymes And Fermentation Technology**	**P8BTEP32**	**Credit 4**
CO1	Understand the general properties of enzymes and factors influencing activity		
CO2	Demonstrate the enzyme structure, function and mechanism and regulation of enzyme activity.		
CO3	Explain the clinical and industrial applications of enzymes		
CO4	Transfer the knowledge of Immobilize the enzyme on demand enzymatic experiments		
CO5	Demonstrate the preparation of media for industrial fermentation		
CO6	Analyze the culture of microbes in bioreactors to study the microbial growth		
CO7	Demonstrate the skill of separation of post fermentation of microbial products.		

CO's	**Course name**: **Environmental Biotechnology**	**P8BT4001**	**Credit 5**
CO1	Gain the knowledge on conservative strategies and laws and policies in India to protect the environment from the damage		
CO2	Understand the bioremediation strategies to protect from environmental degradation		
CO3	Discuss how to detoxify chemicals, pesticides and hydrocarbons		
CO4	Describe the Protection, prevention and assessment of biodeterioration		
CO5	Measure the biological safety level of microbes and recommend biosafety level		
CO6	Discuss the role of various committees governing the application in food and agriculture		

CO7	Understand the internal agreements of environmental release of GMOs

CO's	**Course name**: **Environmental Biotechnology Practical**	**P8BTPR41**	**Credit 4**
CO1	Estimate the DO, solids total suspended solids and alkalinity to check the quality of water samples.		
CO2	Determine the COD/BOD from the water sample to determine the water contamination.		
CO3	Determine the heavy metals and arsenic content in drinking water to check the toxicity		
CO4	Formulate microbial biopesticide to check the growth of microbes.		
CO5	Develop the microbial fertilizers to enrich the soil fertility		
CO6	Isolate the xenobiotic degrading bacteria		
CO7	Detect by the survey the degradative plasmids in microbes glowing in populated environment.		

CO's	**Course name**: **Research Methodology**	**P8BT4002**	**Credit 5**
CO1	Acquire the basic knowledge on various parameters on good research work		
CO2	Quantify the quality research, publication and impact factor to improve the standard of research		
CO3	Understand the writing mechanics of a research paper		
CO4	Design the strategies of sampling methods		
CO5	Apply the statistical tools to record analysis and segregation of database		
CO6	Apply the biotechnological tool for research analysis		
CO7	Justify the research analysis and research outcome by techniques		
CO's	**Course name**: **Entrepreneurial Biotechnology**	**P8BTEP41**	**Credit 4**
CO1	Understand the role of an entrepreneur in economic development of the country.		

CO2	Comprehend the importance of entrepreneur in economic development.
CO3	Identify the creativity to become entrepreneur in biotechnology.
CO4	Prepare the suitable projects for biotechnology based entrepreneurship.
CO5	Develop the knowledge about small, medium and large scale industries

CO's	**Course name**: **Medical Biotechnology**	**P8BTEP42**	**Credit 4**
CO1	Understand the infection of microbial diseases, diagnosis, control and treatment.		
CO2	Explain the application of PCR in medical diagnosis and DNA finger printing		
CO3	Describe the gene therapy and vectors used and the limitations.		
CO4	Comprehend the methods involved in the production vaccines for various diseases.		
CO5	Explain the production of monoclonal antibodies and animal cell cultures and applications		
CO6	Demonstrate stem cell culture and bone marrow transplantation and its application.		
CO7	Understand the application of recombinant hormone and the transgenic animals.		

CO's	**Course name**: **Aquaculture Biotechnology**	**P8BTNM41**	**Credit 2**
CO1	Get insight into the gene transfer technology to increase the fish production		
CO2	Develop knowledge of hormonal application for breeding of fishes		
CO3	Manipulate the culture technique by chromosomal engineering in fishes		
CO4	Improve a particular trait in fish culture by chromosomal banding technique		
CO5	Develop fish feed by recombinant protein technique.		
CO6	Apply the biotechnological tool to manage fish health and vaccination.		
CO7	Diagnose the diseases of fishes by serological techniques.		

CO's	Course name: Research Methodology	MPH8BT01	Credit 5
CO1	Understand the objective and problems encountered by researchers in India.		
CO2	Understand the responsibilities of researchers.		
CO3	Understand the code of ethics in research and publications.		
CO4	Design the research problems, techniques and experimental design.		
CO5	Understand the technique of data collection and ordering for documentation and presentation.		
CO6	Apply the research data for statistical analysis.		
CO7	Determine the measurement of errors and control of research data.		
CO8	Frame logical format for writing thesis research report.		
CO9	Draft reports based on the research data derived and effective illustration by tables and figures.		

CO's	Course name: Advanced Biotechnology	MPH8BT02	Credit 5
Upon completion of this course, students will be able to			
CO1	Frame protocols for amenable gene transfer, vectors used in gene transfer in plants.		
CO2	Develop, characterize and maintenance of cell lines and production of human animal viral vaccines.		
CO3	Demonstrate DNA based diseases diagnosis and stem cell biology and regenerative medicines.		
CO4	Develop the knowledge of production of Bioactive compounds and recombinant vaccine.		
CO5	Demonstrate the knowledge of downstream processing of enzyme production.		
CO6	Describe the biosensors, biofuel, biopolymers and the application of nanotechnology.		
CO7	Analyze the solutions for industrial effluents, nuclear wastes and bioremediations.		

CO's	Course name: Endocrine Biotechnology (Guide Paper)	MPH8BT03	Credit 5
CO1	Define the scope and importance of hormones and mechanism of actions		
CO2	Understand the origin and action of hormones and physiology of pituitary.		
CO3	Describe the role of thyroid hormones in the physiological and metabolism and hypo and hyper thyroidism.		
CO4	Understand biological effects of glucocorticoids and the functions of adrenal cortex and medulla.		
CO5	Understand the role of insulin in glucose metabolism.		
CO6	Describe the endocrinology of pregnancy and contraception.		
CO7	Explain the hormones and cancer and endocrine therapy for cancer.		

CO's	Course name: Aquaculture Biotechnology (Guide Paper)	MPH8BT03	Credit 5
CO1	Design and construction of aqua hatcheries, equipments and automatic feeders		
CO2	Describe the induced feeding, hypophysation and multiple breeding in aquaculture		
CO3	Define the feed, feed ingredients, feed attractants and preservatives		
CO4	Understand the methods of collection, maintenance and rearing of fish food organisms		
CO5	Diagnose the disease in fishes and identify the causative agents		
CO6	Develop the skill of breeding and culture of aquarium ornamental fishes		
CO7	Discuss the different ornamental fishes and economic aquarium fish		

CO's	Course name: Herbal Biotechnology (Guide Paper)	MPH8BT03	Credit 5
CO1	Explain the medicinal plants in indigenous system of medicines.		
CO2	Categorize the indigenous systems of medicines and ethno medicines		

CO3	Collect and process the herbal drugs and methods of packaging.
CO4	Describe the culture of protoplast and callus and cell line selection and mass culture.
CO5	Signify the importance of plant hormones in vegetative propagation of plants.
CO6	Understand the need of acquiring knowledge on Bioprospecting and Biopiracy.
CO7	Develop the knowledge on intellectual property in drug discovery and patent protection and strategy.

DEPARTMENT OF BIOCHEMISTRY

SEMESTER-I

Course Outcomes (COs):	Code: **U8BI1001**	Course Name: **BIOORGANIC CHEMISTRY** **Credit: 7**
CO1	Classify carbohydrates along with their functions.	
CO2	Identify and name lipids along with their functions.	
CO3	Understand Structure, classification and functions of amino acids and proteins.	
CO4	Identify and compare nucleic acids along with their functions.	
CO5	Understand the structure and biological functions of heterocyclic compounds and porphyrins.	
CO6	Understand the principles of the chemistry connected to living systems and correlate the chemical structure of biomolecules to reactivity.	
CO7	Apply rules for description of the structure and stereochemistry of bioorganic compounds.	

Course Outcomes (COs):	Code: **U8BIPR11**	Course Name: **Quantitative and Qualitative Analysis-I** **Credit: 1**
CO1	Analyze the distinction between qualitative and quantitative biochemical analysis.	
CO2	Carry out qualitative analysis of carbohydrates.	
CO3	Able to determine quantity of amino acids and assess rancidity in edible oil.	

SEMESTER - II

Course Outcomes (COs):	Code: **U8BI2001**	Course Name: **CELL BIOLOGY** **Credit: 6**
CO1	Analyze the structures and basic components of prokaryotic cells.	
CO2	Able to explain the structures and purposes of basic components of eukaryotic cells, especially macromolecules, cytoskeleton, membranes, and organelles.	
CO3	Evaluate the difference between prokaryotic and eukaryotic cells.	
CO4	Correlate composition and structure of biomembranes, transport mechanisms across biological membranes.	
CO5	Understand how these cellular components are used to generate and utilize energy in cells.	
CO6	Understand the cellular components underlying cell division.	
CO7	Discuss the role of compartmentalization in cellular biology.	

Course Outcomes (COs):	Code: **U8BIPR21**	Course Name: **Quantitative and Qualitative Analysis-II** **Credit: 1**
CO1	Develop practical skills and applications of analytical methods based on titrations.	
CO2	Able to perform qualitative tests for amino acids.	

CO3	Able to carry out volumetric analysis of carbohydrates and ascorbic acid.

SEMESTER III

Course Outcomes (COs):	Code: **U8BI3001**	Course Name: **ANALYTICAL BIOCHEMISTRY** **Credit: 7**
CO1	Understand the biomedical importance of pH, buffers, osmosis and dialysis.	
CO2	Determine the pH using various electrochemical techniques.	
CO3	Explain the basic principles, operational methods, and biological applications different centrifugation techniques.	
CO4	Discuss the basic principles, methods, instrumentation and biological applications of various chromatography techniques.	
CO5	Understand the basic principles, techniques, instrumentation and biological applications of electrophoresis.	
CO6	Plan how each of the techniques taught in this course can be applied to solve problems in biochemistry.	
CO7	Correlate various analytical techniques in biochemistry.	

Course Outcomes (COs):	Code: **U8BIPR31**	Course Name: **Core Practical-III-Volumetric Analysis and Biological Preparation** **Credit: 1**
CO1	Calculate and prepare molarity**,** normality and percentage solutions.	
CO2	Carry out titrimetric methods for the estimations of iron, oxalate, nitrate, chloride and calcium.	
CO3	Apply basic techniques used in the organic laboratory for isolation/extraction, purification and preparation of biological compounds from food.	

SEMESTER – IV

Course Outcomes (COs):	**Code**: **U8BI4001**	Course Name: Course Name: **Analytical Biochemistry and Bioinformatics** **Credit: 7**
CO1	Apply the basic principles, methods, instrumentation, biological applications of colorimeter, and UV-Visible spectroscopy.	
CO2	Understand the instrumentation and applications of Spectrofluorimetry.	
CO3	Discuss the principles, instrumentation and biological applications of atomic absorption spectroscopy and flame photometry techniques.	
CO4	Assess the use of radio isotopic techniques in biochemistry.	
CO5	Able to explain the fundamentals of computers and handle computers.	
CO6	Correlate various tools in computational biology and analyze biological databases using bioinformatics tools and resources.	
CO7	Apply E-resources for scientific study.	

Course Outcomes (COs):	Code: **U8BIPR41**	Course Name: **Core Practical-IV-Colorimetric Techniques and Preparation of Buffers** **Credit: 1**
CO1	Carry out colorimetric techniques for the estimations of proteins, nucleic acids and carbohydrates.	
CO2	Determine the concentrations of phosphorous in unknown samples.	
CO3	Prepare different types of buffer solutions.	

