ST. JOSEPH'S
COLLEGE OF ENGINEERING
AND TECHNOLOGY,
- PALAI -
AUTONOMOUS

SJCET Int. MCA Curriculum 2024

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Approved by SJCET Academic Council held on 29.11.2024

ST. JOSEPH'S COLLEGE OF ENGINEERING AND TECHNOLOGY, PALAI (Autonomous)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS(INTEGRATED)

CURRICULUM - SEMESTERS I TO X

YEAR: 2024

INT MCA SEMESTER I									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA101	English	4	-	-	40	60	100	4	A
24SJINMCA103	Basic Mathematics	3	1	-	40	60	100	4	B
24SJINMCA105	Introduction to Programming	3	1	-	40	60	100	4	C
24SJINMCA107	Introduction to Computers & PC hardware	3	1	-	40	60	100	4	D
24SJINMCA109	Fundamentals of Accountancy	3	1	-	40	60	100	4	E
24SJINMCA131	Office Automation Lab			4	100		100	1	S
24SJINMCA133	Introduction - PC hardware Lab			4	100		100	1	T
		16	4	8	400	300	700	22	
INT MCA SEMESTER II									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA102	Technical Communication	3	1	-	40	60	100	4	A
24SJINMCA104	Introduction to Discrete Mathematics	3	1	-	40	60	100	4	B
24SJINMCA106	Introduction to Digital Systems & Logic Designs	3	1	-	40	60	100	4	C
24SJINMCA108	Problem Solving and Structured Programming	3	1	-	40	60	100	4	D
24SJINMCA110	Personality Development and Soft Skills	3	1	-	40	60	100	4	R
24SJINMCA132	Problem Solving and Structured Programming Lab			4	100		100	1	S
24SJINMCA134	Technical Communication Lab			4	100		100	1	T
		15	5	8	400	300	700	22	

INT MCA SEMESTER III									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA201	Computer Organization	3	1	-	40	60	100	4	A
24SJINMCA203	Probability and Statistics	3	1	-	40	60	100	4	B
24SJINMCA205	Introduction to Object Oriented Programming	3	1	-	40	60	100	4	C
24SJINMCA207	Basics of Data Analytics	3	1	-	40	60	100	4	D
24SJINMCA209	Data Structures	3	1	-	40	60	100	4	E
24SJINMCA231	Data Structures Lab			4	100		100	1	S
24SJINMCA233	Basic Object Oriented Programming Lab			4	100		100	1	T
		15	5	8	400	300	700	22	

INT MCA SEMESTER IV									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA202	Linux/ Unix Fundamentals	3	1	-	40	60	100	4	A
24SJINMCA204	Statistical Applications	3	1	-	40	60	100	4	B
24SJINMCA206	Operating Systems	3	1	-	40	60	100	4	C
24SJINMCA208	Elements of Business Management	3	1	-	40	60	100	4	D
24SJINMCA210	Internet Concepts and Web Technology	3	1	-	40	60	100	4	E
24SJINMCA232	Scripting Lab			4	100		100	1	S
24SJINMCA234	Statistics Lab			4	100		100	1	T
		15	5	8	400	300	700	22	

INT MCA SEMESTER V									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA301	Numerical Methods	3	1	-	40	60	100	4	A
24SJINMCA303	User Interface Design	3	1	-	40	60	100	4	B
24SJINMCA305	Introduction to RDBMS and SQL	3	1	-	40	60	100	4	C
24SJINMCA307	Fundamentals of Information Systems Security	3	1	-	40	60	100	4	D
24SJINMCA309	Introduction to Operations Research	3	1	-	40	60	100	4	E
24SJINMCA331	RDBMS Lab			4	100		100	1	S
24SJINMCA333	User Interface Design Lab			4	100		100	1	T
		15	5	8	400	300	700	22	

INT MCA SEMESTER VI									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA302	Introduction to Software Engineering	3	1	-	40	60	100	4	A
24SJINMCA304	Fundamentals of Data Science	3	1	-	40	60	100	4	B
24SJINMCA306	Visual Programming	3	1	-	40	60	100	4	C
24SJINMCA308	Design & Analysis of Algorithms	3	1	-	40	60	100	4	D
24SJINMCA310	Mini Project 1/Internship			4	100		100	2	R
24SJINMCA332	Open Source Platforms - Lab		1	3	100		100	1	S
24SJINMCA334	Visual Programming Lab			4	100		100	1	T
		12	5	11	460	240	700	20	

INT MCA SEMESTER VII									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA401	M- Commerce	3	1	-	40	60	100	4	A
24SJINMCA403	Java Programming	3	1	-	40	60	100	4	B
24SJINMCA405	Advanced Web programming	3	1	-	40	60	100	4	C
24SJINMCA407	Advanced Software Engineering	3	1	-	40	60	100	4	D
24SJINMCA409	Distributed Computing	3	1	-	40	60	100	4	E
24SJINMCA431	Java Programming - Lab		1	3	100		100	1	S
24SJINMCA433	Advanced Web programming Lab		1	3	100		100	1	T
24SJINMCANC1	Entrepreneurship & Innovations in Technology			1				0	
		15	7	7	400	300	700	22	

INT MCA SEMESTER VIII									
Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA402	Advanced Database Management Systems	3	1	-	40	60	100	4	A
24SJINMCA404	Advanced Computer Networks	3	1	-	40	60	100	4	B
24SJINMCA406	Research Methodology	3	1	-	40	60	100	4	C
24SJINMCA4--	Elective 1	3	1	-	40	60	100	4	D
24SJINMCA4--	Elective 2	3	1	-	40	60	100	4	E
24SJINMCA432	Advanced DBMS Lab		1	3	100		100	1	S
24SJINMCA434	Networking & System Administration Lab		1	3	100		100	1	T
24SJINMCANC2	Industrial Readiness Training			1				0	
		15	7	7	400	300	700	22	

INT MCA SEMESTER IX

Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA501	Data Science & Machine Learning	3	1	-	40	60	100	4	A
24SJINMCA503	Mobile Computing	3	1	-	40	60	100	4	B
24SJINMCA5--	Elective 3	3	1	-	40	60	100	4	C
24SJINMCA5--	Elective 4	3	1	-	40	60	100	4	D
24SJINMCA509	Mini Project 2			4	100		100	2	R
24SJINMCA531	Data Science Lab		1	3	100		100	1	S
24SJINMCA533	Mobile Application Development Lab		1	3	100		100	1	T
24SJINMCANC3	Domain Expertise Workshops			1				0	
		12	**6**	**11**	**460**	**240**	**700**	**24SJ**	

INT MCA SEMESTER X

Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA502	Comprehensive Viva	-	-	-	-	100	100	6	
24SJINMCA504	Seminar	-	-	2	50	-	50	2	
24SJINMCA506	Main Project/Internship	-	-	27	70	30	100	12	
		-	**-**	**29**	**120**	**130**	**250**	**20**	
	TOTAL						**6550**	**214**	

Details of Electives

Elective I	
24SJINMCA462	Applied Statistics
24SJINMCA464	Organizational Behaviour
24SJINMCA466	Functional Programming
24SJINMCA468	Virtualisation and Containers
24SJINMCA472	Advanced Operating Systems
Elective II	
24SJINMCA482	Business Management
24SJINMCA484	Embedded Systems
24SJINMCA486	Computer Graphics
24SJINMCA488	Artificial Intelligence
24SJINMCA492	IPR and Cyber Laws
24SJINMCA494	Accounting and Financial Management
Elective III	
24SJINMCA561	Operations Research
24SJINMCA563	Cyber Security & Cryptography
24SJINMCA565	Cloud Computing
24SJINMCA567	Cyber Forensics
24SJINMCA569	Compiler Design
Elective IV	
24SJINMCA581	Internet of Things
24SJINMCA583	Deep Learning
24SJINMCA585	Digital Image Processing
24SJINMCA587	Bioinformatics
24SJINMCA589	Social Network Analysis

SYLLABUS

INTEGRATED MCA

2024 SCHEME

Programme Outcomes (POs)

PO1(Foundation Knowledge): Apply knowledge of mathematics, programming logic, and coding fundamentals for solution architecture and problem-solving.

PO2 (Problem Analysis): Identify, review, formulate, and analyze problems primarily focusing on customer requirements using critical thinking frameworks.

PO3 (Development of Solutions): Design, develop, and investigate problems with an innovative approach for solutions incorporating ESG/SDG goals.

PO4 (Modern Tool Usage): Select, adapt, and apply modern computational tools, such as the development of algorithms, with an understanding of the limitations, including human biases.

PO5 (Individual and Teamwork): Function and communicate effectively as an individual or team leader in diverse and multidisciplinary groups, using methodologies such as agile.

PO6 (Project Management and Finance): Apply the principles of project management, including scheduling and work breakdown structure, and be knowledgeable about finance principles for profitable project management.

PO7 (Ethics): Commit to professional ethics in managing software projects, especially in financial aspects. Learn to use new technologies for cybersecurity and insulate customers from malware.

PO8 (Life-long Learning): Continuously enhance management skills and the ability to learn, keeping up with contemporary technologies and ways of working.

