

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI

**Teaching Learning and Examination Scheme: for the Degree of Master of
Commerce (Computer Management) (Two Years – Four Semesters Master
Degree Programme)**



Faculty of Commerce & Management
As Per Direction No-106/2025 Dated 31-10-2025
NEW National Education Policy (NEP) -2026-27

Syllabus

Two Years- Four Semesters Master Degree Programme
Teaching, Learning & Evaluation Scheme for the Degree of Master of Commerce
(Computer Management)

SEMESTER - I to IV - Level 6 -6.5

Effective from Academic Year 2026-27

Sant Gadge Baba Amravati University, Amravati FACULTY :
Scheme of Teaching, Learning, Examination & Evaluation leading to Two Years
PG Degree Master of Commerce (Computer Management)(2025 - 2026)
(Two Years- Four Semesters Master's Degree Programme- NEPv25 with Exit and
Entry Option

Programme Name : M.Com (CM)

PROGRAMME OBJECTIVES (POs) OF M.Com(CM)

The Programme Objectives of M.Com(CM) are:

PO1: Professional Competence

To equip students with advanced knowledge in commerce, computer applications, and management practices essential for professional roles in business and IT sectors.

PO2: Technical Proficiency

To develop technical expertise in areas such as programming, database management, system design, E-Commerce, and emerging digital technologies relevant to the business environment.

PO3: Communication and Teamwork

To enhance written and verbal communication, presentation, and collaborative skills, enabling effective teamwork and leadership in multidisciplinary settings.

PO4: Ethical and Legal Awareness

To develop awareness of ethical, legal, and social responsibilities in business and IT practices, including data protection and cybersecurity.

PO5: Research and Innovation

To encourage innovation, entrepreneurship, and research aptitude by engaging students in projects, and case studies.

PO6: Lifelong Learning and Employability

To instill a lifelong learning mindset and prepare students for employment, further education, certifications, or entrepreneurial ventures in the digital economy.

PROGRAMME SPECIFIC OUTCOMES (PSOs) OF M. COM(CM)

The Programme Specific Outcomes of M.Com(CM) are:

PSO1: Apply advanced concepts of Computer Management , Commerce, Accounting, to solve complex business and organizational problems effectively.

PSO2: Demonstrate proficiency in business application software, database management, ERP systems, E-commerce, data analytics, and other digital tools for informed decision-making.

PSO3: Apply modern information technology tools, and management information systems (MIS) to support organizational decision-making and business operations.

PSO4: Analyze business data using quantitative and qualitative techniques, conduct research, and provide innovative solutions to contemporary business and IT-related challenges.

PSO5: Develop managerial, entrepreneurial, leadership, communication, and teamwork skills while adhering to professional ethics and social responsibility in a technology-driven business environment.

PSO6: Adapt to emerging technologies, digital transformation, cybersecurity practices, and lifelong learning to enhance employability, academic and professional growth in commerce and IT sectors.

These PSOs are aligned with the outcome-based education (OBE) framework commonly adopted by universities and NAAC accreditation guidelines, while being suitable for an M.Com specialization in Computer Management.

Sant Gadge Baba Amravati University, Amravati FACULTY :
Scheme of Teaching, Learning, Examination & Evaluation leading to Two Years PG Degree Master of Commerce(Computer Management) (2025 - 2026)
(Two Years- Four Semesters Master's Degree Programme- NEPv25 with Exit and Entry Option
M.Com (CM) First Year Semester- I

S. N.	Subject	Type of Course	Subject Code	Teaching & Learning Scheme							Duration Of Exam Hours	Examination & Evaluation Scheme								
												Maximum Marks						Minimum Passing		
				Teaching Period Per Week				Credits				Theory		Practical		Total Marks				
				L	T	P	Total	L/T	Practical	Total			Theory Internal	Theory +MCQ External	Internal		External	Marks Internal	Marks External	Grade
1	Research Methodology and IPR	Th-Major	M.com (CM) NEP-101	4			4	4		4	3	40	60			100	16	24	P	
2	DSC I - Python	Th-Major	Mcom (CM) NEP-102	4			4	4		4	3		60			60		24	p	
	DSC I - Python	Th-Major Practical	Mcom (CM) NEP-102			4	4		2	2	3			20	20	40	8	8	p	
3	DSC II Software Project Management	Th-Major	Mcom (CM) NEP-103	4			4	4		4	3	40	60			100	16	24	P	
4	DSC III Ecoommerce & M Commerce Tehnologies	Th-Major	Mcom (CM) NEP-104	3			3	3		3	3		60			60		24	p	
	DSC III Ecoommerce & M Commerce Tehnologies	Th-Major Practical	Mcom (CM) NEP-104			2	2		1	1	3			20	20	40	8	8	p	
Any One of the Following (DSE)																				
5	DSE-I 1) Computer Fundamentals & Operating System	Th-Major Elective	Mcom (CM) NEP-105 A	2			2	2		2	3		60			60		24	p	
	DSE-I 1)Computer Fundamentals & Operating System	Th-Major Elective Practical	Mcom (CM) NEP-105 A			4	4		2	2	3			20	20	40	8	8	p	
6	DSE-II 2)Data Communication & Networking	Th-Major Elective	Mcom (CM) NEP-105 B	4			4	4		4	3	40	60			100	16	24	P	
7	# On Job Training, Internship/ Apprenticeship; Field projects Related to Major @ during vacations cumulatively	Related to DSC		120 Hours cumulatively during vacations of Semester I and Semester II						4*						4*			P*	

8	Co-curricular Courses: Health and wellness, Yoga Education, Sports and Fitness, Cultural Activities, NSS/NCC, Fine/Applied/Visual/Performing Arts During Semester I, II, III and IV	Generic Optional		90 Hours Cumulatively From Sem I to Sem IV														
	TOTAL			17		10	27	17	5	22						500		

L: Lecture, T: Tutorial, P: Practical/Practicum

Pre-requisite Course mandatory if applicable: **Prq**, Theory : **Th**, Practical/Practicum: **Pr**, Faculty Specific Core: **FSC**, Discipline Specific Core: **DSC**, Discipline Specific Elective: **DSE**, Laboratory: **Lab**, **OJT**: On Job Training; Internship/ Apprenticeship; Field projects: **FP**; **RM**: Research Methodology; Research Project: RP, Co-curricular Courses: CC

Note : # On Job Training, Internship/ Apprenticeship; Field projects **Related to Major (During vacations of Semester I and Semester II) for duration of 120 hours mandatory to all the students, to be completed during vacations of Semester I and/or II. This will carry 4 Credits for learning of 120 hours. Its credits and grades will be reflected in Semester II credit grade report.**

Note: **Co-curricular Courses:** In addition to the above, CC also include but not limited to Academic activities like paper presentations in conferences, Aavishkar, start-ups, Hackathon, Quiz competitions, Article published, Participation in Summer school/ Winter School / Short term course, Scientific Surveys, Societal Surveys, Field Visits, Study tours, Industrial Visits, online/offline Courses on Yoga (Yoga for IQ development, Yoga for Ego development, Yoga for Anger Management, Yoga for Eyesight Improvement, Yoga for Physical Stamina, Yoga for Stress Management, etc.). These can be completed cumulatively during **Semester I, II, III and IV. Its credits and grades will be reflected in semester IV credit grade report.**

Sant Gadge Baba Amravati University, Amravati FACULTY :
Scheme of Teaching, Learning, Examination & Evaluation leading to Two Years PG Degree Master of Commerce (Computer Management)(2025 - 2026)
(Two Years- Four Semesters Master's Degree Programme- NEPv25 with Exit and Entry Option
M.Com (CM) First Year Semester- II

S. N.	Subject	Type of Course	Subject Code	Teaching & Learning Scheme							Duration Of Exam Hours	Examination & Evaluation Scheme								
				Teaching Period Per Week				Credits				Maximum Marks						Minimum Passing		
												Theory		Practical		Total Marks				
				L	T	P	Total	L/T	Practical	Total	Theory Internal	Theory +MCQ External	Internal	External	Marks Internal		Marks External	Grade		
1	DSC-I Principles of Management	Th-Major	Mcom (CM) NEP-201	4			4	4		4	3	40	60			100	16	24	P	
2	DSC - II Client Server Computing	Th-Major	Mcom (CM) NEP-202	3			3	3		3	3		60			60		24	p	
	DSC - II Client Server Computing	Th-Major Practical	Mcom (CM) NEP-202			4	4		2	2	3			20	20	40	8	8	p	
3	DSC -III Database Management Technology	Th-Major	Mcom (CM) NEP-203	3			3	3		3	3		60			60		24	p	
	DSC -III Database Management Technology	Th-Major Practical	Mcom (CM) NEP-203			4	4		2	2	3			20	20	40	8	8	p	
Any One of the Following (DSE)																				
4	DSE -I Communication Skill	Th-Major Elective	Mcom (CM) NEP-204A	4			4	4		4	3	40	60			100	16	24	P	
5	DSE - II Digital Accounting	Th-Major Elective	Mcom (CM) NEP-204B	3			3	3		3	3		60			60		24	P	
	DSE -II Digital Accounting	Th-Major Practical Elective	Mcom (CM) NEP-204B			2	2		1	1	3			20	20	40	8	8	p	
6	# On Job Training, Internship/ Apprenticeship; Field projects Related to Major @ during vacations cumulatively	Related to DSC		120 Hours cumulatively during vacations of Semester I and Semester II						4*						4*			P*	
7	Co-curricular Courses: Health and wellness, Yoga Education, Sports and Fitness, Cultural Activities, NSS/NCC, Fine/Applied/Visual/Performing Arts	Generic Optional		90 Hours Cumulatively From Sem I to Sem IV																
	TOTAL			14		8	22	14	4	18+4*						400				

L: Lecture, T: Tutorial, P: Practical/Practicum

Pre-requisite Course mandatory if applicable: **Prq**, Theory : **Th**, Practical/Practicum: **Pr**, Faculty Specific Core: **FSC**, Discipline Specific Core: **DSC**, Discipline Specific Elective: **DSE**, Laboratory: **Lab**, **OJT**: On Job Training: Internship/ Apprenticeship; Field projects: **FP**; **RM**: Research Methodology; Research Project: RP, Co-curricular Courses: CC

Note : # On Job Training, Internship/ Apprenticeship; Field projects **Related to Major (During vacations of Semester I and Semester II) for duration of 120 hours mandatory to all the students, to be completed during vacations of Semester I and/or II. This will carry 4 Credits for learning of 120 hours. Its credits and grades will be reflected in Semester II credit grade report.**

Note: **Co-curricular Courses:** In addition to the above, CC also include but not limited to Academic activities like paper presentations in conferences, Aavishkar, start-ups, Hackathon, Quiz competitions, Article published, Participation in Summer school/ Winter School / Short term course, Scientific Surveys, Societal Surveys, Field Visits, Study tours, Industrial Visits, online/offline Courses on Yoga (Yoga for IQ development, Yoga for Ego development, Yoga for Anger Management, Yoga for Eyesight Improvement, Yoga for Physical Stamina, Yoga for Stress Management, etc.). These can be completed cumulatively during **Semester I, II, III and IV. Its credits and grades will be reflected in semester IV credit grade report.**

Sant Gadge Baba Amravati University, Amravati FACULTY :
Scheme of Teaching, Learning, Examination & Evaluation leading to Two Years PG Degree Master of Commerce (Computer Management)(2025 - 2026)
(Two Years- Four Semesters Master's Degree Programme- NEPv25 with Exit and Entry Option
M.Com (CM) Second Year Semester- III

S. N.	Subject	Type of Course	Subject Code	Teaching & Learning Scheme							Duration Of Exam Hours	Examination & Evaluation Scheme							
				Teaching Period Per				Credits				Maximum Marks					Minimum Passing		
				L	T	P	Total	L/T	Practical	Total			Theory Internal	Theory+ MCQ External	Internal	External	Total Marks	Marks Internal	Marks External
1	DSC- I Software Testing	Th-Major	M.Com(CM) NEP-301	5			5	5		5	3	40	60			100	16	24	P
2	DSC- II Web Designing Development	Th-Major	M.Com(CM) NEP-302	3			3	3		3	3		60			60		24	P
	DSC- II Web Designing Development	Th-Major Practical	M.Com(CM) NEP-302			4	4		2	2	3			20	20	40	8	8	P
3	DSC- III Internet Of Things	Th-Major	M.Com(CM) NEP-303	3			3	3		3	3		60			60		24	P
	DSC-III Internet Of Things	Th-Major Practical	M.Com(CM) NEP-303			2	2		1	1	3			20	20	40	8	8	P
Any one of the following (DSE)																	Minimum Passing Marks		
4	DSE- I Digital Marketing	Th-Major Elective	M.Com(CM) NEP-304A	3			3	3		3	3		60			60		24	P
	DSE- I Digital Marketing	Th-Major Practical Elective	M.Com(CM) NEP-304A			2	2		1	1	3			20	20	40	8	8	P
5	DSE-II Data Warehousing & Mining	Th-Major Elective	M.Com(CM) NEP-304B	4			4	4		4	3	40	60			100	16	24	P
6	Research Project Phase-I	Major			2	4	6	2	2	4				50		50	25		P
7	Co-curricular Courses: Health and wellness, Yoga Education, Sports and Fitness, Cultural Activities, NSS/ NCC, Fine/ Applied/ Visual/ Performing Arts During Semester I, II, III and IV	Generic Optional		90 Hours Cumulatively From Sem I to Sem IV															
	TOTAL			14	2	12	28	16	6	22						450			

L: Lecture, T: Tutorial, P: Practical/Practicum

Pre-requisite Course mandatory if applicable: **Prq**, Theory : **Th**, Practical/Practicum: **Pr**, Faculty Specific Core: **FSC**, Discipline Specific Core: **DSC**, Discipline Specific Elective: **DSE**, Laboratory: **Lab**, **OJT**: On Job Training: Internship/ Apprenticeship; Field projects: **FP**; **RM**: Research Methodology; Research Project: **RP**, **Co-curricular Courses**: **CC**