SEMESTER V

Course Outcomes (COs):	Code: **U8BI5001**	Course name: **ENZYMOLOGY** **Credit: 5**
CO1	Understand the structure, classification, properties and functions of enzymes.	
CO2	Demonstrate various classes of enzymes with mechanism of action and kinetics. Along with the structure and functions of coenzymes.	
CO3	Discuss factors that affect enzymatic activity.	
CO4	Able to demonstrate how a given inhibitor affects the kinetics of an enzymatic reaction.	
CO5	Apply various methods of immobilization of enzymes.	
CO6	Outline various industrial applications of enzymes.	

Course Outcomes (COs):	Code: **U8BI5002**	Course name: **Genetics And Molecular Biology** **Credit: 5**
CO1	Understand the principles of gene expression.	
CO2	Explain the mechanism of the prokaryotic &retroviral replication.	
CO3	Discuss the mechanism of the prokaryotic transcription.	
CO4	Understand the mechanism of the translation in prokaryotes.	
CO5	Revise the mechanism of genetic mutation and repair processes.	
CO6	Able to envisage thorough knowledge in genetics, genome organizations in organisms and their developmental aspects.	

Course Outcomes (COs):	Code: **U8BI5003**	Course name: **Human Anatomy and Physiology** **Credit: 5**
CO1	Correlate the structure and functions of skeletal system.	
CO2	Identify different cells and tissue types.	
CO3	Recognize structure and functions of tissues.	
CO4	Discuss the structure and functions of cardiovascular system.	
CO5	Understand the mechanisms of digestion, excretion, respiration and hormone action.	
CO6	Relate structure and functions of nervous system.	

Course Outcomes (COs):	Code: **U8BI5004**	Course name: **Medical Laboratory Technology** **Credit: 5**
CO1	Able to collect biological specimens, their storage, transport and analysis.	
CO2	Develop Skill in current laboratory practices as entry-level practioners.	
CO3	Demonstrate the ability to think critically and solve problems in a laboratory setting.	
CO4	Understand ethics and responsibilities of health care team.	
CO5	Perform a variety of blood, chemical, microbiological and other clinical laboratory tests.	
CO6	Apply knowledge in hospitals, health laboratories, health care clinics, veterinary office, research lab, forensic lab or pharmaceutical lab,	

Course Outcomes (COs):	Code: **U8BISB51**	Course name: **BIOTECHNOLOGY – I** **Credit: 1**
CO1	Design enzymatic tools of genetic engineering, cloning, and gene transfer methods.	
CO2	Able to communicate various experimental techniques used in recombinant technology.	
CO3	Exploit genetic engineering for human welfare.	

Course Outcomes (COs):	Code: **U8BIPR51**	Course name: **Core Practical-V-Colorimetric Analysis and Electrophoresis** **Credit: 2**
CO1	Understand the principle, theory and calculation of colorimetric experiments.	
CO2	Demonstrate the estimation of glucose, creatinine, urea and cholesterol.	
CO3	Carry out SDS-PAGE and agarose gel electrophoresis.	

Course Outcomes (COs):	Code: **U8BIPR52**	Course name: **Core Practical-VI-Medical Laboratory Technology Practical-I** **Credit: 2**
CO1	Collect and store blood samples for analysis.	
CO2	Determine hemoglobin concentration, CBC, ESR, PCV, BT and CT.	
CO5	Carry out blood grouping and operate cell counter.	

SEMESTER VI

Course Outcomes (COs):	Code: **U8BI6001**	Course name: **INTERMEDIARY METABOLISM** **Credit: 5**
CO1	Explain how biochemical energy is generated in the cells.	
CO2	Able to know the chemical reactions involved in the biochemical pathways that produce ATP.	
CO3	Describe gluconeogenesis, HMP shunt, glycogenesis and glycogenolysis.	
CO4	Determine the process of lipogenesis, lipolysis and ketogenesis.	
CO5	Discuss transamination, oxidative and non-oxidative deamination.	
CO6	Understand the de novo and salvage pathway of purines and pyrimidines.	

Course Outcomes (COs):	Code: **U8BI6002**	Course name: **CLINICAL BIOCHEMISTRY** **Credit: 5**
CO1	To summarize the use of standard precautions applied in clinical laboratories during the collection and processing of biological specimens for analysis.	
CO2	Relate laboratory results to clinical diagnosis and relationships to heart, liver, kidney, GI tract and pancreas.	
CO3	Identify inborn error in metabolism and correlate them with deficiency of key metabolic enzymes.	
CO4	Demonstrate the use of plasma enzymes in diagnosis of disease.	
CO5	Describe the various factors contributing to diabetes, diagnosis, metabolic complications and treatment.	
CO6	Ability to think critically and solve problems in a laboratory setting.	
Course Outcomes (COs):	Code: **U8BISB61**	Course name: **BIOTECHNOLOGY – II** **Credit: 1**
CO1	Understand various equipments used in tissue culture laboratory.	
CO2	Demonstrate plant tissue culture and mammalian tissue culture techniques.	
CO3	Recombinant production of transgenic plants and animals for human welfare.	

Course Outcomes (COs):	Code: **U8BIPR61**	Course name: **Core Practical-VII-Enzymology and Chromatography** **Credit: 2**
CO1	Demonstrate the effect of pH, temperature and substrate concentration on salivary amylase enzyme activity.	
CO2	Assess the activity of liver marker enzymes.	
CO3	Understand the principle, instrumentation of chromatography techniques.	

Course Outcomes (COs):	Code: **U8BIPR62**	Course name: **Core Practical-VII-Medical Laboratory Technology Practical-II** **Credit: 2**
CO1	Collection, preservation and transport and analysis of pathological urine sample	
CO2	Operate urine analyzer.	
CO3	Demonstrate the sterilization methods, preparation of culture media, identification of pathogenic bacteria and evaluate the antibiotic sensitivity	

MSc BIOCHEMISTRY

Course name: **BIOMOLECULES** Code: **P8BI1001** Credit: **5**

CO1	Understand the structure, properties and functions of Amino acids and proteins
CO2	Identify the structure, properties and functions of Glycoprotein's
CO3	Determine the structure, types and functions of nucleic acids.
CO4	Identify the structure and functions lipoproteins.
CO5	Understand the sources, requirements, functions and deficiency disorders of vitamins.
CO6	Discuss the sources, requirements, functions and deficiency disorders of minerals.
CO7	Impart knowledge on the structure and functions of Biomolecules

Course name: **ENZYMES** Code: **P8BI1002** Credit: **5**

CO1	Identify the structure, classification, properties and functions of enzymes.
CO2	Understand enzymes kinetics and their mechanism of action.
CO3	Explain the mechanism of enzyme inhibition.
CO4	Discuss the applications of coenzymes.
CO5	Understand the clinical applications of Isoenzymes
CO6	Analyze the role of enzymes in industries.
CO7	Understand techniques of enzyme immobilization.

Course name: **ISOLATION AND ESTIMATION OF BIOMOLECULES**
Code: **P8BIPR11** Credit: **4**

CO1	Carryout colorimetric techniques for the estimations of biological macromolecules and other organic compounds
CO2	Apply basic techniques used in the laboratory for isolation/extraction, and purification of biological compounds from their sources.
CO3	Isolate biological macromolecules
CO4	Quantify the biological macromolecules
CO5	Understand the principles and protocols of spectrophotometric determination of Biomolecules

CO6	Correlate theory with practice.

Course name: **ENZYME ASSAYS** Code: **P8BIPR12** Credit: **4**

CO1	Understand the kinetics of enzyme catalyzed reactions and enzyme inhibitory and regulatory process.
CO2	Demonstrate the effect of pH on enzyme catalyzed reaction.
CO3	Analyze the effect of temperature and substrate concentration on enzyme catalyzed reaction.
CO4	Understand the basic steps involved in extraction and assay of enzyme activities.
CO5	Identify the clinically important enzymes in biological samples
CO6	Correlate theory with practice.

Course name: **ELECTIVE PAPER I - CELL BIOLOGY**
Code: **P8BIE101** Credit: **4**

CO1	Understand the structures and components of prokaryotic and eukaryotic cells.
CO2	Analyze the properties and functions of plasma membrane
CO3	Understand the organization of chromosome in higher organisms
CO4	Identify the different stages of cell cycle and its regulations.
CO5	Understand biology of stem cells and its functions
CO6	Understand the mechanisms of programmed cell death
CO7	Correlate the cellular dynamics in subcellular organs

Course name: **ANIMAL CELL SCIENCE AND TECHNOLOGY**
Code: **P8BIE102** Credit: **4**

CO1	Preparation of culture media for animal and plant cell culture.
CO2	Understand the sterilization methods in plant and animal cell culture.
CO3	Understand the different types of culture methods.
CO4	Analyze the characterization of cultured cells.
CO5	Understand the steps involved in producing of transgenic animals.
CO6	Apply practical knowledge in plant and animal cell culture.
CO7	Understand the basic principles of plant and animal cell culture and its maintenance.

Course name: **ANALYTICAL TECHNIQUES** Code: **P8BI2001**
Credit: **5**

CO1	Understand the principle, instrumentation and applications spectroscopy
CO2	Assess the radio labelled components
CO3	Determine the molecular weight of protein and DNA by Electrophoretic techniques
CO4	Understanding the basic principles, methods, instrumentation and applications of chromatography techniques
CO5	Separation of subcellular components by centrifugation techniques
CO6	Identification of structure of biological macromolecules.
CO7	Understand the basic principles, instrumentation and applications of the analytical

	tools of biochemistry

Course name: **BIOENERGETICS AND METABOLISM** Code: **P8BI2002**
Credit: **5**

CO1	Elucidate the metabolic pathways, the energy yielding and energy requiring reactions in living systems
CO2	Understand the metabolism of carbohydrates
CO3	Discuss the metabolism of lipids and its regulations
CO4	Understand the metabolism of Amino acid and Protein
CO5	Explain the metabolism of purine and pyrimidine nucleotides
CO6	Able to know the metabolic pathways of biomolecules
CO7	Understand the interrelationship between the pathways and the mechanisms of regulation

Course name: **BIOCHEMICAL ANALYSIS OF BLOOD**
Code: **P8BIPR21** Credit: **4**

CO1	Plan and carry out estimations of biochemical constituents of blood
CO2	Able to operate autoanalyser and correlate their experience with manual biochemical methods.
CO3	Perform analysis of normal and abnormal biochemical constituent of blood.
CO4	Determine lipid profile.
CO5	Analyze the antioxidant enzymes of Biological samples
CO6	Able to correlate theory with practice.

Course name: **HEMATOLOGY AND SEROLOGY**
Code: **P8BIPR22** Credit: **4**

CO1	Collect, preserve, store, and transport blood and urine specimens in the laboratory for examinations.
CO2	Apply basic techniques used in the laboratory for determination of hematological parameters.
CO3	Determination of serological parameters using commercially available diagnostic kits.
CO4	Operate blood cell counter and correlate their experience with manual biochemical methods.
CO5	Able to operate ELISA reader and correlate their experience with manual biochemical methods.
CO6	Carryout the blood cells count for the investigation of diseases.

Course name: **CELL SIGNALING AND COMMUNICATION**
Code: **P8BIE201** Credit: **4**

CO1	Understand the cellular signaling components.

CO2	Able to demonstrate the principles of cell signaling, Signal cascade, inhibitors of signal cascade.
CO3	Explain the basic mechanisms of signaling pathways with special reference to host-parasite interactions and cancer.
CO4	Understand general principles of cell communication
CO5	Understand various signaling pathways of programmed cell death and etiology of cancer
CO6	Able to describe the molecular mechanism of drug designing

Course name: **NANO BIOCHEMISTRY**
Code: **P8BIE202** Credit: **4**

CO1	Understand the fundamental principles of nanotechnology.
CO2	Identify the types and applications of biopolymers.
CO3	Evaluate the biocompatible nucleic acid based nanomaterials.
CO4	Understand nanotechnology with reference to therapeutics, drug targeting and drug delivery.
CO5	Identify the various plant based nanomaterials applicable in medical field.
CO6	Gain practical knowledge of synthesizing of nanomaterials using natural sources

Course name: **Molecular Endocrinology**
Code: **P8BI3001** Credit: **5**

CO1	Identify and Classify endocrine glands and their secretions.
CO2	Correlate the structural organization of hormonal receptors.
CO3	Able to explain the biological functions of Hypothalamic and Pituitary Hormones.
CO4	Understand the significance of Thyroid, Parathyroid Hormones.
CO5	Discuss the Pancreatic & GI tract Hormones and their biological functions.
CO6	Explain adrenal and reproductive Hormones and their biological functions and disorders of hormone secretions.