INDEX

CURRICULUM

INT MCA SEMESTER I

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24SJINMCA101	English	4	-	-	40	60	100	4	A
24SJINMCA103	Basic Mathematics	3	1	-	40	60	100	4	B
24SJINMCA105	Introduction to Programming	3	1	-	40	60	100	4	C
24SJINMCA107	Introduction to Computers & PC Hardware	3	1	-	40	60	100	4	D
24SJINMCA109	Fundamentals of Accountancy	3	1	-	40	60	100	4	E
24SJINMCA131	Office Automation Lab			4	100		100	1	S
24SJINMCA133	Introduction - PC Hardware Lab			4	100		100	1	T
		16	4	8	400	300	700	22	

INT MCA SEMESTER II

Course No	Course	Hours/week			IA Marks	ESE Marks	Total	Credits	Exam Slot
		L	T	P					
24SJINMCA102	Technical Communication	3	1	-	40	60	100	4	A
24SJINMCA104	Introduction to Discrete Mathematics	3	1	-	40	60	100	4	B
24SJINMCA106	Introduction to Digital Systems & Logic Designs	3	1	-	40	60	100	4	C
24SJINMCA108	Problem Solving and Structured Programming	3	1	-	40	60	100	4	D
24SJINMCA110	Personality Development and Soft Skills	3	1	-	40	60	100	4	R
24SJINMCA132	Problem Solving and Structured Programming Lab			4	100		100	1	S
24SJINMCA134	Technical Communication Lab			4	100		100	1	T
		15	5	8	400	300	700	22	

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MCA Integrated

SEMESTER 1

24SJINMCA101	ENGLISH	CATEGORY	L	T	P	CREDIT
		GENERAL	4	-	-	4

Preamble:	Language is an empowering attribute that helps us to express ourselves in an exquisite manner. The objective of this course is to help students understand the structure and different learning strategies of language. The language focuses on effective communication in various life situations and is also an important criterion for success in workplaces.
Prerequisite:	Basic Communication Skills

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Apply language skills in professional and real- life situations.	K3
CO2	Identify various strategies to actively listen and comprehend messages	K2
CO3	Describe various contexts and demonstrate appropriate speaking skills	K2
CO4	Interpret various technical and non-technical texts using appropriate reading methodologies.	K2
CO5	Show the ability to write well- organised academic and professional documents	K3
CO6	Use sentence structures and lexical ability.	K3

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		2	3		3	3		2
CO2			1		3	3		
CO3					3	3		1
CO4		2	3		3	3		
C05		2			3	3		1
CO6					3	3		1

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	40	60	3 hours

Continuous Internal Evaluation Pattern:

Attendance : 8 marks

Continuous Assessment Test (2 numbers) : 20 marks

Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern:

There will be two parts; Part A and Part B. Part A should contain 10 compulsory short answer questions, 2 from each module which carries 3 marks. Part B should contain 2 questions from each module with maximum 2 sub- divisions which carry 6 marks, of which the student should answer any one.

Course Level Assessment Questions

Course Outcome 1 :

1. Examine the importance of language learning.
2. Discuss the emergence of English as a global language.
3. Summarize the different learning strategies

Course Outcome 2 :

1. Compare active and intensive listening.
2. Outline the strategies for listening.
3. Create notes while listening to a video on a particular topic by using outline method

Course Outcome 3 :

1. Outline the steps for critical reading

2. The chart shows the survey result of technical students about the important aspects in working for a company that they learned from the internships they did in various companies. Understand the chart and summarize the information given.

Course Outcome 4 :

1. Outline the steps for critical reading
2. Explain the steps to make inferences.

Course Outcome 5 :

1. Create a letter asking permission to your class teacher for taking leave for attending a two- day seminar on 'Artificial Intelligence' in IIT, Mumbai.
2. Assume that you recently bought a printer for your desktop and found that it is not working properly. Compose a letter to be sent to the Sales Manager of the company which you bought the printer from, informing about your dissatisfaction about the product and an immediate replacement.
3. Describe about your home town in not more than 50 words.

Course Outcome 6 :

1. Choose the right prefix and suffix for the following words.
   a) Wrap
   b) Sense
   c) Manage
   d) Child
2. Modify the following phrases into compound words.
   a) A ball made out of snow.
   b) A parent of one's father or mother.
   c) The time from lunch time to evening.
   d) A shelf on which a book can be stored.
3. Modify the sentences from active to passive voice.
   a) Somebody stole my purse.
   b) John explained the event to the students.
   c) They say she sang well.
   d) We can generate heat for welding in many ways

SYLLABUS

Module 1

Introduction to Language Learning: - Language Learning Strategies -Oxford taxonomy, English as a Global, Second Language and Foreign Language. Listening: Objectives, Myths, Types of Listeners. Speaking: Phonetics -Introduction to Vowels, Consonants & Diphthongs. Introducing basic steps of a conversation -Initiating, Interrupting, Sustaining & Closing. Reading: Importance & Strategies. Writing: Importance (AIDA model), Writing process steps, Practice writing on descriptions of people and places. Grammar & Vocabulary: Common errors in Tenses, One-word substitutions.

Module 2

Intermediate Language Skills: - Listening: Active Listening Process, Traits of a good listener, Intensive Listening. Speaking: Phonetics -Transcribing words, Word Stress & Rhythm, Intonation, Sentence Stress, Pause and Sense groups, Interactional and transactional pattern of conversations. Reading: Reading with a purpose, making intelligent guesses, use of signposts, making inferences. Writing: Descriptions on events and products. Grammar & Vocabulary: Active-Passive Voice, Synonyms.

Module 3

Pre- Advanced Language Skills: - Listening: Joseph Devito's Five levels of Listening, Listening for General Content, Listening for Specific Information. Speaking: Fluency and Pace of Delivery. Telephone Communication -Agreeing and Disagreeing, Making Appointments, Cancelling and Rescheduling Appointments. Conversations on Seeking Clarification, Extending an Apology, Giving an Opinion. Reading: Reading Critically, Reading for Research. Writing: Framing short speeches - Welcome address, Vote of thanks and Farewell speech. Grammar & Vocabulary: Subject –Verb Agreement, Antonyms.

Module 4

Advanced Language Skills:- Listening: Barriers, Strategies to improve listening, Academic Listening. Speaking: Greetings on different occasions, Introducing oneself and others, Making Requests, Asking for Permission, Denying Permission. Reading: Reading and understanding Graphs and Charts. Writing: Framing Leave letters, Apology and Permission letter. Grammar & Vocabulary: Question tags, Suffixes & Prefixes.

Module 5

Very Advanced Language Skills:- Listening: Keyword Outline Method of Note-taking. Reading: Note-taking- Cornell method, Mind-mapping, Sentence method. Speaking: Awareness of different accents (British & American), Influence of Mother Tongue in Language, Remedies for Speech defects. Writing: Framing letters of Enquiry and

Complaints. Grammar & Vocabulary: Articles & Prepositions, Compound Words & Abbreviations.

Text Books

1. Sasikumar.V, Kiranmai Dutt. P, Geetha Rajeevan, "Communication Skills in English",Cambridge University Press, Chennai, (2014).
2. Kumar Sanjay & Lata Pushp, "Communication Skills in English", Oxford University Press, (2015).
3. Meenakshi Raman and Sangeetha Sharma, "Technical Communication: Principles and practice", 2nd Edition, Oxford University Press, 2011.
4. Ashraf Rizvi, "Effective Technical Communication", 2nd Edition, McGraw Hill Education, 2017.

Web Resources

Grammar:

Sno	Topic	Exercise Link	Video Link
1	Tenses	https://www.englishpage.com/verbpage/verbtenseintro.html	https://www.youtube.com/watch?v=84jVz0D-KkY
2	Active – Passive Voice	https://www.englisch-hilfen.de/en/exercises/active_passive/active_or_passive2.html	https://www.youtube.com/watch?v=ofsHKOch8B4
3	Subject – Verb Agreement	https://www.englishgrammar.org/subject-verb-agreement-exercise/	https://www.youtube.com/watch?v=BU1LEaDnZMo
4	Question tags	https://www.englisch-hilfen.de/en/exercises/questions/question_tags3.html	https://www.youtube.com/watch?v=beCqCLgbrnc

5	Articles	https://www.englishpage.com/articles/index.htm	https://www.youtube.com/watch?v=-zZau_dttRY
6	Preposition	https://www.englishgrammar.org/prepositions-exercise-30/	https://www.youtube.com/watch?v=IutZFSXfgYs

Vocabulary

Sno	Topics	Exercise Link
1	One word substitutions	https://www.indiabix.com/verbal-ability/one-word-substitutes/
2	Synonyms	https://agendaweb.org/vocabulary/homonyms_synonyms-exercises.html
3	Antonyms	https://agendaweb.org/grammar/opposites-antonyms-exercises.html
4	Suffixes & Prefixes	https://www.myenglishpages.com/site_php_files/vocabulary-exercise-affixes.php
5	Compound words	https://www.englisch-hilfen.de/en/exercises/structures/compounds.htm
6	Abbreviations	https://www.englisch-hilfen.de/en/words/abbreviations.htm