Note: **Co-curricular Courses:** In addition to the above, CC also include but not limited to Academic activities like paper presentations in conferences, Aavishkar, start-ups, Hackathon, Quiz competitions, Article published, Participation in Summer school/ Winter School / Short term course, Scientific Surveys, Societal Surveys, Field Visits, Study tours, Industrial Visits, online/offline Courses on Yoga (Yoga for IQ development, Yoga for Ego development, Yoga for Anger Management, Yoga for Eyesight Improvement, Yoga for Physical Stamina, Yoga for Stress Management, etc.). These can be completed cumulatively during **Semester I, II, III and IV. Its credits and grades will be reflected in semester IV credit grade report.**

Sant Gadge Baba Amravati University, Amravati FACULTY :
Scheme of Teaching, Learning, Examination & Evaluation leading to Two Years PG Degree Master of Commerce (Computer Management)(2025 - 2026)
(Two Years- Four Semesters Master's Degree Programme- NEPv25 with Exit and Entry Option
M.Com (CM) Second Year Semester- IV

S. N.	Subject	Type of Course	Subject Code	Teaching & Learning Scheme							Duration Of Exam Hours	Examination & Evaluation Scheme							
				Teaching Period Per Week				Credits				Maximum Marks				Minimum Passing			
				L	T	P	Total	L/T	Practical	Total		Theory		Practical		Total Marks	Marks Internal	Marks External	Grade
							Theory Internal	Theory+ MCQ External	Internal	External									
1	DSC- I Management Information System	Th-Major	M.Com(CM) NEP-401	4			4	4		4	3	40	60			100	16	24	P
2	DSC-II -PHP	Th-Major	M.Com(CM) NEP-402	3			3	3		3	3		60			60		24	P
	DSC-II PHP	Th-Major-Practical	M.Com(CM) NEP-402			4	4		2	2	3			20	20	40	8	8	P
3	DSC-III Artificial Intelligence & Machine Learning	Th-Major	M.Com(CM) NEP-403	5			5	5		5	3	40	60			100	16	24	P
Any one of the following (DSE)																			
4	DSE- I Cloud Computing	Th-Major Elective	M.Com(CM) NEP-404A	4			4	4		4	3	40	60			100	16	24	P
5	DSE-II Cyber Security	Th-Major Elective	M.Com(CM) NEP-404B	4			4	4		4	3	40	60			100	16	24	P
6	Research Project Phase-II	Major			2	8	10	2	4	6	3			75	75	150	75		P
7	Co-curricular Courses: Health and wellness, Yoga Education, Sports and Fitness, Cultural Activities, NSS/NCC, Fine/ Applied/ Visual/ Performing Arts During Semester I, II, III and IV	Generic Optional		90 Hours Cumulative y From Sem I to Sem IV															
	TOTAL			16	2	12	30	18	6	24						550			

L: Lecture, T: Tutorial, P: Practical/Practicum

Pre-requisite Course mandatory if applicable: **Prq**, Theory : **Th**, Practical/Practicum: **Pr**, Faculty Specific Core: **FSC**, Discipline Specific Core: **DSC**, Discipline Specific Elective: **DSE**, Laboratory: **Lab**, **OJT**: On Job Training: Internship/ Apprenticeship; Field projects: **FP**; **RM**: Research Methodology; Research Project: **RP**, **Co-curricular Courses**: CC

Note: **Co-curricular Courses**: In addition to the above, CC also include but not limited to Academic activities like paper presentations in conferences, Aavishkar, start-ups, Hackathon, Quiz competitions, Article published, Participation in Summer school/ Winter School / Short term course, Scientific Surveys, Societal Surveys, Field Visits, Study tours, Industrial Visits, online/offline Courses on Yoga (Yoga for IQ development, Yoga for Ego development, Yoga for Anger Management, Yoga for Eyesight Improvement, Yoga for Physical Stamina, Yoga for Stress Management, etc.). These can be completed cumulatively during **Semester I, II, III and IV. Its credits and grades will be reflected in semester IV credit grade report.**

Table: Comprehensive Credits distribution amongst the type of Courses over Two Years (Four Semesters) to be earned for PG Degree [Master in _____ Faculty -----Major _____]

Sr. No.	Type of Course	
1	MAJOR	
	i. DSC	56
	ii. DSE	16
	TOTAL	
2	Research Methodology and IPR (FSC/DSC: Major)	04
2	On Job Training, Internship/ Apprenticeship; Field projects Related to Major	04
3	Research Project	10
	OPTIONAL	
4	Co-Curricular Courses (offline and/or online as applicable): Co-curricular Courses: Health and wellness, Yoga Education, Sports and Fitness, Cultural Activities, NSS/NCC, Fine/Applied/Visual/Performing Arts, CC also include but not limited to Academic activities like paper presentations in conferences, Aavishkar, start-ups, Hackathon, Quiz competitions, Article published, Participation in Summer school/ Winter School / Short term course, Scientific Surveys, Societal Surveys, Field Visits, Study tours, Industrial Visits, online/offline Courses on Yoga (Yoga for IQ development, Yoga for Ego development, Yoga for Anger Management, Yoga for Eyesight Improvement, Yoga for Physical Stamina, Yoga for Stress Management, etc.).	
	TOTAL	

rs) PG Programme and Minimum Credits to

Total Credits Offered	Teaching & Learning Scheme
	56
	16
72	72
04	04
04 for 120 Hours OJT/FP cum.	02 (Minimum 60 Hours OJT/FP is mandatory)
10	10
Limited to Maximum 03 only (For 90 Hours of CC cumulatively)	00
93	88

Table A: Comprehensive Credit Distribution for CC

S. N.	Activities (offline/online as applicable)	Credits at Levels						Letter Grade
		College	University	State	Zone if exist	National	International if exist	
1	Health and wellness, Yoga* Competitions *If a Course (online/offline) on Yoga is completed for 60 Hours, 2 credits will be awarded to the student (1 Credit = 30 Hours)	1	2	3	4	5	6	P (Pass)
2	Unnat Bharat Abhiyan [UBA]	1	2	3	4	5	6	P (Pass)
3	Sports and fitness activities (see separate Table B)	1	1 / 2	2 / 3	3 / 4	4 / 5	5 / 6	P (Pass)
4	Cultural activities, Fine/Applied/Visual/Performing Arts	1	2	3	4	5	6	P (Pass)
5	N.S.S. activities Camps	1	2	3	4	5	6	P (Pass)
6	Academic activities like Research Paper/Article/Poster presentations, Aavishkar, start-up, Hackathon, Quiz competitions, other curricular, co-curricular activities, students exchange programme etc. Research Paper/Article published	1 --	2 1	3 2	4 -	5 4	6 6	P (Pass) P (Pass)
7	Participation in Summer school/ Winter School / Short term course (not less than 30 hours 1 or 2 weeks duration) (not less than 60 hours 2 or 3 weeks duration) Scientific Surveys, Societal Surveys Field Visits, Study tours, Industrial Visits,	2 Credits 4 Credits 2 Credits 1 Credit						P (Pass) P (Pass) P (Pass) P (Pass)
8	NCC Activities	As given in Table C						

Table B: Credit Distribution for Sports and Fitness

Sr. No.	Particulars of Sports Status (Individual/ Team)	Credits	Letter Grade
1	College Level Participation	1	P (Pass)
2	University Level Participation	1	P (Pass)
3	University Level Rank 1, 2, 3	2	P (Pass)
4	State Level Participation	2	P (Pass)
5	State Level Rank 1, 2, 3	3	P (Pass)
6	Zonal Level Participation	3	P (Pass)
7	Zonal Level Rank 1, 2, 3	4	P (Pass)
8	National Level Participation	4	P (Pass)
9	National Level Rank 1, 2, 3	5	P (Pass)
10	International Level Participation	5	P (Pass)
11	International Level 1,2,3	6	P (Pass)

Table C: Credit Distribution for NCC activities

Sr. No.	Particulars of NCC Activities	Credits	Letter Grade
1	Participation in NCC activities	1	P (Pass)
2	'B' Certificate obtained	2	P (Pass)
3	'C' Certificate obtained	3	P (Pass)
4	State Level Participation	4	P (Pass)
5	National level Participation	5	P (Pass)
6	International Level Participation	6	P (Pass)

Part-A

Syllabus Prescribed for 2 years post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management) -I Year Semester I-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-101	Research Methodology and IPR	60

Course Outcomes:

After going through the syllabus of "**Research Methodology and IPR**", the students will be able to:

1. Give an overview of the research methodology and explain the technique of defining a research problem.
2. Explain various research designs and their characteristics.
3. Explain the details of sampling designs, measurement and scaling techniques and also different methods of data collections.
4. Explain several parametric tests of hypotheses and Chi-square test.
5. Explain the art of interpretation and the art of writing research reports.
6. Understand the fundamental concepts and importance of various forms of Intellectual Property Rights (IPRs) such as patents, trademarks, copyrights, and designs.

Unit	Contents	No. of periods
I	Research Methodology: Meaning of research, Objectives of research, Motivation in Research, types of research, significance of Research, Research and scientific Method, Research process, Criteria of Good research. Defining the Research Problem: what is research Problem? Selecting the Problem, Necessity of Defining the problem, Technique involved in defining a Problem	12
II	Research Design: Meaning of Research Design, Need for Research Design, Features of Good Design, Important Concepts Relating to Research Design, Basic Principles of Experimental Designs Methods of Data Collection: Collection of Primary Data, observation Method, Interview Method, Collection of data through Questionnaires, Collection of secondary Data, selection of appropriate method for Data Collection	12
III	Sampling Design: Census and Sample survey, Steps in Sampling Design, Characteristics of a Good sample Design, Different Types of Sample Design, Complex random Sampling Design. Measurement and Scaling Techniques: Measurement in Research, Measurement Scales, Sources of error in Measurement, Technique of developing Measurement Tools,	12

	Meaning of Scaling, Scale Classification Bases, important Scaling Techniques.	
IV	Testing of Hypothesis: What is Hypothesis, Basic Concepts concerning Testing of hypotheses, Procedure for Hypothesis Testing, Hypothesis Testing of Means, hypothesis Testing for Difference between Means, Hypothesis Testing of Proportions, Hypothesis Testing for Difference between proportions, Hypothesis Testing for Comparing two variances, Limitation of the Tests of Hypotheses. Chi -Square Test: Chi-Square as a test for comparing Variance, Conditions for the Application of chi-Square Test, Important Characteristics of chi-square Test, Caution in using Chi-Square test.	12
V	Interpretation and Report Writing: Meaning of Interpretation, why interpretation? Technique of Interpretation, Precaution in Interpretation, Significance of Report Writing, Different Steps in Writing Report, Layout of the Research Report, Types of Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing Research Reports. Intellectual Property: The Concept, Intellectual Property System in India, Development of TRIPS Complied Regime in India, Patents Act, 1970, Trade Mark Act, 1999, The Designs Act, 2000, The Geographical Indications of Goods (Registration and Protection) Act 1999, Copyright Act, 1957, The Protection of Plant Varieties and Farmers' Rights Act, 2001 (relating to Commerce and Industry)	12

Text Book:

1. Research Methodology: Methods and Techniques, C.R. Kothari, Gaurav Garg New Age International 4th Edition, 2018

Reference Books:

1. Research Methodology MCQs, Dr. Sonal Chandak, Dr. Jayant Kumar Gupta, Balaji Prakashan, Nagpur.
2. Research Methodology a step-by-step guide for beginners. (For the topic Reviewing the literature under module 2) Ranjit Kumar SAGE Publications Ltd 3rd Edition, 2011
3. Research Methods: the concise knowledge base, Trochim, Atomic Dog Publishing 2005
4. Conducting Research Literature Reviews: From the Internet to Paper Fink A Sage Publications 2009
5. Research Methodology, Dr. Ashish Mohata, Rohit D. Akolkar and Anita Vishwakarma, Apex Publication
6. Study Material (For the topic Intellectual Property under module 5) Professional Programme Intellectual Property Rights, Law and Practice, The Institute of Company Secretaries of India, Statutory Body Under an Act of Parliament, September 2013
7. P. Narayanan – *Intellectual Property Law*
8. N.S. Gopalakrishnan & T.G. Agitha – *Principles of Intellectual Property*

PART A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP) Programme: Master of Commerce (Computer Management) I Year Semester I-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-102(DSC)	Python Programing	60

Course outcomes:

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

1. Understand and apply Python syntax, data types, and control structures for basic program development.
2. The ability to understand and apply core programming concepts such as variables, data types (integers, floats, strings, lists, tuples, dictionaries), operators, conditional statements (if-else), and looping constructs (for, while).
3. The capability to design, write and debug Python programs to solve computational problems, including structuring programs using functions and modules for reusability and organization.
4. Proficiency in handling various data structures like lists, tuples, and dictionaries, and the ability to perform operations such as indexing, slicing, and manipulation of data within these structures. This also extends to reading from and writing to files.
5. Understanding and implementing OOP principles in Python, including classes, objects, inheritance, and encapsulation, to create modular and reusable code.
6. The capacity to analyze problems, develop algorithms, and translate those algorithms into efficient Python code.
7. The ability to identify and correct syntax and logical errors in Python programs and implement exception handling for robust application development.

