

SREEKRISHNAPURAM V.T.BHATTATHIRIPAD COLLEGE

MANNAPATTA, PALAKKAD

PROGRAMME OUTCOMES

Bachelor of Business Administration (BBA)

Introduction

Gone are the days when people used to enroll for conventional undergraduate programs such as BA, B.Com and B.Sc. These days' youngsters have moved towards professional and vocational courses which gives them an extra edge over other graduates. BBA is one of such program, which has now become quite popular with the students.

After completing class XII board exam, students can apply to various private and government colleges offering BBA programs. BBA course aims at exploring management skills in the students. The course curriculum is designed in such a way so as to develop basic business and management skills in the students.

Outline of the Course

University of Calicut is conducting the BBA programme which has 3 years duration with 6 semesters. The course aims at explaining the business environment in which the public and private sectors operate. It helps students to develop decision making ability in real time business situations. It also focuses on developing operational and analytical skills in students to tackle business problems in different sectors. The students are required to choose a specialization of their interest in the last year of the program, which further facilitates them to develop their management skills in a particular sector.

Objectives of the Course

The course is designed with the following objectives in mind:

1. To develop Critical Thinking and Decision Making abilities in students,
2. To develop analytical and reflective thinking techniques to identify and analyze problems, develop viable alternatives, and make effective decisions,
3. To develop the ability to identify and analyze ethical conflicts and social responsibility issues involving different stakeholders,
4. To develop the ability to identify and analyze relevant global factors that influence decision making,
5. To develop the ability to apply appropriate quantitative and qualitative techniques in solving business problems,

6. To develop good communication Skills,
7. To develop the skill to formulate viable alternatives and make effective decisions relating to business ethics and social responsibility,
8. To develop the skill to formulate viable alternatives and make effective decisions in an international business setting,
9. To develop positive attitude and interest towards the concept of entrepreneurship and administration, and
10. To develop the ability to appreciate and admire the practice of business administration.

Learning Outcomes

After the completion of the BBA course, following learning outcomes are expected:

1. The learner starts to think critically,
2. The learner takes effective decisions through analytical and reflective thinking,
3. The learner becomes socially responsible person with great ethical values,
4. The learner is aware of the global factors that affects his/her decisions,
5. The learner solves the business problems by applying appropriate quantitative and qualitative techniques,
6. The learner presents his/her concepts in an attractive way with good communication skills,
7. The learner identifies viable alternatives and make effective decisions relating to business ethics and social responsibilities,
8. The learner becomes confident in making effective decisions in an international business settings,
9. The learner shows interest and attitude towards starting and administering a business enterprise, and
10. The learner makes further studies to acquire deeper knowledge in the concepts, persons, or institutions related to business administration.

Subject-wise Learning Outcome

Semester I

Sl.No.	Course	Title	Learning Outcomes
1	Core	BBIB01 Management Concepts and Business Ethics	<ul style="list-style-type: none"> The learner develops the understanding about the process of business management, its functions and current management practices. The learner realizes the importance of ethics in business and also acquires the capability to develop ethical practices for effective management.
2	Complementary	BBIC01 Managerial Economics	<ul style="list-style-type: none"> Develops the understanding regarding the micro and macro economic concepts and ability to apply the economic principles in business management.

Semester II

Sl.No.	Course	Title	Learning Outcomes
1	Core	BBIIB02 Financial Accounting	<ul style="list-style-type: none"> The learner develops the skill for recording the business transactions and for preparing the financial statements.
2	Complementary	BBIIC02 IT for Business & Management	<ul style="list-style-type: none"> The learner develops the skill in using the computer for routine tasks like data retrieval, data analysis, accounting and report generation.

Semester III

Sl.No.	Course	Title	Learning Outcomes
1	Common	BBIIIA11 Basics of Business & Management	<ul style="list-style-type: none"> The learner develops the basic knowledge and understanding regarding the business and management.

2	Common	BBIIIA12 General Informatics	<ul style="list-style-type: none"> The learner updates and expands basic Informatics skills and develops the skill to utilize the digital knowledge resources.
3	Core	BBIIIB03 Business regulatory framework	<ul style="list-style-type: none"> The learner develops the awareness regarding the basic legal concepts and the Indian legal environment in which the business is carried on. The learner also develops understanding regarding the emerging legal issues in a digital networked environment.
4	Core	BBIIIB04 Organizational Behavior	<ul style="list-style-type: none"> The learner develops the understanding regarding the basic concepts of the Organizational Behaviour and also skills of interaction between the individual and the organizations.
5	Complementary	BBIIIC03 Quantitative Techniques for Business	<ul style="list-style-type: none"> The learner develops the ability to use the quantitative techniques in managerial decision making.

Semester IV

Sl.No.	Course	Title	Learning Outcomes
1	Common	BBIVA13 Basic numerical skills	<ul style="list-style-type: none"> The learner develops understanding regarding set operations matrix and Mathematics of finance, Statistical tools and their applications.
2	Common	BBIVA14 Entrepreneurship Development	<ul style="list-style-type: none"> The learner develops the entrepreneurial skills and the ability to generate innovative business ideas in the emerging industrial scenario.

3	Core	BBIVB05 Marketing Management	<ul style="list-style-type: none"> The learner acquires the skill of marketing in a business firm
4	Core	BBIVB06 Financial Management	<ul style="list-style-type: none"> The learner develops the skill of financial management in a business firm.
5	Complementary	BBIVC04 Management Science	<ul style="list-style-type: none"> The learner develops the basic knowledge regarding the operation research and an awareness regarding some common operations Research Tools for various business decision marketing situations.

Semester V

Sl.No.	Course	Title	Learning Outcomes
1	Core	BBVB07 Accounting for management	<ul style="list-style-type: none"> The learner realizes the relevance of management accounting and the use of accounting and costing data for planning, controlling and decision making.
2	Core	BBVB08 Business Research methods	<ul style="list-style-type: none"> The learner develops the skill in conducting survey researches and case studies.
3	Core	BBVB09 Operations management	<ul style="list-style-type: none"> The learner develops necessary skills related to operations in management in a business firm.
4	Core	BBVB10 Emerging Trends in Management	<ul style="list-style-type: none"> The learner develops a deep understanding regarding the emerging trends in management.

5	Core	BBVB11 Human Resource Management	<ul style="list-style-type: none"> The learner develops understanding regarding the human resource practices in organizations.
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Semester VI

Course	Title	Learning Outcomes
Core Specialization: FINANCE	1. BBVIB12 Indian Financial System	<ul style="list-style-type: none"> The learner develops a detailed idea regarding the Indian financial system and its broad components.
	2. BBVIB13 Investment Management	<ul style="list-style-type: none"> The learner develops the basic knowledge and skills to manage the investments.
	3. BB VI B14 Income Tax	<ul style="list-style-type: none"> The learner develops the ability to apply the principles and provisions of Income Tax Act 1961, amended up to date.
	4. BBVIB15 Working Capital Management	<ul style="list-style-type: none"> The learner develops the basic knowledge and skills regarding the Working Capital Management.
Core Specialization: MARKETING	1. BBVIB12 Services Management	<ul style="list-style-type: none"> The learner develops the basic knowledge and skills regarding the management of services.
	2. BBVIB13 E-Commerce	<ul style="list-style-type: none"> The learner develops the basic knowledge and understanding regarding the database development and management.
	3. BBVIB14 Consumer Behaviour	<ul style="list-style-type: none"> The learner develops the awareness regarding the consumer decision making process and the information needs for helping the consumer in decision making.
	4. BBVIB15 Retail Management	<ul style="list-style-type: none"> The learner develops the basic knowledge and skills regarding the management of retailing.
Core Specialization: HUMAN	1. BBVIB12 Human Resource Planning and Development	<ul style="list-style-type: none"> The learner develops the basic knowledge and skills regarding the planning and development of human resources.

RESOURCE MANAGEMENT	2. BBVIB13 Performance Management	<ul style="list-style-type: none"> • The learner gains the in-depth understanding regarding the organizational and managerial performances, team management, target setting and achievement.
	3. BBVIB14 Industrial Relations	<ul style="list-style-type: none"> • The learner develops the deep knowledge regarding the industrial relations and the current industrial relation practice.
	4. BBVIB15 Management training and development	<ul style="list-style-type: none"> • The learner develops the an in-depth understanding of the concepts, tools and techniques of management training, and • The learner develops the skill of designing and using methods for management development.