Course Contents and Lecture Schedule

No	Topic	No. of Lectures
1	**Introduction to Language Learning**	**8 hrs**
1.1	Language Learning Strategies	1
1.2	Objectives, myths & types of listening	2
1.3	Phonetics & Introducing basic steps of a conversation	2
1.4	Importance & Strategies of reading	1
1.5	Importance of writing and description of places and events	2
2	**Intermediate Language Skills**	**9 hrs**
2.1	Active & Intensive Listening, Traits of a good listener	2
2.2	Phonetics	1
2.3	Reading, signposts, making inferences	2
2.4	Description of places and products	2
2.5	Active passive voice, Synonyms	2
3	**Pre- advanced Language Skills**	**9 hrs**
3.1	Levels and different purpose of listening	2
3.2	Fluency and Pace of Delivery & Telephone Communication	2
3.3	Critical reading & Reading for research	2
3.4	Framing short speeches	3
4	**Advanced Language Skills**	**10 hrs**
4.1	Academic listening, barriers & strategies for improving listening	2
4.2	Greetings on different occasions, Introducing oneself and others, Making Requests, Asking for Permission, Denying Permission.	2

4.3	Reading and understanding Graphs and Charts	2
4.4	Framing apology, permission and leave letters	3
4.5	Question tags, Prefix and Suffix	1
5	**Very Advanced Language Skills**	**10 hrs**
5.1	Listening and note making	1
5.2	Reading and note making	2
5.3	Awareness of different accents, Influence of Mother Tongue in Language, Remedies for Speech defects	2
5.4	Framing letters of Enquiry and Complaints	2
5.5	Articles & Prepositions, Compound Words & Abbreviations	3

24SJINMCA103	BASIC MATHEMATICS	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	This course introduces students to some basic mathematical ideas and tools which are at the core of MCA course. It introduces the concepts of set theory, relations, functions and calculus.
Prerequisite:	NIL

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion	K3
CO2	Describe binary relations between two sets; check their properties and combine relations using set operations and composition.	K3
CO3	Explain the concept and check the properties of functions which correspond to input output combinations in computer science	K3
CO4	Understand the concept of differentiation as a rate of change and evaluate the derivative of simple functions	K3
CO5	Compute the indefinite and definite integrals of standard functions	K3

Mapping of course outcomes with program outcomes								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	3	3	3					1
CO2	3	3	3					1
CO3	3	3	3					1
CO4	3	3	3					1
CO5	3	3	3					1

Mark distribution

Continuous Internal Evaluation Pattern:

Attendance : 8 marks

Continuous Assessment Test (2 numbers) : 20 marks

Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern:

There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question caries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define Cartesian product of two sets with an example (K1)

2. State and prove De Morgan's laws (K2)

3. There are 21 players in a cricket team and out of this, 6 players participate in one day matches, 7 players participate in T20 matches and 5 players participate in both matches. Construct the diagram and find the number of players who participate in

   (a) at least one match (ODI or T20)?

   (b) neither of the matches? (K3)

Course Outcome 2 (CO2):

1. Let $R = \{(a, b), (c, d), (b, b)\}$ and $S = \{(d, b), (b.e), (c, a), (a. c)\}$

   Find $(a)\ RoR$, $(b)\ SoR$, $(c)\ RoS$ (K2)

2. Let A={1,2,3,4} and R={(1,1),(1,4),(4,1),(4,4),(2,2),(2,3),(3,2),(3,3)}.Write the matrix of R and sketch its graph. (K4)
3. A relation is defined on the set of integers as $(a, b)\epsilon R$ if and only if $1 + ab > 0$ Determine whether the relation is an equivalence relation. (K5)

Course Outcome 3(CO3):

1. Distinguish between one-one and onto functions (K4)
2. 2. Show that the function $f: R \rightarrow R$ defined by $f(x) = 2x + 3$ is a bijection (K3)
3. 3. Let $f, g: Z \rightarrow Z$ be defined by $f(x) = x + 1$, $g(x) = 2x\ 2 + 3$, find fog and gof. Examine whether $fog = gof$ (K4)

Course Outcome 4 (CO4):

1. Find $y'(x)$ for $y(x) = \frac{x^3+2x^2-1}{x-5}$ (K1)
2. Evaluate $\frac{d^2y}{dx^2}$ for $y(x) = x\ sinx - 3\ cosx$ (K4)
3. Calculate the value of the derivative for $y(x) = (x - \frac{1}{x})^3$ at $x = 1$ (K3)

Course Outcome 5 (CO5):

1. Compute $\int \left[5x + \frac{2}{3x^5}\right] dx$ (K2)
2. Calculate the value of the definite integral $\int_{1/2}^{5} f(x)dx$ where $f(x) = \begin{cases} 2x, x < 1 \\ 2, \ x \geq 1 \end{cases}$ (K3)

3. Evaluate $\int t^4 \sqrt[3]{3-5t^5}dt$ (K4)

SYLLABUS

Module 1(Sets)

(Text 1: Relevant topics from sections 2.1, 2.2, 8.5)

Introduction, Venn Diagrams, Subsets, The Size of a Set, Power Sets, Cartesian Product, Set Operations –Introduction, Set Identities, Generalized Unions and Intersections, Principles of inclusion and exclusion

Module 2 (Relations)

(Text 1: Relevant topics from sections 9.1, 9.2, 9.3, 9.5, 9.6)

Introduction, Relations on a Set, Properties of Relations, Combining Relations, n-ary relations (definition and examples), Representing Relations Using Matrices and Digraphs, Equivalence relations (definition and examples), Partial Orderings (definition and examples

Module 3 (Functions)

(Text 1: Relevant topics from section 2.3)

Introduction, Functions as Relations, One-to-One and onto Functions, Inverse Functions and Compositions of Functions.

Module 4 (Differential Calculus)

(Text 2: Relevant topics from sections 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.2, 3.3) (Simple problems only)

Limits, Tangent Lines, Slopes and Rates of Change (concept only - not for examination) Differentiability-Physical and Geometrical interpretation, Derivatives - Constant, Power Functions, Constant multiple of a Function, Sums & Differences, Trigonometric Functions, Logarithmic functions and Exponential Functions, Higher Derivatives, Product rule, Quotient rule, Chain rule.

Module 5 (Integral Calculus)

(Text 2: Relevant topics from 5.2, 5.3, 5.6) (Simple problems only)

The Indefinite Integral, Properties of the Indefinite Integral, U-Substitution, The Definite Integral-area under the curve, Properties of the Definite Integral, The Fundamental Theorem of Calculus, Integration by parts.

Text Books:

1. Kenneth H. Rosen, “Discrete mathematics and its applications”, McGraw-Hill, 7th Edition.

2. H. Anton, I. Bivens, S. Davis, “Calculus”, Wiley, 9th Edition.

Reference Books:

1. C. Liu, “Elements of Discrete Mathematics: A Computer Oriented Approach”, McGraw-Hill, 4th Edition (2012).

2. J. P. Tremblay and R Manohar, “Discrete Mathematical Structures with Application to Computer Science”, Tata McGraw-Hill Publications, (1997).

3. Ralph P Grimaldi, “Discrete and Computational Mathematics: An applied introduction”, Pearson Education, 5th Edition, (2007).

4. Ralph. P. Grimaldi, “Discrete and Combinatorial Mathematics: An Applied Introduction”, Pearson Education Asia, Delhi, 4th Edition (2002).

5. Seymour Lipschutz and Mark Lipson, “Discrete Mathematics”, Schaum’s Outlines, Tata McGrawHill Pub. Co. Ltd., New Delhi, 2nd Edition, (2007).

6. Thomas Koshy, “Discrete Mathematics with Applications”, Elsevier Publications, (2006).

7. J. Stewart, Essential Calculus, Cengage, 2nd Edition, (2017).

8. G.B. Thomas and R.L. Finney, “Calculus and Analytic geometry”, 9th Edition, Pearson, (2002).

Web Resources:

1.https://nptel.ac.in/courses/111/107/111107058/

2.http://nptel.ac.in/courses/111104026/2

3.https://nptel.ac.in/courses/111/104/111104085/#

Course Contents and Lecture Schedule:

No	Topic	No. of Lectures
1	**Module 1**	**9 hrs.**
1.1	Introduction, Venn Diagrams	1
1.2	Subsets	1
1.3	The Size of a Set, Power Sets	1
1.4	Cartesian Product	1
1.5	Set Operations –Introduction	1

1.6	Set Identities	1
1.7	Generalized Unions and Intersections	1
1.8	Principles of inclusion and exclusion	2
2	**Module 2**	**10 hrs.**
2.1	Relations on a Set	1
2.2	Properties of Relations	2
2.3	Combining Relations	1
2.4	n-ary Relations(definition and examples)	1
2.5	Representing Relations Using Matrices and Digraphs	1
2.6	Equivalence Relations (definition and examples)	2
2.7	Partial Orderings (definition and examples)	2
3	**Module 3**	**8 hrs.**
3.1	Function – introduction	1
3.2	One-to-One and Onto Functions	2
3.3	Inverse Functions	2
3.4	Compositions of Functions	3
4	**Module 4**	**10 hrs.**
4.1	Limits Tangent Lines, Slopes and Rates of Change (concept only - not for examination)	1
4.2	Differentiability- Physical and Geometrical interpretation	1
4.3	Derivative of- Constant, Power Functions, Constant multiple of a Function, Sums & Differences	1
4.4	Higher Derivatives	1
4.5	Product rule	1
4.6	Quotient rule	1
4.7	Derivatives of Trigonometric Functions	1
4.8	Derivatives of Logarithmic and Exponential Functions	1
4.9	Chain rule	2
5	**Module 5**	**11 hrs.**
5.1	The Indefinite Integral	2
5.2	Properties of the Indefinite Integral	1
5.3	U-Substitution	2
5.4	The Definite Integral-area under the curve	1
5.5	Properties of the Definite Integral	1
5.6	The Fundamental Theorem of Calculus	2
5.7	Integration by parts	2

24SJINMCA105	INTRODUCTION TO PROGRAMMING	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	This course introduces students to some basic problem-solving ideas and tools which are at the core of MCA course. It introduces the concepts of algorithm, flow chart and problem-solving methods.
Prerequisite:	A basic problem-solving idea in computer fundamentals.