Unit	Contents	No. of Periods
I	Fundamentals of Python, Understanding Python variables Python basic Operators, understanding python blocks, Python Data Types, using Numeric data types: int, float, using string data type and string operations, Python Program Flow Control, Conditional blocks using if, else and elif, Use of while loops in python, for loop using ranges, Loop manipulation using pass, continue, break and else Programming using Python conditional and loops block	12
II	Python Functions, Modules and Packages, organizing python codes using functions, Organizing python projects into modules, Importing own module as well as external modules Understanding Packages, Powerful Lamda function in python, Programming using functions, modules and external packages, Python Strings, Using List, Tuple, Sets and Dictionary objects, understanding string methods, List manipulation using in built methods, Dictionary manipulation, Programming using string, list and dictionary in build functions Python Built-in modules – math, random, datetime etc.	12
III	Python Object Oriented Programming – Oops, Concept of class, object and instances, Constructor, class attributes and destructors, Real time	12

	use of class in live projects, Inheritance , overlapping and overloading operators, Adding and retrieving dynamic attributes of classes, Programming using OOps support, Python Exception Handline, Avoiding code break using exception handling, Safe guarding file operation using exception handling, Handling and helping developer with error code, Programming using Exception handling	
IV	Python File Operation, reading config files in python, writing log files in python, Understanding read functions, read (), readline () and readlines (), Understanding writes functions, write () and writelines (), Manipulating file pointer using seek, Programming using file operations, Python Regular Expression, Powerful pattern matching and searching, Power of pattern searching using regex in python, Real time parsing of networking or system data using regex, Password, email, url validation using regular expression, Pattern finding programs using regular expression	12
V	Python Database Interaction, SQL Database connection using python, Creating and searching tables, Reading and storing config information on database, Programming using database connections, Python Multithreading, understanding threads, forking threads, Synchronizing the threads, Programming using multithreading, Contacting User Through Emails Using Python, installing smtp python module for Sending email, reading from file and sending emails to all users addressing them	12

Textbook References:

- **Core Python Programming** by R. Nageswara Rao
- **Python Programming** by Sachin Malhotra and Saurabh Choudhary
- **Introduction to Python Programming** by S. Gowrishankar and A. Veena

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-102(DSC)	Python Programming (Practical)	40

List of Practical's

- 1) Write a python program to check whether given number is odd or even.
- 2) Write a python program to find the largest of three numbers using if-else.
- 3) Write a python program to print the series 5,55,555, 5555,..n
- 4) Write a python program to print the multiplication table of a number.
- 5) Write a python program to print factorial of number using function.
- 6) Write a python program to check whether given number is prime or not using function.
- 7) Write a menu driven program to find areas of different shapes using user defined module.
- 8) Write a python program to print first n lines from given file.
- 9) Write a python program to check whether string is palindrome or not.
- 10) Write a python program to count number of negative, positive and zero numbers in list.
- 11) Write a python program to print intersection of two sets.
- 12) Write a python program to check whether set A is superset of set B.
- 13) Write a class driven python program including methods and constructors.
- 14) Write a python program to demonstrate inheritance.
- 15) Write a python program to display the various Date Time formats –
 - a) Current date and time

- b) Current year
- c) Month of year in words
- d) Week number of the year
- e) Weekday of year

- 16) Write a python program to search the string to see if it starts with 'the' and ends with 'Spain'
- a) Original string is txt=" The rain in Spain"
- 17) Write a python program to demonstrate use of Exception Handling.
- 18) Write a python program to create a database in MySql
- 19) Write a python program which displays all the records from MySql database.
- 20) Write a python program to demonstrate Multi Threading.

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

Part-A

Syllabus Prescribed for 2 years post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-I Year Semester I -NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-103 (DSC)	Software Project Management	60

Course Outcome:

1. Students will be able to describe the phases of the software development life cycle for designing efficient software.
2. Define and apply key software project and product metrics to monitor and control project progress and quality.
3. It establishes the logical order of tasks, highlighting dependencies (which tasks must be completed before others can start). This ensures a smooth workflow and prevents bottlenecks.
3. Identify, assess, and prioritize risks associated with software projects. Develop and implement strategies for risk mitigation, monitoring, and control.
4. Understanding different design principles, architectural styles, and design patterns.
5. Students will be able to implement quality assurance metrics and multiple testing techniques to ensure software quality.

Unit	Content	No of periods
I	Overview Of Software Development: Software Characteristics, Software applications, software myths. Model for System Development: Linear Sequential Model, RAD Model, Evolutionary Software Model, W5HH Principle. Project Management Concepts: People, Product, Process, Project.	12
II	Measures, Metrics and Indicators: Metrics in Process and project domains, Software Measurement, Metrics for Software Quality, Integrating metrics within the software Engineering Process. Software Project Planning: Objectives, Scope, Resources, Software Project Estimation, Decomposition Techniques, Empirical Estimation model, Make-buy Decision tools.	12
III	Project Scheduling: Concept, Relationship between people and effort, defining a task set for the software Project, Selecting Software engineering tasks, Refinement of major tasks, defining task Network. Software Risks: software Risks, Risk Identification, Risk Projector, Risk Refinement, Safety risks and Hazards, RMMM Plan.	12

IV	Design Concepts and Principle: Design Principle, Design Concepts, Design Model, Effective Modularity, Software architecture. Designing Requirement mapping- Transform and transaction Mapping. User Interface Design: - Golden rules, User Interface Design, Task analysis & modeling, Interface Design Activities, Design Evaluation.	12
V	Software Quality Management: Definition, Quality Concepts, Software Quality Assurance, Software Reviews, Formal Technical reviews, Formal Approaches to SQA, Statistical Software Quality Assurance, Software reliability, Mistake-proofing for software, ISO 9000 Quality Standards SQA Plan. Configuration Management- Change Control, Version Control, Configuration Audit.	12

Text Book:

1. Roger S. Pressman, "Software Engineering" McGraw Hill, 5th Edition.

Reference Books:

2. James Peter, "Software Engineering an Engineering Approach", John Wiley.
3. Ian Somerville, "Software Engineering ", Pearson Education.
4. Software Project Management in Practice by Pankaj Jalote
5. Software Project Management A concise study by S A Kelkar

Part-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-I Year Semester I-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-104 (DSC)	E-Commerce and M-commerce Technologies	60

Course Outcomes:

1. Explain the fundamental concepts, types, business models, and technological infrastructure of E-Commerce and M-Commerce, including client-server architecture, SSL, and digital payment gateways.
2. Evaluate various electronic and mobile payment systems (UPI, wallets, cryptocurrencies), their security challenges, and the regulatory frameworks governing digital transactions.
3. Apply digital and mobile marketing strategies such as SEO, SEM, email, social media, push notifications, and web/mobile analytics to enhance online business visibility and engagement.
4. Describe logistics and supply chain practices in E-Commerce, including order fulfillment, inventory, dropshipping, and analyze the role of AI and automation in logistics.
5. Understand mobile platforms and applications, including PWAs, native apps, app stores, and examine real-world mobile commerce case studies.
6. Analyze legal, ethical, and security issues in E-Commerce and M-Commerce, and explore emerging trends like voice commerce, AR, IoT, mobile banking, and 5G integration.

Unit	Contents	No. of Periods
I	E-Commerce Business Models: Definition, scope, and evolution, Types of E-Commerce (B2B, B2C, C2C, C2B, B2G, G2C), Advantages and limitations of E-commerce, E-tailing and online retailing, Revenue models in E-commerce, Marketplaces vs. e-shops, Subscription, Freemium, and Advertising models Technology Infrastructure: Internet, Intranet, Extranet; Client-server architecture; Payment gateways and digital wallets; Secure Electronic Transactions (SET), Secure Socket Layer(SSL), HTTPS	12
II	E-Payment Systems: Types of electronic payment systems, Credit/debit cards, UPI, mobile payments, Cryptocurrencies and blockchain in E-commerce, Security threats in online transactions, Regulatory frameworks (PCI-DSS, GDPR, IT Act) Digital Marketing & CRM: Search Engine Optimization (SEO), Search Engine Marketing (SEM), Social Media Marketing (SMM), Email and content marketing, Web analytics tools (e.g., Google Analytics), Affiliate marketing and influencer marketing; Customer Relationship Management (CRM) in E-commerce	12

III	E-Commerce Logistics and Supply Chain: Order fulfillment and delivery, Reverse logistics and returns management, Inventory management and dropshipping, Role of AI and automation in logistics Case study: Amazon Prime logistics Mobile Platforms and Applications: Mobile operating systems (Android, iOS): Mobile application development basics, Progressive Web Apps (PWAs) and native apps, Mobile app stores and distribution channels, Case studies of successful mobile apps	12
IV	Mobile Payment Systems: Overview of mobile payment technologies, UPI, mobile wallets (e.g., Paytm, Google Pay), Near Field Communication (NFC) and QR codes, Security in mobile transactions Regulatory environment for mobile payments Mobile Marketing and Advertising: SMS and push notification marketing, Location-based marketing, Mobile SEO and mobile-friendly websites, In-app advertising and monetization models, Campaign tracking and mobile analytics	12
V	Security and Legal Aspects: Security threats in M-Commerce (malware, phishing), Mobile device management (MDM), Legal and ethical issues, Data protection and privacy in mobile apps, Compliance standards and regulations Emerging Trends in M-Commerce: Mobile banking and financial services, Voice commerce and AI assistants, Augmented Reality (AR) in mobile shopping, IoT and mobile integration, 5G and its impact on M-Commerce	12

Reference Books:

- E-Commerce: Business, Technology, Society – Kenneth C. Laudon & Carol G. Traver
- Electronic Commerce – Gary Schneider
- Digital Marketing – Seema Gupta
- Mobile Commerce: Technology, Theory and Applications – Brian E. Mennecke
- M-Commerce: Technologies, Services, and Business Models – Norman Sadeh

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-104 (DSC)	E-Commerce and M-commerce Technologies (Practical)	40

List of Practical's:

1. Make a Poster or Brochure for an Online Store
 - Design a simple poster using Canva or MS Word.
 - Include your store name, product images, offers, and contact details.
2. Product Catalog Management
 - Create a product database in Excel or Google Sheets.
 - Include product name, ID, price, stock, and description.
3. Simulate a Product Purchase Process
 - Choose a product on any e-commerce website.
 - Take screenshots of the steps: add to cart → checkout → payment method (no actual purchase).
4. Create a Simple Web Page for a Shop
 - Design a basic HTML page showing product details like name, image, price, and description.
5. View and Compare E-Commerce Websites
 - Visit websites like Amazon, Flipkart, Nykaa and Meesho.
 - Compare features like design, product display, and payment options.
 - Analyze their business model, user experience, and success factors.
6. Digital Marketing Campaign Design
 - Design a mock marketing plan using Google Ads or Facebook Ads.
 - Include ad copies, targeting, and basic budget outline.
7. Cybersecurity in E-Commerce
 - Discuss common threats: phishing, MITM attacks, SQL injection.
8. Simulate Mobile Wallet Integration
 - Show how wallets like Google Pay or Paytm work during online checkout.
9. QR Code Payment Demo
 - Generate and scan QR codes for mock payments.
10. Study a Mobile Commerce App
 - Choose an app like Swiggy or Meesho and write a short case study on its features and success.

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

PART B

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP) Programme: Master of Commerce (Computer Management) I Year Semester I-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP 105(DSE)	Computer Fundamentals and Operating System	60

Course outcomes

By the end of this course, students will be able to:

- CO1:** Understand and describe fundamental computer components, software types, and operating systems.
- CO2:** Execute Unix/Linux commands, manage files, directories, users, and write basic shell scripts.
- CO3:** Use MS Word efficiently for document creation, formatting, mail merge, and report preparation.
- CO4:** Design professional presentations using MS PowerPoint with transitions, animations, and data visuals.
- CO5:** Apply spreadsheet skills for formatting, referencing, and using basic functions in Excel.
- CO6:** Perform advanced data analysis using What-If tools, conditional logic, data validation, and lookup functions.
- CO7:** Create dynamic reports and dashboards using PivotTables, Charts, and Slicers in Excel.
- CO8:** Automate tasks and enhance productivity using Macros and introductory VBA scripting.

Unit	Contents	No. of Periods
I	Introduction, Basic functional units of Computer, Hardware, Types of memory, Input / Output devices. Software, Classification of software, Types of Operating system, Number system.	12
II	Introduction to Unix: Features , Basic Unix commands, Unix files system ,Working with files and directories, Permissions, Using vi Editor. User management in Unix, mail and other commands, Introduction to Linux , Features, Basic Linux commands, Shell programming.	12
III	Overview of Word Processor: Introduction to MS-Word, Basics Format the Text document, Formatting Paragraphs and Lists Page settings and margins including header and footer, Mail Merge, Spelling and Grammatical checks, Table and its options, Working with Hyperlinks, Working with pictures. Overview of Power-Point Presentation: Introduction of MS-Power Point, Opening, Viewing, Creating and Printing slides, Applying auto layouts, adding custom animation, using slide transitions, graphically representing data: Charts & Graphs, Creating Professional Slide for Presentation	12
IV	Overview of Spreadsheet Introduction to MS Excel, Customizing Excel: - Customizing the Ribbon, Using and Customizing AutoCorrect, Changing Excel's Default Options Formatting and Proofing: -Currency Format, Format Painter, Formatting Dates, Formatting Cells with Number formats, Font formats, Alignment, Borders, etc, Basic conditional formatting, Absolute, Mixed and Relative Referencing	12

	Basic Functions :- Mathematical Functions, Text Functions, Date and Time Functions Advanced Paste Special Techniques: - Paste Formulas, Paste Formats, Paste Validations, Transpose Tables, Sorting and Filtering	
V	Advanced Excel What If Analysis :- Goal Seek, Scenario Analysis, Data Tables (PMT Function), Solver Tool, Logical Functions :- If Function, How to Fix Errors – if error, Nested If, Complex if and or functions, Data Validation :- Number, Date & Time Validation, Text and List Validation, Custom validations based on formula for a cell, Dynamic Dropdown List Creation using Data Validation – Dependency List, Lookup Functions:- Vlookup / HLookup, Creating Smooth User Interface Using Lookup Vlookup with Helper Column, Pivot Tables, Charts and slicers, Introduction to VBA	12

Textbook References:

- Introduction to Computers by Peter Norton Tata McGraw Hill Private Limited
- Introduction To Information Technology, by V.Rajaraman PHI Learning Private Limited, Delhi, 2009
- Working in Microsoft office Ron Mansfield Tata Me Graw Mill (2008)

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-105(DSC)	Computer Fundamentals and Operating System (Practical)	40

List of Practical's

1. Create a document with a heading and using formatting features underline, boldface and change the font.
2. Enter a list of at least 10 things you have to do this week. Select the list and turn on Numbering. Select the list again and turn on Bullets.
3. Write letter to HR Managers of five different companies requesting them to allow you to do a summer project in their companies using Mail Merge.
4. Create a document that contains several paragraphs of text. Select the text and convert it into two columns. Balance the column length. Add a line between the columns; also add a title that spans both the columns.
5. Create a Table Student using Table Handling feature; include five columns and five rows taking your own data.
6. In above table find Maximum and Minimum marks in columns mark1, mark2, mark3, mark4 and total.
7. Create Graph
8. Use of different Functions in MS Excel
9. Use of Data Consolidation
10. Use of Pivote Table
11. Create a Presentation with 5 slides about various events that take place in of your college.
12. Create a presentation with at least 5 slides, change the color scheme and change the fill for a single scheme.
13. In a presentation – insert a sound file and replay.
14. In an existing presentation – select one or more slides – apply a new transition, change the speed of the transition.
15. In an existing presentation select one or more slides and apply preset animations from animation affects.