Bachelor of Commerce (B.Com)

Introduction

The B.com course prepares students to be adequately equipped with good domain knowledge and skills required for careers in Business. With an innovative curriculum design and content the B.com course empowers students to conveniently adapt to an ever changing and dynamic business environment. The course enables students to have good fundamental knowledge of Accounting, Economics, Taxation, Statistics, Auditing, Cost Accounting, and Finance and in addition the management subjects. The B.com course is challenging and yet very rewarding to students with high career aspirations. It also builds competence and confidence among students to pursue and complete, professional courses such CA, CFA, ICWA, ACS etc. Our B.com students have been in high demand with employers for their excellent knowledge, skills and attitude which gives them an edge over their peers from other institutions. The B.com course of the college is rated among the top 10 in the country (India Today-AC Nielsen Survey 2014).

Objectives of the Course

1. To provide conceptual knowledge and application skills in the domain of Commerce studies,
2. To provide knowledge and skills in almost all areas of business to be able to meet expectations of business and to handle basic business tasks, thus equipping a student to pursue careers in different sectors of commerce, trade and industry,
3. To sharpen the students' analytical and decision making skills,
4. To provide a good foundation to students who plan to pursue professional courses like CA, ICWAI, ACS, CFA and MBA,
5. To facilitate students to acquire skills and abilities to become competent and competitive in order to be assured of good careers and job placements,
6. To develop entrepreneurship abilities and managerial skills in students so as to enable them to establish and manage their own business establishments effectively,
7. To develop ethical Business professionals with a broad understanding of Business from an interdisciplinary perspective,
8. To develop positive attitude and interest towards the concept of entrepreneurship and administration,

9. To develop the ability to appreciate and admire the practice of business administration, and
10. To make the learner a self sufficient, economically productive and socially dynamic individual.

Learning Outcomes

1. The learner demonstrates knowledge of major theories and models in key areas of commerce subject,
2. The learner analyses organizational problems and generate realistic solutions based on current academic research in organizational behaviour,
3. The learner applies basic mathematical and statistical skills necessary for analysis of a range of problems in economics, actuarial studies, accounting, marketing, management and finance,
4. The learner analyses commerce /business issues in the international contexts,
5. The learner compares international contexts and issues through the lens of the commerce disciplines,
6. The learner evaluates national and international debates and discussions on economic, commercial, and business issues,
7. The learner becomes confident in making effective decisions in an international business settings,
8. The learner shows interest and attitude towards starting and administering a business enterprise,
9. The learner makes further studies to acquire deeper knowledge in the concepts, persons, or institutions related to business administration, and
10. The learner starts to appreciate the concept of commerce.

Subject-wise Learning Outcomes

Semester I

Sl.No.	Course	Title	Learning Outcomes
1	Core	BCIB01 Management Concepts and Business Ethics	<ul style="list-style-type: none">• The learner develops the understanding about the process of business management, its functions and current management practices.• The learner realizes the importance of ethics in business and also acquires the capability to develop ethical practices for effective management.
2	Complementary	BCIC01 Managerial Economics	<ul style="list-style-type: none">• Develops the understanding regarding the micro and macro economic concepts and ability to apply the economic principles in business management.

Semester II

Sl.No.	Course	Title	Learning Outcomes
1	Core	BC2B02 Financial Accounting	<ul style="list-style-type: none">• The learner develops the skill for recording the business transactions and for preparing the financial statements.
2	Complementary	BC2C02 Marketing Management	<ul style="list-style-type: none">• The learner acquires the skill of marketing in a business firm

Semester III

Sl.No.	Course	Title	Learning Outcomes
1	Common	BC3A11 Basics of Business & Management	<ul style="list-style-type: none">The learner develops the basic knowledge and understanding regarding the business and management.
2	Common	BC3A12 General Informatics	<ul style="list-style-type: none">The learner updates and expands basic Informatics skills and develops the skill to utilize the digital knowledge resources.
3	Core	BC3B03 Business regulatory framework	<ul style="list-style-type: none">The learner develops the awareness regarding the basic legal concepts and the Indian legal environment in which the business is carried on.The learner also develops understanding regarding the emerging legal issues in a digital networked environment.
4	Core	BC3B04 Corporate Accounting	<ul style="list-style-type: none">The learner acquires the conceptual knowledge of the fundamentals of the corporate accounting and the techniques of preparing the financial statements.
5	Complementary	BC3C03 E-Commerce Management	<ul style="list-style-type: none">The learner develops the basic knowledge and understanding regarding the database development and management.

Semester IV

Sl.No.	Course	Title	Learning Outcomes
1	Common	BC4A13 Basic numerical skills	<ul style="list-style-type: none">The learner develops understanding regarding set operations matrix and Mathematics of finance, Statistical tools and their applications.
2	Common	BC4A14 Entrepreneurship Development	<ul style="list-style-type: none">The learner develops the entrepreneurial skills and the ability to generate innovative business ideas in the emerging industrial scenario.
3	Core	BC4B05 Cost Accounting	<ul style="list-style-type: none">The learner develops cost consciousness by acquiring deep knowledge and understanding of cost and its elements.
4	Core	BC4B06 Regulatory Frame work for Companies	<ul style="list-style-type: none">The learner develops the awareness regarding the basic legal concepts and the Indian legal environment in which the business is carried on.The learner also develops understanding regarding the emerging legal issues in a digital networked environment.
5	Complementary	BC4C04 Quantitative Techniques for Business	<ul style="list-style-type: none">The learner develops the ability to use the quantitative techniques in managerial decision making.

Semester V

Course	Title	Learning Outcomes
Core	1. BC5B07 Accounting for management	<ul style="list-style-type: none"> The learner realizes the relevance of management accounting and the use of accounting and costing data for planning, controlling and decision making.
Core	2. BC5B08 Business Research methods	<ul style="list-style-type: none"> The learner develops the skill in conducting survey researches and case studies.
Core	3. BC5B09 Basics of Banking and Insurance	<ul style="list-style-type: none"> The learner develops knowledge about basics of banking and insurance.
Core Specialization: FINANCE	4. BC5B10 Indian Financial System	<ul style="list-style-type: none"> The learner develops a detailed idea regarding the Indian financial system and its broad components.
	5. BC5B11 Financial Management	<ul style="list-style-type: none"> The learner develops the basic knowledge and skills to manage the finance.
Core Specialization: BANKING & INSURANCE	4. BC5B10 Banking Service Management	<ul style="list-style-type: none"> The learner develops the basic knowledge regarding the banking services and skill to manage it.
	5. BC5B11 Insurance Management	<ul style="list-style-type: none"> The learner develops the basic knowledge regarding the insurance services and skill to manage it.
Core Specialization: CO-OPERATION	4. BC5B10 Co-operative Theory and Practice	<ul style="list-style-type: none"> The learner develops conceptual clarity and theoretical base in the co-operation.
	5. BC5B11 Legal Frame Work for Co-operatives	<ul style="list-style-type: none"> The learner acquires knowledge about cooperative laws with special reference to Kerala Co-operative Societies Act.

Semester VI

Course	Title	Learning Outcomes
Core	1. BC6B12 Income Tax Law and Practice	<ul style="list-style-type: none"> The learner develops the ability to apply the principles and provisions of Income Tax Act 1961, amended up to date.

Core	2. BC6B13 Auditing	<ul style="list-style-type: none"> The learner develops knowledge about auditing principles, procedures and techniques in accordance with current legal requirements and professional standards.
Core Specialization: FINANCE	3. BC6B14 Financial Services	<ul style="list-style-type: none"> The learner develops a detailed idea regarding the available financial services.
	4. BC6B15 Fundamentals of Investments	<ul style="list-style-type: none"> The learner develops the basic knowledge and skills to manage the investments.
Core Specialization: BANKING & INSURANCE	3. BC6B14 Foreign Exchange Management	<ul style="list-style-type: none"> The learner develops the basic knowledge regarding the foreign exchange services and skill to manage it.
	4. BC6B15 Risk Management and Insurance	<ul style="list-style-type: none"> The learner develops the basic knowledge regarding the risks inherent in a business and skill to manage it.
Core Specialization: CO-OPERATION	3. BC6B14 Banking, Production, Trading and Service Co-operatives	<ul style="list-style-type: none"> The learner acquires the in-depth knowledge regarding the structure and functioning of different types of co-operatives.
	4. BC6B15 Co-operative Management and Administration	<ul style="list-style-type: none"> The learner develops necessary skills in managing and administering the co-operatives.

Master of Commerce (M.Com)

Introduction

The world is witnessing a high-tech revolution with changes in science, technology, commerce and industry. The world now believes that knowledge is everything. With opening up of world economy by way of globalization, liberalization and privatization processes, all the business sectors are witnessing a tremendous growth. The whole economy is undergoing a tremendous transformation with many new sunrise sectors like financial services, consultancies etc coming up. The service sector is outstripping the manufacturing sector in growth. A career in these sectors involves challenging work, high growth opportunities, lucrative pay packets and a professionally challenging work environment. It is in this context, University of Calicut revised the syllabus of Master of Commerce (M.Com.) with an intention to prepare the students to meet the need of the changed business environment.