Course name: **Clinical Biochemistry**
Code: **P8BI3002** Credit: **5**

CO1	Collection and analysis of various body fluids
CO2	Assess the metabolism and disorders of Carbohydrates and lipids.
CO3	Discuss the disorders of Protein metabolism
CO4	Analysis of Organs function test
CO5	Identify the role of free radicals in health and diseases.
CO6	Understanding the principles and applications of clinical biochemistry in diagnosis.

Course name: **Practical V ANALYSIS OF URINE**
Code: **P8BIPR31** Credit: **4**

CO1	Collection, preservation and transportation of urine
CO2	Carry out the physical and chemical examination of urine
CO3	Perform the microscopic examination of urine
CO4	Carry out the analysis of normal and abnormal constituents of urine
CO5	Demonstrate the renal function tests
CO6	Perform the quantitative analysis of urine.

Course name: **Practical VI Clinical Enzymology**
Code: **P8BIPR32** Credit: **4**

CO1	Acquire skills to collect and process blood sample.
CO2	Assess the cardiac marker enzymes.
CO3	Perform analysis of brain marker enzymes
CO4	Analyze the serum marker enzymes
CO5	Assay of diagnostically important enzymes with clinical interpretations
CO6	Assess the hepatic marker enzymes.

Course name: **Ecology and Evolution and Biodiversity**

Code: **P8BIE301** Credit: **4**

CO1	Understand the fundamental processes that cause or prevent adaptive evolution, speciation and extinction.
CO2	Able to explain the ecosystem and their roles
CO3	Determine the evolutionary time scale theories
CO4	Discuss the significance of evolution in prokaryotes and eukaryotes organisms.
CO5	Correlate population genetics and species interactions
CO6	Discuss the concepts of species, populations, communities, ecosystems and biomes
CO7	Understand environmental issues, ecological basis, ecological evolutionary & biodiversity consequences

Course name: **Pharmacology and Toxicology**

Code: **P8BIE302** Credit: **4**

CO1	Identify sources and route of administration of Drugs.
CO2	Understanding the mechanism of toxicity.
CO3	Evaluate the mechanism of pharmacokinetics and pharmacodynamics.
CO4	Discuss the systemic classification of Drugs.
CO5	Able to identify the mode and action of therapeutic drugs.
CO6	Discuss the basic principles of pharmacology and toxicology.

Course name: **Genetics and Molecular Biology**
Code: **P8BI4001** Credit: **5**

CO1	Discuss the fundamental aspects of Mendelian's genetics
CO2	Understand the role of enzymes involved in DNA replication and mechanism of replication
CO3	Discuss the mechanism transcription
CO4	Deduce genetic code and mechanism of translation.
CO5	Identify the causes genetic mutation and various repair systems
CO6	Gain knowledge in genetics, genome organization in organisms and their developmental aspects

Course name: **Immunology and Immunotechnology**
Code: **P8BI4002** Credit: **5**

CO1	Identify and classify the organs and components of immune system.
CO2	Identify the structure and classification of antigen and antibody.
CO3	Discuss the mechanism of complement activation.
CO4	Distinguish the types and causes of Hypersensitivity.
CO5	Assess the immunological aspects organ transplantation.
CO6	Discuss the mechanisms of antigen-antibody interactions.
CO7	Explain the principles and applications of various immunological techniques

Course name: **Molecular Biology Practical – VII**
Code: **P8BIPR41** Credit: **4**

CO1	Carryout to isolate sub-cellular organelles by centrifugation
CO2	To isolate and separate proteins in biological samples by Sodium Dodecyl Sulphate Poly Acrylamide Gel Electrophoresis (SDS – PAGE)
CO3	To determine the molecular weight of DNA in biological samples by Agarose gel electrophoresis
CO4	Identify particular protein/DNA from biological samples by blotting techniques
CO5	Perform restriction digestion and ligation of DNA
CO6	Understand the principles, instrumentation techniques and applications of molecular biology.

Course name: **Research methodology**
Code: **P8BIEP41** Credit: **4**

CO1	Understand the fundamentals of research methodology
CO2	Carry out research problems and research design
CO3	Identify the research hypothesis.
CO4	Collection and analysis of research data
CO5	To prepare and plan for thesis and research paper writing.

CO6	Understand the basis research, research design, and principle in scientific research data collection and analysis of significance data

Course name: **Biostatistics and Bioinformatics**
Code: **P8BINM41** Credit: **4**

CO1	Understand statistics - basic theory, and application of Bioinformatics
CO2	Analyze the Mean, Median, Mode
CO3	Apply the bioinformatics tool for analysis of Protein and Nucleic acid sequence.
CO4	Solve problems quantitatively using appropriate arithmetical, algebraic, or statistical methods.
CO5	Develop skills for data collection and its representation.
CO6	Create and interpret visual representations of quantitative information, such as graphs or charts
CO7	Understand theoretical and conceptual framework for quantitative reasoning, such as aspects of mathematics, statistics and logic

Course name: **Human Physiology**
Code: **P8BINM41** Credit: **2**

CO1	Understand the physiology of blood and muscles
CO2	Describe the mechanism of cardiac cycle and functions of sensory organs
CO3	Understand the mechanism of respiration and thermoregulation.
CO4	Able to explain the mechanism of central nervous system and reproductive system.
CO5	Discuss the process of digestion and absorption of food.
CO6	Understand the anatomical structures of human respiratory system, nervous system, cardiovascular and digestive and excretory system.
CO7	Correlate the physiological functions of human Respiratory system, nervous system, respiratory system, cardiovascular and digestive and excretory system.

Course name: **Research Methodology** Code: **MPH8BIO1** Credit: **5**

CO1	Understand the fundamentals of research methodology
CO2	Identify the research problems and research design
CO3	Propose the research hypothesis.
CO4	Collect and analyze the research data
CO5	Plan thesis and research paper writing.
CO6	Understand the basis of research, research design, and principle in scientific research data collection and analysis of significance data

Course name: **ANALYTICAL METHODS** Code: **MPH8BIO2** Credit: **5**

CO1	Understand the principle, instrumentation and applications spectroscopy
CO2	Isolation and separation of biological macromolecules

CO3	Discuss the basic principles, methods, instrumentation and applications of radioisotope techniques
CO4	Separation and identification of protein and DNA by Electrophoresis
CO5	Understand the basic principles, methods, instrumentation and applications of chromatography techniques
CO6	Understand the basic principles, methods, instrumentation and applications of centrifugation techniques
CO7	Apply the basic principles, instrumentation and applications of the analytical tools in biochemistry

DEPARTMENT OF COMPUTER SCIENCE

ISLAMIAH COLLEGE (AUTONOMOUS), VANIYAMBADI

B.Sc., (COMPUTER SCIENCE)

SEMESTER – I

COs	**Course Name: Digital Logic Fundamentals**	**Code: U8CC1001**	**Credit : 7**
CO1	Understand the basic concepts of digital computing circuits and its working principles		
CO2	Understand Boolean algebra, Number systems, Combinational logic circuit design concepts and sequential logic circuit design concepts		
CO3	Compute about Complement arithmetic, Adder circuit design and its significance role in designing the ALU of a digital computer		
CO4	Compile Flip Flop design		
CO5	Develop the registers of a digital computer		
CO6	Understand basic terms like compiler, interpreter and operating systems		
CO7	Design and understand the construction and working of counters		

COs	**Course Name: Office Software Lab**	**Code: U8CCPR11**	**Credit : 1**
CO1	Develop the applications in Excel.		
CO2	Develop the Macro Programs.		
CO3	Create and manipulate the Databases.		
CO4	Retrieve and check integrity of the data in database.		
CO5	Develop the web applications using HTML.		

COs	**Course Name: Mathematical Foundations - I**	**Code: U8CCAL11**	**Credit : 6**
CO1	Understand basic features of logics of lattice and Boolean algebra		
CO2	Formulate problems in the sets and perform set operations		

CO3	Describe several areas of Mathematics beyond calculus
CO4	Set up and solve linear systems algebraically
CO5	Determine differential coefficients, calculate curvature and its radius
CO6	Compile and validate arguments.
CO7	Determine sections of Conics.

COs	**Course Name: Computational Mathematics Practical – I**	**Code: U8CCAP11**	**Credit : 1**
CO1	Formulate problems on computing expressions		
CO2	Formulate problems operations on vectors		
CO3	Solve problems on operations of sets		
CO4	Formulate problems on permutations and combinations		
CO5	Solve the problems in differential calculus using software tools.		

SEMESTER - II

COs	**Course Name: Programming in C**	**Code: U8CC2001**	**Credit : 6**
CO1	Identify the process of problem solving using computer and design an algorithmic solution.		
CO2	Understand the logical flow of simple and complex computation.		
CO3	Able to know data storage and retrieval to/from memory locations.		
CO4	Understand programming with statements and constructs.		
CO5	Understand data grouping, stored procedure, structures and file concepts.		
CO6	Able to understand dynamic memory management.		
CO7	Write a program for prime number , Fibonacci series.		

COs	Course Name: Programming in C Lab	Code: U8CCPR21	Credit : 1
CO1	Understand the analyzing and problem solving skills and use the same for writing programs in C.		
CO2	Write diversified solutions, draw flowcharts and develop a well-documented and indented program according to coding standards.		
CO3	Execute and debug C programs.		
CO4	Understand usage and practice of conditional and looping statements.		
CO5	Implement arrays, functions and pointers.		
CO6	Handle strings and data files		

COs	Course Name: Mathematical Foundations - II	Code: U8CCAL21	Credit : 6
CO1	Understand the mathematical concept for matrices problems		
CO2	Solve the linear equations involving real life problems		
CO3	Compute limits and derivatives of algebraic and trigonometric functions		
CO4	Solve problems in a range of mathematical applications using the derivatives of integrals		
CO5	Solve the three dimensional analytic geometry problems		
CO6	Calculate areas of different shapes and volume of solids of revolution		
CO7	Determine rank of matrices.		

COs	Course Name: Computational Mathematics Practical – II	Code: U8CCAP21	Credit : 1
CO1	Formulate problems on Matrix manipulations		
CO2	Test consistency of system of equations		
CO3	Solve problems on numerical integration		
CO4	Formulate problems on applications of integration to area and volume		

CO5	Plot of 2D and 3D objects in Graphs

SEMESTER – III

COs	**Course Name: C++ and Data Structures**	**Code: U8CC3001**	**Credit : 7**
CO1	Describe the Procedural and Object Oriented Paradigm with Concepts of Streams, Classes, Functions, Data and Objects.		
CO2	Understand Creating and Deleting the Objects with the Concepts of Constructors and Destructors.		
CO3	Analyze and Develop the Inheritance methods.		
CO4	Understand the Polymorphism Concepts and Operator Overloading.		
CO5	Understand the concept of Dynamic Memory Management, Data type Algorithms.		
CO6	Solve problems using Recursion techniques and generating functions.		
CO7	Apply Algorithm for solving problems like Sorting and Searching. Describe the Hash Function and Concepts of Collision, Buckets and Chaining its resolution methods.		