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

Part-B

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-I Year Semester I-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-105 (DSE)	Data Communication and Networking	60

Course Outcomes:

1. Understand the fundamental concepts of data communication, network components, and Analyze various types of transmission media and signal encoding methods used in modern communication systems.
2. Explain networking models such as OSI and TCP/IP and their respective layer functionalities and design and evaluate network topologies.
3. Critically assess security threats in data communication and recommend cryptographic and authentication solutions.
4. Develop awareness of ethical, legal, and societal issues related to network security, data privacy, and global connectivity.
5. Understand Wireless and mobile networks with emerging wireless technologies.
6. Conduct research or case studies on emerging trends and technologies in networking such as Software Defined Networking (SDN), Internet of Things (IoT), or 5G communication.

Unit	Contents	No. of Periods
I	Introduction to Data Communication: Fundamentals of data communication, Components: Message, sender, receiver, transmission medium, protocol; Data representation: Text, numbers, images, audio, video; Data flow: Simplex, half-duplex, full-duplex, Analog and digital signals. Transmission Media: Guided Media: Twisted pair, coaxial cable, fiber-optic cable; Unguided Media: Radio waves, microwaves, infrared; Transmission impairments: Attenuation, distortion, noise; Data Encoding and Modulation: Digital-to-digital and analog-to-digital encoding techniques; Modulation techniques: ASK, FSK, PSK, QAM, Multiplexing: FDM, TDM, WDM	12
II	OSI and TCP/IP Models: OSI 7-layer model: Functions of each layer, TCP/IP protocol suite, Encapsulation and decapsulation; IP Addressing and Routing: IPv4 and IPv6 addressing, Subnetting and supernetting, Static and dynamic routing; Routing protocols: RIP, OSPF, BGP Networking Devices and Topologies: Network Topologies: Star, bus, ring, mesh, hybrid; Networking devices: Repeater, hub, switch, router, gateway, bridge; Network types: LAN, MAN, WAN, PAN, NAT, DHCP	12

III	Network Security and Cryptography: Introduction to network security, Types of threats and attacks, Firewall, antivirus, IDS/IPS Network Security Tools and Technologies: VPN (Virtual Private Network), Proxy Servers and Reverse Proxies, SIEM (Security Information and Event Management), Cryptography basics: Symmetric and asymmetric encryption; Security protocols: SSL/TLS, IPsec Advanced Cryptography: Digital Signatures, Public Key Infrastructure (PKI), Certificates and Certificate Authorities (CA), Blockchain and Cryptography	12
IV	Wireless and Mobile Networks: Wireless LANs and IEEE 802.11 standards, Bluetooth, Wi-Fi, WiMAX, Cellular networks: 3G, 4G, 5G, Mobile IP and mobility management, Ad-hoc and sensor networks Emerging Wireless Technologies: Li-Fi (Light Fidelity), Visible Light Communication (VLC), Terahertz Communication, Quantum Wireless Communication	12
V	Emerging Trends and Advanced Concepts: Software-Defined Networking (SDN): Architecture and use cases, Network Function Virtualization (NFV) and its role in modern networks, 5G and beyond: Network slicing, Zero Trust Architecture in enterprise networks, Cloud networking and hybrid cloud infrastructure.	12

Reference Books:

- **Data and Computer Communications**, William Stallings, Pearson Education, 10th Edition or latest
- **Data Communications and Networking**, Behrouz A. Forouzan, McGraw-Hill Education, 5th Edition or latest
- **A Top-Down Approach Computer Networking**., James F. Kurose & Keith W. Ross, Pearson, 8th Edition or latest
- **Computer Networks**, Andrew S. Tanenbaum, David J. Wetherall, Pearson Education, 5th Edition or latest
- **Cryptography and Network Security: Principles and Practice**, William Stallings, Pearson, 7th Edition or latest
- **Network Security Essentials: Applications and Standards**, William Stallings, Pearson, 6th Edition

Part-A
Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)
Programme: Master of Commerce (Computer Management)-I Year Semester II-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-201(DSC)	Principles of Management	60

Course Outcomes:

After successful completion of this course, students will be able to:

1. CO1: Understand Fundamental Concepts of Management

Students will comprehend the basic principles, functions, and evolution of management and its relevance in modern organizations.

2. CO2: Apply Planning and Decision-Making Techniques

Students will learn to formulate organizational plans and make effective managerial decisions using logical and analytical thinking.

3. CO3: Analyze Organizational Structures and Roles

Students will understand different organizational structures, authority-responsibility relationships, and departmentalization.

4. CO4: Demonstrate Leadership and Motivation Techniques

Students will explore leadership styles and motivation theories applicable to managing teams and achieving organizational goals.

5. CO5: Develop Skills in Coordination and Control

Students will understand how to implement effective coordination and control mechanisms for achieving efficiency and productivity.

6. CO6: Apply Management Principles in IT and Business Contexts

Students will be able to relate and apply management principles to real-world situations in IT project management and computer-based business environments.

Unit	Contents	No.of Periods
I	Introduction to Management • Meaning, Nature, and Importance of Management • Principles of Management • Levels of Management • Roles and Skills of Manager	12

	• Evolution of Management Thought (By Taylor, Fayol)	
II	Planning & Decision Making - • Meaning and Importance of Planning • Steps in Planning Process • Types of Plans (Objectives, Strategies, Policies) • Decision Making – Meaning, Process, and Types • Limitations of Planning	12
III	Organizing & Delegation of Authority- • Meaning and Importance of Organizing • Principles of Organization • Types of Organizational Structure (Line, Functional, Matrix) • Delegation of Authority and Responsibility • Centralization vs. Decentralization	12
IV	Staffing, Directing and Motivation • Meaning and Importance of Staffing • Recruitment, Selection, and Training • Meaning and Principles of Directing • Leadership – Styles and Qualities of a Leader • Motivation – Concepts and Theory (Maslow), Types of Motivation	12
V	Controlling, Coordination & Co-operation • Meaning and Importance of Control • Process of Controlling • Coordination & Co-operation – Meaning, Importance and Difference	12

Textbook and References:

- P.C. Tripathi, P. N. Reddy “Principles of Management”
- K. Gupta, J. K. Sharma “Management of Systems”
- Lallan Prasad, S. S. Gulshan “Management Principles and Practices”

PART-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme : Master of Commerce(Computer Management)-I Year Semester II-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-202(DSC)	Client Server Computing	60

Course Outcomes:

After successful completion of this course, students will be able to:

1. Understand the syntax, semantics, and structure of Java programming language.
2. Apply object-oriented programming concepts using Java.
3. Implement robust and error-free programs using exception handling mechanisms.
4. Develop multi-threaded and file-handling applications.
5. Build GUI-based applications using Java AWT/Swing and handle events effectively.
6. Integrate Java programs with databases using JDBC
7. Create Web Applications using Servlets.

Unit	Contents	No.of Periods
I	Introduction to Java and Features , JVM, JRE, JDK, Java program structure, Compilation and Execution, Data , Java Applets, Types, Variables, Operators, and Constant, Control Structures (if, switch, Loops:for,while,do-while),break and continue, Arrays and Strings : One-dimensional and multidimensional arrays, String class and StringBuffer class methods	12
II	Classes and Objects : Class and Object creation, Constructors and Overloading, Inheritance and Polymorphism :Types of inheritance, Method overriding, final, super, and this keywords , Abstract Class and Interfaces, Access Specifiers :Static,public, Private, protected, Exception Handling : try, catch, throw ,throws,finally	12
III	Packages and Imports : Creating and using packages, Accessing package members, Multithreading : Thread Class, Runnable interface, Thread Lifecycle, Synchronization, File I/O : FileReader and FileWriter, BufferedReader and BufferedWriter, Serialization basics, Collections	12

	Framework: List, Set, Map interfaces, ArrayList, HashSet, HashMap classes.	
IV	AWT and Swing Components: Introduction to AWT, JFrame, JButton, JLabel, JTextField, JCheckBox, JRadioButton, Layout Managers: FlowLayout, BorderLayout, GridLayout, Event Handling: Event Delegation Model, ActionListener, MouseListener, KeyListener, Networking: java.net package, InetAddress, Socket and ServerSocket, DatagramSocket, URL & URLConnection.	12
V	Java Database Connectivity (JDBC) : JDBC Architecture and Drivers, Connecting to Databases (MySQL/Oracle), Statements, PreparedStatement, Stored Procedure and CallableStatement, DatabaseMetaData, ResultSet and ResultSetMetaData , Servlets: Servlet API and lifecycle, HttpServlet class, doGet(), doPost(), Session Management using Cookies and HttpSession, JDBC in Servlets.	12

Text Books :

- **Herbert Schildt**, Java: The Complete Reference, Seventh Edition McGraw Hill
- **Core Java Volume I – Fundamentals** Eighth Edition by Cay S. Horstmann, Gary Cornell ,Pearson Education

Reference Books:

- **E. Balagurusamy**, Programming with Java, McGraw-Hill
- **Core Java Volume I – Fundamentals** Eighth Edition by Cay S. Horstmann GUI & multithreading sections
- **Core Servlets and Java Server Pages Volume 1: Core Technologies** by Marty Hall and Larry Brown Prentice Hall
- **JDBC, Servlets, and JSP** by Ivan Bayross
- **Java 6 in Simple Steps**-DreamTech Press

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-202(DSC)	Client Server Computing (Practical)	40

List of Practical's

1. Write a Java program to check whether a number is even or odd.
2. Write a Java program to find the largest of three numbers using if-else.
3. Write a Java program to print the multiplication table of a number.
4. Write a Java program to generate Fibonacci series using loops.
5. Write a Java program to reverse an array of integers.
6. Write a Java program to sort numbers in Asce/Desc order.
7. Write a Java program to perform various operations on strings (length, concat, compare, substring).
8. Write a Java program to demonstrate constructors.
9. Write a Java program to overload methods..
10. Write a Java program to implement an interface.
11. Write a Java program to demonstrate try-catch-finally.
12. Create a package and access it in java program.
13. Create a multithreaded application that prints numbers using two threads.
14. Write a Java program to read and write text using FileReader and FileWriter.
15. Create a Java Swing application with login form using JLabel, JTextField, and JButton.
16. Demonstrate the use of different layout managers (FlowLayout, BorderLayout, GridLayout).
17. Write a Java program for client-server communication using TCP (Socket and ServerSocket).
18. Write a Java program to read content from a given URL using URLConnection.
19. Write a program to send and receive UDP datagrams.
20. Write a JDBC program to connect to MySQL database and insert a record.
21. Retrieve and display records from a database using ResultSet.
22. Update and delete records in a table using PreparedStatement.
23. Demonstrate the use of CallableStatement to call a stored procedure.
24. Create a servlet to accept form data (name, email) and display it.
25. Implement session tracking using Cookies and HttpSession.

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

PART-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-I Year Semester -II-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-203(DSC)	Database Management Technology	60

Course Outcomes:

After successful completion of this course, students will be able to:

- *Understand* the basic concepts and the applications of data base systems.
- *Master* the basics of SQL and construct queries using SQL.
- *Understand* the relational database design principles.
- *Familiar* with the basic issues of transaction processing and concurrency control.
- *Familiar* with database storage structures and access techniques.