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Demonstrate the ability to analyse and differentiate between types of flowcharts, applying rules and symbols for effective representation of systems and programs.	**K4**
CO2	Apply advanced understanding of different operators, constants, variables, and algorithms to solve complex problems	**K4**
CO3	Apply and analyse different control structures to solve complex computational problems	**K4**
CO4	Design and implement iterative and repetitive control structures to solve complex computational problems involving series, number sequences, and pattern printing.	**K4**
CO5	Apply subscripted variables and one-dimensional arrays to solve complex problems such as calculating averages, performing logical operations, and conducting linear searches	**K4**

Mapping of course outcomes with program outcomes								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	3	1	1	2	1			1
CO2	3	2	2	2	1			2
CO3	3	2	2	3	1			2
CO4	3	1	1	3	2			2
CO5	3	1	2	2	1			2

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	40	60	3Hours

Continuous Internal Evaluation Pattern:

Attendance : 8 marks

Continuous Assessment Test (2 numbers) : 20 marks

Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern: There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question caries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define Algorithm (K1)

2. Define Data, Information and Program (K1)

Course Outcome 2 (CO2)

1. Explain different symbols using in flowcharts (K2)

2. Discuss steps in Algorithm (K2)

Course Outcome 3 (CO3):

1. Calculate the area of a Circle of radius r. (K3)

2. Illustrate an algorithm to read two numbers and find their sum. (K3)

3. Evaluate an algorithm and flowchart to convert temperature from Celsius to Fahrenheit. (K5).

Course Outcome 4 (CO4):

1. Demonstrate an algorithm to find the greater number between two numbers. (K3)

2. Evaluate Repetition and Iteration Structure (K5)

3. Design an algorithm to find the largest value of any three numbers. (K6)

4. Design an algorithm to calculate even numbers between 0 and 99. (K6)

Course Outcome 5 (CO5):

1. Analyse and trace the problem to gets a natural value, n, as its input and calculate odd numbers equal or less than n. (K4)

2. Design an algorithm and flowcharts to find the sum of first 100 natural numbers. (K6)

3. Design an algorithm and flowchart to find the sum of series 1+3+5+….+N, where N is positive odd Integer. (K6)

SYLLABUS

Module 1

Basics of Computers: Introduction, what is a Computer, Data, Information, Program. Flowchart: Kinds of Flowcharts – System flowcharts and Program flowcharts; Symbols used in flowcharts, General rules for flowcharting, Advantages of flowcharts, Example.

Module 2

Operators: Arithmetic operators, Relational operators, Logical operators. Constants and Variables: Constants, Variables, Types of variables – Integer variables, Real variables, String Variables, Logical variables; Expressions and Assignment operator, Writing expressions in computer languages. Algorithm: Definition, Type of Algorithms, Properties of an Algorithm, Example. Pseudocode: Definition, Examples.

Module 3

Control Structures or Logical Structures: The sequence structure, Decision structures - If-then-else structure, Nested Else-If structure, illustrating examples – Sum of two numbers, Radius of a Circle, Celsius to Fahrenheit, Area of a Triangle, Greater of two numbers, Largest value of any three numbers, One's complement, Factorial of a number, Swapping two numbers.

Module 4

Repetition and Iteration Structure: Repeat Until loop, The While loop, the for loop, and Nested loops Illustrating examples - Sum and average of N numbers, Sum of squares of first N positive integers, Even numbers between 0 and 99, Odd numbers equal or less than n, sum of first 100 natural numbers, Pattern printing. Number series: Different Number series, solving problems using Number sequence and Iterations – Print first N positive integers, Sum of first N positive integers, Sum of squares of first N positive integers without any loop structure, Fibonacci sequence, Check the number is prime or not, Reverse a number, sum of series 1+3+5+….+N.

Module 5

Subscripted Variables: Introduction, Basic concepts of subscripted variables, One-dimensional arrays, illustrating examples – Average of an Array, Maximum of an Array, Addition of two Arrays, Mean and Standard Deviation, Appending two Arrays, Frequency Count, Inversion of an Array, Logical OR operation for Boolean Arrays, Linear Search.

Text Books

1. Raj K. Jain, "Insight into Flowcharting", S. Chand & Company Ltd (2000).

Reference Books

1. Anil Bikas Chaudhuri, "The Art of Programming through Flowcharts & Algorithms", Laxmi Publications (2018).
2. Brajendra Singh, Pathik Rawal and Jignesh Rawal, " Algorithm, Pseudocode and Flowchart for Kids: Learn Algorithm in Simple Steps", BeITReady (2015).

MOOC

1. **https://www.geeksforgeeks.org/raptor-tool-flowchart-interpreter/**

Web Resources

1. https://faradars.org/wp-content/uploads/2015/07/Algorithm-and-Flow-Chart.pdf
2. http://www.yspuniversity.ac.in/cic/algorithm-manual.pdf
3. http://archive.mu.ac.in/myweb_test/syllFybscit/C++.pdf
4. http://ceng.eskisehir.edu.tr/emrekacmaz/bil158/Algorithms3.pdf
5. https://www.multidots.com/importance-of-code-quality-and-coding-standard-in-softwaredevelopment/

Course Contents and Lecture Schedule

No	Topic	No. of Lectures
1	**Module 1**	**4 Hrs**
1.1	Introduction, What is a Computer, Data, Information, Program.	1
1.2	Kinds of Flowcharts – System flowcharts and Program flowcharts; Symbols used in flowcharts, General rules for flowcharting.	1
1.3	Advantages of flowcharts, Example.	2
2	**Module 2**	**4 Hrs**
2.1	Operators: Arithmetic operators, Relational operators, Logical operators.	1
2.2	Constants and Variables: Constants, Variables, Types of variables – Integer variables, Real variables, String Variables, Logical variables; Expressions and Assignment operator, Writing expressions in computer languages	2
2.3	Algorithm: Definition, Type of Algorithms, Properties of an Algorithm, Examples, Pseudocode: Definition, Examples	1
3	**Module 3**	**11 Hrs**
3.1	Control Structures or Logical Structures: The sequence structure, Decision structures - If-Then-Else structure, Nested Else-If structure	2
3.2	Illustrating examples of Control Structures or Logical Structures - Sum of two numbers, Radius of a Circle, Celsius to Fahrenheit, Area of a Triangle, Greater of two numbers, Largest value of any three numbers, One's complement, Factorial of a number, Swapping two numbers.	9
4	**Module 4**	**15Hrs**
4.1	Repeat Until loop, The While loop, The For loop and Nested loops	2
4.2	Illustrating examples of Repetition and Iteration Structure - Sum and average of N numbers, Sum of squares of first N positive integers, Even numbers between 0 and 99, Odd numbers equal or less than n, sum of first 100 natural numbers, Pattern printing.	6
4.3	Different Number series	1
4.4	Solving problems using Number sequence and Iterations – Print first N positive integers, Sum of first N positive integers, Sum of squares of first N positive integers without any loop structure, Fibonacci sequence, Check the number is prime or not, Reverse a number, sum of series 1+3+5+….+N.	6
5	**Module 5**	**14 Hrs**
5.1	Basic concepts of subscripted variables, One-dimensional arrays, Illustrating examples – Average of an Array, Maximum of an Array, Addition of two Arrays, Mean and Standard Deviation.	7
5.2	Appending two Arrays, Frequency Count, Inversion of an Array, Logical OR operation for Boolean Arrays, Linear Search	7

24SJINMCA107	INTRODUCTION TO COMPUTERS & PC HARDWARE	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	This course introduces the basic knowledge in using computers by studying the various components like I/O devices, CPU etc. Gain knowledge in fundamental concepts, Basic architecture of PC.
Prerequisite:	Basic knowledge in using computer

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Explain how a PC works and understand the relationship between hardware and software.	K2
CO2	Understand Motherboards, Power supply and cooling systems.	K2
CO3	Understand purpose and functions of Mass storage interface.	K1
CO4	Understand I/O ports and Devices, Keyboards and pointing devices, Video and audio subsystems. Understand the purpose and functions of the computer peripherals.	K2
CO5	Understand diagnostic procedures and troubleshooting techniques to personal computers, portable devices and computer peripherals.	K2

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	1						
CO2	3	1						
CO3	3	1	1					
CO4	3	1	1					
CO5	3	2	1					

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	40	60	3 hours

Continuous Internal Evaluation Pattern:

Attendance : 8 marks

Continuous Assessment Test (2 numbers) : 20 marks

Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern:

There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question carries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have a maximum 2 subdivisions and carry 6 marks.