COs	**Course Name: Data Structures Using C++ Lab**	**Code: U8CCPR31**	**Credit : 1**
CO1	Implement Linear and Linked List like Stacks, Queues, List, Polynomial Arithmetic and Infix to Postfix Conversion.		
CO2	Analyze Doubly Linked Lists and its Operations.		
CO3	Understand and apply Fundamental Algorithmic Problems including Tree Traversals and Graph Traversals (BFS and DFS).		
CO4	Analyze the performance of Searching and Sorting Techniques		

COs	**Course Name: Financial Accounting - I**	**Code: U8CCAL31**	**Credit : 6**
CO1	Understand the basic of accounting concepts and preparation of journal and ledger		

CO2	Prepare the usage of Subsidiary Book and Bank Reconciliation Statements		
CO3	Rectify the different types of errors in the journal		
CO4	Prepare Trial Balance of the business concern		
CO5	Prepare Final Accounts for Sole Proprietorship Concern		
CO6	Understand different types of partnership, accounting procedure, calculation of good will during admission, retirement, death of a partner and prepare insolvency account at the time of dissolution		
COs	**Course Name: Accountancy Lab - I**	**Code: U8CCAP31**	**Credit : 1**
CO1	Create new Company, Groups and Ledger.		
CO2	Manipulate editing and deleting ledgers.		
CO3	Prepare Trial Balance.		
CO4	Analyze Trading , Profit and Loss Account and Balance Sheet.		
CO5	Prepare Bank Reconciliation Statement and interest calculation.		

SEMESTER – IV

COs	**Course Name: Programming in Java**	**Code: U8CC4001**	**Credit : 7**
CO1	Analyze Object Oriented Programming approach in computing.		
CO2	Understand java language is more simpler		
CO3	Develop skills in covers the core Java features, Java Evolution, its data types and control structures.		
CO4	Understand the concepts of Array, Vector and String manipulations are revealed here		
CO5	Design programming fundamentals of Threads and Files usage		
CO6	Write programs in exception handling		
CO7	Analyze I/O streaming, buffering, RMI and servlets		

COs	**Course Name: Programming in Java Lab**	**Code: U8CCPR41**	**Credit : 1**

CO1	Understand Classes and Objects
CO2	Apply knowledge of Inheritance, Polymorphism, Interface and Package concepts
CO3	Develop and implement Flow, Border ,Grid Layouts, Frames, Menus, Dialogs Using Applets
CO4	Execute Swing concepts, Exception Handling and Multi Threading
CO5	Write programs using I/O Streams, Networking concepts, Servlets, RMI and Java Beans

COs	**Course Name: Financial Accounting II**	**Code: U8CCAL41**	**Credit : 6**
CO1	Develop the skill for preparing Average Due Date and Account Current.		
CO2	Understand various techniques and methods of Depreciation.		
CO3	Prepare various types of Branch Accounts.		
CO4	Transform the accounting knowledge in preparing Departmental Accounting.		
CO5	Develop accounts in Hire Purchase and Installment system.		
CO6	Evaluate the progress and performance of each department		
CO7	Enhance depreciable assets.		

COs	**Course Name: Accounts Lab – II**	**Code: U8CCAP41**	**Credit : 1**
CO1	Create Cost Category and Cost Centre using class.		
CO2	Prepare Invoicing, Inventory and Stock.		
CO3	Identify Security Control.		
CO4	Prepare Bill of Material.		
CO5	Create Cash and Master Budgets.		

SEMSTER V

COs	**Course Name: Design and Analysis of Algorithms**	**Code: U8CC5001**	**Credit : 5**
CO1	Analyze algorithms with time and space complexity.		
CO2	Solve problems of recursive nature.		
CO3	Solve problems whose solution is based on sequence of decisions.		
CO4	Generate solutions to problems that are solved in stages.		
CO5	Attempt fault tolerant solutions.		
CO6	Express algorithm specifications.		
CO7	Enumerate shortest path algorithms.		

COs	**Course Name: Microprocessors and its Applications**	**Code: U8CC5002**	**Credit : 5**
CO1	Understand the pin details of Intel 8085 and its internal architecture.		
CO2	Perform various 8085 arithmetic operations (8-bit and 16-bit,code conversions and block operations)		
CO3	Identify Intel 8086 pin details, internal architecture, instruction sets and addressing modes		
CO4	Write 8086 programs involving 8-bit and 16-bit arithmetic and string operations bios routines.		
CO5	Implement 8055 and 8237 interrupt controller and programmable peripherals, keyboard & display.		
CO6	Design architecture for RISC		
CO7	Integrate Keyboard interrupts		

COs	**Course Name: Computer Networks**	**Code:U8CC5003**	**Credit : 5**
CO1	Understand basic computer network technology, Data Communications system and its components, network topologies and protocols, OSI model and TCP/IP and their functions		

CO2	Compile analog to analog modulation and demodulation
CO3	Distinguish between the different types of bit errors and explain the concept of bit redundancy
CO4	Understand technical descriptions of communication protocols and their operations
CO5	Able to learn TCP/IP layers, components and functions, network security, vulnerability, threat and attack and usage of SMTP/POP/FTP & other different types of protocols.
CO6	Determine error correction procedures
CO7	Understands working repeaters, bridge, Routers, gateways and switches

COs	**Course Name: Software Engineering**	**Code: U8CC5004**	**Credit : 5**
CO1	Understand the different approaches of developing an efficient software.		
CO2	Facilitate the knowledge of technological and managerial aspect of incorporating software.		
CO3	Analyze the development of process of software.		
CO4	Develop the skills in cost estimation.		
CO5	Good software requirements specification.		
CO6	Understand the different validation and verification techniques of software testing.		
CO7	Develop a qualitative software.		

COs	**Course Name: Microprocessors Lab**	**Code: U8CCPR51**	**Credit : 2**
CO1	Understand 8-bit arithmetic and 16-bit arithmetic programs in 8085		
CO2	Perform code conversions from BCD to binary and ASCII to hex		
CO3	Understand 8-bit and 16-bit arithmetic programs in 8086		
CO4	Gain knowledge about code conversions like BCD to binary and ASCII to hex in		

	8086
CO5	Identify block operations in 8086
CO6	Able to practice string operations

COs	**Course Name: Computer Networks Lab**	**Code: U8CCPR52**	**Credit : 2**
CO1	Understand the working of various network topologies.		
CO2	Determines SMTP/POP/FTP & other different types of protocols.		
CO3	Emulate the working of repeaters, bridges, routers, gateways, and switches using Packet Tracer and GNS3.		
CO4	Identify different transmission media and compare their features and operational aspects.		
CO5	Perform error detection and error correction.		

COs	**Course Name: Mobile Application Development Lab**	**Code: U8CCSBP5**	**Credit : 1**
CO1	Able to install SDK in their Java platform and also write code using OOPS.		
CO2	Understand the concepts of Android Operation System, Android Application Building Blocks and the Emulator		
CO3	Create User Interface, build Custom Views and Layouts and create Multi-form design		
CO4	Compile Views, adaptors and dialogs and develop applications using Intents and Intent Filters		
CO5	Build applications using Audio and Video tools		

SEMSTER VI

COs	**Course Name: Computer Graphics And Multimedia**	**Code: U8CC6001**	**Credit : 5**
CO1	Understand how the Computer graphics are used to simplify the process and various algorithms/techniques used to generate graphics in computers.		
CO2	Design two dimensional graphics and Apply two dimensional transformations		
CO3	Apply clipping techniques to computer graphics, the logic to develop animation and gaming programs		
CO4	Create effective OpenGL programs to solve graphics programming issues, including 3D transformation, objects modeling, color modeling, lighting, textures, and ray tracing		
CO5	Identify and use the elements and principles of design in multimedia and also identify terminology associated with the concepts, techniques, and processes used throughout the multimedia environment.		
CO6	Analyze MIDI files		
CO7	Enumerate media files		

COs	**Course Name: Database Management System**	**Code: U8CC6002**	**Credit : 5**
CO1	Understand the database concepts and DBMS components.		
CO2	Analyze E-R model and relational model.		
CO3	Able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.		
CO4	Implement Normalization techniques and be able to write a data-intensive application using DBMS APIs.		
CO5	Evaluate the architecture of database management system and different architectures.		
CO6	Enumerate difference Schema		
CO7	Illustrate different retrieval systems		

COs	Course Name: Operating Systems	Code: U8CC6003	Credit : 5
CO1	Understand the concepts, Structure and design of operating System.		
CO2	Perform operating system design and analyze its impact on application system design and performance.		
CO3	Comprehend recognizing and using operating system features.		
CO4	Compare the various algorithms and comment about performance of various algorithms used for management of memory, CPU Scheduling, File handling and I/O Operations.		
CO5	Enumerate various concepts related to Deadlock for solving problems, resource allocation, after checking system in safe state or not.		
CO 6	Identify the role of Process Synchronization towards increasing throughput of system.		
CO 7	Familiarize with various views and management policies adopted by operating System as pertaining with processes Deadlock, memory, File, and I/O operations.		
CO 8	Apply various concepts related to Page Replacement algorithms to solve problems related with number of frames.		
CO 9	Recognize File System Interface, Protection and Security mechanisms.		

COs	Course Name: Open Source Programming	Code: U8CC6004	Credit : 5
CO1	Develop dynamic web pages using HTML5 AND CSS		
CO2	Understand how to incorporate PHP WITHIN HTML using Functions, Objects and Arrays.		
CO3	Explore different methods of using JavaScript to create various Dynamic Web Pages.		

CO4	Exposed to R programming
CO5	Able to write real time applications and medical coding using Python
CO6	Prepare programs for big data
CO7	Integrating user interfaces

COs	**Course Name: DBMS Lab**	**Code: U8CCPR61**	**Credit : 2**
CO1	Create a database schema for a given problem domain.		
CO2	Populate and Query a database using SQL DDL/DML Commands.		
CO3	Build well formed in String Date/Aggregate Functions.		
CO4	Design and Implement a database query using Joins, Sub-Queries and Set Operations.		
CO5	Understand to write the program in SQL including Objects (Functions, Procedures, Triggers).Develop and Implement Advance Queried using Adventure Works, Pubs, and North-Wind Databases and SQL Reports.		

COs	**Course Name: Unix And Operating System Lab**	**Code: U8CCPR62**	**Credit : 2**
CO1	Understand the basic commands of Linux Operating System and write Shell Scripts		
CO2	Implement the Process Creations to Child, Orphan, and Zombie Process Concepts.		
CO3	Demonstrate the Inter Process Communication to understand the basic Pipes, Message Queues and Semaphores.		
CO4	Analyze the Scheduling Algorithms and Deadlock Concepts		
CO5	Illustrate the Memory Allocations Strategies as FirstFit, BestFit, and Worst Fit.		
CO 6	Identify and Use Page Replacement Utilities to development FIFO, Least Recently Used, Optimal.		
CO 7	Design the Various Disk Scheduling Algorithms		

COs	Course Name: Open Source Programming Lab	Code: U8CCSBP6	Credit : 1
CO1	Create a HTML page		
CO2	Generate a form with different input controls and display the values in another page		
CO3	Develop a canvas and draw line with given thickness and color		
CO4	Display the given content as web page using CSS		
CO5	Generate random numbers using Python		
CO6	Use an internal style sheet and use jQuery to change view		

BACHELOR OF COMPUTER APPLICATION

SEMESTER – I

COs	Course Name: Digital Logic Fundamentals	Code: U8CC1001	Credit : 7
CO1	Understand the basic concepts of digital computing circuits and its working principles		
CO2	Understand Boolean algebra, Number systems, Combinational logic circuit design concepts and sequential logic circuit design concepts		
CO3	Compute about Complement arithmetic, Adder circuit design and its significance role in designing the ALU of a digital computer		
CO4	Compile Flip Flop design		
CO5	Develop the registers of a digital computer		
CO6	Understand basic terms like compiler, interpreter and operating systems		
CO7	Design and understand the construction and working of counters		

COs	Course Name: Office Software Lab	Code: U8CCPR11	Credit : 1
CO1	Develop the applications in Excel.		