Unit	Contents	No. of Periods
I	Database Management System: Introduction, Purpose of Database System, Database System Applications, View of Data, Database Languages, Database System Structure, Data Models, Database Design ER-model: Entity Relationship model, ER diagram (Entities, Attributes, Relationships, Constraints, keys), extend E-R features.	12
II	SQL: Characteristics and Advantages, SQL Data types and Literals. Database Objects: Table, Synonyms, Indexes, Views, Sequence, Cluster and Snapshots, Operators, Conditions, Commands, Functions, Joins, Unions, Subqueries. PL/SQL: Block, Architecture, Variables, Constants, Characters, Datatypes, Conditions, Loops, concept of Stored procedures, Functions, Packages, Cursors, Triggers, Error handling in PL/SQL.	12
III	Schema Refinement and Normal Forms: Introduction to schema refinement, function dependencies, Normal forms-1NF,2NF, 3NF BCNF, Properties of decompositions, Normalizations, Schema refinement in database design.	12
IV	Database Transaction Management: Introduction, Transaction States, ACID properties. Serializability: Conflict and View. Concurrency Control: Lock-Based, Time-Stamp based Deadlock handling, Recovery methods: Log Based recovery.	12

V	NOSQL Database: Introduction to Distributed Database System, Advantage and Disadvantages. Introduction to NOSQL Database, Need, features, Types of NOSQL database. Introduction to MongoDB, syntax and usage, CRUD operations, Indexing	12
---	--	----

Text books:

- Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill Education
- Database System Concepts, A. Silberschatz, Henry.F. Korth, S. Sudarshan, McGraw Hill Education

Reference Books:

- Databasesystems, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson Education.
- Database Systems Design, Implementation, and Management, Peter Rob & Carlos Coronel, 7th Ed.
- Fundamentals of Database Systems, Elmasri Navrate, Pearson Education
- Introduction to Database Systems, C.J. Date, Pearson Education
- Database Development and Management, Lee Chao, Auerbach publications, Taylor & Francis. G

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-203(DSC)	Database Management Technology (Practical)	40

List of Practical's

- Design a Database and create required tables. For e.g. Bank, College Database
- Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables.
- Write a SQL statement for implementing ALTER, UPDATE and DELETE.
- Write the queries to implement the joins.
- Write the query for implementing the following functions: AX (), MIN (), AVG (), COUNT ().
- Write the queries using following functions: -
 - Add Months
 - Last Day
 - Months Between
 - To_Char
 - To_date
 - 1.Concat
 - 2.Replace
 - 3.Substr
 - 4.Length
 - 5.Initcap
 - 1.Least
 - 2.Count
 - 3.Ceil
 - 4.Floor
 - 5.Mod
- Create table 'STUDENT' having fields Rollno, Name, Class, Age, Category and giving the following constraints. Primary key, Unique, default, check, not null.
- Create unique index on student table and insert one repeated record in it.
- Create sequence on emp table and display it.
- Write the query to implement the concept of Integrity constraints.
- Write the query to create the views.
- Write a program in PL/SQL to update one record in student table using trigger
- Perform the following operation for demonstrating the insertion, updation and deletion using the referential integrity constraints.
- Write the query for creating the users and their role.
- Write a program in PL/SQL which will generate a Fibonacci series in the following manner on the output screen.
1 2 3 5 8.
- Write a program in PL/SQL to print 1 to 50 numbers in ascending order using for loop.
- Write a PL/SQL code to implement Procedure.
- Write a PL/SQL code to implement Functions.
- Write a PL/SQL code to create a Package and implement it.
- Write a PL/SQL block to handle Exception Handling.
- Case Study on Database Transaction Management
- Case Study on NOSQL

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

PART-B

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme : Master of Commerce (Computer Management)-I Year Semester II-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-204(DSE)	Communication Skills	60

Course Outcomes:

After successful completion of this course, students will be able to:

1. CO1: Understand the Basics of Communication

Students will understand the nature, types, and barriers of communication, especially in professional and technical environments.

2. CO2: Improve Listening, Speaking, Reading, and Writing (LSRW) Skills

Students will develop core communication skills essential for academic, corporate, and IT-related interactions.

3. CO3: Communicate Effectively in Interviews and Group Discussions

Students will gain confidence and competence in public speaking, interviews, and group communication settings.

4. CO4: Draft Clear and Professional Written Communication

Students will be able to write resumes, emails, notices, reports, and other professional documents clearly and correctly.

5. CO5: Use Communication Tools and Technology Efficiently

Students will learn to use modern tools (email, video calls, collaboration platforms) to communicate effectively in digital workplaces.

6. CO6: Demonstrate Communication Etiquette and Soft Skills

Students will display professional behavior, positive body language, and appropriate etiquette in various business and managerial contexts.

Unit	Contents	No.of Periods
I	Basics of Communication - • Meaning and Importance of Communication • Process and Elements of Communication • Types of Communication (Verbal, Non-Verbal, Written, Visual) • Barriers to Communication and Overcoming Them	12

II	Business Communication: • Characteristics of Effective Business Communication • Formats of Business Letters (Enquiry, Order, Complaint, Sales, Circular) • Memorandums, Notices, and Circulars • Email Etiquette and Professional Writing	12
III	Digital & Technical Communication: • Role of Computers in Communication • Email Writing for Business • Report Writing and Presentation Skills • Basics of Social Media Communication in Business	12
IV	Oral Communication Skills: • Presentation Skills (Using PPT) • Group Discussions and Debates • Interview Techniques and Public Speaking • Telephone and Video Conferencing Etiquette	12
V	Professional & Interpersonal Skills: • Body Language and Non-Verbal Cues • Listening Skills and Feedback • Professional Ethics in Communication	12

Text Books and References:

1. Business Communication” by Meenakshi Raman and Prakash Singh Publisher: Oxford University Press
2. “Technical Communication: Principles and Practice” by Meenakshi Raman and Sangeeta Sharma Publisher: Oxford University Press
3. “Effective Technical Communication” by M. Ashraf Rizvi Publisher: Tata McGraw-Hill
4. “Developing Communication Skills” by Krishna Mohan & Meera Banerji Publisher: Macmillan India

PART-B

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce(Computer Management) I Year Semester II-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-204(DSE)	Digital Accounting	60

Course outcomes

Upon completion of “Digital Accounting”, Syllabus students will be able to

1. **Understand and explain** the fundamental concepts of accounting and the process of computerized accounting using software applications.
2. **Generate and interpret** key accounting statements including Trial Balance, Profit & Loss Statement, and Balance Sheet to analyze financial performance.
3. **Manage and record** various accounting transactions including cash/bank books, journal and ledger entries, and track receivables and payables.
4. **Configure and manage GST** in Tally including master setup, intrastate and interstate transactions, advance payments, and generating statutory reports.
5. **Analyze the impact of indirect taxation (GST, VAT, Excise)** on business transactions and reflect accurate tax liability and input tax credit in books of accounts.
6. **Apply the principles of tax deduction at source (TDS) and tax collection at source (TCS)** to real-world business cases within Tally for compliance.

Unit	Contents	No. of Periods
I	Introduction, Basic Accounting Concepts, Process of Accounting Software, Different Accounting Packages, Important Concepts under GST, Basics of Accounting, Advanced Accounting Features, Quick setup	12
II	Fundamentals of Tally, Company Creation, Gateway of Tally, Account Masters, Accounts Vouchers, Report, Cash/Bank Book, Journal Book, Ledger Book	12
III	Trial Balance, Profit & Loss Statement, Balance Sheet, Accounts Receivables & Payables, Banking, Cost Centers, Foreign Currency, Tally Administration	12

IV	Tax Deducted at Source (TDS), Value Added Tax (VAT), Excise Duty (ED), Tax Collected at source (TCS), Payroll Masters, Pay Voucher, Pay Reports	12
V	GST Introduction, GST Master Setup in Tally, GST - Intrastate Supply, GST - Interstate Supply, GST Advance Transaction & Reports	12

Textbook References:

- ***Tally Essentials*** by Tally Education Pvt. Ltd.
- ***Fundamentals of Accounting*** by C. Vishwanatha Reddy
- ***Introduction to Python Programming*** by S. Gowrishankar and A. Veena:

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-204(DSE)	Digital Accounting (Practical)	40

List of Practical's

1. Company Creation
2. Creating Account Masters
3. Creating different Accounting Vouchers
4. Payment Vouchers
5. GST Invoice
6. Tally Administration

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

Part-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-II Year Semester III-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-301(DSC)	Software Testing	60

Course Outcomes:

After successful completion of this course, students will be able to:

1. Explain the fundamentals of software testing, software quality assurance, Software Development Life Cycle (SDLC), Software Testing Life Cycle (STLC), and the principles of software testing.
2. Apply various software testing methods, including functional, non-functional, maintenance, and different levels of testing, to verify software quality and reliability.
3. Analyze and design effective test cases using black-box, white-box, and grey-box testing techniques, and prepare appropriate test documentation.
4. Demonstrate defect management practices using industry-standard tools such as Jira and Bugzilla, and explain software quality standards and quality models including ISO, CMMI, and Six Sigma.
5. Understand the fundamentals of automation testing, Selenium components, automation frameworks, and the automation testing process, and identify career opportunities in manual and automation testing.

Unit	Contents	No. of Periods
I	Introduction to Software Testing: - Fundamental of Software Testing, Goal of Software Testing, Testability, Attributes of good test, Meaning of Software Quality Assurance. Software Development Life Cycle: - SDLC Phases, Waterfall Model, V-Model (Verification & Validation), Agile Model (iterative, flexible approach) Software Testing Life Cycle: - Requirement Analysis, Test Planning, Test Case Development, Test Environment setup, Test Execution. Principles of Software Testing: Seven Principles, Verification Vs Validation	12
II	Functional Testing: - Smoke Testing (basic build verification), Sanity Testing (quick checks after changes), Regression Testing (ensuring old features still work) Non-Functional Testing: - Performance Testing (speed, responsiveness), Load Testing (handling expected workload), Stress Testing (system under extreme conditions) Levels of Testing: - Unit Testing, Integration Testing, System Testing, Acceptance Testing Maintenance Testing: - Retesting (fix verification), Impact Analysis (checking side effects of changes)	12

III	White Box Testing: - Basis Path Testing, Control Structure Testing Black Box Testing :- Graph Based Testing Method, Equivalence Partitioning, Boundary Value Analysis. Grey Box Testing: - Purpose and Significance, Applications (partial knowledge testing), Advantages (balanced approach) Test Documentation: - Before Testing, During Testing, After Testing.	12
IV	Defect Management:- What is Defect, Importance of Defect Management, Defect Management Life Cycle. Defect Management Tools :- Jira, Bugzilla, Advantages of Defect Management. Software Quality Standards: - ISO Standards (International Benchmarks), Quality Models (CMMI, Six Sigma)	12
V	Basics of Automation Testing :- Manual vs Automation Testing, Advantages & Limitation of Automation Testing, Selenium Introduction: - Selenium Components (IDE, RC, WebDriver, Grid), Features & Applications of Selenium Automation Frameworks :- Frame work Types: Data Driven Framework, Hybrid Framework . Automation Process :- Tool Selection, Scope Identification, Test Planning & Script Development, Test Execution, Result Analysis and Maintenance Career Opportunities :- Manual Tester (Traditional role), Automation Tester (Modern role)	12

Textbook References:

1. Software Testing Principles and Practices – Srinivasan Desikan
2. Foundations of Software Testing – Dorothy Graham
3. Effective Software Testing – Elfriede Dustin
4. Software Engineering – Roger Pressman
5. Software Testing Techniques – Boris Beizer

Part-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-II Year Semester III-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-302(DSC)	Web Designing Development	60

Course Outcomes:

After successful completion of this course, students will be able to:

1. Understand the fundamentals of web technologies and create structured web pages using HTML.
2. Design visually appealing and responsive web interfaces using CSS and modern styling techniques.
3. Develop interactive and dynamic web pages using JavaScript and client-side scripting.
4. Build server-side web applications using technologies such as ASP/ASP.NET or other web development frameworks.
5. Integrate front-end and back-end components to develop complete web-based applications.
6. Apply web development best practices, including validation, usability, accessibility, in website development.

Unit	Contents	No.of Periods
I	Introduction to Web Technologies and HTML: HTML Browser, Introduction to elements of HTML, Structure of HTML Document, HTML Tags and Attributes, Working with Text, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls. Introduction to DHTML: Definition and Features of DHTML, Difference between HTML and DHTML, Advantages and Applications of DHTML	12
II	Cascading Style Sheets(CSS): Introduction to CSS: Definition, Feature, Advantage , CSS Properties, & Syntax. Types of CSS: Inline, Internal and External CSS Styling (Background, Text Format, Controlling Fonts, Border Properties, Color Properties, CSS Syntax and Selectors: Element Selector , Class Selector , ID Selector , Universal Selector , Group Selector, Descendant Selector Box Model: Introduction, Border properties, Padding Properties, Margin properties),	12

	Advanced CSS Layout and Positioning Techniques: Display Property , Position Property (Static, Relative, Absolute, Fixed, Sticky) , Float and Clear , Z-index Navigation Menus: Horizontal Navigation Bar , Vertical Navigation Bar Modern CSS Features: Flexbox and Grid Layout	
III	JavaScript: Introduction to JavaScript: Features and Advantages of JavaScript, Embedding JavaScript in HTML. Variables and Data Types and operators Control Statements: if, if-else, Nested if, switch Statement, Looping Statements (for, while, do-while) Functions and Arrays: Defining and Calling Functions, Function Parameters and Return Values. Creating Arrays, Array Methods, JavaScript Objects Object Properties and Methods: String Object, Math Object, Date Object. Events and Event Handling: Mouse Events, Keyboard Events, Form Event, Event Handlers. Document Object Model (DOM) : Accessing HTML Elements ,Modifying HTML Elements , Changing CSS Styles Dynamically Working with form Validation : Client-Side Validation , Validation using JavaScript Advanced JavaScript Concepts : Cookies , JSON , Timers (setTimeout, setInterval), Introduction to AJAX	12
IV	Introduction to Bootstrap: History and evolution of Bootstrap, Features and advantages of Bootstrap, Applications of Bootstrap in web development, Bootstrap versions (Overview), Bootstrap file structure, CDN vs Local Installation, Setting up Bootstrap environment, Bootstrap Grid System: Responsive web design concepts, Bootstrap Containers (Container and Container-fluid), Grid system overview, Rows and Columns, 12-column layout, Grid breakpoints (xs, sm, md, lg, xl, xxl), Column sizing and nesting, Column offsetting, Reordering columns, Alignment and justification, Bootstrap Buttons and Tables: Introduction to Buttons, Standard button classes, Outline buttons, Button sizes, Active and disabled buttons, Block buttons, Button groups, Vertical button groups, Toolbar with button groups. Basic tables, striped tables, Bordered tables, Borderless tables, Hoverable tables, Dark tables, Small tables, Responsive tables, Contextual table classes Bootstrap Utilities and Alerts: Contextual colors, Background color utilities, Text color utilities, Opacity classes, Borders and border colors, Spacing utilities (Margin and Padding), Display utilities Introduction to Alerts, Alert styles, Dismissible alerts, Icons with alerts	12

V	Navigation Components: Introduction to Navigation, Navbar structure, Responsive Navbar, Navbar branding, Navigation links, Navigation Tabs, Navigation Pills, Pagination, Breadcrumbs (Overview the Command Object. Bootstrap Images and Cards: Responsive images, Rounded images, Image thumbnails, Image alignment, Responsive image gallery, Introduction to Cards, Card structure, Card header and footer, Card images, Card groups. Cards with navigation, Cards with buttons Bootstrap Dropdowns and Forms: Introduction to Dropdowns, Basic dropdown menu, Split button dropdown, Dropdown alignment, Dropdown headers and dividers, Dropup and Dropped (Overview), Introduction to Forms, Form layout, Form controls	12
---	---	----

Text Books:

- **Duckett, Jon** – *HTML and CSS: Design and Build Websites*, Wiley Publications.
- Schultz, Don and Cook, Craig – *Beginning HTML with CSS and XHTML: Modern Guide and Reference*, A press Publications.
- JavaScript and jQuery: Interactive Front-End Web Development – by **Jon Duckett**, Wiley Publications.