Course Level Assessment Questions

Course Outcome 1 (CO1):

(a) Identification of PC Components.
(b) Understand the basic architecture.
(c) Understand different Memory Concepts

Course Outcome 2 (CO2)

(a) Examine each PC Component
(b) Describe motherboards and its functionality
(c) Model Functionalities of each component associated with the motherboard.

Course Outcome 3(CO3):

(a) Understanding BIOS setup.
(b) Understanding Storage mechanisms and concepts.
(c) Examine the working of operating system on Hardware

Course Outcome 4 (CO4):

(a) Identify peripherals and its functionalities.
(b) Understand the importance of each peripheral components
(c) Examine the connection of various peripherals together.
(d) Understand Modems and Communications.
(e) Understand the importance of Networking
(f) Model Printers and portable PC.

Course Outcome 5 (CO5):

(a) Connecting various components in PC.
(b) Assembling basic components to form PC.
(c) Troubleshooting and installation of components

SYLLABUS

Module 1

Fundamentals of PC technology: Fundamental building block of PC. The Microprocessor: CPU Operation, Troubleshooting. Memory: How does memory work? Memory chips and modules, Advanced memory technology

Module 2

Motherboards: Motherboard controllers and system resources, I/O system bus, on-board I/O devices, Chipsets, ROM BIOS, ROM POST, CMOS setup, Motherboard physical form factors. Power supply, cooling and protection: The power supply, Ventilation and cooling protection, Power protection and backup.

Module 3

Mass storage Interfaces: The IDE interface, The SCSI interface, Comparisons. Magnetic Storage devices: Magnetic Storage, Hard disk drive. Optical storage Devices: Optical storage Media, DVD-ROM drives, Recordable drives. SSD.

Module 4

I/O ports and Devices: Serial ports, parallel ports, Universal serial bus. Keyboards and pointing Devices, The video Subsystem: Video adapters, Monitors. The audio Subsystem: Audio applications, storing sound, Audio adapter architecture and standards, selecting audio components. PC peripherals: Modems and communications: modems, ISDN, CATV network modems, DSL. Networking: Networking fundamentals, Networking hardware, networking protocol. Printers: Printer types, printer attributes, printer maintenance. Portable PCs: Portable PC designs, Portable system components

Module 5

PC Troubleshooting: Troubleshooting tools and techniques: Tools of the trade, basic PC handling techniques. Basic Data Recovery and Disaster Recovery: Disk structure and data recovery, Disaster recovery.

Reference Text Books

Craig Zacher, John Rourke “PC Hardware The complete reference” Tata McGraw-Hill Edition 2012

Course Contents and Lecture Schedule

No	Topic	No. of Lecture Hours
1	**Module 1: Fundamentals of PC technology**	**7 Hours**
1.1	Fundamental building block of PC. The Microprocessor: CPU Operation, Troubleshooting	3 Hours

1.2	Memory: How memory works? Memory chips and modules, Advanced memory technology.	4 Hours
2	**Module 2: Motherboards**	**9 Hours**
2.1	Motherboard controllers and system resources, I/O system bus	2 Hours
2.2	on-board I/O devices, Chipsets, ROM BIOS, ROM POST, CMOS setup	2 Hours
2.3	Motherboard physical form factors	2 Hours
2.4	Power supply, cooling and protection: The power supply	2 Hours
2.5	Ventilation and cooling protection, Power protection and backup	1 Hours
3	**Module 3: Mass storage Interfaces**	**10 Hours**
3.1	The IDE interface, The SCSI interface, Comparisons.	2 Hours
3.2	Magnetic Storage devices: Magnetic Storage, Hard disk drive.	2 Hours
3.3	Optical storage Devices: Optical storage Media, DVD-ROM drives, Recordable drives	3 Hours
3.4	SSD	3 Hours
4	**Module 4: I/O ports and Devices**	**14 Hours**
4.1	Serial ports, parallel ports, Universal serial bus	2 Hours
4.2	Keyboards and pointing Devices	1 Hours
4.3	The video Subsystem: Video adapters, Monitors	2 Hours
4.4	The audio Subsystem: Audio applications, storing sound, Audio adapter architecture and standards, selecting audio components	2 Hours
4.5	PC peripherals	1 Hours
4.6	Modems and communications: modems, ISDN, CATV network modems, DSL.	2 Hours
4.7	Networking: Networking fundamentals, Networking hardware, Networking Protocol	2 Hours
4.8	Printers: Printer types, printer attributes, printer maintenance. Portable PCs: Portable PC designs, Portable system components	2 Hours
5	**Module 5: PC Troubleshooting**	**8 Hours**
5.1	Troubleshooting tools and techniques: Tools of the trade, basic PC handling techniques.	4 Hours
5.2	Basic Data Recovery and Disaster Recovery: Disk structure and data recovery, Disaster recovery	4 Hours

24SJINMCA109	FUNDAMENTALS OF ACCOUNTANCY	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	This course introduces the concept of accounting and its application. It helps the students to prepare income statement, balance sheet and get idea about the various financial statements used in companies. It provides skills that can be applied in analyzing these statements.
Prerequisite:	NIL

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Describe accounting terminology.	K2
CO2	Apply theoretical and practical aspects of recording transactions in books of accounts.	K3
CO3	Prepare financial statements with adjustments	K4
CO4	Describe and apply depreciation methods.	K3
CO5	Analyze the financial statements of a company using various methods.	K4

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	2					3	1	2
CO2	2					3	1	2
CO3	2					3	1	2
CO4	2					3	1	2
CO5	2					3	1	2

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	40	60	3hrs

Continuous Internal Evaluation Pattern:

Attendance : 8 marks

Continuous Assessment Test (2 numbers) : 20 marks

Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern: There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question caries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks

Course Level Assessment Questions

Course Outcome 1(CO1):

1. Describe the accounting terminology with its basic concepts and principles
2. Solve the basic accounting equation
3. Describe the forms of organisation
4. Explain the users of accounting information

Course Outcome 2 (CO2):

1. Describe the concepts of basic books of accounts: journal, ledger and Trial balance
2. Classify and prepare the books of accounts
3. Explain the journalising process

Course Outcome 3 (CO3):

1. Evaluate various financial statements of a company
2. Determine the profit or loss by prepare the Trading and Profit and loss accounts
3. Summarize the financial statements of a company
4. Create final accounts with adjustments

Course Outcome 4(CO4):

1. Explain the concept of Depreciation
2. Describe the various methods used for calculating depreciation
3. Solve the depreciation problems

Course Outcome 5 (CO5):

1. Explain the concept of financial statement analysis
2. Analyze comparative and common size statements

SYLLABUS

Module 1

Introduction to Accountancy- Accounting and its Functions, Scope of Accounting, Book Keeping and accounting, Basic terminologies in accounting. Basic Concepts and Principles of Accounting. Internal and external users of accounting information. Double entry and single-entry Accounting Equation, Classification of Accounts, Traditional and Modern

classifications. Forms of organization - sole proprietorship, partnership and company.

Module 2

Recording of transactions- Definition of Journal, Journalizing Process, Subsidiary books, Ledger Posting, Balancing an Account, Trial Balance. Objectives of Preparing Trial Balance.

Preparation and Analysis of Final Accounts: Trading Account, Profit and Loss Account, Preparation of Balance Sheet, horizontal and vertical format.

Module 3

Balance Sheet with Adjustment: Adjustment with respect to Closing stock, outstanding expenses, prepaid expenses, Accrued income, Income received in advance, Depreciation, Bad debts, Provision for doubtful debts, Provision for discount on debtors.

Module 4

Depreciation: Meaning and Need for charging depreciation. Methods of depreciation- straight line method, diminishing value method, sum of the digits method, sinking fund method, Insurance premium method.

Module 5

Financial statements: Analysis and interpretation (basics). Meaning and types of financial statements, Nature of financial statements, Analysis and interpretation of financial statements, Common Size Statement, Comparative Balance Sheet.