CO2	Develop the Macro Programs.
CO3	Create and manipulate the Databases.
CO4	Retrieve and check integrity of the data in database.
CO5	Develop the web applications using HTML.

COs	**Course Name: Mathematical Foundations - I**	**Code: U8CCAL11**	**Credit : 6**
CO1	Understand basic features of logics of lattice and Boolean algebra		
CO2	Formulate problems in the sets and perform set operations		
CO3	Describe several areas of Mathematics beyond calculus		
CO4	Set up and solve linear systems algebraically		
CO5	Determine differential coefficients, calculate curvature and its radius		
CO6	Compile and validate arguments.		
CO7	Determine sections of Conics.		

COs	**Course Name: Computational Mathematics Practical – I**	**Code: U8CCAP11**	**Credit : 1**
CO1	Formulate problems on computing expressions		
CO2	Formulate problems operations on vectors		
CO3	Solve problems on operations of sets		
CO4	Formulate problems on permutations and combinations		
CO5	Solve the problems in differential calculus using software tools.		

SEMESTER - II

COs	**Course Name: Programming in C**	**Code: U8CC2001**	**Credit : 6**
CO1	Identify the process of problem solving using computer and design an algorithmic solution.		

CO2	Understand the logical flow of simple and complex computation.
CO3	Able to know data storage and retrieval to/from memory locations.
CO4	Understand programming with statements and constructs.
CO5	Understand data grouping, stored procedure, structures and file concepts.
CO6	Able to understand dynamic memory management.
CO7	Write a program for prime number , Fibonacci series.

COs	**Course Name: Programming in C Lab**	**Code: U8CCPR21**	**Credit : 1**
CO1	Understand the analyzing and problem solving skills and use the same for writing programs in C.		
CO2	Write diversified solutions, draw flowcharts and develop a well-documented and indented program according to coding standards.		
CO3	Execute and debug C programs.		
CO4	Understand usage and practice of conditional and looping statements.		
CO5	Implement arrays, functions and pointers.		
CO6	Handle strings and data files		

COs	**Course Name: Mathematical Foundations - II**	**Code: U8CCAL21**	**Credit : 6**
CO1	Understand the mathematical concept for matrices problems		
CO2	Solve the linear equations involving real life problems		
CO3	Compute limits and derivatives of algebraic and trigonometric functions		
CO4	Solve problems in a range of mathematical applications using the derivatives of integrals		
CO5	Solve the three dimensional analytic geometry problems		
CO6	Calculate areas of different shapes and volume of solids of revolution		
CO7	Determine rank of matrices.		

COs	Course Name: Computational Mathematics Practical – II	Code: U8CCAP21	Credit : 1
CO1	Formulate problems on Matrix manipulations		
CO2	Test consistency of system of equations		
CO3	Solve problems on numerical integration		
CO4	Formulate problems on applications of integration to area and volume		
CO5	Plot of 2D and 3D objects in Graphs		

SEMESTER – III

COs	Course Name: C++ and Data Structures	Code: U8CC3001	Credit : 7
CO1	Describe the Procedural and Object Oriented Paradigm with Concepts of Streams, Classes, Functions, Data and Objects.		
CO2	Understand Creating and Deleting the Objects with the Concepts of Constructors and Destructors.		
CO3	Analyze and Develop the Inheritance methods.		
CO4	Understand the Polymorphism Concepts and Operator Overloading.		
CO5	Understand the concept of Dynamic Memory Management, Data type Algorithms.		
CO6	Solve problems using Recursion techniques and generating functions.		
CO7	Apply Algorithm for solving problems like Sorting and Searching. Describe the Hash Function and Concepts of Collision, Buckets and Chaining its resolution methods.		

COs	Course Name: Data Structures Using C++ Lab	Code: U8CCPR31	Credit : 1
CO1	Implement Linear and Linked List like Stacks, Queues, List, Polynomial Arithmetic and Infix to Postfix Conversion.		
CO2	Analyze Doubly Linked Lists and its Operations.		

CO3	Understand and apply Fundamental Algorithmic Problems including Tree Traversals and Graph Traversals (BFS and DFS).
CO4	Analyze the performance of Searching and Sorting Techniques

COs	**Course Name: Financial Accounting - I**	**Code: U8CCAL31**	**Credit : 6**
CO1	Understand the basic of accounting concepts and preparation of journal and ledger		
CO2	Prepare the usage of Subsidiary Book and Bank Reconciliation Statements		
CO3	Rectify the different types of errors in the journal		
CO4	Prepare Trial Balance of the business concern		
CO5	Prepare Final Accounts for Sole Proprietorship Concern		
CO6	Understand different types of partnership, accounting procedure, calculation of good will during admission, retirement, death of a partner and prepare insolvency account at the time of dissolution		

COs	**Course Name: Accountancy Lab - I**	**Code: U8CCAP31**	**Credit : 1**
CO1	Create new Company, Groups and Ledger.		
CO2	Manipulate editing and deleting ledgers.		
CO3	Prepare Trial Balance.		
CO4	Analyze Trading , Profit and Loss Account and Balance Sheet.		
CO5	Prepare Bank Reconciliation Statement and interest calculation.		

COs	**Course Name: Enterprise Resource Planning**	**Code: U8BC3002**	**Credit : 4**
CO1	Comprehend the business process, business function and differences between business process and business functions.		
CO2	Enumerate the key differences between raw data and raw materials.		

CO3	Identify the key factors related to marketing and sales in the companies, and the differences among (Material Requirement Planning) MRP, MRP II, and ERP systems. They also understand the inter relationship between the other functional areas like SCM, AF, HR and customers.
CO4	Understand the concepts of production planning and the principles of supply chain management with the ability of exchanging information with other functional areas of information.
CO5	Analyze the exchange of information between AF, SCM, HR and MS. And they also learn about CRM, budget and preparing balance sheets.
CO6	Understand the power of human resources such as managing man power, job skills preparing paybills and taking legal actions to the compliances and hiring needs.

COs	**Course Name: Computer Organization and Architecture**	**Code: U8BC3003**	**Credit : 4**
CO1	Compute simple arithmetic operations for fixed-point and floating-point addition, subtraction, multiplication & division.		
CO2	Understand the computer organization and design.		
CO3	Understand the concepts of CPU, instruction formats, data transfer and CISC.		
CO4	Demonstrate a memory system for a given set of specifications		
CO5	Analyze arithmetic operations and input output organizations.		
CO6	Identify memory hierarchy and multiprocessor concepts		

COs	**Course Name: Internet Lab**	**Code: U8BCSBP3**	**Credit : 2**
CO1	Design a basic website using HTML5 and CSS.		
CO2	Prepare Dynamic WebPages with Validation using Java Script Objects by applying different Event Handling Mechanisms.		

CO3	Develop Simple Web Applications with Frames, Audio, and Video.
CO4	Build well formed document and implement JQuery using Cookies Concepts.
CO5	Understand Simple Web Applications using Prebuilt Templates.

SEMESTER – IV

COs	**Course Name: Programming in Java**	**Code: U8CC4001**	**Credit : 7**
CO1	Analyze Object Oriented Programming approach in computing.		
CO2	Understand java language is more simpler		
CO3	Develop skills in covers the core Java features, Java Evolution, its data types and control structures.		
CO4	Understand the concepts of Array, Vector and String manipulations are revealed here		
CO5	Design programming fundamentals of Threads and Files usage		
CO6	Write programs in exception handling		
CO7	Analyze I/O streaming, buffering, RMI and servlets		

COs	**Course Name: Programming in Java Lab**	**Code: U8CCPR41**	**Credit : 1**
CO1	Understand Classes and Objects		
CO2	Apply knowledge of Inheritance, Polymorphism, Interface and Package concepts		
CO3	Develop and implement Flow, Border ,Grid Layouts, Frames, Menus, Dialogs Using Applets		
CO4	Execute Swing concepts, Exception Handling and Multi Threading		
CO5	Write programs using I/O Streams, Networking concepts, Servlets, RMI and Java Beans		

COs	Course Name: Financial Accounting II	Code: U8CCAL41	Credit : 6
CO1	Develop the skill for preparing Average Due Date and Account Current.		
CO2	Understand various techniques and methods of Depreciation.		
CO3	Prepare various types of Branch Accounts.		
CO4	Transform the accounting knowledge in preparing Departmental Accounting.		
CO5	Develop accounts in Hire Purchase and Installment system.		
CO6	Evaluate the progress and performance of each department		
CO7	Enhance depreciable assets.		

COs	Course Name: Accounts Lab – II	Code: U8CCAP41	Credit : 1
CO1	Create Cost Category and Cost Centre using class.		
CO2	Prepare Invoicing, Inventory and Stock.		
CO3	Identify Security Control.		
CO4	Prepare Bill of Material.		
CO5	Create Cash and Master Budgets.		

COs	Course Name: E- Commerce	Code: U8BC4002	Credit : 5
CO1	Understand the foundations and importance of E-commerce and its different types, and describe the network infrastructure for E-commerce.		
CO2	Identify the types of networks and fundamental security concepts, security services to counter them and the fundamental properties of cryptography Techniques		
CO3	Analyze the electronic payment systems, online security.		
CO4	Understand the fundamentals of electronic document interchange EDI, supply chain management process		
CO5	Able to learn internet trading relationships including inter organization and intra-organizations.		

CO6	Enumerate the E-commerce catalogs and directories.
CO7	Prepare applets, browsers and software agents.
CO8	Able to create an E-commerce web site.

COs	**Course Name: Problem Solving and Algorithms**	**Code: U8BC4003**	**Credit : 3**
CO1	Perform comparison of algorithms.		
CO2	Understand the concept of sorting through merge sort, bubble sort, insertion sort.		
CO3	Determine the concepts of Text Line Length Adjustment, Justification of Text , Searching in Text ,Editing ,Linear Pattern Search.		
CO4	Able to perform Stack Operations, Queue Operations and Binary Search Tree.		
CO5	Apply recursion for Binary Tree Traversal, Quick Sort, Towers of Hanoi Problem, Sample Generations, Combination Generation and Permutation Generation.		

COs	**Course Name: Problem Solving and Algorithms Lab**	**Code: U8BCSBP4**	**Credit : 4**
CO1	Implement the concept of Merging, Sorting and Searching		
CO2	Able to implement Array Order Reversal.		
CO3	Acquire the knowledge of Array Counting and Histogramming.		
CO4	Analyze findings of Maximum and Minimum.		
CO5	Evaluate removal of duplicates of an Ordered Array.		
CO6	Execute Permutation and Combination generation .		

SEMSTER V

COs	**Course Name: Design and Analysis of Algorithms**	**Code: U8CC5001**	**Credit : 5**
CO1	Analyze algorithms with time and space complexity.		

CO2	Solve problems of recursive nature.		
CO3	Solve problems whose solution is based on sequence of decisions.		
CO4	Generate solutions to problems that are solved in stages.		
CO5	Attempt fault tolerant solutions.		
CO6	Express algorithm specifications.		
CO7	Enumerate shortest path algorithms.		
COs	**Course Name: Microprocessors and its Applications**	**Code: U8CC5002**	**Credit : 5**
CO1	Understand the pin details of Intel 8085 and its internal architecture.		
CO2	Perform various 8085 arithmetic operations (8-bit and 16-bit,code conversions and block operations)		
CO3	Identify Intel 8086 pin details, internal architecture, instruction sets and addressing modes		
CO4	Write 8086 programs involving 8-bit and 16-bit arithmetic and string operations bios routines.		
CO5	Implement 8055 and 8237 interrupt controller and programmable peripherals, keyboard & display.		
CO6	Design architecture for RISC		
CO7	Integrate Keyboard interrupts		

COs	**Course Name: Computer Networks**	**Code:U8CC5003**	**Credit : 5**
CO1	Understand basic computer network technology, Data Communications system and its components, network topologies and protocols, OSI model and TCP/IP and their functions		
CO2	Compile analog to analog modulation and demodulation		
CO3	Distinguish between the different types of bit errors and explain the concept of bit redundancy		
CO4	Understand technical descriptions of communication protocols and their operations		

CO5	Able to learn TCP/IP layers, components and functions, network security, vulnerability, threat and attack and usage of SMTP/POP/FTP & other different types of protocols.
CO6	Determine error correction procedures
CO7	Understands working repeaters, bridge, Routers, gateways and switches

COs	**Course Name: Software Engineering**	**Code: U8CC5004**	**Credit : 5**
CO1	Understand the different approaches of developing an efficient software.		
CO2	Facilitate the knowledge of technological and managerial aspect of incorporating software.		
CO3	Analyze the development of process of software.		
CO4	Develop the skills in cost estimation.		
CO5	Good software requirements specification.		
CO6	Understand the different validation and verification techniques of software testing.		
CO7	Develop a qualitative software.		