Reference Books:

1. Learning Web Design – **Jennifer Niederst Robbins**, O'Reilly Media.
2. JavaScript: The Definitive Guide – **David Flanagan**, O'Reilly Media.
3. JavaScript Bible – **Danny Goodman**, Wiley Publications.
4. Professional ASP.NET 4.5 in C# and VB – **Bill Evjen, Scott Hanselman**, and others, Wiley Publications.
5. Web Technologies – **Achyut S. Godbole** and **Atul Kahate**, McGraw-Hill Education.
6. Bootstrap 5 For Beginners: A Complete Guide to Responsive Web Development, Ajay Kumar
7. The Complete Bootstrap Guide, 2nd Edition(2026), Rishi Ray
8. Bootstrap 3 Tutorial <https://share.google/cjf8nfHpz3eNMJqKy>

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-302(DSC)	Web Designing Development (Practical)	40

List of Practical's

1. Create a simple web page using basic HTML tags, text formatting tags, hyperlinks and images.
2. Design an HTML form containing various form controls (textbox, radio button, checkbox, dropdown list, textarea, submit button).
3. Apply Inline, Internal, and External CSS styles to a webpage.
4. Create a webpage demonstrating different CSS selectors (element, class, ID, universal, group, descendant).
5. Design a webpage using various background, text, font, border, and color properties.
6. Develop a webpage illustrating the CSS Box Model (margin, border, padding, content).
7. Create a webpage demonstrating different positioning techniques
8. Design horizontal and vertical navigation menus using CSS.
9. Create page layouts using Float, Clear, and Z-index properties.
10. Develop responsive layouts using CSS Flexbox.
11. Create webpage layouts using CSS Grid.
12. Write a JavaScript program to demonstrate the use of variables, operators, and control statements.
13. Write scripts to perform form validation.
14. Develop programs using arrays and string manipulation.
15. Create a webpage demonstrating JavaScript events
16. Develop programs using objects and built-in JavaScript methods.
17. Create interactive webpages using DOM manipulation.
18. Install Bootstrap using CDN and Local files and create the first webpage.
19. Design a responsive webpage using Bootstrap containers and grid layouts.
20. Create different types of buttons and button groups.
21. Design responsive tables using Bootstrap table classes.
22. Design a responsive navigation bar with tabs, pills, and pagination.
23. Create a responsive image gallery using Bootstrap image classes.
24. Design dropdown menus and split-button dropdowns.

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

Part-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-II Year Semester III-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-303(DSC)	Internet Of Things	60

Course Outcomes:

After successful completion of this course, students will be able to:

CO1: Understand the fundamentals, architecture, components, and communication models of the Internet of Things (IoT).

CO2: Explain IoT devices, sensors, actuators, networking technologies, and communication protocols used in IoT systems.

CO3: Analyze IoT cloud platforms, data management techniques, and analytics tools for monitoring and decision-making.

CO4: Identify and evaluate IoT applications in smart homes, smart cities, healthcare, industry, agriculture, and business environments.

CO5: Understand security, privacy, governance issues, and emerging trends such as AIoT, Industry 4.0, Digital Twins, and 5G-enabled IoT.

CO6: Design simple IoT-based solutions using cloud dashboards, data visualization tools, and IoT application development concepts.

Unit	Contents	No. of Periods
I	Fundamentals of Internet of Things 1.1 Introduction to IoT • Definition and Evolution of IoT • Characteristics and Features of IoT • Internet of Everything (IoE) vs Internet of Things (IoT) • Benefits and Challenges of IoT • Applications of IoT in Daily Life 1.2 IoT Architecture • Physical Design of IoT • Logical Design of IoT • Functional Blocks of IoT • IoT Ecosystem • IoT Communication Models • IoT Communication APIs 1.3 IoT Components • Sensors • Actuators • Embedded Devices • Gateways • Cloud Platforms • Mobile Applications 1.4 Machine-to-Machine (M2M) Communication • Introduction to M2M • Difference between IoT and M2M • Advantages and Limitations	12

II	IoT Devices, Networking and Communication 2.1 IoT Hardware • Overview of Arduino • ESP32 / NodeMCU • Raspberry Pi (Introduction) • Selection of IoT Hardware 2.2 Sensors and Actuators • Types of Sensors ◦ Temperature ◦ Humidity ◦ Motion ◦ Light ◦ Gas • Types of Actuators • Sensor Interfacing 2.3 Wireless Communication Technologies • Wi-Fi • Bluetooth & BLE • ZigBee • RFID • NFC • LoRaWAN (Introduction) • Cellular IoT (4G/5G Overview) 2.4 Communication Protocols • MQTT • HTTP • HTTPS • CoAP (Overview) • WebSocket (Introduction) 2.5 Sensor Networks • Wireless Sensor Networks (WSN) • Node Discovery • Data Aggregation • Routing Concepts • Gateway Communication	12
III	IoT Cloud, Data Management and Analytics 3.1 IoT Reference Architecture • Functional View • Information View • Deployment View • Operational View 3.2 Cloud Computing for IoT • Cloud Services • Edge Computing • Fog Computing • Cloud vs Edge Computing 3.3 IoT Platforms • ThingSpeak • Blynk • Overview of AWS IoT • Overview of Azure IoT 3.4 Data Management • Data Collection • Data Storage • Data Processing • Data Visualization	12

	3.5 IoT Analytics • Real-Time Monitoring • Dashboard Design • Predictive Analytics • Business Intelligence using IoT Data	
IV	IoT Applications and Development 4.1 Smart Home and Smart Building • Home Automation • Energy Management • Smart Appliances 4.2 Smart City Applications • Smart Parking • Traffic Management • Waste Management • Water Monitoring 4.3 Healthcare IoT • Wearable Devices • Remote Patient Monitoring • Telemedicine 4.4 Industrial IoT (IIoT) • Manufacturing Automation • Predictive Maintenance • Asset Tracking 4.5 Agriculture and Environmental Monitoring • Smart Farming • Irrigation Control • Weather Monitoring • Pollution Monitoring 4.6 IoT Development Life Cycle • Device Connectivity • Cloud Integration • Dashboard Creation • Mobile IoT Applications	12
V	IoT Security, Governance and Emerging Trends 5.1 IoT Security • Security Requirements • Authentication and Authorization • Encryption • Secure Communication 5.2 Privacy and Governance • Privacy Issues • Data Protection • User Consent • IoT Standards 5.3 Risk Management • Device Security • Network Security • Cloud Security • Security Best Practices 5.4 Emerging Trends • Artificial Intelligence of Things (AIoT) • Digital Twins • Industry 4.0 • Smart Manufacturing • 5G-enabled IoT • Future Scope and Career Opportunities	12

Text Books

1. Internet of Things: A Hands-On Approach
Arshdeep Bahga & Vijay Madisetti, Universities Press
2. Internet of Things
McGraw Hill Education
3. The Internet of Things: Key Applications and Protocols
Wiley Publications

Reference Books

1. IoT Fundamentals: Networking Technologies, Protocols and Use Cases for the Internet of Things
Cisco Press
2. Building the Internet of Things
Wiley Publications
3. The Internet of Things: Enabling Technologies, Platforms and Use Cases
CRC Press
4. Practical Internet of Things Security
Packt Publishing

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-303(DSC)	Internet of Things (Practical)	40

List of Practical's

1. **Study the Basic Components of an IoT System**
Identify and understand the purpose of sensors, actuators, gateways, and cloud platforms.
2. **Identify IoT Devices Used in Daily Life**
List common IoT devices such as smart watches, smart TVs, smart bulbs, and fitness bands.
3. **Create an Account on ThingSpeak**
Register on the ThingSpeak platform and explore its basic features.
4. **Create a Simple Channel in ThingSpeak**
Create a new channel with fields to store sample sensor data.
5. **Enter Sample Data and View Graphs**
Enter sample values manually and observe the graphs generated by ThingSpeak.
6. **Export Data and Create a Chart in Excel**
Download data from ThingSpeak and create a simple chart using Microsoft Excel.
7. **Study the Blynk IoT Platform**
Explore the Blynk interface and understand how dashboards are created.
8. **Prepare a Report on IoT Applications**
Write a short report on applications of IoT in Smart Home, Smart City, Healthcare, or Agriculture.
9. **Study Business Applications of IoT**
Explain how IoT is used in business areas such as retail, banking, logistics, or manufacturing.
10. **Compare Two IoT Cloud Platforms**
Compare any two cloud platforms (e.g., ThingSpeak and AWS IoT) based on their features and uses.
11. **Present an IoT Case Study**

Prepare a short presentation on a real-life IoT application and explain its benefits.

12. Draw a Simple IoT System

Draw a block diagram of a basic IoT system (such as a Smart Home or Smart Parking system) and explain its working.

Division of Marks for Internal Assessment

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

Part-B

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-II Year Semester III-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-304(DSE)	Digital Marketing (DM)	60

Course Outcomes:

After successful completion of this course, students will be able to:

- 1 **Explain Digital Marketing Fundamentals** – Learners will describe the basics of traditional vs digital marketing and their relevance in modern business.
- 2 **Understand Digital Marketing Scope** – Learners will explain the meaning, scope, and importance of digital marketing in global contexts.
- 3 **Apply Digital Channels** – Learners will utilize SEO, social media, and email marketing to build brand visibility.
- 4 **Analyze Consumer Behaviour** – Learners will evaluate customer journeys and engagement strategies for retention.
- 5 **Develop Content Strategies** – Learners will design effective content calendars, blogs, and promotional techniques.
- 6 **Implement SEO Techniques** – Learners will apply on-page, off-page, and technical SEO methods to improve search rankings.
- 7 **Design Social Media Campaigns** – Learners will create strategies for Facebook, Instagram, and LinkedIn marketing.
- 8 **Execute Email and Influencer Marketing** – Learners will manage email campaigns and collaborate with influencers for brand growth.
- 9 **Utilize Online Advertising** – Learners will design PPC, display, and video ad campaigns using Google Ads.
- 10 **Measure and Optimize Performance** – Learners will apply web analytics, Google Analytics, KPIs, and ROI analysis to optimize campaigns.

Unit	Contents	No. of Periods
I	Fundamentals of Digital Marketing • Introduction to Marketing ◦ Traditional Marketing ◦ Digital Marketing ◦ Comparison of Traditional and Digital Marketing • Meaning, Scope and Importance of Digital Marketing • Benefits and Challenges of Digital Marketing • Digital Marketing Ecosystem and Channels ◦ Search Engine Optimization (SEO) ◦ Search Engine Marketing (SEM) ◦ Social Media Marketing ◦ Email Marketing ◦ Content Marketing ◦ Mobile Marketing • Consumer Behaviour in the Digital Environment ◦ Customer Journey ◦ Customer Engagement and Retention • Emerging Trends in Digital Marketing ◦ Artificial Intelligence (AI) ◦ Influencer Marketing ◦ Voice Search and Chatbots	12
II	Website and Content Marketing • Website Fundamentals ◦ Domain Name ◦ Web Hosting ◦ Website Structure ◦ User Experience (UX) • Content Marketing ◦ Blogging ◦ Articles ◦ Videos ◦ Infographics • Digital Copywriting ◦ Writing for Websites ◦ Call-to-Action (CTA) • Landing Pages ◦ Lead Generation ◦ Conversion Optimization • Content Strategy ◦ Content Planning ◦ Content Calendar ◦ Content Promotion Techniques	12
III	Search Engine Optimization (SEO) • Introduction to SEO • Meaning of SEO • Search Engines (Google, Bing) • Importance of SEO ◦ Visibility ◦ Traffic Growth • On-Page SEO • Meta Tags ◦ Title ◦ Description • Keyword Optimization ◦ Placement ◦ Density	12

	• Off-Page SEO • Backlink Building (Authority Links) • Social Bookmarking (External Visibility) • Keyword Research • Keyword Types ◦ Short-tail ◦ Long-tail • SEO Tools ◦ Google Keyword Planner ◦ SEMrush • Technical SEO • Sitemap (Indexing) • Mobile Optimization (Responsive Design)	
IV	Social Media and Online Marketing • Social Media Marketing ◦ Facebook Marketing ◦ Instagram Marketing ◦ LinkedIn Marketing • Social Media Strategy ◦ Content Planning ◦ Audience Engagement • Email Marketing ◦ Campaign Management ◦ Newsletter Design ◦ Email Automation (Introduction) • Influencer Marketing ◦ Types of Influencers ◦ Collaboration Strategies • Video Marketing ◦ YouTube Marketing ◦ Short-form Video Marketing (Instagram Reels)	12
V	Online Advertising, Analytics and Performance Measurement • Google Ads ◦ Pay-Per-Click (PPC) ◦ Search Campaigns ◦ Display Campaigns • Display and Video Advertising • Web Analytics ◦ Website Traffic ◦ Audience Behaviour • Google Analytics (GA4 Overview) ◦ Dashboard ◦ Reports • Performance Measurement ◦ Key Performance Indicators (KPIs) ◦ Return on Investment (ROI) ◦ Campaign Optimization • Digital Marketing Ethics and Data Privacy (Overview)	12

Text Books

1. Gupta, Seema. **Digital Marketing**. Latest Edition, McGraw-Hill Education.
2. Ahuja, Vandana. **Digital Marketing**. Oxford University Press.
3. Bhatia, Puneet Singh. **Digital Marketing**. Pearson Education.