The M.Com. programme has a distinct objective to equip the students with knowledge, skills and attitude to become more suitable for the present and emerging job market. The courses are intended to impart intensive knowledge and training in the subject and help the students to acquire wider perspectives both for research and for professional application. The syllabus has been designed student-centered where there is flexibility for the students to have a greater choice of courses appropriate to their interests, needs, and sustainability and long term goals.

Objectives of M.Com. Programme

1. To provide foundation for further advanced studies and research in the area of Commerce such as M.Phil. and Ph. D. programmes.
2. To allow M.Com. graduates to choose for further advanced studies in different specialization of Commerce such as Accounting, Taxation, Finance, Human Resource, Marketing etc.
3. To enable M. Com. graduates for a wide range of career dealing with the flow of money, from accountant to investment banker, money manager to personal finance consultant.
4. To enable master graduates in Commerce to qualify UGC-NET/SET and JRF examinations so that they can take-up the work of teaching or research of high quality.
5. To impart entrepreneurial skills for starting new business ventures.

Learning Outcomes

1. The learner shows interest and curiosity to study more in the field of Commerce.
2. The learner tries to get in-depth knowledge related to Commerce such as Accounting, Taxation, Finance, Human Resource, Marketing etc.
3. The learner shows great confidence for a wide range of career dealing with the flow of money, from accountant to investment banker, money manager to personal finance consultant.
4. The learner shows great confidence in competitive examination to qualify UGC-NET/SET and JRF examinations so that they can take-up the work of teaching or research of high quality.
5. The learner searches for all the opportunities for starting new business ventures.

Subject-wise Learning Outcomes

Semester I

Sl.No.	Course Code	Title	Learning Outcomes
1	M.COM 1.1	BUSINESS ENVIRONMENT	<ul style="list-style-type: none">• The learner develops deeper understanding in the concepts of macro-economic environment in which a business organization operates.• The learner develops the skill to analyze and understand the macroeconomic policies of the Government and assess their impact on business.
2	M.COM 1.2	QUANTITATIVE TECHNIQUES	<ul style="list-style-type: none">• The learner develops the ability to use the quantitative techniques in managerial decision making.
3	M.COM 1.3	ACCOUNTING FOR MANAGERIAL DECISIONS	<ul style="list-style-type: none">• The learner realizes the relevance of management accounting and the use of accounting and costing data for planning, controlling and decision making.

4	M.COM 1.4	MANAGEMENT INFORMATION SYSTEMS	<ul style="list-style-type: none"> The learner understands the process of information generation and communication in organizations The learner develops the skill in the process of IT application development and use in organizations
5	M.COM 1.5	ORGANIZATIONAL BEHAVIOUR	<ul style="list-style-type: none"> The learner develops the understanding regarding the basic concepts of the Organizational Behaviour and also skills of interaction between the individual and the organizations.

Semester II

Sl.No.	Course Code	Title	Learning Outcomes
1	M COM 2.1	INTERNATIONAL BUSINESS	<ul style="list-style-type: none"> The learner develops awareness regarding the nature, scope, structure and operations of International Business.
2	M.COM 2.2	ADVANCED CORPORATE ACCOUNTING	<ul style="list-style-type: none"> The learner develops deeper understanding regarding the concepts related to corporate accounting, and The learner develops the skill to solve problems relating to Company Accounts, Valuations and Special types of situations.
3	M.COM 2.3	IT APPLICATIONS IN COMMERCE	<ul style="list-style-type: none"> The learner develops the ability to plan and develop spreadsheets that can analyze, manipulate and provide solutions to the types of questions that arise within the working environment from a variety of data sources. The learner understands the concept of RDBMS and creates databases to provide information for decision making.

4	M.COM 2.4	OPERATIONS RESEARCH	<ul style="list-style-type: none"> The learner understands the concepts and techniques of Operations Research and the use of OR tools for business decision making. The learner develops the required skills to solve various problems in OR.
5	M.COM 2.5	STRATEGIC MANAGEMENT	<ul style="list-style-type: none"> The learner develops a conceptual idea about Strategic Management.

Semester III

Sl.No.	Course	Title	Learning Outcomes
1	M COM 3.1	Financial Management	<ul style="list-style-type: none"> The learner develops the basic knowledge and understanding regarding the business and management.
3	M.COM 3.2	Research methodology in Commerce	<ul style="list-style-type: none"> The learner understands the process of doing research and its importance, and The learner acquires required skills to undertake research projects as a part of the curriculum and to solve business problems.
3	M.COM 3.3	Income tax	<ul style="list-style-type: none"> The learner develops the ability to apply the principles and provisions of Income Tax Act 1961, amended up to date.

Semester IV

Sl.No.	Course	Title	Learning Outcomes
1	M COM 4.1	Strategic Cost Accounting	<ul style="list-style-type: none"> The learner is capable of designing and Implementing cost control, cost reduction programme and different cost systems, and

			<ul style="list-style-type: none">• The learner gets adequate knowledge on cost accounting practices.
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BA HISTORY

INTRODUCTION

BA history education will help pupils to gain a coherent knowledge and understanding of past and that of the wider world. Teaching should equip pupils to ask perspective questions , think critically, with evidence ,sift arguments and develop wide knowledge about past ‘The study of history which help the students to understand the past events and to compare the present and to correct the mistakes of the past. This knowledge helps the students to mould the future wisely. In addition to this the study of history which help the students to understand the society and various culture. It will help the students to foster humanity.

Program outcome :

The students acquire knowledge in the field of social sciences, literature and humanities .which make them sensitive and sensible enough.

- The BA graduates will be acquainted with the social economical , historical . geographical, political ,ideological and philosophical tradition and thinking
- The program also empowers the graduates to appear for various competitive examinations or choose the part graduate program of their choice.
- The BA program enables the students to acquire the knowledge with human values framing the base to deal with various problems in life, courage and humanity.

Outline of the course

The basic goal of the Degree in history is to provide students with a rational and critical knowledge of the past of humanity in order to enable them to understand the present. Only historians are able to understand how event and processes in the past influence those in the present.

Objective s of the course

1. Understand the methods of historical enquiry including how evidence is used rigorously to make historical claims and interpretations of the past have been constructed.
2. Inculcating curiosity about past.
3. Imparting intellectual skills to make sense of the past.
4. Developing the critical thinking of the students.
5. Developing an understanding of the present.
6. Imparting knowledge of our heritage.

Learning Objectives

Learning objectives : Students can be based on three areas of learning knowledge, skill and attitudes. They help to clarify organize and prioritize learning. And students evaluate progress and encourage them to take responsibility for their learning.

Learning outcomes

After the completion of the BA History course ,following learning outcomes are expected.

1. The learner starts to think critically.
2. The learner becomes socially responsible person with great ethical values.
3. The learner solves the social problems by applying human values.
4. The learner develop good communication skills.
5. The learner shows interest to understand India s cultural heritage.

Subject- wise Learning Outcomes

Semester 1

SL No	Course	Title	Learning Outcome
1.	Core	HIS1B01 Trends in Historiography	Students will be able to identify the different views of historiography

Semester II

Sl. No	Course	Title	Learning Outcomes
1.	Core	HIS2B02 Trends in Indian Historiography	➤ Students will be able to understand the different methods of Indian Historiography.
2	Complementary	HIS1(2)CO5- Archaeology in India	➤ Students will be able to understand the importance of Archaeology in Indian history.

Semester III

SL NO	Course	Title	Learning Outcomes
1	Core	HIS3BO3- INFORMATICS AND HISTORY	➤ The learner realizes the importance of Information technology for teaching, learning and research in history
2	Core	HIS3B04 History of Early India	➤ Students will learn about the

			prehistoric period, in ancient India. They can acquire knowledge about the Vedic period and the rise of Jainism and Buddhism in India.
3	Complimentary	HY3CO5- Archaeological Excavations in India	➤ Students will learn about the various excavations conducted in India.