COs	**Course Name: Microprocessors Lab**	**Code: U8CCPR51**	**Credit : 2**
CO1	Understand 8-bit arithmetic and 16-bit arithmetic programs in 8085		
CO2	Perform code conversions from BCD to binary and ASCII to hex		
CO3	Understand 8-bit and 16-bit arithmetic programs in 8086		
CO4	Gain knowledge about code conversions like BCD to binary and ASCII to hex in 8086		

CO5	Identify block operations in 8086
CO6	Able to practice string operations

COs	**Course Name: Computer Networks Lab**	**Code: U8CCPR52**	**Credit : 2**
CO1	Understand the working of various network topologies.		
CO2	Determines SMTP/POP/FTP & other different types of protocols.		
CO3	Emulate the working of repeaters, bridges, routers, gateways, and switches using Packet Tracer and GNS3.		
CO4	Identify different transmission media and compare their features and operational aspects.		
CO5	Perform error detection and error correction.		

COs	**Course Name: Mobile Application Development Lab**	**Code: U8CCSBP5**	**Credit : 1**
CO1	Able to install SDK in their Java platform and also write code using OOPS.		
CO2	Understand the concepts of Android Operation System, Android Application Building Blocks and the Emulator		
CO3	Create User Interface, build Custom Views and Layouts and create Multi-form design		
CO4	Compile Views, adaptors and dialogs and develop applications using Intents and Intent Filters		
CO5	Build applications using Audio and Video tools		

SEMSTER VI

COs	**Course Name: Computer Graphics And Multimedia**	**Code: U8CC6001**	**Credit : 5**
CO1	Understand how the Computer graphics are used to simplify the process and		

	various algorithms/techniques used to generate graphics in computers.
CO2	Design two dimensional graphics and Apply two dimensional transformations
CO3	Apply clipping techniques to computer graphics, the logic to develop animation and gaming programs
CO4	Create effective OpenGL programs to solve graphics programming issues, including 3D transformation, objects modeling, color modeling, lighting, textures, and ray tracing
CO5	Identify and use the elements and principles of design in multimedia and also identify terminology associated with the concepts, techniques, and processes used throughout the multimedia environment.
CO6	Analyze MIDI files
CO7	Enumerate media files

COs	**Course Name: Database Management System**	**Code: U8CC6002**	**Credit : 5**
CO1	Understand the database concepts and DBMS components.		
CO2	Analyze E-R model and relational model.		
CO3	Able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.		
CO4	Implement Normalization techniques and be able to write a data-intensive application using DBMS APIs.		
CO5	Evaluate the architecture of database management system and different architectures.		
CO6	Enumerate difference Schema		
CO7	Illustrate different retrieval systems		

COs	**Course Name: Operating Systems**	**Code: U8CC6003**	**Credit : 5**
CO1	Understand the concepts, Structure and design of operating System.		

CO2	Perform operating system design and analyze its impact on application system design and performance.
CO3	Comprehend recognizing and using operating system features.
CO4	Compare the various algorithms and comment about performance of various algorithms used for management of memory, CPU Scheduling, File handling and I/O Operations.
CO5	Enumerate various concepts related to Deadlock for solving problems, resource allocation, after checking system in safe state or not.
CO 6	Identify the role of Process Synchronization towards increasing throughput of system.
CO 7	Familiarize with various views and management policies adopted by operating System as pertaining with processes Deadlock, memory, File, and I/O operations.
CO 8	Apply various concepts related to Page Replacement algorithms to solve problems related with number of frames.
CO 9	Recognize File System Interface, Protection and Security mechanisms.

COs	**Course Name: Open Source Programming**	**Code: U8CC6004**	**Credit : 5**
CO1	Develop dynamic web pages using HTML5 AND CSS		
CO2	Understand how to incorporate PHP WITHIN HTML using Functions, Objects and Arrays.		
CO3	Explore different methods of using JavaScript to create various Dynamic Web Pages.		
CO4	Exposed to R programming		
CO5	Able to write real time applications and medical coding using Python		
CO6	Prepare programs for big data		
CO7	Integrating user interfaces		

COs	Course Name: DBMS Lab	Code: U8CCPR61	Credit : 2
CO1	Create a database schema for a given problem domain.		
CO2	Populate and Query a database using SQL DDL/DML Commands.		
CO3	Build well formed in String Date/Aggregate Functions.		
CO4	Design and Implement a database query using Joins, Sub-Queries and Set Operations.		
CO5	Understand to write the program in SQL including Objects (Functions, Procedures, Triggers).Develop and Implement Advance Queried using Adventure Works, Pubs, and North-Wind Databases and SQL Reports.		

COs	Course Name: Unix And Operating System Lab	Code: U8CCPR62	Credit : 2
CO1	Understand the basic commands of Linux Operating System and write Shell Scripts		
CO2	Implement the Process Creations to Child, Orphan, and Zombie Process Concepts.		
CO3	Demonstrate the Inter Process Communication to understand the basic Pipes, Message Queues and Semaphores.		
CO4	Analyze the Scheduling Algorithms and Deadlock Concepts		
CO5	Illustrate the Memory Allocations Strategies as FirstFit, BestFit, and Worst Fit.		
CO 6	Identify and Use Page Replacement Utilities to development FIFO, Least Recently Used, Optimal.		
CO 7	Design the Various Disk Scheduling Algorithms		

COs	Course Name: Open Source Programming Lab	Code: U8CCSBP6	Credit : 1
CO1	Create a HTML page		
CO2	Generate a form with different input controls and display the values in another		

	page
CO3	Develop a canvas and draw line with given thickness and color
CO4	Display the given content as web page using CSS
CO5	Generate random numbers using Python
CO6	Use an internal style sheet and use jQuery to change view

B.Sc., (SOFTWARE COMPUTER SCIENCE)

SEMESTER – I

COs	**Course Name: Digital Logic Fundamentals**	**Code: U8CC1001**	**Credit : 7**
CO1	Understand the basic concepts of digital computing circuits and its working principles		
CO2	Understand Boolean algebra, Number systems, Combinational logic circuit design concepts and sequential logic circuit design concepts		
CO3	Compute about Complement arithmetic, Adder circuit design and its significance role in designing the ALU of a digital computer		
CO4	Compile Flip Flop design		
CO5	Develop the registers of a digital computer		
CO6	Understand basic terms like compiler, interpreter and operating systems		
CO7	Design and understand the construction and working of counters		

COs	**Course Name: Office Software Lab**	**Code: U8CCPR11**	**Credit : 1**
CO1	Develop the applications in Excel.		
CO2	Develop the Macro Programs.		
CO3	Create and manipulate the Databases.		
CO4	Retrieve and check integrity of the data in database.		
CO5	Develop the web applications using HTML.		

COs	**Course Name: Mathematical**	**Code:**	**Credit : 6**

	Foundations - I	**U8CCAL11**	
CO1	Understand basic features of logics of lattice and Boolean algebra		
CO2	Formulate problems in the sets and perform set operations		
CO3	Describe several areas of Mathematics beyond calculus		
CO4	Set up and solve linear systems algebraically		
CO5	Determine differential coefficients, calculate curvature and its radius		
CO6	Compile and validate arguments.		
CO7	Determine sections of Conics.		

COs	**Course Name: Computational Mathematics Practical – I**	**Code: U8CCAP11**	**Credit : 1**
CO1	Formulate problems on computing expressions		
CO2	Formulate problems operations on vectors		
CO3	Solve problems on operations of sets		
CO4	Formulate problems on permutations and combinations		
CO5	Solve the problems in differential calculus using software tools.		

SEMESTER - II

COs	**Course Name: Programming in C**	**Code: U8CC2001**	**Credit : 6**
CO1	Identify the process of problem solving using computer and design an algorithmic solution.		
CO2	Understand the logical flow of simple and complex computation.		
CO3	Able to know data storage and retrieval to/from memory locations.		
CO4	Understand programming with statements and constructs.		
CO5	Understand data grouping, stored procedure, structures and file concepts.		
CO6	Able to understand dynamic memory management.		
CO7	Write a program for prime number , Fibonacci series.		

COs	Course Name: Programming in C Lab	Code: U8CCPR21	Credit : 1
CO1	Understand the analyzing and problem solving skills and use the same for writing programs in C.		
CO2	Write diversified solutions, draw flowcharts and develop a well-documented and indented program according to coding standards.		
CO3	Execute and debug C programs.		
CO4	Understand usage and practice of conditional and looping statements.		
CO5	Implement arrays, functions and pointers.		
CO6	Handle strings and data files		

COs	Course Name: Mathematical Foundations - II	Code: U8CCAL21	Credit : 6
CO1	Understand the mathematical concept for matrices problems		
CO2	Solve the linear equations involving real life problems		
CO3	Compute limits and derivatives of algebraic and trigonometric functions		
CO4	Solve problems in a range of mathematical applications using the derivatives of integrals		
CO5	Solve the three dimensional analytic geometry problems		
CO6	Calculate areas of different shapes and volume of solids of revolution		
CO7	Determine rank of matrices.		

COs	Course Name: Computational Mathematics Practical – II	Code: U8CCAP21	Credit : 1
CO1	Formulate problems on Matrix manipulations		
CO2	Test consistency of system of equations		
CO3	Solve problems on numerical integration		
CO4	Formulate problems on applications of integration to area and volume		

CO5	Plot of 2D and 3D objects in Graphs

SEMESTER – III

COs	**Course Name: C++ and Data Structures**	**Code: U8CC3001**	**Credit : 7**
CO1	Describe the Procedural and Object Oriented Paradigm with Concepts of Streams, Classes, Functions, Data and Objects.		
CO2	Understand Creating and Deleting the Objects with the Concepts of Constructors and Destructors.		
CO3	Analyze and Develop the Inheritance methods.		
CO4	Understand the Polymorphism Concepts and Operator Overloading.		
CO5	Understand the concept of Dynamic Memory Management, Data type Algorithms.		
CO6	Solve problems using Recursion techniques and generating functions.		
CO7	Apply Algorithm for solving problems like Sorting and Searching. Describe the Hash Function and Concepts of Collision, Buckets and Chaining its resolution methods.		

COs	**Course Name: Data Structures Using C++ Lab**	**Code: U8CCPR31**	**Credit : 1**
CO1	Implement Linear and Linked List like Stacks, Queues, List, Polynomial Arithmetic and Infix to Postfix Conversion.		
CO2	Analyze Doubly Linked Lists and its Operations.		
CO3	Understand and apply Fundamental Algorithmic Problems including Tree Traversals and Graph Traversals (BFS and DFS).		
CO4	Analyze the performance of Searching and Sorting Techniques		

COs	**Course Name: Financial Accounting - I**	**Code: U8CCAL31**	**Credit : 6**
CO1	Understand the basic of accounting concepts and preparation of journal and		

	ledger
CO2	Prepare the usage of Subsidiary Book and Bank Reconciliation Statements
CO3	Rectify the different types of errors in the journal
CO4	Prepare Trial Balance of the business concern
CO5	Prepare Final Accounts for Sole Proprietorship Concern
CO6	Understand different types of partnership, accounting procedure, calculation of good will during admission, retirement, death of a partner and prepare insolvency account at the time of dissolution

COs	**Course Name: Accountancy Lab - I**	**Code: U8CCAP31**	**Credit : 1**
CO1	Create new Company, Groups and Ledger.		
CO2	Manipulate editing and deleting ledgers.		
CO3	Prepare Trial Balance.		
CO4	Analyze Trading , Profit and Loss Account and Balance Sheet.		
CO5	Prepare Bank Reconciliation Statement and interest calculation.		