Reference Books

1. Dodson, Ian. **The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns**. Wiley.
2. Deiss, Ryan & Henneberry, Russ. **Digital Marketing for Dummies**. Latest Edition, Wiley.
3. Chaffey, Dave & Ellis-Chadwick, Fiona. **Digital Marketing: Strategy, Implementation and Practice**. Pearson Education.
4. Godin, Seth. **This Is Marketing: You Can't Be Seen Until You Learn to See**. Portfolio/Penguin.
5. Kingsnorth, Simon. **Digital Marketing Strategy: An Integrated Approach to Online Marketing**. Kogan Page.

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-304(DSE)	Digital Marketing (Practical)	40

List Of Practical's

1. Study of different digital marketing channels (SEO, Social Media Marketing, Email Marketing, Content Marketing, and Google Ads).
2. Creation of a simple website using Google Sites.
3. Creation of a simple blog or web page with text and images.
4. Preparation of a content calendar for one week for a selected business or product.
5. Identification of keywords using Google Trends.
6. Basic SEO analysis of a website using a free online SEO analysis tool.
7. Design of a social media post for a product or service using Canva.
8. Preparation of a social media marketing plan for Facebook or Instagram.
9. Creation of a simple email newsletter using Mailchimp or Canva.
10. Study of Google Ads and preparation of a sample online advertisement.
11. Exploration of the Google Analytics (GA4) Demo Account and analysis of website traffic reports.
12. Preparation of a digital marketing strategy report for a local business or startup.

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

Part-B

Syllabus Prescribed for 2 years Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-II Year Semester III -NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com (CM)-NEP-304 (DSE)	Data Warehousing and Mining	60

Course Outcome:

After successful completion of the course, students will be able to:

1. Explain the concepts, architecture, and components of data warehousing and business intelligence.
2. Design simple data warehouse models and perform multidimensional analysis using OLAP concepts.
3. Describe the data mining process, preprocessing techniques, and Knowledge Discovery in Databases (KDD).
4. Apply basic data mining techniques such as association, classification, clustering, and prediction for data analysis.
5. Analyze business problems and recommend appropriate data warehousing and data mining techniques for decision-making and emerging analytics applications

Unit	Content	No of periods
I	Fundamentals of Data Warehousing: Introduction to Data Warehousing ,Need and Characteristics of Data Warehouses , Operational Database System vs Data Warehouses ,Data Warehouse Architecture ,Components of Data Warehouse , Data Marts and Metadata, ETL (Extract, Transform, Load) ,Benefits and Challenges of Data Warehousing , Business Intelligence and Decision Support Systems	12
II	Data Warehouse Design and OLAP: Data Warehouse Design Concepts ,Dimensional Modeling, Fact Tables and Dimension Tables ,Schema Design :Star Schema ,Snowflake Schema ,Fact Constellation Schema ,Data Cube Concept, Introduction to OLAP, OLAP Architecture ,OLAP Operations: Roll-Up ,Drill-Down ,Slice ,Dice ,Pivot, Types of MOLAP, ROLAP ,HLOP, Data Warehouse Implementation Issues	12

III	Fundamentals of Data Mining : Introduction to Data Mining, Data Mining vs. Data Warehousing ,Knowledge Discovery in Databases (KDD), Data Mining Process, Data Mining Functionalities ,Data Mining System Architecture ,Data Preprocessing: Data Cleaning ,Data Integration ,Data Transformation ,Data Reduction ,Challenges and Ethical Issues in Data Mining	12
IV	Data Mining Techniques : Association Rule Mining ,Market Basket Analysis, Apriori Algorithm, Classification Techniques : Decision Trees, Naïve Bayes Classification .Clustering Techniques : K-Means Clustering, Hierarchical Clustering. Prediction and Regression(Introduction) ,Outlier Analysis ,Evaluation of Data Mining Results	12
V	Contemporary Trends and Applications: Web Mining ,Text Mining ,Big Data and Data Warehousing, Data Mining in Business Intelligence, Data Warehousing and Data Mining in : Banking and Finance, Marketing and Customer Relationship Management ,Healthcare ,E-Commerce . Data Privacy, Security and Ethical Issues ,Emerging Trends in Data Analytics and Artificial Intelligence	12

Text Book:

1. Data Mining: Concepts and Techniques – Third Edition, Jiawei Han, Micheline Kamber, and Jian Pei.
2. Data Warehousing Fundamentals for IT Professionals – Second Edition, Paulraj Ponniah.

Reference Books:

1. The Data Warehouse Toolkit – Ralph Kimball.
2. Data Warehousing in the real world - Sam Anahory, Dennis Murry, Pearson Education
3. Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach, and Vipin Kumar.
4. Business Intelligence, Analytics, and Data Science – Ramesh Sharda, Dursun Delen, and Efraim Turban.
5. Data Mining Techniques – Michael Berry and Gordon Linoff.
6. Introduction to Data Mining with Case Studies-G. K. Gupta, Third Edition, PHI
7. Data Mining Techniques & Applications An Introduction , Hongbo Du
8. Data Mining:Typical Data Mining Process for Predictive Modeling, BPB

Part-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-II Year Semester IV-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-401(DSC)	Management Information System	60

Course Outcomes:

After successful completion of this course, students will be able to:

1. **Understand Information Systems** Learners will be able to explain the meaning, definition, and role of information systems in business contexts.
2. **Apply MIS Concepts** Learners will describe the objectives, scope, and functions of MIS, and assess its limitations in organizational settings.
3. **Classify Information Systems** Learners will categorize different types of information systems (TPS, MIS, DSS, ESS, and OAS) and analyse their applications.
4. **Evaluate MIS Applications** Learners will assess how MIS supports functional areas such as marketing, finance, HR, and production.
5. **Analyze Decision Making** Learners will explain types of decisions, the decision-making process, and how MIS provides strategic, tactical, and operational support.
6. **Utilize Database Management** Learners will understand DBMS concepts, models, and advantages, and apply knowledge of data processing, security, and recovery.
7. **Integrate Enterprise Systems** Learners will evaluate ERP, CRM, and SCM systems, and explain the role of MIS in e-commerce and digital business.
8. **Explore Emerging MIS Trends** Learners will analyse the impact of AI, Big Data, Cloud Computing, and IoT on business, and identify future career opportunities in MIS.

Unit	Contents	No. of Periods
I	Introduction to Information System :- Concept , Objectives and Characteristics of MIS, Need and Scope of MIS, Functions of MIS, Limitations of MIS, Importance of Information in Business, Role of MIS in Business Organizations Components of MIS : Hardware, Software, Database, Procedures, Human Resources Types of Information Systems :- TPS, MIS, DSS, EIS, Office Automation System, Information as a Strategic Resource Applications of MIS :- MIS in Marketing, MIS in Finance, MIS in HR, MIS in Production	12

II	Decision Making Concepts :- Meaning of Decision Making, Types of Decisions, Decision Making Process MIS Support for Managers :- Strategic Information, Tactical Information, Operational Information Decision Support System :- Features of DSS, Components of DSS, Applications of DSS Executive Information System :- Meaning and Features, Benefits of EIS Business Intelligence :- Introduction to BI, BI Tools, MIS and Analytics	12
III	Database Concepts :- Database Concepts, DBMS, Advantages of DBMS Data Processing :- Batch Processing, Real Time Processing, Electronic Data Processing Database Models :- Hierarchical Model, Network Model, Relational Model Data Security :- Data Protection, Security Threats, Backup and Recovery Information Storage Technologies :- Cloud-Based Information Storage, Data Warehousing, Data Mining	12
IV	ERP :- Meaning and Objectives, ERP Modules, Advantages of ERP CRM :- Introduction to CRM, CRM Applications, Benefits of CRM SCM :- Components of SCM, Role of MIS in SCM E-Commerce :- Meaning and Features, Types of E-Commerce Digital Business :- Mobile Commerce, Digital Payments, Online Transaction Systems	12
V	Artificial Intelligence :- AI Concepts, AI Applications in Business Big Data :- Meaning and Characteristics, Business Applications Cloud Computing :- Types of Cloud Services, Advantages and Challenges Internet of Things :- IoT Concepts, Applications of IoT Future Scope of MIS :- Digital Transformation, Career Opportunities	12

Text Books

1. Management Information Systems – Kenneth C. Laudon and Jane P. Laudon, Pearson Education.
2. Management Information Systems – James A. O'Brien and George M. Marakas, McGraw-Hill Education.
3. Management Information Systems – C.S.V. Murthy, Himalaya Publishing House.

Reference Books

1. Management Information Systems – W.S. Jawadekar, Tata McGraw-Hill.
2. Information Technology for Management – Efraim Turban, Wiley India.
3. Enterprise Resource Planning – Alexis Leon, Tata McGraw-Hill.
4. Management Information Systems – S. Sadagopan, Prentice Hall of India.
5. Digital Business and E-Commerce Management – Dave Chaffey, Pearson Education.
6. MIS and Business Analytics – Ramesh Behl

Part-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management) II Year Semester IV NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-402(DSC)	PHP	60

Course outcomes

After successful completion of this course, the students will be able to

1. Students will be able to **understand PHP fundamentals** including syntax, variables, operators, and control structures.
2. They will learn to **develop dynamic web applications** using server-side scripting.
3. Students will gain skills in **form handling and validation** to process user input securely.
4. They will be able to **connect PHP with MySQL** and perform CRUD operations effectively.
5. Students will understand **session management** and authentication techniques for user tracking.
6. They will learn to **handle files** including uploading, reading, writing, and deleting.
7. Students will practice **error handling** and debugging to improve application reliability.
8. They will apply **object-oriented programming** concepts such as classes, inheritance, and polymorphism.
9. Students will implement **security measures** to protect web applications from vulnerabilities.
10. They will be introduced to **React basics** for building interactive and modern front-end applications

Unit	Contents	No. of Periods
I	Fundamentals of PHP • Introduction to PHP: history, features, installation (XAMPP/WAMP) • PHP syntax, variables, constants, data types • Operators: arithmetic, relational, logical, assignment, ternary • Control structures: if-else, switch, loops (for, while, do-while, foreach) • Functions: built-in functions, user-defined functions, parameter passing • Arrays: indexed, associative, multidimensional, array functions	12
II	Working with Forms and Files • HTML forms with PHP: GET and POST methods • Form validation: required fields, sanitization, regex validation • File handling: open, read, write, append, delete • File upload: handling multiple files, restrictions on size and type • File download: secure download implementation • Regular expressions: pattern matching and validation	12

III	Database Connectivity • Introduction to MySQL and relational databases • Connecting PHP with MySQL (mysqli, PDO) • Executing queries: SELECT, INSERT, UPDATE, DELETE • CRUD operations with examples (student record system) • Prepared statements and parameterized queries • Database security: avoiding SQL injection	12
IV	Advanced PHP Concepts • Sessions: creating, managing, destroying sessions • Cookies: setting, retrieving, deleting cookies • Error handling: types of errors, try-catch blocks, custom error handlers • Object-oriented PHP: classes, objects, constructors, inheritance, polymorphism, interfaces • Security practices: SQL injection prevention, XSS protection, CSRF tokens • Introduction to PHP frameworks: overview of Laravel and CodeIgniter	12
V	Introduction to React • Introduction to React: features, advantages, installation • JSX syntax and rendering elements • Components: functional components, class-based components • Props: passing data between components • State management: useState, setState • Lifecycle methods and React hooks (useEffect) • Event handling in React • Simple integration of React front-end with PHP backend (API calls, JSON data exchange)	12

Textbook References:

- **Programming PHP** by Rasmus Lerdorf, Kevin Tatroe, and Peter MacIntyre *Covers fundamentals, advanced topics, and best practices from the creator of PHP himself.*
- **PHP and MySQL Web Development** by Luke Welling and Laura Thomson *Widely used textbook for learning PHP with database integration, ideal for UG courses.*
- **Learning PHP, MySQL & JavaScript** by Robin Nixon *Comprehensive guide that also introduces JavaScript and AJAX for full-stack web development.*
- **Modern PHP** by Josh Lockhart *Focuses on PHP 7/8 features, modern practices, and frameworks like Laravel.*
- **PHP 8 Solutions** by David Powers *Practical examples tailored to PHP 8, including new features like match expressions and union types.*
- **PHP: A Beginner's Guide** by Vikram Vaswani (Indian Author) *Clear explanations and examples, widely adopted in Indian universities.*
- **Web Technologies: HTML, PHP, JavaScript, Perl, Python** by Uttam Kumar Roy (Indian Author) *Covers PHP along with other web technologies, useful for comparative learning.*

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-402(DSC)	PHP (Practical)	40

List of Practical's

1. Hello World program in PHP
2. Simple calculator using PHP
3. Form validation with required fields and regex
4. File upload script with type and size restrictions
5. File download script for text and PDF files
6. Image gallery using PHP and MySQL
7. Login system with sessions and cookies
8. Registration form storing data in MySQL
9. CRUD operations on student records
10. Search functionality in a database
11. Pagination for displaying records
12. Email sending using PHP mail() function
13. Error handling demo with try-catch blocks
14. Session timeout implementation
15. Shopping cart using sessions and MySQL
16. Blog application with comments and categories
17. Image resizing tool using GD library
18. React Hello World application
19. React component demo with props and state
20. React form handling with controlled components

Division of Marks for Practical's

Record Preparation	10 Marks
Practical Performance	10 Marks
Viva-Voce	10 Marks
Description	10 Marks
Practical Total	40 Marks

Part-A

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP) Programme: Master of Commerce (Computer Management) II Year Semester IV-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-403 (DSC)	Artificial Intelligence & Machine Learning	60

Course outcomes:

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

1. Understand the fundamentals of Artificial Intelligence and Machine Learning.
2. Apply AI and ML concepts to solve business and management problems.
3. Analyze data using machine learning techniques for prediction and decision-making.
4. Evaluate business applications of AI in marketing, finance, HR, and operations.
5. Understand emerging trends, ethical issues, and future opportunities in AI.