Reference Books

1. S.N Maheshwari, Maheshwari S K, “Introduction to Accountancy”. Eleventh Edition, Vikas Publications, New Delhi. (2013)
2. S.P. Jain and K L Narang, “Fundamentals of Accounting”. Eighth Edition, Kalyani Publications (2014)
3. Srinivasan & Murugan, “Accounting for Management”, First Edition, S Chand & Company Ltd, (2006)
4. T.S. Grewal, “Double Entry Book Keeping”, Sultan Chand, (2016)

Web References:

Fundamentals of Managerial Accounting- http://nptel.ac.in/courses/110101003/2

Course Contents and Lecture Schedule

No	Topic	No. of Lectures
1	**Module 1: Introduction to Accountancy**	**7 hrs**
1.1	Accounting and its Functions, Scope of Accounting, Book Keeping and accounting, Basic terminologies in accounting.	2
1.2	Basic Concepts and Principles of Accounting	1
1.3	Internal and external users of accounting information. Double entry and single entry. Accounting Equation	2
1.4	Classification of Accounts, Traditional and Modern classifications. Forms of organization - sole proprietorship, partnership and company.	2
2	**Module 2: Recording of Transactions**	**12 hrs**
2.1	Definition of Journal, Journalizing Process, Subsidiary books, Ledger Posting -Theory	3
2.2	Journalising-problems	1
2.3	Ledger, balancing an account – problems	1
2.4	Trial Balance. Objectives of Preparing Trial Balance	1
2.5	Trial balance- problems	1
2.6	Preparation and Analysis of Final Accounts	1
2.7	Trading Account, Profit and Loss Account- problems	2
2.8	Balance sheet- problems	1
2.9	Balance sheet- horizontal and vertical format problems	1
3	**Module 3: Balance Sheet with Adjustment**	**12 hrs**
3.1	Balance Sheet with Adjustment	1
3.2	Adjustment with respect to Closing stock, Outstanding expenses, Prepaid expenses, Accrued income, Income received in advance, Depreciation, Bad debts, Provision for doubtful debts, Provision for discount on debtors	5
3.3	Final account problems with all adjustments.	6

4	**Module 4: Depreciation**	**9 hrs**
4.1	Meaning and need for charging depreciation	1
4.2	Methods of depreciation- straight line method, diminishing value method, sum of the digit's method, sinking fund method, Insurance premium method.	4
4.3	Problems relating to depreciation	4
5	**Module 5: Analysis of financial statements**	**8 hrs**
5.1	Meaning and types of financial statements	2
5.2	Nature of financial statements, Analysis and interpretation of financial statements	2
5.3	Common Size Statement, Comparative Balance Sheet- problems	4

24SJINMCA131	OFFICE AUTOMATION LAB	CATEGORY	L	T	P	CREDIT
		GENERAL	0	0	4	1

Preamble:	Office tools course would enable the students in crafting professional word documents, excel spreadsheets, powerpoint presentations using the Microsoft suite of office tools. To familiarize the students in preparation of documents and presentations with office automation tools.
Prerequisite:	Basic knowledge in using computers. A computer with MS Office 2016 or higher version installed.

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Understand the features and functionalities of most commonly used office automation tools.	K1
CO2	Prepare professional documents, perform accounting operations, and prepare professional multimedia presentations.	K2
CO3	Organize and perform accounting operations on a large volume of data across multiple worksheets or pages of information in the file	K3
CO4	Construct formulas, including the use of built-in functions, and relative and absolute references and translate raw data into meaningful information by creating charts and pivot tables.	K3
CO5	Save time, effort and minimize human errors by making use of features like Master templates, Formulas, Mail Merge, Macros etc.	K1

Mapping of course outcomes with program outcomes								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	3	1		2				
CO2	2	2	2	2		2	1	1
CO3	2	2	2	2		2		1
CO4	2	1	3	2				1
CO5	2	2	1	2				1

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	50	50	3 hours

Continuous Internal Evaluation Pattern:

Maximum Marks : 50	
Attendance	15%
Maintenance of daily lab record and GitHub management	20%
Regular class viva	15%
Timely completion of dat to day tasks	20%
Tests/Evaluation	30%

End Semester Examination Pattern

Lab exam will be conducted by an internal examiner.

Course Level Assessment

Course Outcome 1 (CO1):

1. Explore User Interface and Quick Introduction to MS Word, Excel and PowerPoint.
2. Explore File Tab options.

Course Outcome 2 (CO2):

1. Basic editing and formatting in MS Word.
2. Basic Formatting and Management in MS Excel.
3. PowerPoint preparations and basic formatting.
4. Designing and adding features and effects in MS Word and PowerPoint preparation.

Course Outcome 3 (CO3):

1. Performing mathematical operations in MS Excel.
2. Using in-build tools in MS Word.

Course Outcome 4 (CO4):

1. Using inbuilt tools in MS Excel.
2. Setting formula in MS Excel.
3.Prepare charts and Pivot tables in MS Excel.

Course Outcome 5 (CO5):

1. Creating Master slides in PowerPoint presentations.
2. Create Mail merge in MS Word.
3. Create Macros MS Word.

SYLLABUS

Microsoft Word : Documentation Software
Microsoft Excel : Spreadsheets Microsoft
Power Point : Presentation Software

Reference Books

1. Curtis Frye and Joan Lambert, "Microsoft Office 2016 Step by Step" Microsoft Press 2015.
2. Stewart Melart, "Microsoft Office 2016: The Complete Guide", Conceptual Kings, (2015).
3. Christopher N. Cain and Riley W. Walker, “OpenOffice 3.4 Volume I: Writer”, Quantum Scientific Publishing, (2012).
4. Christopher N. Cain and Riley W. Walker, “OpenOffice 3.4 Volume II: Calc”, Quantum Scientific Publishing, (2012).
5. Koch, Michael, “Special Edition Using Star Office 6.0”, Que Corporation.
6. Prof. James Steinberg, “Open Office Basic: An Introduction”, Gold Turtle Publishing, December (2012).
7. Wells, Nicholas D. & Taylor, Dean, “Sams Teach Yourself StarOffice 5 for Linux in 24 Hours”, Publishers: Sams Publishing.

Web References

- http://www.myonlinetraininghub.com/
- https://www.microsoft.com/en-us/learning/training.aspx
- https://support.office.com/en-us/article/Word-2010-videos-and-tutorials-cfa75118-e522-4ea5963e-2b56d25fb9a5
- https://support.office.com/en-us/office-training-center
- https://edu.gcfglobal.org/en/topics/office2016/
- https://officeskills.org/microsoft-office-tutorials.html

MOOC Courses

- https://www.eduonix.com/courses/Office-Productivity/quick-and-easy-guide-to-microsoft-word
- https://www.coursera.org/learn/excel-essentials
- https://www.udemy.com/courses/search/?q=microsoft%20office%202016&src=sac&kw=microsoft%20office
- https://www.edx.org/course/introduction-to-data-analysis-using-excel-2

List of Lab Experiments

Lab exams may include customized question combining various elements, features, tools and functionalities from Word, Excel and PowerPoint, covered in below topics.