SEMESTER – IV

COs	**Course Name: Programming in Java**	**Code: U8CC4001**	**Credit : 7**
CO1	Analyze Object Oriented Programming approach in computing.		
CO2	Understand java language is more simpler		
CO3	Develop skills in covers the core Java features, Java Evolution, its data types and control structures.		
CO4	Understand the concepts of Array, Vector and String manipulations are revealed here		
CO5	Design programming fundamentals of Threads and Files usage		
CO6	Write programs in exception handling		
CO7	Analyze I/O streaming, buffering, RMI and servlets		

COs	Course Name: Programming in Java Lab	Code: U8CCPR41	Credit : 1
CO1	Understand Classes and Objects		
CO2	Apply knowledge of Inheritance, Polymorphism, Interface and Package concepts		
CO3	Develop and implement Flow, Border ,Grid Layouts, Frames, Menus, Dialogs Using Applets		
CO4	Execute Swing concepts, Exception Handling and Multi Threading		
CO5	Write programs using I/O Streams, Networking concepts, Servlets, RMI and Java Beans		

COs	Course Name: Financial Accounting II	Code: U8CCAL41	Credit : 6
CO1	Develop the skill for preparing Average Due Date and Account Current.		
CO2	Understand various techniques and methods of Depreciation.		
CO3	Prepare various types of Branch Accounts.		
CO4	Transform the accounting knowledge in preparing Departmental Accounting.		
CO5	Develop accounts in Hire Purchase and Installment system.		
CO6	Evaluate the progress and performance of each department		
CO7	Enhance depreciable assets.		

COs	Course Name: Accounts Lab – II	Code: U8CCAP41	Credit : 1
CO1	Create Cost Category and Cost Centre using class.		
CO2	Prepare Invoicing, Inventory and Stock.		
CO3	Identify Security Control.		
CO4	Prepare Bill of Material.		
CO5	Create Cash and Master Budgets.		

SEMSTER V

COs	**Course Name: Design and Analysis of Algorithms**	**Code: U8CC5001**	**Credit : 5**
CO1	Analyze algorithms with time and space complexity.		
CO2	Solve problems of recursive nature.		
CO3	Solve problems whose solution is based on sequence of decisions.		
CO4	Generate solutions to problems that are solved in stages.		
CO5	Attempt fault tolerant solutions.		
CO6	Express algorithm specifications.		
CO7	Enumerate shortest path algorithms.		

COs	**Course Name: Microprocessors and its Applications**	**Code: U8CC5002**	**Credit : 5**
CO1	Understand the pin details of Intel 8085 and its internal architecture.		
CO2	Perform various 8085 arithmetic operations (8-bit and 16-bit,code conversions and block operations)		
CO3	Identify Intel 8086 pin details, internal architecture, instruction sets and addressing modes		
CO4	Write 8086 programs involving 8-bit and 16-bit arithmetic and string operations bios routines.		
CO5	Implement 8055 and 8237 interrupt controller and programmable peripherals, keyboard & display.		
CO6	Design architecture for RISC		
CO7	Integrate Keyboard interrupts		

COs	**Course Name: Computer Networks**	**Code:U8CC5003**	**Credit : 5**
CO1	Understand basic computer network technology, Data Communications system and its components, network topologies and protocols, OSI model and TCP/IP		

	and their functions
CO2	Compile analog to analog modulation and demodulation
CO3	Distinguish between the different types of bit errors and explain the concept of bit redundancy
CO4	Understand technical descriptions of communication protocols and their operations
CO5	Able to learn TCP/IP layers, components and functions, network security, vulnerability, threat and attack and usage of SMTP/POP/FTP & other different types of protocols.
CO6	Determine error correction procedures
CO7	Understands working repeaters, bridge, Routers, gateways and switches

COs	**Course Name: Software Engineering**	**Code: U8CC5004**	**Credit : 5**
CO1	Understand the different approaches of developing an efficient software.		
CO2	Facilitate the knowledge of technological and managerial aspect of incorporating software.		
CO3	Analyze the development of process of software.		
CO4	Develop the skills in cost estimation.		
CO5	Good software requirements specification.		
CO6	Understand the different validation and verification techniques of software testing.		
CO7	Develop a qualitative software.		

COs	**Course Name: Microprocessors Lab**	**Code: U8CCPR51**	**Credit : 2**
CO1	Understand 8-bit arithmetic and 16-bit arithmetic programs in 8085		

CO2	Perform code conversions from BCD to binary and ASCII to hex
CO3	Understand 8-bit and 16-bit arithmetic programs in 8086
CO4	Gain knowledge about code conversions like BCD to binary and ASCII to hex in 8086
CO5	Identify block operations in 8086
CO6	Able to practice string operations

COs	**Course Name: Computer Networks Lab**	**Code: U8CCPR52**	**Credit : 2**
CO1	Understand the working of various network topologies.		
CO2	Determines SMTP/POP/FTP & other different types of protocols.		
CO3	Emulate the working of repeaters, bridges, routers, gateways, and switches using Packet Tracer and GNS3.		
CO4	Identify different transmission media and compare their features and operational aspects.		
CO5	Perform error detection and error correction.		

COs	**Course Name: Mobile Application Development Lab**	**Code: U8CCSBP5**	**Credit : 1**
CO1	Able to install SDK in their Java platform and also write code using OOPS.		
CO2	Understand the concepts of Android Operation System, Android Application Building Blocks and the Emulator		
CO3	Create User Interface, build Custom Views and Layouts and create Multi-form design		
CO4	Compile Views, adaptors and dialogs and develop applications using Intents and Intent Filters		
CO5	Build applications using Audio and Video tools		

SEMSTER VI

COs	**Course Name: Software Testing Techniques**	**Code: U8SW6001**	**Credit : 5**
CO1	Understand the purpose of testing bugs		
CO2	Implement various test process for quality improvement		
CO3	Design test planning.		
CO4	Manage the test process.		
CO5	Apply the software testing techniques in commercial environment.		
CO6	Use practical knowledge a variety of ways to test software and an understanding of some of the tradeoffs between testing techniques.		
CO7	Perform test planning.		

COs	**Course Name: Database Management System**	**Code: U8CC6002**	**Credit : 5**
CO1	Understand the database concepts and DBMS components.		
CO2	Analyze E-R model and relational model.		
CO3	Able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.		
CO4	Implement Normalization techniques and be able to write a data-intensive application using DBMS APIs.		
CO5	Evaluate the architecture of database management system and different architectures.		
CO6	Enumerate difference Schema		
CO7	Illustrate different retrieval systems		

COs	**Course Name: Operating Systems**	**Code: U8CC6003**	**Credit : 5**
CO1	Understand the concepts, Structure and design of operating System.		

CO2	Perform operating system design and analyze its impact on application system design and performance.
CO3	Comprehend recognizing and using operating system features.
CO4	Compare the various algorithms and comment about performance of various algorithms used for management of memory, CPU Scheduling, File handling and I/O Operations.
CO5	Enumerate various concepts related to Deadlock for solving problems, resource allocation, after checking system in safe state or not.
CO 6	Identify the role of Process Synchronization towards increasing throughput of system.
CO 7	Familiarize with various views and management policies adopted by operating System as pertaining with processes Deadlock, memory, File, and I/O operations.
CO 8	Apply various concepts related to Page Replacement algorithms to solve problems related with number of frames.
CO 9	Recognize File System Interface, Protection and Security mechanisms.

COs	**Course Name: Open Source Programming**	**Code: U8CC6004**	**Credit : 5**
CO1	Develop dynamic web pages using HTML5 AND CSS		
CO2	Understand how to incorporate PHP WITHIN HTML using Functions, Objects and Arrays.		
CO3	Explore different methods of using JavaScript to create various Dynamic Web Pages.		
CO4	Exposed to R programming		
CO5	Able to write real time applications and medical coding using Python		
CO6	Prepare programs for big data		
CO7	Integrating user interfaces		

COs	Course Name: DBMS Lab	Code: U8CCPR61	Credit : 2
CO1	Create a database schema for a given problem domain.		
CO2	Populate and Query a database using SQL DDL/DML Commands.		
CO3	Build well formed in String Date/Aggregate Functions.		
CO4	Design and Implement a database query using Joins, Sub-Queries and Set Operations.		
CO5	Understand to write the program in SQL including Objects (Functions, Procedures, Triggers).Develop and Implement Advance Queried using Adventure Works, Pubs, and North-Wind Databases and SQL Reports.		

COs	Course Name: Unix And Operating System Lab	Code: U8CCPR62	Credit : 2
CO1	Understand the basic commands of Linux Operating System and write Shell Scripts		
CO2	Implement the Process Creations to Child, Orphan, and Zombie Process Concepts.		
CO3	Demonstrate the Inter Process Communication to understand the basic Pipes, Message Queues and Semaphores.		
CO4	Analyze the Scheduling Algorithms and Deadlock Concepts		
CO5	Illustrate the Memory Allocations Strategies as FirstFit, BestFit, and Worst Fit.		
CO 6	Identify and Use Page Replacement Utilities to development FIFO, Least Recently Used, Optimal.		
CO 7	Design the Various Disk Scheduling Algorithms		

COs	Course Name: Open Source Programming Lab	Code: U8CCSBP6	Credit : 1
CO1	Create a HTML page		

CO2	Generate a form with different input controls and display the values in another page
CO3	Develop a canvas and draw line with given thickness and color
CO4	Display the given content as web page using CSS
CO5	Generate random numbers using Python
CO6	Use an internal style sheet and use jQuery to change view

M.Sc., (COMPUTER SCIENCE) SEMESTER –I

COs	Course Name: Advanced Java Programming	Code: P8CS1001	Credit: 5
CO1	Understand the concepts of I/O Streams and Networks.		
CO2	Compile Abstract Window Tool Kits.		
CO3	Understand the concepts of Java Servlets.		
CO4	Demonstrate Remote Method Invocation.		
CO5	Implement Java Beans.		
CO6	Troubleshoot client server mechanism.		
CO7	Create the RMI concept		

COs	Course Name: Advanced Software Engineering	Code: P8CS1002	Credit: 5
CO1	Understand the concepts of Software Quality Development Process.		
CO2	Able to learn about Software Cost Estimation Methods.		
CO3	Gain knowledge about Software Requirement Specifications.		
CO4	Demonstrate Software Design.		
CO5	Debug errors and maintain software.		
CO6	Analyze constructive cost models.		
CO7	Identify the different types of models.		

COs	Course Name: Advanced Java Programming Lab	Code: P8CSPR11	Credit: 4
CO1	Write programs in java for real time application.		
CO2	Generate a Graphical User Interface.		
CO3	Build fault tolerant systems.		
CO4	Demonstrateservlets and packages		
CO5	Understand Remote Method Invocation.		
CO6	Create cookies program.		

COs	Course Name: Software Engineering Lab	Code: P8CSPR12	Credit: 4
CO1	Transform case studies into applications.		
CO2	Apply requirements specifications in software development.		
CO3	Generate metrics for software quality assurance.		
CO4	Able to write routines that identify errors.		
CO5	Reduce complexity using coupling and cohesion.		
CO6	Design expressions for software cost control.		