Unit	Contents	No. of Periods
I	Introduction to Artificial Intelligence 1.1 Basics of AI • Introduction to Artificial Intelligence • History and Evolution of AI • AI, Machine Learning, and Deep Learning • Benefits and Limitations of AI 1.2 AI in Daily Life • AI in Smartphones • AI in Social Media • AI in E-commerce • AI in Banking and Finance 1.3 Intelligent Systems • What are Intelligent Systems? • AI Agents and their Functions • Examples of AI Applications 1.4 Business Applications of AI • Customer Service • Marketing Automation • Business Decision Making	12
II	Data and Machine Learning Fundamentals 2.1 Introduction to Machine Learning • Meaning and Need of Machine Learning • Applications of Machine Learning • Types of Machine Learning 2.2 Data for Machine Learning • Data Collection • Data Preparation • Training Data and Testing Data • Importance of Quality Data 2.3 Machine Learning Process • Problem Identification • Data Analysis • Model Building • Result Interpretation 2.4 Business Use Cases • Sales Prediction	12

	• Customer Analysis • Fraud Detection • Product Recommendations	
III	Supervised Learning Techniques 3.1 Prediction Techniques • Introduction to Regression • Linear Regression • Business Forecasting 3.2 Classification Techniques • Introduction to Classification • Decision Trees • Naïve Bayes (Concept Only) 3.3 Model Evaluation • Accuracy • Errors in Prediction • Improving Results 3.4 Applications • Sales Forecasting • Customer Churn Analysis • Credit Approval Systems	12
IV	Unsupervised Learning and Analytics 4.1 Introduction to Clustering • Meaning of Clustering • K-Means Clustering (Basic Concept) • Customer Segmentation 4.2 Data Analytics • Data Visualization • Dashboards • Business Reports 4.3 Business Intelligence • Introduction to Business Intelligence • Data-driven Decision Making • Role of AI in Business Intelligence 4.4 Applications • Market Basket Analysis • Customer Profiling • Business Performance Analysis	12
V	Emerging Trends and Ethical Issues 5.1 Generative AI • Introduction to Generative AI • ChatGPT and AI Assistants • AI Content Generation 5.2 AI Tools and Platforms • ChatGPT • Microsoft Copilot • Google Gemini • AI-powered Business Tools 5.3 Ethical Issues in AI • Privacy and Security • Bias in AI • Responsible Use of AI 5.4 Future of AI • AI in Business • AI and Employment • Career Opportunities in AI • Future Trends	12

Textbook References:

1. Russell, S. and Norvig, P, Artificial Intelligence: A Modern Approach, Third Edition, PrenticeHall, 2010.
2. Machine Learning An Algorithmic Perspective 2nd Edition, Stephen Marsland, 2015, by Taylor & Francis Group, LLC
3. Introduction to Machine Learning , The Wikipedia Guide

Part-B

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management) II Year Semester IV-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-404 (DSE)	Cloud Computing	60

Course Outcomes:

After successful completion of this course, the students will be able to

1. Understand various service delivery models of a cloud computing
2. Understand the ways in which the cloud can be programmed and deployed
3. Understand the virtualization and cloud computing concepts
4. Assess the comparative advantages and disadvantages of Virtualization technology
5. Analyze authentication, confidentiality and privacy issues in cloud computing
6. Identify security implications in cloud computing

Unit	Contents	No. of Periods
I	Fundamentals of Cloud Computing • Introduction to Cloud Computing • Evolution of Cloud Computing • Characteristics and Benefits of Cloud Computing • Cloud Computing Architecture ◦ Types of Cloud: Public, Private, Hybrid, Community • Cloud Service Models ◦ Infrastructure as a Service (IaaS) ◦ Platform as a Service (PaaS) ◦ Software as a Service (SaaS) • Advantages and Limitations of Cloud Computing • Introduction to Computing Paradigms ◦ Distributed Computing ◦ Cluster Computing ◦ Grid Computing ◦ High Performance Computing (Overview only)	12
II	Virtualization and Cloud Infrastructure • Introduction to Virtualization • Need and Benefits of Virtualization • Types of Virtualization ◦ Server Virtualization ◦ Storage Virtualization ◦ Network Virtualization ◦ Desktop Virtualization • Virtual Machines • Hypervisors (Type I and Type II) • Virtual Machine Provisioning (Basic Concepts) • Cloud Infrastructure • Data Centers • Cloud Storage Concepts	12
III	Cloud Services and Business Applications • Introduction to Cloud Service Providers • Overview of Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP) • Cloud Storage and Cloud Database Services • Cloud-based Productivity and Collaboration Tools (Google Workspace, Microsoft 365) • Business Applications of Cloud Computing	12

	○ Enterprise Resource Planning (ERP) ○ Customer Relationship Management (CRM) ○ Accounting and Finance ○ Human Resource Management (HRM) ○ E-commerce Applications • Benefits and Challenges of Cloud Adoption in Business Organizations	
IV	Cloud Security and Data Management • Cloud Security Fundamentals • Data Security in Cloud • Authentication and Authorization • Identity and Access Management (IAM) • Multi-Factor Authentication (MFA) • Data Privacy and Confidentiality • Data Encryption • Backup and Disaster Recovery • Security Challenges in Cloud Computing • Compliance and Governance in Cloud	12
V	Cloud Management and Emerging Trends • Cloud Migration (Basic Concepts) • Service Level Agreement (SLA) • Components and Types of SLA • SLA Management • Cloud Cost Management • Pay-as-you-Go Pricing Model • Cloud Monitoring and Performance Management • Challenges in Cloud Adoption • Business Case Studies of Cloud Computing • Emerging Trends ○ Edge Computing ○ Serverless Computing ○ Artificial Intelligence and Cloud ○ Green Cloud Computing	12

Text Books

1. *Cloud Computing: A Practical Approach* – Toby Velte, Anthony Velte & Robert Elsenpeter, Cengage Learning.
2. *Cloud Computing* – Rajkumar Buyya, Christian Vecchiola & S. Thamarai Selvi, McGraw-Hill Education.
3. *Cloud Computing: Principles and Paradigms* – Rajkumar Buyya, James Broberg & Andrzej Goscinski, Wiley.

Reference Books

1. *Mastering Cloud Computing* – Rajkumar Buyya, Christian Vecchiola & S. Thamarai Selvi, McGraw-Hill Education.
2. *Cloud Computing Bible* – Barrie Sosinsky, Wiley.
3. *Cloud Computing for Dummies* – Judith Hurwitz et al., Wiley.
4. *Cloud Security and Privacy* – Tim Mather, Subra Kumaraswamy & Shahed Latif, O'Reilly Media.
5. *Architecting the Cloud* – Michael J. Kavis, Wiley.

Part-B

Syllabus Prescribed for 2 Year Post Graduate Programme (NEP)

Programme: Master of Commerce (Computer Management)-II Year Semester IV-NEP

Code of the Course	Title of the Course	Total Number of Periods
M.Com(CM)-NEP-404(DSE)	Cyber Security	60

Course Outcomes:

After successful completion of this course, students will be able to:

1. Explain the fundamentals of cyber security, networking, and information security.
2. Apply cryptographic techniques and data protection methods to secure information.
3. Demonstrate the use of network and cloud security technologies to protect digital resources.
4. Evaluate security management practices, cyber laws, and organizational security policies.
5. Analyze system security challenges and emerging cyber security technologies for modern business environments.

Unit	Contents	No. of Periods
I	Fundamentals of Cyber Security: 1.1 Introduction to Cyber Security • Evolution of Cyber Security • Information Security vs Cyber Security • Importance of Cyber Security • CIA Triad (Confidentiality, Integrity, Availability) 1.2 Basics of Computer Networks • Communication Systems • Types of Networks (LAN, MAN, WAN) • Network Topologies • TCP/IP Basics • Wired and Wireless Networks 1.3 Common Cyber Threats • Malware (Virus, Worm, Trojan, Ransomware) • Phishing • Social Engineering • Password Attacks • Cyber Crime	12
II	Data Protection and Cryptography 2.1 Basics of Cryptography • Encryption and Decryption • Symmetric Encryption • Asymmetric Encryption • Hash Functions • Digital Signatures 2.2 Data Security • Public Key Infrastructure (PKI) • Authentication and Authorization • Password Management • Data Backup and Recovery • Applications of Cryptography	12

III	Network Security and Cloud Security: 3.1 Network Security • Firewalls • Antivirus and Anti-malware • Intrusion Detection System (IDS) – Overview • Virtual Private Network (VPN) • Secure Wi-Fi 3.2 Internet and Cloud Security • Secure Web Browsing • Email Security • SSL/TLS (Introduction) • Cloud Computing Basics • Cloud Security Challenges • Cloud Security Best Practices	12
IV	Security Management and Cyber Laws: 4.1 Information Security Management • Security Policies • Information Classification • Risk Management • Business Continuity Planning • Disaster Recovery Planning 4.2 Cyber Laws and Ethics • Information Technology Act (India) • Intellectual Property Rights (IPR) • Data Privacy • Cyber Ethics • ISO/IEC 27001 (Overview)	12
V	System Security and Emerging Trends: 5.1 System Security • Operating System Security • Software Updates and Patch Management • Endpoint Security • Mobile Device Security • Database Security (Introduction) 5.2 Emerging Trends • Artificial Intelligence in Cyber Security • Internet of Things (IoT) Security • Blockchain Basics • Digital Forensics (Introduction) • Future Trends in Cyber Security	12

Reference Books

1. **William Stallings** – *Cryptography and Network Security: Principles and Practice*
2. **William Stallings** – *Network Security Essentials*
3. **Michael E. Whitman & Herbert J. Mattord** – *Principles of Information Security*
4. **Nina Godbole & Sunit Belapure** – *Cyber Security*
5. **Charles P. Pfleeger & Shari Lawrence Pfleeger** – *Security in Computing*
6. **EC-Council** – *Certified Ethical Hacker (CEH) Official Courseware*
7. **NIST Cybersecurity Framework** (Latest Version)
8. **OWASP Web Security Testing Guide**

Absorption Scheme

Scheme of Equivalence and Absorption

It is notified for general information of all the concerned that the authorities of the University have decided to provide the Scheme of Equivalence and Absorption to the failure students of CBCS Pattern into NEP-2020 pertaining to the Post Graduate Degree Programme MCM Semester- I to IV into M.Com(CM) Semester I to IV from Summer-2025-26 Examination as under :-

Absorption Scheme (Faculty of Commerce & Management)

Absorption Scheme For P.G (M.Com(CM))

Sr. No	CBCS Pattern	NEP Pattern
SEMESTER -I		SEMESTER -I
1	1MCM1 -Computer Fundamentals & Operating System	Computer Fundamentals & Operating System DSE-I (NEP-SEM-I), NEP-105 A (Th-Major) Computer Fundamentals & Operating System DSE-I (NEP-SEM-I), NEP-105 A (Th-Major Practical)
2	1MCM2-Programming Methodology	Communication Skills DSE-I (NEP-SEM-II), NEP-204 A
3	1MCM3-Object Oriented Programming	Python Programming DSC-I (NEP-SEM-I), NEP-102 (Th-Major) Python Programming DSC-I (NEP-SEM-I), NEP-102 (Th-Major Practical)
4	1MCM4- Business Data Communication-I	Data Communication & Networking DSE-II(NEP-SEM-I), NEP-105 B
5	1MCM5- System Analysis & Design	Research Methodology & IPR (NEP-SEM-I), NEP-101
SEMESTER -II		SEMESTER –II
1	2MCM1- Principles of Management	Principles of Management DSC-I (NEP-SEM-II), NEP-201
2	2MCM2- Advanced Database Management System	Database Management Technology DSC-III(NEP-SEM-II), NEP-203 (Th-Major) Database Management Technology DSC-III(NEP-SEM-II), NEP-203 (Th-Major Practical)
3	2MCM3- Java Programming	PHP DSC-II(NEP-SEM-IV), NEP-402 (Th-Major) PHP DSC-II(NEP-SEM-IV), NEP-402 (Th-Major Practical)
4	2MCM4- Software Engineering -I	Software Project Management DSC-II (NEP-SEM-I), NEP-103

5	2MCM5- Operations Research Techniques	Cyber Security DSE-II (NEP-SEM-IV), NEP-404 B
SEMESTER -III		SEMESTER -III
1	3MCM1- Management Information System	Management Information System DSC-I(NEP-SEM-IV), NEP-401
2	3MCM2- Advanced Java Programming	Client Server Computing DSC-II (NEP-SEM-II), NEP-202 (Th-Major) Client Server Computing DSC-II (NEP-SEM-II), NEP-202 (Th-Major Practical)
3	3MCM3- Visual Computing	Internet of Things DSC-III (NEP-SEM-III), NEP-303 (Th-Major) Internet of Things DSC-III (NEP-SEM-III), NEP-303 (Th-Major Practical)
4	3MCM4- Business Data Communication - II	Cloud Computing DSE-I (NEP-SEM-IV), NEP-404 A
5	3MCM5- Software Engineering -II	Software Testing DSC-I (NEP-SEM-III), NEP-301
SEMESTER -IV		SEMESTER -IV
1	4MCM1-Internet Technology	Web Designing Development DSC-II (NEP-SEM-III), NEP-302 (Th-Major) Web Designing Development DSC-II (NEP-SEM-III), NEP-302 (Th-Major Practical)
2	4MCM2- E-Commerce	E-Commerce & M-Commerce Technologies DSC-III(NEP-SEM-I), NEP-104 (Th-Major) E-Commerce & M-Commerce Technologies DSC-III(NEP-SEM-I), NEP-104 (Th-Major Practical)
3	4MCM3- Elective (Data Warehousing & Mining, ERP)	Data Warehousing & Mining DSE-II (NEP-SEM-III), NEP-304 B
4	Project/Seminar	Research Project Phase-I & II NEP Major, SEM III & IV