Semester IV

SLNO	Course	Title	Learning Outcomes
1.	Core	HIS4B05 HISTORY OF THE MEDIEVAL WORLD	➤ Students acquire knowledge about the growth of medieval world
2	Core	HIS4B06 METHODOLOGY OF HISTORICAL WRITING	➤ Learner will develop and demonstrate skill in historical research. ➤ To be aware of Historiography as a field of study in history.
	Complimentary	HY4C05	➤ Students acquire knowledge of

3		MODERN TECHNIQUES IN ARCHAEOLOGY	various dating techniques in Archaeology and the importance of Marine Archaeology in India.
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Semester V

SLNO	Course	Title	Learning Outcomes
1.	Core	HIS5B07 KERALA SOCIETY AND CULTURE ANCIENT AND MEDIEVAL	➤ The learner understand the formation of Kerala society and culture.
2	Core	HIS5B08 HISTORY OF MEDIEVAL INDIA	➤ Critically discuss major social ,political and economic events in the medieval period especially in the period of Delhi Sultanate, Mughals etc.
3	Core	HIS5B09 HISTORY OF MODERN INDIA	➤ Learner understand how the British established their Colonialism in India. ➤ Students acquire knowledge of the various socio-religious

			movements in India ➤ Understand the Freedom Movement of India
4	Core	HIS5B010 HISTORY OF MODERN WORLD	➤ The learner acquire knowledge about the rise of Modern age. ➤ The scientific inventions in the world etc.
5	Open Course	HIS5D01 HERITAGE STUDIES	➤ It enable the students to understand our culture and heritage and the need to preserve our heritage.

Semester VI

SL NO	Course	Title	Learning Outcome
1	Core	HIS6B11 HISTORY OF MODERN KERALA	➤ The learner understand the emergence of Kerala state .
2	Core	HIS6B12HISTORY OF CONTEMPORARY INDIA	➤ The learner understand the events of contemporary India.
3	Core	HIS6B013 CONTEMPORARY KERALA	➤ Identify & analyze the political ,economic

			<p>experience of Kerala.</p> <ul style="list-style-type: none"> ➤ Locate the issues in Contemporary Kerala. ➤ Analyze the reform movements in the making of modern Kerala.
4	Core	HIS6B14 GENDER STUDIES	<ul style="list-style-type: none"> ➤ Learner can analyze a gender issue and plan it in a societal and cultural as well as in interdisciplinary perspectives.
5	Project	HIS6B15 DISSERTATION	<ul style="list-style-type: none"> ➤ Understand the methods of historical writing ➤ Understand the Importance of Local history writing
6	Elective	HIS6E04 HUMAN RIGHTS	<ul style="list-style-type: none"> ➤ Understand the historical growth of the human rights. ➤ Understand the importance of the human rights act.

BA Economics

2.6.1. Programme Outcome (PO) and Course Outcome (CO) (10)

Programme Outcome

- Critically evaluate and apply the theories and techniques of economics.
- To impart knowledge about procedures and documentation in export, import and logistics
- To familiarize the students with the nature and scope of international marketing.
- To familiarize the students with the change in concept of shipping and marine insurance
- To familiarizes students about the various source of foreign trade financing.
- Demonstrate subject-specific ‘thinking’ skills that are readily transferable to problem solving and decision making in a wider context.
- Enhance their lifelong learning, employing a range of practical and professional skills.
- Find, evaluate, synthesize and use information from a variety of sources

Course Outcome

2.6.2. Evaluation of Attainment of PO and CO (10)

- ⇒ Conducted field visit to port premises to show the working of Vallarpadam Transshipment Container terminal
- ⇒ Video clippings of loading and unloading of cargo is presented.

BA Sanskrit

PROGRAMME OUTCOME

PSO1- Internalize basic structure of Sanskrit Language.

PSO2- Develop interacting and communicating skills in Sanskrit.

PSO3 - Understand the ancient Indian tradition and culture through a critical approach.

PSO4- Develop an analytic method and critical thinking in Sanskrit literature and regional cultures.

PSO5- Evaluate the traditional knowledge and relate it to contemporary socio-cultural scenario.

PSO6- Acquire the ability to live fruitfully in the society imbibing traditional values and to discharge duties and responsibilities as ideal citizens.

COURSE OUTCOME

COURSE CODE	COURSE NAME	EXPECTED OUTCOME
SKT IA 07(01)	संस्कृतसाहित्यसमीक्षा-I (KAVYA LITERATURE AND APPLIED GRAMMAR)	<ul style="list-style-type: none">• Attain general awareness of Sanskrit Kavya Literature.• Evaluate the Sanskrit Kavya Literature, its origin and development and understand the basic principles of grammar.• Cultivate moral values among students through the study of Subhashitas.
SKT1B01	भाषानुशासनम् (METHODOLOGY OF SANSKRIT SAHITYA)	<ul style="list-style-type: none">• Understand the traditional methodology of learning Sanskrit language• Critically analyse the linguistic components in ancient and modern literature.
SKT1C01(01)	COMPLEMENTARY COURSE I साहित्यमीमांसा-I (HISTORY OF SANSKRIT LITERATURE)	<ul style="list-style-type: none">• Understand the history of Vedic literature, classical Sanskrit literature, ancient Indian astronomical system, medical science and architecture.• Evaluate the contemporary relevance of ancient Indian science.
SKT1A07(02) B Com /BBA		Understand the world of poetry, popular tales and fables in Sanskrit literature.

	संस्कृतसाहित्याध्ययनम्- I (PROSE, SUBHASHITAS AND BASIC GRAMMAR)	Familiarize the basic grammatical peculiarities of Sanskrit language through simple stories. Get transformed into a better human.
SKT2A 08 (01)	संस्कृतसाहित्यसमीक्षा-II (PROSE AND APPLIED GRAMMAR)	<ul style="list-style-type: none"> • Attain general awareness of Sanskrit prose literature. • Evaluate modern Sanskrit prose literature through the study of the text and understand the tradition of Sanskrit fables.
SKT2B02	महाकाव्यपठनम्	<ul style="list-style-type: none"> • Attain awareness about origin and development of poetry in Sanskrit. • Cultivate a deep level of appreciation of poetry through the study of Alankaras and Vrttas.
SKT2C03(01)	शास्त्रमीमांसा-I (LINGUISTICS)	<ul style="list-style-type: none"> • Know the basic Indian concept of Linguistics • Understand the peculiarities of genders, numbers, suffixes and prefixes.
SKT 2A08 (02) B Com /BBA	संस्कृतसाहित्याध्ययनम् II (ANCIENT STATE CRAFT & TRANSLATION)	Understand ancient Indian culture and life style. system of trade, commerce and management. Apply the language skills
SKT09(01)	Drama and Alankara	Knows the characteristics of Sanskrit drama and features of Alankra
SKT3B03	Methodology of Ancient Indian Tradition	Thorough Knowledge of the Methodology of Learning Sanskrit
SKT3B04	Gadyakavya	Familiarize the Gadyakavya of Sanskrit
SKT3C05(01)	Linguistics-I	Knows the history of Language
SKT4C08(01)	Indian Philosophy Non Vedic Schools	Sound knowledge about Indian system of Vedic Schools

SKT4A10(01)	History of Sanskrit Literature, Kerala Culture and Translation	Aware about Epic Literature, Historical Kavyas and Chamhu Literature
SKT4B(05)	Vyakarana and Nyaya-I	Improved Language skills
SKT4B06	Nataka	Knowledge about visual arts as well as Sanskrit poetry
SKT4C07(01)	Indian Literary Theories	Familiarize the Indian literary theories and authors
SKT4C04(02)	Drama and Kerala Sanskrit Theatre	Knowing the general features of drama and dramatic works
SKT5B07	Veda Smrithi and Upanishad	Awareness of the Vedic Culture and Texts
SKT5B08	Vyakarana and Nyaya-II	Developed language skills
SKT5B09	Bhagvatgita and Arthasastra	Values and strategies to live
SKT5B10	General Informatics	Application of technology on the Sanskrit language
SKT5D(01)	Management Principles in Sanskrit	Familiarize the management principles
SKT5D(02)	Ancient Indian Law	Knowing the ancient Indian law
SKT5D(03)	Scientific Literature in Sanskrit and Kerala	Knowing the diversity of Sanskrit literature especially the scientific literature
	Project	
SKT6B11	Alankara Sastra	Knowledge about poetics of Sanskrit especially the views of Mammata
SKT6B12	Natyaśidhānta	Knowledge on Dramaturgy depicted in Sanskrit
SKT6B13	Sankhya and Vedānta	Aware about Indian philosophy
SKT6B14	Elements of Indian Culture and Environmental Science	Knowledge about the cultural history of India
SKT6B15(E01)	Malayalam Writers on Sanskrit	Familiarize the Malayalam writers
SKT6B15(E02)	Sanskrit Theatre of Kerala	Knowledge on Kudiattam and Nangiarkuttu
SKT6B15(E03)	Kavisiksha	Familiarize the instructions to poet laid down in texts of Alankarasastra in Sanskrit

B.Sc. Mathematics

2.6.1. Programme Outcome (PO) and Course Outcome (CO) (10)

PO: 1.To develop critical thinking and reasoning .