COs	Course Name: Theory of Computation.	Code: P8CSE101	Credit: 4
CO1	Understand the concepts of Automata.		
CO2	Demonstrate Regular Expressions and Languages.		
CO3	Understand Context – Free Grammar.		
CO4	Gain knowledge about the Properties of Context-Free languages.		
CO5	Understand the concepts of Undecidability.		
CO6	Judge about NP Complete and NP Hard.		

COs	Course Name: Principles of Programming Languages	Code: P8CSE102	Credit: 4
CO1	Understand the concepts of Programming Languages.		
CO2	Develop Imperative Programming.		
CO3	Write Object Oriented Programming.		
CO4	Understand the concepts of Functional Programming.		
CO5	Compare various programming paradigms.		
CO6	Reason out classes and methods in data protection.		

SEMESTER - II

COs	Course Name: Design and Analysis of Algorithms.	Code: P8CS2001	Credit: 5
CO1	Understand Divide and Conquer Methods.		
CO2	Write algorithm for Greedy Methods.		
CO3	Solve problems by Dynamic Programming.		
CO4	Understand Backtracking Algorithm.		
CO5	Demonstrate NP- Completeness.		
CO6	Employ recursion for traversal and Divide and Conquer.		
CO7	Apply Branch and Bound techniques.		

COs	Course Name: Mobile Computing	Code: P8CS2002	Credit: 5
CO1	Demonstrate Mobile Communications and Needs.		
CO2	Compile Frequency of Mobile communication.		
CO3	Understand the concept of CDPD Systems.		
CO4	Analyze Mobile Internet and Wireless Network Security.		

CO5	Demonstrate WCDMA Technology.
CO6	Perform frequency calculation.
CO7	Create CDMA Technology.

COs	**Course Name: Open Source Programming Lab**	**Code: P8CSPR21**	**Credit: 4**
CO1	Check message passing mechanism between pages		
CO2	Integrate a PHP and MYSQL table.		
CO3	Design a college application form using MYSQL table.		
CO4	Evaluate Regular Expression, HTML functions, Hashing functions and also check File System functions.		
CO5	Create a PHP program using cookie and session.		

COs	**Course Name: Mobile Application Development Lab**	**Code: P8CSPR22**	**Credit: 4**
CO1	Develop an application for Discount Calculation.		
CO2	Create Media Player with sound.		
CO3	Implement a Seek Bar Application.		
CO4	Create a List View-onItemclick/onItemLongclick/Alert Dialog		
CO5	Develop a Reading/Writing file in SD Card		

COs	**Course Name: Fuzzy and Neural Networks**	**Code: P8CSE201**	**Credit: 4**
CO1	Understand the concepts of Biological Neuron.		
CO2	Compare Supervised and Unsupervised Learning.		
CO3	Develop Fuzzification – Defuzzification.		
CO4	Understand about the Membership function.		
CO5	Demonstrate Auto mobile MPG Prediction.		

CO6	Understand Artificial Neurons Frameworks.

COs	**Course Name: Data Mining**	**Code: P8CSE202**	**Credit: 4**
CO1	Understand the concepts of Data Warehouse- Multidimensional Data Model.		
CO2	Comprehend Data Preprocessing Language Architectures.		
CO3	Understand the concepts of Association Rules.		
CO4	Compare Classification and Clustering.		
CO5	Analyze recent trends in Multidimensional Analysis.		
CO6	List out tools for analysis and prediction.		

SEMESTER - III

COs	**Course Name: Digital Image Processing**	**Code: P8CS3001**	**Credit: 5**
CO1	Understand the basics of Image Processing.		
CO2	Perform Image Analysis.		
CO3	Demonstrate Segmentations of Image Processing.		
CO4	Develop Object recognition and Fuzzy Systems.		
CO5	Demonstrate Image Compressions Algorithms.		
CO6	Apply Fourier Transformation for Image Correction.		
CO7	Perform Image restoration.		

COs	**Course Name: Information and Network Security**	**Code: P8CS3002**	**Credit: 5**
CO1	Understand the Fundamental concepts of Information Security.		
CO2	Analyze Security Investigation.		
CO3	Know about Security Analysis.		
CO4	Figure out various Attacks, Services and Mechanisms.		
CO5	Understand the basic concepts of Public Key Cryptography.		
CO6	Identify software security agents.		
CO7	Identify the threats in cyber security.		

COs	**Course Name: Digital Image Processing Lab**	**Code: P8CSPR31**	**Credit: 4**
CO1	Implement an Arithmetic Operation on Images and Bit Planes Slicing		
CO2	Perform Contrast Enhancement and Geometric Transforms		
CO3	Understand Low Pass and High Pass Filters and Quantization Reduction		
CO4	Generate routines that read and write Images and do simple Image Manipulation		
CO5	Improve security through Water Marking.		

COs	Course Name: Advanced Computer Architecture	Code: P8CS3003	Credit: 4
CO1	Understand the basic concepts of Instruction Level Parallelism.		
CO2	Identify the basic concepts of Multiple Issue Processors.		
CO3	Demonstrate Thread Level Parallelism		
CO4	Explore the basic concepts of Memory Input and Output		
CO5	Understand about Multi- Core Architectures.		
CO6	Compare Parallel and Serial Processing.		

COs	Course Name: Business Intelligence and Data Mining.	Code: P8CSE301	Credit: 4
CO1	Analyze the fundamental concepts of Data warehousing.		
CO2	Understand Datamining and Preprocessing.		
CO3	Perform Association Rule Mining.		
CO4	Comprehend Classification and prediction.		
CO5	List out various hashing techniques to reduce Clustering.		
CO6	Identify different data cleaning and data preprocessing routines.		

COs	Course Name: Wireless Networks	Code: P8CSE302	Credit: 4
CO1	Understand the fundamental concepts of Wireless networks.		
CO2	Decide about different Topologies		
CO3	Specify the concepts of Security		
CO4	Develop Sensor Networks.		
CO5	PerformMulti Area Connectivity of Networks.		

CO6	Demonstrate data communication between networks.

SEMESTER – IV

COs	**Course Name: Cloud Computing**	**Code: P8CS4001**	**Credit: 5**
CO1	Understand the fundamental concepts and terminology of cloud computing.		
CO2	Develop Mapping events in cloud		
CO3	List out various cloud services.		
CO4	Demonstrate Outside view of cloud services.		
CO5	Discuss storing and sharing.		
CO6	Identify the methods of Parallel and Cloud Computing.		

COs	**Course Name: Principles of Compiler Design**	**Code: P8CS4002**	**Credit: 5**
CO1	Understand the fundamental concepts of Lexical Analysis.		
CO2	Comprehend Syntax Analysis and Run Time Environments.		
CO3	Perform Intermediate Code Generations.		
CO4	Understand the basic concepts of Code Generation.		
CO5	Carry out Code Optimizations		
CO6	Illustrate Turing Machine.		

COs	**Course Name: Compiler Design Lab**	**Code: P8CSPR41**	**Credit: 4**
CO1	Construct NFA, and develop Construction Of Minimized DFA		
CO2	Implement Symbol Table and Syntax Analysis Using YACC		
CO3	Apply Shift Reduce Parsing Algorithm and Construction Of LR Parsing Table		
CO4	Implement Code Optimization Techniques, Conversion Of Infix To Postfix Expression and of Quadruples		
CO5	Develop Triples and Generation of Tokens For Given Lexeme and Parsing The String		

COs	Course Name: Human Computer Interaction	Code: P8CSE401	Credit: 4
CO1	Understand the fundamental concepts of Interface for GUI.		
CO2	List out the basic characteristics of GUI.		
CO3	Analyze GUI Technologies.		
CO4	Demonstrate the development of GUI.		
CO5	Justify the need for Software Tools.		
CO6	Code better algorithms for interfaces.		

COs	Course Name: Web Publishing	Code: P8CSE402	Credit: 4
CO1	Understand about the Web Publishing areas.		
CO2	Revise Networks		
CO3	Demonstrate the concepts of Domain areas.		
CO4	Understand the concepts of Web Publishing Security.		
CO5	Figure out Web protocols and Techniques.		
CO6	Demonstrate web publishing tools.		

COs	Course Name: Embedded Systems	Code: P8CSNM41	Credit: 2
CO1	Identify the concepts of Embedded Computing.		
CO2	Plan Memory and Input/output Management		
CO3	Compare various Process and Operating Systems.		
CO4	Identify the Embedded Software.		
CO5	Understand the concepts of Embedded System Development.		
CO6	Demonstrate RISC.		

COs	Course Name: Project with Viva	Code: P8CSPJ41	Credit: 4
CO1	Present problem definition.		
CO2	Work out requirement specification.		
CO3	Design the right architecture model.		
CO4	Code the requirement and architecture.		
CO5	Perform testing.		
CO6	Implement the final system.		

M.Phil.,(COMPUTER SCIENCE)

SEMESTER I

COs	Course Name: Research Methodology	Code : MPH8CS01	Credit: 5
CO1	Analyze the core concepts of Research Methods.		
CO2	Understand the strengths and weakness of each of these methods.		
CO3	Demonstrate knowledge of research processes reading, evaluating and developing		
CO4	Identify, explain, compare, and prepare the key elements of a research proposal/report.		
CO5	Compare and contrast quantitative and qualitative research paradigms.		
CO6	Develop a research proposal or industry project plan		
CO7	Understand roles of authors, reviewers. How to review research articles?		
CO8	Write technical articles/research papers.		

COs	Course Name: Computer Graphics &Image Processing	Code : MPH8CS02	Credit: 5
CO1	Understand and review image transforms		

CO2	Analyze the basic algorithms used for image processing &image compression with morphological image processing.
CO3	Execute Contrast Image Segmentation and Representation
CO4	Design & Synthesize Color image processing and its real world applications
CO5	Identify various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping.
CO6	Comprehend the importance of viewing and projections.
CO7	Define the fundamentals of animation, virtual reality and its related technologies
CO8	Understand a typical graphics pipeline

COs	**Course Name: Data Mining, Data Warehousing And Business Intelligence**	**Code : MPH8CS03**	**Credit: 5**
CO1	Understand Data Warehouse fundamentals, Data Mining Principles.		
CO2	Analyze the dimensions of OLTP operations.		
CO3	Design data warehouse with dimensional modeling and apply OLAP operations.		
CO4	Identify appropriate data mining algorithms to solve real world problems		
CO5	Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining		
CO6	Analyze data mining for Business Intelligence Application.		
CO7	Incorporate the data analysis framework for optimal performance.		
CO8	Perform a needs assessment and analytical problem framing.		

COs	**Course Name: Big Data Analytics**	**Code : MPH8CS03**	**Credit: 5**
CO1	Identify Big Data and its Business Implications.		
CO2	List the components of Hadoop and Hadoop Eco-System		
CO3	Access and Process Data on Distributed File System		

CO4	Develop Big Data Solutions using Hadoop Eco System
CO5	Analyze Info sphere Big Insights Big Data Recommendations
CO6	Apply Machine Learning Techniques using R.
CO7	Understand and apply scaling up machine learning techniques and associated computing techniques and technologies.
CO8	Integrate machine learning libraries and mathematical and statistical tools with modern technologies like Hadoop and map reduce.

COs	**Course Name: Bio Informatics**	**Code : MPH8CS03**	**Credit: 5**
CO1	Develop the structural organization, DNA, Protein and Carbohydrates		
CO2	Exposed to computational methods, tools and algorithms employed for Biological Data Interpretation		
CO3	Apply various techniques used in genomics and proteomics		
CO4	Provide hands on training on various computational tools and techniques employed in Biological sequence analysis		
CO5	Apply various techniques, algorithms and tools employed in DNA sequencing, assembly and its applications in Next Generation Sequencing.		
CO6	Impart knowledge on chemical databases, various advanced techniques and tools like docking, QSAR studies etc employed in computational drug discovery		
CO7	Identify the chemistry and applications of food enzymes, additives and flavor		
CO8	Understand the biochemistry plant defense mechanism		