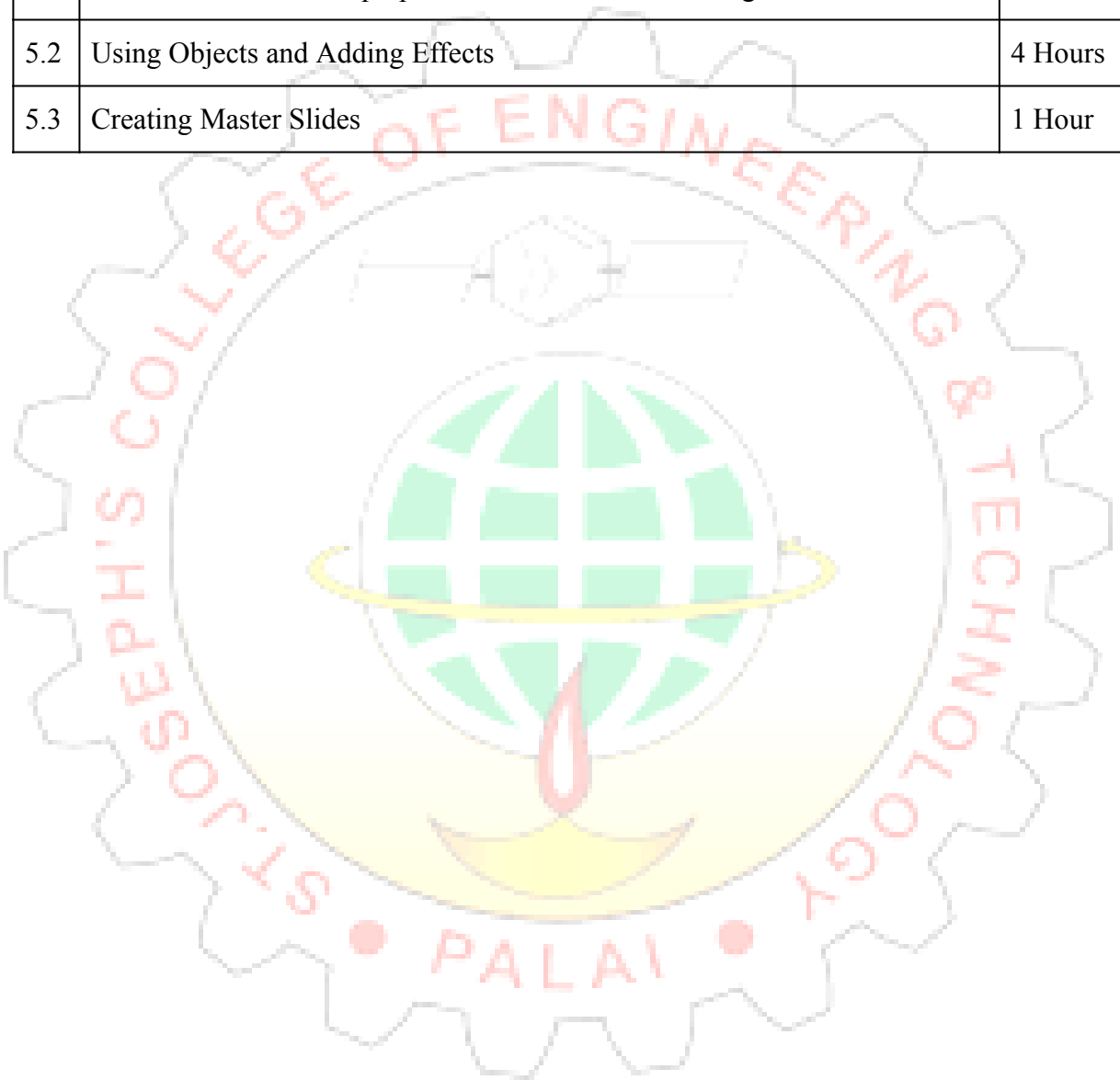
1. Quick Introduction to MS Word, MS Excel and MS Power Point (2016 Version).
2. Explore User Interface: Menu Bar, Ribbon, Tabs, Tab Groups, Quick Access Toolbar, Document Area, Ruler, Scroll Bar, Status Bar, View layout shortcuts, Zoom, Ribbon display options.
3. Explore File Tab: Document protection, Creating a new file, Using templates, Opening and document, Save and Save-As options, Print options, Document options and general settings.
4. Explore the common short-cut keys for fast and convenient use of automation software's.
5. MS Word: Editing text documents- Cut, Copy, Paste, Undo, Redo, Find, Advanced find using search options, Replace, Using help.
6. Set Font styles- Font selection, Size, Text Colour and Highlighting, Bold, Italic, Underline, Strikethrough, Format painter, Subscript and Superscript, Case settings, Text effects, Clear formatting.
7. Paragraph and document styles- Alignments, Line and paragraph spacing, Bullets & Numbering, Indents, Applying document styles, Border & Shading, Sorting. 26
8. Inserting Cover Page, Blank Page, Page Break, Insert Pictures and its formatting, Shapes, SmartArt and Charts, Hyperlinks using different methods, Bookmarks, Header & footer, Page numbering, Adding Textbox, Auto Text, WordArt, Drop Cap, Adding Objects, Equations and Symbols to document.
9. Tables-Adding Tables, Insertion, Deletion, Merging, Splitting, Borders.
10. Designing: Setting Themes, Watermark, Page colour, Page border.
11. Layout Settings: Setting Page Size and Margins, Orientation, Columns, Page and Section Brakes, Hyphenation.
12. Setting Image/object position and arrangements, Wrap Text, Align objects, Grouping, Rotate, Adding Table of contents, Mail Merge using DB and excel.
13. Review options: Using Spelling and Grammar check, Thesaurus, Tracking changes.
14. View Options: Page views, Ruler, Split Window, Recording and Using Macros.
15. Spreadsheets-User Interface: Formula Bar, Managing and Protecting Sheets, Addressing Rows/Columns/Cells.
16. Basic Formatting and Data Management-Entering data, Filling Continuous rows and columns, Text Align and Orientation, Wrap Text, Merge and Centre.
17. Cell Management- Insert and Delete Cells/Columns/Rows, Cell styles, Row Height, Column Width, Column Headers, Hide/Unhide, Locking Cells.

18. Conditional Formatting, Sort, Custom Sort and Filter, Find, Search & Replace.
19. Using Tools- Insert Tables, Table Formatting, Pivot Tables, Pictures, Charts, Pivot Charts.
20. Visibility- Sheet formatting using Themes, Colours, Background.
21. Setting Formula- Basic Math Functions, Mathematical operations (Addition, Subtraction, Multiplication, Division, Exponentiation).
22. Data Management- Add data from external files, Text to columns, Duplicate removal, Data validation, Consolidate.
23. View Settings- Freeze Panes, Split, Hide/Unhide.
24. Presentation Software-User Interface: Normal Presentation View, Notes Area, Options in Status bar.
25. Basic Presentation- Choose Template, Add New Slide, Enter and Arrange Text, Format Text Placeholders, Text formatting, Text direction and Alignment, Add Shapes, Shape Fill/Outline/Effects, Arrange objects, Quick styles.
26. Slide Operations- Duplicate, Delete, Re-Arrange, Hide, Unhide, Format Slide Background, Choose Slide Layout, Add Section, Set Themes, Side size.
27. Adding Graphical Objects to a Presentation- Pictures, Smart Art, WordArt, Objects, Video and Audio.
28. Insert Tables in a Slide, Format Tables, Insert Charts in a Slide, Chart customization.
29. Adding Effects to the Presentation- Setting Animation & Transition Effects.
30. Create Master Slides.

Course Contents and Lecture Schedule

No	Topics	Hours
1	Module 1	2 Hours
1.1	Explore User Interface and Quick Introduction to MS Word, Excel and PowerPoint	1 Hour
1.2	Explore File Tab options.	1 Hour
2	Module 2	11 Hours
2.1	MS Word: Basic editing and formatting	7 Hours
2.2	Inserting objects and customizing	4 Hours
3	Module 3	11 Hours
3.1	MS Word: Designing and adding features	7 Hours
3,2	Using inbuilt tools	4 Hours
4	Module 4	14 Hours

4.1	MS Excel: Basic Formatting and Management	5 Hours
4.2	Using Tools	4 Hours
4.3	Setting formula	5 Hours
5	Module 5	10 Hour
5.1	MS PowerPoint: Slide preparations and basic formatting	5 Hours
5.2	Using Objects and Adding Effects	4 Hours
5.3	Creating Master Slides	1 Hour



24SJINMCA133	INTRODUCTION - PC HARDWARE LAB	CATEGORY	L	T	P	CREDIT
		GENERAL	0	0	4	1

Preamble:	This course introduces the various components like I/O devices, CPU etc. Gain knowledge in fundamental concepts, Basic architecture of PC. Working of Operating System, Troubleshooting etc.
Prerequisite:	Basic knowledge in using computers.

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Explain how a PC works and understand the relationship between hardware and software.	K2
CO2	Understand purpose and functions of an operating system (OS).	K2
CO3	Understand the purpose and functions of the computer peripherals.	K2
CO4	Install, troubleshoot and Format Windows and Linux Operating System.	K2
CO5	Understand and perform diagnostic procedures and troubleshooting techniques to personal computers, portable devices, operating systems and computer peripherals.	K2

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	1					1
CO2	2	3	1					1
CO3	2	1	2					1
CO4	1	2	3	1	1			1
CO5	1	2	3		1			2

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	50	50	3 hours

Continuous Internal Evaluation Pattern:

Maximum Marks : 50	
Attendance	15%
Maintenance of daily lab record and GitHub management	20%
Regular class viva	15%
Timely completion of dat to day tasks	20%
Tests/Evaluation	30%

End Semester Examination Pattern

Lab exam will be conducted by an internal examiner.

Course Level Assessment

Course Outcome 1 (C01):
1. Identification of PC Components. (K4)
2. Understand the basic architecture of PC Components. (K4)
3. Relationship between hardware and software. (K3)

Course Outcome 2 (C02):
1. Examine each PC Component. (K4)
2. Categorize PC components based on functionality. (K4)
3. Model Functionalities of each component. (K4)

Course Outcome 3 (C03):
1. Understanding BIOS set up. (K2)
2. Storage mechanism and operating system concepts. (K2)
3. Working of operating system on Hardware. (K4)

Course Outcome 4 (C04):
1. Identify peripherals and its functionalities. (K4)
2. Importance of each peripheral components. (K4)
3. Connecting various peripherals together. (K4)

Course Outcome 5 (CO5):
1. Connecting various components in PC. (K4)
2. Assembling basic components to form PC. (K5)
3. Troubleshooting and installation of components. (K5)
4. Install, configure and update/upgrade Hardware. (K5)
5. Install, configure and update/upgrade Software. (K5)

6. Install, configure and update/upgrade OS. (K5)

SYLLABUS

● Identification of PC Components, Understanding BIOS set up
● Assembling and dissembling of internal components of PC, Installation of different OS (Windows, Linux).
● Analyze File system (FAT, NTFS, ext4), Installation of Software Packages in windows and Linux.
● Reframe Hard disk partitioning and formatting, Analyze and apply Virus removal and disc scan.
● Plan trouble shooting of the PC, Identification of Basic and Special Components of Mobile Phone.
● Installation of driver software, Analyze Disc Managers and its use.
● Checking the Basic Component of Mobile Phone and its Faults.
● Troubleshooting of the OS.

Reference Books

1. Craig Zacker, John Rourke "PC Hardware The Complete Reference" Tata McGraw-Hill Edition.

Web References

1. https://www.bleepingcomputer.com/tutorials/hardware/
2. https://www.inetdaemon.com/tutorials/computers/hardware
3. http://www.karbosguide.com

List of Lab Experiments

1. Identification of PC Components.
2. Understanding BIOS set up.
3. Assembling and dissembling of internal components of PC.
4. Installation of different OS (Windows, Linux).
5. Analyze File system (FAT, NTFS, ext4).
6. Installation of Software Packages in windows and Linux.
7. Reframe Hard disk partitioning and formatting.
8. Analyze and apply Virus removal and disc scan.
9. Plan trouble shooting of the PC.
10. Identification of Basic and Special Components of Mobile Phone.
11. Installation of driver software.
12. Analyze Disc Managers and its use.
13. Checking the Basic Component of Mobile Phone and its Faults.
14. Troubleshooting of the OS.