2. acquire good knowledge and understanding in advanced area of mathematics
3. stimulate an interest in all aspects of mathematics .
4. develop skills like problem solving, numerical skills, analyzing things etc.

Course Outcomes

MTS1B01 BASIC LOGIC AND NUMBER THEORY

Logic ,the study of principles of techniques and reasoning ,is fundamental to every branch of learning.Besides being the basis of all mathematical reasoning,it is required in the field of computerscience for developing programming languages and also to check the correctness of the programmes.The classical number theory is introduced and some of the very fundamental results are discussed in this course.number theory is an ideal topic for a beginner to illustrate how mathematicians do their normal business.

Objectives

- 1)Enable the students to enjoy and master several techniques of problem solving such as recursion,induction,etc,the importance of pattern recognition in mathematics, the art of conjecturing and a few applications of number theory.
- 2)acquire knowledge to read and enjoy on their own a few applications of number theory in the field of art ,geometry and coding theory.

Learning outcomes

- 1)understand the theory and method of solutions of LDE
- 2)Understand the theory of congruence and a few applications.
- 3)Solve linear congruent equations
- 4)Learn three classical theorems Wilson's theorem ,Fermat's Little theorem and .Eulers theorem and a few important consequences.

MTS2B02 CALCULUS OF SINGLE VARIABLE -1

The Mathematics required for viewing and analyzing the physical world around us is contained in calculus. While algebra and geometry provide us very useful tools for expressing the relationship between static quantities ,the concepts necessary to explore the relation between moving/changing objects are provided in calculus.

Objectives

- 1) The objective of the course is to introduce students to the fundamental ideas of limit, continuity, and differentiability and also to some basic theorem of differential calculus.
- 2) It also helps to know how these ideas can be applied in problem of sketching of curves and in the solution of some optimization problem of interest in real life.

Learning outcomes

1. understand the fundamental ideas of limit, continuity and differentiability
2. understand the branch of integral calculus.
3. understand the concept of definite integrals.
4. learn the fundamental theorem of calculus.

MAT4 B04: Theory of Equations, Matrices & Vector Calculus

This course details about polynomial equations and fundamental theorem of algebra. Explain the rank of matrices and its Canonical form, Normal form. Discusses about Expressing Systems of Linear equations in matrix form and to find the solution of the systems. Characteristic roots and characteristic vectors are also introduced.

Objectives

- 1) Introduce concept of rank of a matrix and methods to find the rank
- 2) Discuss the fundamental theorem of algebra and polynomial eqns.
- 3) Study about system of equations and methods to solve them.

Learning Outcomes

- 1) Students will be able to find rank of matrices and apply them in practical problems. and use Cayley Hamilton theorem to compute inverse of matrices.
- 2) They can solve system of linear equations .
- 3) They will get knowledge about polynomial equations and Algebra.

MAT5 B05: Vector Calculus

Course gives an introduction to function of several variables and partial differentiation. Terms like directional derivatives, gradient vectors are defined and analyzed. The course discusses triple integrals, Line integrals and Green's and Stoke's Theorems.

Objectives

1. Introduce concepts of functions of several variables and Partial differentiation.
2. Discuss directional derivatives, double integrals and Lagrange multipliers
3. Introduce Triple integrals, Line integrals and study about these integrals in Cylindrical and Spherical coordinates.
4. Study about Green's, Stoke's Theorems and applications.

Learning Outcomes

1. Students can find derivatives of functions of several variable using chain rules and apply the technique of partial differentiation effectively.

2. Students can understand the concept of directional derivatives, saddle points and apply the theory of double integrals.
3. Students will get an idea of the coordinate systems and higher integrals.
4. They can apply Green's and Stokes's theorems in practical problems.

MAT5 B06: Abstract Algebra

This course serves an introduction to abstract algebra. The course aims at an attempt to introduce axiomatic treatment of mathematics. Course aims to teach students about groups rings and fields.

Objectives

1. Introduce the idea of groups, rings and fields.
2. Give a peek to the axiomatic approach of mathematics
3. Define and study about Integral domains and Field of quotients.

Learning Outcomes

1. Students will get a deep and fundamental knowledge about Groups, rings and Fields.
2. Students can understand the basic properties of these structures.
3. Students will get the basic idea of integral domains.
4. The students will be able to understand and prove mathematical statements in a logical and rigid manner.

MAT5 B07: Basic Mathematical Analysis

This course provides a quick review of sets and mathematical induction. Course tries to spread light on the real number line and the properties of real numbers. Sequences and subsequences are also discussed in this course.

Objectives

1. Give a basic idea of real number system
2. Discuss the important properties of real numbers.
3. Define sequences and subsequences of real numbers
4. Study about limits and discuss limit theorems.

Learning Outcomes

1. Students will get an in-depth knowledge about real numbers and their properties.
2. Students will be able to understand and analyze the properties of real sequences.

MAT5 B08: Differential Equations

This course studies about the ordinary differential equation involving one independent and one or more dependent variables. The integrals of ordinary differential equation are evaluated and are found to be plane curves. Differential equation involving one dependent and more than one independent variables are studied.

Objectives

1. To classify differential equations
2. Discuss the methods to solve first and second order equations
3. Introduce Laplace Transforms and PDE
4. Solve boundary value problems, study about Fourier series

Learning Objectives

1. Students can use the idea of differential equations in engineering problems.
2. Students will get a basic idea of important equations like wave equation and heat equations.
3. Students can use the technique of Fourier series to solve wave and heat equations effectively
4. The students will know relation between heat equation and Laplace eqns.

MAT6 B09: Real Analysis

This course provides a quick review of continuous functions and continuity. The idea of Riemann integral is introduced. Course gives a brief discussion about series of real numbers, Improper integrals, Beta and Gamma functions.

Objectives

1. To study about Riemann integrals and its applications
2. Review series of real numbers and their convergence
3. Define and in depth study of Improper integrals
4. Introduce Beta and Gamma functions.

Learning Outcomes

1. Students can understand and apply the concepts of Riemann integrals
2. Students will be able to find convergence of real series

3. Students can evaluate improper integrals using various techniques
4. Facilitate use of Beta and Gamma integrals in various situations.

MAT6 B10: Complex Analysis

This course introduces the concepts analytic function, elementary complex functions, and their properties, basic methods of complex integration and its applications in contour integration.

Objectives: The course aims

1. To explain the fundamental ideas of Analytic functions
2. To discuss basic methods of complex integration
3. To introduce elementary complex functions
4. To discuss power series expansion of analytic functions

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

1. Conceive the concept of analytic functions and will be familiar with the elementary complex functions and their properties
2. They will be familiar with the theory and techniques of complex integration
3. Apply the theory of the power series expansion of analytic functions.

MAT6 B11: Numerical Methods

This course aims to familiarize students with different methods of Numerical Analysis. Course also discusses the methods to solve Linear Systems including ODE.

Objectives

1. To equip the student with the computer based numerical and statistical methods.
2. Explain and analyze errors in computation and their minimization
3. Discuss normal and iterative methods to solve linear equations, ODE
4. Study about curve fitting, Numerical differentiation.

Learning Outcomes

1. Students can use numerical methods to solve mathematical problems
2. They will get an idea of numerical differentiation and integration
3. Students will get a better understanding of finite differences
4. Students will be able to find numerical solutions to ODE and linear eqns

MAT6 B12: Number Theory and Linear Algebra

The course gives a brief introduction to theory of numbers. Important theorems like Fermat's theorem and Wilson's theorem is discussed. The concepts of Vector space and linear transformations are introduced.

Objectives

1. To introduce results of basic number theory
2. Introduce divisibility theory and Congruences
3. Study Fermat's and Wilson's Theorem
4. Impart basic idea of vector spaces and linear transformations

Learning Outcomes: After completion of this course students

1. Can use the theory of numbers, division algorithm and congruences in the field of Computer science and Mathematics.
2. Can apply these ideas in studying cryptography and network security
3. Will get a brief idea about vector spaces and related concepts

MAT6 B13 (E01): Graph Theory

This course introduces the Graphs and allied properties. Various types of graphs are discussed along with the techniques of coloring graphs, Planarity and Matchings.

Objectives

1. Introduce graphs and its origin as an important tool of computation.
2. Study about various types of graphs like line graphs, Eulerian and Hamiltonian graphs.
3. Discuss properties of graphs, like isomorphic graphs.
4. Define colorings, Matching and study about Planarity and Chromatic polynomials in graphs.

Learning Outcomes

1. Facilitate the use of graphs as an important tool in day-to-day activities in life like navigation and root maps.
2. Students can understand the intrinsic, structural properties of graphs
3. Students can get a better understanding of various aspects of graphs like planarity and coloring.

MAT5 D18: Mathematics for Natural Sciences

This course aims to introduce fundamental mathematical concepts to students of branches other than Mathematics. It gives a glimpse to statistical data collection and other concepts like moments and central tendencies in statistics.

Objectives

1. Familiarize the students with sets and operations on sets.
2. Introduce the idea of frequency distribution and data analysis
3. Define and analyze measures of central tendencies
4. Study about the theory of probability and probability distributions.

Learning Outcomes

1. Students shall get basic idea about sets
2. Students will have an understanding of frequency distributions and data tabulation.
3. They will get an idea of measures of central tendencies
4. Students will get familiarized with probability distributions.

M.Sc. Computer Science

Programme Outcome:

Syllabus (2014 Onwards)

The course of the MSc (Computer Science) programme is designed with the following objectives:

a) To equip students to take up challenging research oriented responsibilities and courses for their higher studies/profession.

b) To train and equip the students to meet the requirements of the Software industry in the country and outside.

c) To motivate and support the students to prepare and qualify challenging competitive examinations such as JRF/NET/JAM/GATE etc.

Course Outcome:

COURSE	SEMESTER	OUTCOME	EVALUATION METHODOLOGY
CSS1C01-Discrete Mathematical Structures	I	To introduce discrete mathematics concepts necessary to understand basic foundation of Computer Science.	Test paper
CSS1C02-Advanced Data Structures	I	To introduce basic and advanced data structures dealing with algorithm development and problem solving.	Discussion
CSS1C03- Theory of Computation	I	To provide the students with an understanding of basic concepts in the theory of computation.	Powerpoint presentation evaluation
CSS1C04 - The Art of Programming Methodology	I	<input type="checkbox"/> <input type="checkbox"/> To learn the art of designing algorithms and flowcharts. <input type="checkbox"/> <input type="checkbox"/> To introduce the concept of algorithmic approach for solving real-life problems. <input type="checkbox"/> <input type="checkbox"/> To develop competencies for the design and coding of computer programs. <input type="checkbox"/> <input type="checkbox"/> To learn designing programs with advanced features of C.	Debugging
CSS1C05 - Computer Organization & Architecture	I	To familiarize with the digital fundamentals, computer organization, computer architecture and assembly language programming.	Multiple choice tests
CSS1P06-Practical I	I	To practically implement the theory portions covered in The Art of Programming	Lab exam

		Methodology (CSS1C04) and Advanced Data Structures (CSS1C02).	
SEMESTER II			
CSS2C01-Design and Analysis of Algorithms	II	<ul style="list-style-type: none"> • To introduce the concept of algorithmic approach for solving real-life problems. • To teach basic principles and techniques of computational complexity. • To familiarize with parallel algorithms and related techniques. 	Brainstorming
CSS2C02-Operating System Concepts	II	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> Introduce the underlying principles of an operating system. <input type="checkbox"/> <input type="checkbox"/> Exposure of multi programming, virtual memory and resource management concepts. <input type="checkbox"/> <input type="checkbox"/> Case study of public and commercially available operating systems. 	Oral examination
CSS2C03-Computer Networks	II	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To provide the student with a top down approach of networking starting from the application layer. <input type="checkbox"/> <input type="checkbox"/> To introduce computer networking in the back drop of Internet protocol stack. 	Multiple choice tests
CSS2C04-Computational Intelligence	II	<input type="checkbox"/> <input type="checkbox"/> To introduce concepts of Artificial Intelligence and Machine Learning.	Brainstorming
CSS2P06-Practical II	II	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To practically implement the theory portions covered in Operating System Concepts (CSS2C02) and Computer Networks (CSS2C03). <input type="checkbox"/> <input type="checkbox"/> To extend the programming knowledge acquired thru The Art of Programming Methodology (CSS1C04). 	Practical Tests
CSS2P07-Term Paper	II	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To introduce the student to the techniques of literature survey. <input type="checkbox"/> <input type="checkbox"/> To acquaint him/her with the process of presenting his/her work through seminars and technical reports. 	Seminars and reports
Semester II Elective I CSS3E05 List of Electives			

CSS2E05a Computer Graphics	- II	<ul style="list-style-type: none"> □□To understand the fundamentals of the modern computer graphics. □□To pipeline the mathematics of affine transformations in three dimensions. □□To understand the common data structures to represent and manipulate geometry, colour and light representation and manipulation in graphics systems. □□To have an exposure to programming in Open GL. 	Modeling and Animation practices
CSS2E05b Introduction to Soft Computing	II	<ul style="list-style-type: none"> □□To give students the fundamental knowledge of soft computing theories. □□To expose the fundamentals of non-traditional technologies and approaches to solving hard real-world problems. 	Written examination
CSS2E05c Web Technology	II	<ul style="list-style-type: none"> □□To introduce the tools for creating and maintaining websites – content development (HTML), client side scripting (JavaScript), web server (Apache), server side scripting (PHP) and content management system (Joomla!). 	Website Designing
CSS2E05d Bioinformatics	II	<ul style="list-style-type: none"> □□Expose students to the popular genomic and proteomic databases and to impart knowledge in processing and analyzing genomic data. □□Introduce advanced topics in Bioinformatics. 	Oral examination
Computer Optimization Techniques	II	<ul style="list-style-type: none"> □□To give an exposure for the student to the area of modeling techniques, numerical methods and algorithms. □□To realize the importance of various aspects of optimization techniques in industries like IT. □□To implement the knowledge of optimization techniques in real life problems. 	Test paper
CSS2E05f Numerical and Statistical Methods	II	<ul style="list-style-type: none"> □□To provide the student with basic concepts in statistics, probability that can be applied for mathematical modeling of computer applications. 	Modeling of applications

SEMSESTE III			
CSS3C01 Advanced Database Management System	III	<ul style="list-style-type: none"> ☐☐To understand the relational model, and know how to translate requirements captured in an Entity-Relationship diagram into a relational schema. ☐☐To reason about dependencies in a relational schema. ☐☐To understand normal form schemas, and the decomposition process by which normal forms are obtained. ☐☐To familiarize with advanced SQL statements. ☐☐To understand advanced features of database technologies. 	Written examination
CSS3C02 Principles of Compilers	III	<ul style="list-style-type: none"> ☐☐To introduce the fundamental concepts and various phases of compiler design. 	Test paper
CSS3C03 Object Oriented Programming Concepts	III	<ul style="list-style-type: none"> ☐☐To learn object oriented concepts and programming concepts and methodologies and to learn its implementation using Java. 	Debugging
CSS3P06 Practical III	III	<ul style="list-style-type: none"> ☐☐To practically implement the theoretical aspects covered in Advanced Database Management System (CSS3C01) and Object Oriented Programming Concepts (CSS3C03). ☐☐To extend the programming knowledge acquired through The Art of Programming Methodology (CSS1C04) to encompass object oriented techniques. 	Practical Examination
Semester III Elective II CSS3E04 List of Electives			
CSS3E04a Pattern Recognition	III	<ul style="list-style-type: none"> ♣ To understand the concept of a pattern and the basic approach to the development of pattern recognition algorithms. ♣ To understand and apply methods for pre-processing, feature extraction, and feature selection to multivariate data. ♣ To understand supervised and unsupervised classification methods to detect and characterize patterns in real-world data. wireless mobile environment. 	Debugging

CSS3E04b Wireless & Mobile Networks	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To understand the fundamental concepts of wireless and mobile networks. <input type="checkbox"/> <input type="checkbox"/> To familiarize with wireless application Protocols to develop mobile content applications. <input type="checkbox"/> <input type="checkbox"/> To understand about the security aspects of wireless networks. <input type="checkbox"/> <input type="checkbox"/> To learn programming in the wireless mobile environment. 	Debugging
CSS3E04c Cryptography and Network Security	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To be familiar with classical and modern encryption and decryption techniques and apply in the security system. <input type="checkbox"/> <input type="checkbox"/> To understand various aspects of network security standards. 	Multiple choice tests
CSS3E04d Advanced Web Technology	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To introduce the advanced concepts of web development tools – Web 2.0, Web Services, Python, SQLite and MVC architecture. 	Lab exam
CSS3E04e Virtualisation and Cloud Computing	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> Understand the technical capabilities and business benefits of virtualization and cloud computing and how to measure these benefits. <input type="checkbox"/> <input type="checkbox"/> Describe the landscape of different types of virtualization and understand the different types of clouds. <input type="checkbox"/> <input type="checkbox"/> Illustrate how key application features can be delivered on virtual infrastructures. <input type="checkbox"/> <input type="checkbox"/> Explain typical steps that lead to the successful adoption of virtualization technologies. 	Brainstorming
CSS3E04f Data Warehousing and Data Mining	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To provide the fundamentals on information retrieval and data mining techniques <input type="checkbox"/> <input type="checkbox"/> To focus on practical algorithms of textual document indexing, relevance ranking, web usage mining, text analytics, as well as their performance evaluations. <input type="checkbox"/> <input type="checkbox"/> To give an exposure to the fundamentals of Data Analytics. 	Powerpoint presentation evaluation
Semester III Elective III CSS3E04 List of Electives			
CSS3E05a Data Compression	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To understand the physical significance of some basic concepts of information theory including entropy, average mutual information and the rate distortion 	Debugging

		<p>bound.</p> <ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To learn the design of entropy codes including Huffman codes and arithmetic coding. <input type="checkbox"/> <input type="checkbox"/> To understand the operation of lossless compression schemes. <input type="checkbox"/> <input type="checkbox"/> To understand the operation of popular lossy compression schemes including delta modulation, differential pulse code modulation, transform coding, and vector quantization. 	
CSS3E05b Pervasive Computing	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To provide a sound conceptual foundation in the area of Pervasive Computing aspects. <input type="checkbox"/> <input type="checkbox"/> To provide the students the ability to conceptualize, analyze and design select classes of pervasive computing systems. 	Multiple choice tests
CSS3E05c System Security	III	<input type="checkbox"/> <input type="checkbox"/> To provide an understanding of the differences between various forms of computer security, where they arise, and appropriate tools to achieve them.	Brain Storming
CSS3E05d Molecular Simulation and Modeling	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To understand application of simulation techniques to study molecular dynamics and derive properties. <input type="checkbox"/> <input type="checkbox"/> To learn and apply the statistical approaches and models for phylogenetic analysis and tree reconstruction. <input type="checkbox"/> <input type="checkbox"/> To understand the basis and nature of protein-protein interactions. <input type="checkbox"/> <input type="checkbox"/> To understand principles of docking simulations. 	Brainstorming
CSS3E05e Fundamentals of Big Data	III	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To cover the basics of big data. <input type="checkbox"/> <input type="checkbox"/> To familiarize with big data technology and tools. 	Powerpoint presentation evaluation
CSS3E05f Web Engineering	III	<input type="checkbox"/> <input type="checkbox"/> To understand the concepts, principles, strategies, and methodologies of web applications development.	Power Point Presentation
SEMESTER IV			
CSS4C01 – Principles of Software Engineering	IV	<ul style="list-style-type: none"> <input type="checkbox"/> <input type="checkbox"/> To develop familiarity with software engineering principles and practices. <input type="checkbox"/> <input type="checkbox"/> To have an understanding about the process of product/literature survey, 	Multiple choice tests

		techniques of problem definition, and methods of report writing.	
CSS4C02 Project Work	IV	<ul style="list-style-type: none"> □ □ To give a practical exposure to the process of software development life cycle. □ □ To develop a quality software solution by following the software engineering principles and practices. Students are also encouraged to take up a research oriented work to formulate a research problem and produce results based on its implementation/simulation/experimental analysis. 	Project Evaluation
Semester IV Elective IV CSS4E01 List of Electives			
CSS3E01a Digital Image Processing	IV	<ul style="list-style-type: none"> □ □ To be familiar with processing of the images, recognition of the pattern and their applications. 	Powerpoint presentation evaluation
CSS4E01b Advanced Topics in Database Design	IV	<ul style="list-style-type: none"> □ □ To study the advanced database techniques beyond the fundamental database techniques. 	Debugging
CSS4E01c Software Development for Portable Devices	IV	<ul style="list-style-type: none"> □ □ Explain the key differences between development of systems to run on mobile devices and typical personal computing. □ □ Design effective applications for a mobile device by taking into consideration the underlying hardware-imposed restrictions such as screen size, memory size and Processor capability. □ □ Identify potential security issues and suggest mechanisms to ensure the safety of applications on the mobile device. □ □ To critically analyze and communicate the differences in architecture and specialized topics such as event handling between applications on the mobile device and non-mobile platforms. 	Mini Projects
CSS4E01d Storage Area Networks	IV	<ul style="list-style-type: none"> □ □ Understand Storage Area Networks (SAN) characteristics and components. □ □ Learn about the SAN architecture and management. 	Written Test

		□□ Understand about designing and building SAN.	
CSS4E01e Semantic Web	IV	□□ To discover the capabilities and limitations of semantic web technology for different applications.	Brainstorming
CSS4E01f Advanced Java Programming	IV	□□ To learn the advanced features of Java programming language that equip the students to develop web based applications with RDBMS.	Practical Examination

Syllabus (2019 Onwards)

The course of the MSc (Computer Science) programme is designed with the following objectives:

- a) To equip students to take up challenging research oriented responsibilities and courses for their higher studies/profession.
- b) To train and equip the students to meet the requirements of the Software industry in the country and outside.
- c) To motivate and support the students to prepare and qualify challenging competitive examinations such as JRF/NET/JAM/GATE etc.

Course Outcome:

COURSE	SEMESTER	OUTCOME	EVALUATION METHODOLOGY
CSS1C01-Discrete Mathematical Structures	I	To introduce discrete mathematics concepts necessary to understand basic foundation of Computer Science.	Test paper
CSS1C02-Advanced Data Structures	I	To introduce basic and advanced data structures dealing with algorithm development and problem solving.	Discussion
CSS1C03- Theory of Computation	I	To provide the students with an understanding of basic concepts in the theory of computation.	Powerpoint presentation evaluation

CSS1C04 - The Art of Programming Methodology	I	<ul style="list-style-type: none"> □□To learn the art of designing algorithms and flowcharts. □□To introduce the concept of algorithmic approach for solving real-life problems. □□To develop competencies for the design and coding of computer programs. □□To learn designing programs with advanced features of C. 	Debugging
CSS1C05 - Computer Organization & Architecture	I	To familiarize with the digital fundamentals, computer organization, computer architecture and assembly language programming.	Multiple choice tests
CSS1L01-Practical I	I	To practically implement the theory portions covered in The Art of Programming Methodology (CSS1C04) and Advanced Data Structures (CSS1C02) .	Lab exam
CSS1A01 – Introduction To Research (Ability Enhancement Audit Course)	I	<ul style="list-style-type: none"> ♣ Understand research terminology ♣ Be aware of the ethical principles of research ♣ Identify the components of a literature review process ♣ Critically analyse published research ♣ To introduce research methods in the field of computer Scienc 	Multiple choice Tests
SEMESTER II			
CSS2C06-Design and Analysis of Algorithms	II	<ul style="list-style-type: none"> • To introduce the concept of algorithmic approach for solving real-life problems. • To teach basic principles and techniques of computational complexity. • To familiarize with parallel algorithms and related techniques. 	Brainstorming
CSS2C07- Operating System Concepts	II	<ul style="list-style-type: none"> □□Introduce the underlying principles of an operating system. □□Exposure of multi programming, virtual memory and resource management concepts. □□Case study of public and commercially available operating systems. 	Oral examination

CSS2C08- Computer Networks	II	<ul style="list-style-type: none"> □□To provide the student with a top down approach of networking starting from the application layer. □□To introduce computer networking in the back drop of Internet protocol stack. 	Multiple choice tests
CSS2C09- Computational Intelligence	II	<ul style="list-style-type: none"> □□To introduce concepts of Artificial Intelligence and Machine Learning. 	Brainstorming
CSS4C10- Principles of Software Engineering	II	<ul style="list-style-type: none"> □□To develop familiarity with software engineering principles and practices. □□To have an understanding about the process of product/literature survey, techniques of problem definition, and methods of report writing. 	Multiple choice tests
CSS2L02-Practical II	II	<ul style="list-style-type: none"> □□To practically implement the theory portions covered in Operating System Concepts (CSS2C02) and Computer Networks (CSS2C03). □□To extend the programming knowledge acquired thru The Art of Programming Methodology (CSS1C04). 	Simulation tests
CSS2A02 – Term Paper (Professional Competency Audit Course)	II	<ul style="list-style-type: none"> □□To introduce the student to the techniques of literature survey. □□To acquaint him/her with the process of presenting his/her work through seminars and technical reports. 	Seminars and reports
SEMESTER III			
CSS3C11 Advanced Database Management System	III	<ul style="list-style-type: none"> □□To understand the relational model, and know how to translate requirements captured in an Entity-Relationship diagram into a relational schema. □□To reason about dependencies in a relational schema. □□To understand normal form schemas, and the decomposition process by which normal forms are obtained. □□To familiarize with advanced SQL statements. □□To understand advanced features of database technologies. 	Written examination

CSS3C12 Principles of Compilers	III	<ul style="list-style-type: none"> □□To introduce the fundamental concepts and various phases of compiler design. 	Test paper
CSS3C13 Object Oriented Programming Concepts	III	<ul style="list-style-type: none"> □□To learn object oriented concepts and programming concepts and methodologies and to learn its implementation using Java. 	Debugging
CSS3L03 Practical III	III	<ul style="list-style-type: none"> □□To practically implement the theoretical aspects covered in Advanced Database Management System (CSS3C01) and Object Oriented Programming Concepts (CSS3C03). □□To extend the programming knowledge acquired through The Art of Programming Methodology (CSS1C04) to encompass object oriented techniques. 	Practical Examination
Semester III Elective I CSS3E01 List of Electives			
CSS3E01a - Computer Graphics	II	<ul style="list-style-type: none"> □□To understand the fundamentals of the modern computer graphics. □□To pipeline the mathematics of affine transformations in three dimensions. □□To understand the common data structures to represent and manipulate geometry, colour and light representation and manipulation in graphics systems. □□To have an exposure to programming in Open GL. 	Modeling and Animation practices
CSS2E01b Introduction to Soft Computing	II	<ul style="list-style-type: none"> □□To give students the fundamental knowledge of soft computing theories. □□To expose the fundamentals of non-traditional technologies and approaches to solving hard real-world problems. 	Written examination
CSS3E01c Web Technology	III	<ul style="list-style-type: none"> □□To introduce the tools for creating and maintaining websites – content development (HTML), client side scripting (JavaScript), web server (Apache), server side scripting (PHP) and content management system (Joomla!). 	Website Designing

CSS3E01d Bioinformatics	III	<input type="checkbox"/> <input type="checkbox"/> Expose students to the popular genomic and proteomic databases and to impart knowledge in processing and analyzing genomic data. <input type="checkbox"/> <input type="checkbox"/> Introduce advanced topics in Bioinformatics.	Oral examination
CSS3E01e Computer Optimization Techniques	III	<input type="checkbox"/> <input type="checkbox"/> To give an exposure for the student to the area of modeling techniques, numerical methods and algorithms. <input type="checkbox"/> <input type="checkbox"/> To realize the importance of various aspects of optimization techniques in industries like IT. <input type="checkbox"/> <input type="checkbox"/> To implement the knowledge of optimization techniques in real life problems.	Test paper
CSS3E01f Numerical and Statistical Methods	III	<input type="checkbox"/> <input type="checkbox"/> To provide the student with basic concepts in statistics, probability that can be applied for mathematical modeling of computer applications.	Modeling of applications
Semester III Elective II CSS3E02 List of Electives			
CSS3E02a Pattern Recognition	III	<ul style="list-style-type: none"> ♣ To understand the concept of a pattern and the basic approach to the development of pattern recognition algorithms. ♣ To understand and apply methods for pre-processing, feature extraction, and feature selection to multivariate data. ♣ To understand supervised and unsupervised classification methods to detect and characterize patterns in real-world data. wireless mobile environment. 	Debugging
CSS3E02b Wireless & Mobile Networks	III	<input type="checkbox"/> <input type="checkbox"/> To understand the fundamental concepts of wireless and mobile networks. <input type="checkbox"/> <input type="checkbox"/> To familiarize with wireless application Protocols to develop mobile content applications. <input type="checkbox"/> <input type="checkbox"/> To understand about the security aspects of wireless networks. <input type="checkbox"/> <input type="checkbox"/> To learn programming in the wireless mobile environment.	Debugging
CSS3E02c Cryptography and Network Security	III	<input type="checkbox"/> <input type="checkbox"/> To be familiar with classical and modern encryption and decryption techniques and apply in the security system.	Multiple choice tests

		<ul style="list-style-type: none"> □□To understand various aspects of network security standards. 	
CSS3E02d Advanced Web Technology	III	<ul style="list-style-type: none"> □□To introduce the advanced concepts of web development tools – Web 2.0, Web Services, Python, SQLite and MVC architecture. 	Lab exam
CSS3E02e Virtualisation and Cloud Computing	III	<ul style="list-style-type: none"> □□Understand the technical capabilities and business benefits of virtualization and cloud computing and how to measure these benefits. □□Describe the landscape of different types of virtualization and understand the different types of clouds. □□Illustrate how key application features can be delivered on virtual infrastructures. □□Explain typical steps that lead to the successful adoption of virtualization technologies. 	Brainstorming
CSS3E02f Data Warehousing and Data Mining	III	<ul style="list-style-type: none"> □□To provide the fundamentals on information retrieval and data mining techniques □□To focus on practical algorithms of textual document indexing, relevance ranking, web usage mining, text analytics, as well as their performance evaluations. □□To give an exposure to the fundamentals of Data Analytics. 	Powerpoint presentation evaluation
SEMESTER IV			
CSS4P01 – PROJECT WORK	IV	<ul style="list-style-type: none"> □□To give a practical exposure to the process of software development life cycle. □□To develop a quality software solution by following the software engineering principles and practices. Students are also encouraged to take up a research oriented work to formulate a research problem and produce results based on its implementation/simulation/experimental analysis. 	Project Evaluation
Semester IV Elective III CSS4E03 List of Electives			
CSS3E03a Data Compression	IV	<ul style="list-style-type: none"> □□To understand the physical significance of some basic concepts of information 	Debugging

		<p>theory including entropy, average mutual information and the rate distortion bound.</p> <ul style="list-style-type: none"> □□To learn the design of entropy codes including Huffman codes and arithmetic coding. □□To understand the operation of lossless compression schemes. □□To understand the operation of popular lossy compression schemes including delta modulation, differential pulse code modulation, transform coding, and vector quantization. 	
CSS3E03b Pervasive Computing	IV	<ul style="list-style-type: none"> □□To provide a sound conceptual foundation in the area of Pervasive Computing aspects. □□To provide the students the ability to conceptualize, analyze and design select classes of pervasive computing systems. 	Multiple choice tests
CSS3E03c System Security	III	<ul style="list-style-type: none"> □□To provide an understanding of the differences between various forms of computer security, where they arise, and appropriate tools to achieve them. 	Brain Storming
CSS3E03d Molecular Simulation and Modeling	III	<ul style="list-style-type: none"> □□To understand application of simulation techniques to study molecular dynamics and derive properties. □□To learn and apply the statistical approaches and models for phylogenetic analysis and tree reconstruction. □□To understand the basis and nature of protein-protein interactions. □□To understand principles of docking simulations. 	Brainstorming
CSS3E03e Fundamentals of Big Data	III	<ul style="list-style-type: none"> □□To cover the basics of big data. □□To familiarize with big data technology and tools. 	Powerpoint presentation evaluation
CSS3E03f Web Engineering	III	<ul style="list-style-type: none"> □□To understand the concepts, principles, strategies, and methodologies of web applications development. 	Power Point Presentation
Semester IV Elective IV CSS4E04 List of Electives			
CSS4E04a Digital Image Processing	IV	<ul style="list-style-type: none"> □□To be familiar with processing of the images, recognition of the pattern and their applications. 	Powerpoint presentation evaluation

CSS4E04b Advanced Topics in Database Design	IV	<ul style="list-style-type: none"> □□To study the advanced database techniques beyond the fundamental database techniques. 	Debugging
CSS4E04c Software Development for Portable Devices	IV	<ul style="list-style-type: none"> □□Explain the key differences between development of systems to run on mobile devices and typical personal computing. □□Design effective applications for a mobile device by taking into consideration the underlying hardware-imposed restrictions such as screen size, memory size and Processor capability. □□Identify potential security issues and suggest mechanisms to ensure the safety of applications on the mobile device. □□To critically analyze and communicate the differences in architecture and specialized topics such as event handling between applications on the mobile device and non-mobile platforms. 	Mini Projects
CSS4E04d Storage Area Networks	IV	<ul style="list-style-type: none"> □□Understand Storage Area Networks (SAN) characteristics and components. □□Learn about the SAN architecture and management. □□Understand about designing and building SAN. 	Written Test
CSS4E04e Semantic Web	IV	<ul style="list-style-type: none"> □□To discover the capabilities and limitations of semantic web technology for different applications. 	Brainstorming
CSS4E04f Advanced Java Programming	IV	<ul style="list-style-type: none"> □□To learn the advanced features of Java programming language that equip the students to develop web based applications with RDBMS. 	Practical Examination