Course Contents and Lecture Schedule

No	Topic	No. of Hours
1	Identification of PC Components	3 hr.
2	Understanding BIOS set up	3 hr.
3	Assembling and dissembling of internal components of PC	4 hr.
4	Installation of different OS (Windows, Linux)	4 hr.
5	Analyze File system (FAT, NTFS, ext4)	3 hr.
6	Installation of Software Packages in windows and Linux	4 hr.
7	Reframe Hard disk partitioning and formatting	4 hr.
8	Analyze and apply Virus removal and disc scan	3 hr.
9	Plan trouble shooting of the PC	3 hr.
10	Identification of Basic and Special Components of Mobile Phone	3 hr.
11	Installation of driver software	3 hr.
12	Analyze Disc Managers and its use	4 hr.
13	Checking the Basic Component of Mobile Phone and its Faults	3 hr.
14	Troubleshooting of the OS	4 hr.

ST. JOSEPH'S
COLLEGE OF ENGINEERING
AND TECHNOLOGY,
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AUTONOMOUS

MCA Integrated

SEMESTER 2

24SJINMCA102	TECHNICAL COMMUNICATION	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	-	4

Preamble:	Technical communication is a means to convey scientific, engineering, or other technical information and in an organizational context it is the key to better productivity and professional interaction. This course enables the students to master advanced level communication skills and helps to convey specific information to specific audiences.
Prerequisite:	Basic Communication Skills

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Apply effective technical communication skills in a professional environment.	K3
CO2	Review professional documents by implementing various strategies of reading.	K2
CO3	Compose various technical and non- technical documents in an organized, clear and precise manner.	K2
CO4	Identify various listening strategies to analyze technical knowledge and information.	K2
CO5	Discuss and present ideas and opinions in an effective manner.	K2
C06	Develop, choose and apply vocabulary and grammar skills.	K3

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		2	3		3	3		2
CO2		2	1		1	2		
CO3		2			1	2		1
CO4					3	3		
CO5					3	3		1
CO6					3	3		1

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	40	60	3 hours

Continuous Internal Evaluation Pattern:

Attendance	: 8 marks
Continuous Assessment Test (2 numbers)	: 20 marks
Assignment/Quiz	: 12 marks

End Semester Examination Pattern:

There will be two parts; Part A and Part B. Part A should contain 10 compulsory short answer questions, 2 from each module which carries 3 marks. Part B should contain 2 questions from each module with maximum 2 sub- divisions which carries 6 marks, of which the student should answer any one.

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Explain the importance of technical communication in a professional environment.
2. List the objectives of technical communication
3. Outline the characteristics of technical communication.

Course Outcome 2 (CO2):

1. Compare active and emphatic listening.
2. Listen to a video lecture on any topic and summarize the main points.
3. Summarize the steps to do analytical listening

Course Outcome 3 (CO3):

1. Outline the dos and don'ts in a debate.
2. Assume that you are attending your college farewell party and you were asked to deliver a speech about the reminiscences of your college life. Create an impromptu speech in not more than 50 words.
3. Describe the various elements of a presentation.

Course Outcome 4 (CO4):

1. Create a KWL table on effective reading and reading techniques.
2. Compare efficient and inefficient readers.
3. Summarize the barriers to effective reading.

Course Outcome 5 (CO5):

1. Create a persuasive essay on the topic "Say No to Plastic".
2. Compose a letter to the Editor of the newspaper 'The Hindu' pointing out the poor

condition of roads in your home town.

3. Develop a newspaper report on an accident that you saw on the way to your college

Course Outcome 6 (CO6):

1. Modify the conditional sentences by filling the correct word.

a. (Second conditional) If she (have) her mobile with her, she (call) me.
b. (First conditional) If she (not go) to school tomorrow, I (not go) either.
c. (First conditional) If our boss (give) us lots of work this weekend, I (not be) happy.
d. (Third conditional) If we (tidy) our house, we (not lose) the documents.

2. Choose the right word among the homophones.

a. I saw you car keys over (there/ their).
b. (its/ it's) not my book.
c. I (warn/ worn) you. Do not keep the box opened.
d. He (threw/ through) the papers through the window.

3. Modify the tenses into its correct form with regular and irregular verbs.

a. When she saw them she (cry) and I (put) down my book on the desk.
b. She (draw) the pictures yesterday and we (send) them right away.
c. After a few hours we (find) the lost document and we (sit) down and relaxed for a while.
d. Yesterday John (hurt) his leg during the final round of the competition.
I (take) the early morning train

SYLLABUS

Module 1

Introduction to Technical Communication: Importance, Objectives & Characteristics Listening: Importance & Benefits of Active Listening, Appreciative Listening - Practice listening to motivational speeches. Speaking: Importance of Vocal Cues, Roleplays - Definition, Types, Significance, Steps of a Role Play, Practicing Role Plays in different situations. Reading: Introduction to Effective Reading, Benefits of Effective Reading, KWL technique, Speed of Reading, Tips to develop Reading Habits, Practice the art of Skimming documents. Writing: Structure of Paragraphs, Types-Descriptive, Narrative, Persuasive & Creative, Steps to write a Paragraph. Grammar & Vocabulary: Simple, Compound and Complex sentences, Imperatives, Compound words.

Module 2

English for Business Communication: Listening -Emphatic Listening-Stages & Strategies. Practice listening to Panel discussions to understand different viewpoints. Speaking: The three Vs of communication, Telephonic Conversation Practice. Reading: Efficient & Inefficient readers, four basic steps to reading, Comprehensive Reading, Comprehensive Reading techniques -SQ3R method, Practice the art of Scanning documents. Writing: Format of Letter,

The Seven C's of Letter Writing, Letter to the Editor, Business Letters -Acknowledgement letter, Appreciation letter, Permission Letter. Grammar & Vocabulary: Regular /Irregular Verbs, Transitive /Intransitive Verbs, Acronyms.

Module 3

English for Academic Purposes: Listening: Comprehensive Listening Strategies, Practice listening to lectures or directions. Speaking: Barriers to effective speaking, Debate -Purpose, Features, Dos & Don'ts, Practice Debates on various topics. Reading: Barriers to effective reading, Critical reading, Practice the art of Intensive Reading. Writing: Introduction to Review Writing, Parts of a Review - Book review & Film Review Grammar & Vocabulary: Conditionals, Framing Questions, Guessing meaning from the context.

Module 4

English for Organizational Skills: Listening: Critical or Analytical listening, Practice listening to Political Speeches. Speaking: Reasons for Incorrect pronunciation, Received Pronunciation, Practice Impromptu speeches. Reading: Predicting and Problem Solving, Surveying a text using an Index, Practice the art of Extensive Reading. Writing: Importance, structure & types of reports. Preparing Technical and Newspaper reports. Grammar & Vocabulary: Conjunctions, Sequencers, Homophones.

Module 5

English for Professional Communication: Listening: Three basic listening models Speaking: Strategies for Speaking, Tips for effective Presentation, Practice Presentation Skills. Reading: Methods of Reading -Sub-vocalized, Speed reading, Photo reading, SPE, Multiple intelligences-based method. Approaches to Reading -Phonics approach, Whole Word Approach, Language Experience Approach. Writing: Difference between Technical & Creative Writing, Poster Designing, Advertisements, Tweeting & Blogging. Grammar & Vocabulary: Phrases and Clauses, Direct and Indirect Speech, Blend words.

Text Books

1. Mindscapes: English for Technologists and Engineers, Orient Black Swan, 2012.
2. Kumar Sanjay & Lata Pushp, "Communication Skills in English", Oxford University Press, 2015.
3. Raman, Meenakshi and Sangeeta Sharma, Technical communication: Principles and practice, Oxford University Press, 2015.

Web resources

Sno	Topic	Exercise Link	Video Link
1	Simple, Compound and Complex sentences	https://www.englishgrammar.org /sim ple-compound-or-complex-sentence/	https://www.youtube.com/watch ?v=m9Avsw-kK-s

2	Imperatives	https://www.englisch-hilfen.de/en/exercises/various/imperative.htm	https://www.youtube.com/watch ?v=1mJJ3UL jWYQ
3	Regular/Irregular Verbs	https://www.englisch-hilfen.de/en/exercises_list/verbs.htm	https://www.youtube.com/watch ?v=LciKb0uuFEc
4	Transitive/Intransitive Verbs	https://www.learnenglishfeelgood.co m/transitive-intransitive-verbs1.html	https://www.youtube.com/watch ?v=NG7MY2_A0Ew
5	Conditionals	https://www.ego4u.com/en/cram-up/tests/conditional-sentences-3	https://www.youtube.com/watch ?v=xyq9eJn9W0Q
6	Framing Questions	https://www.englisch-hilfen.de/en/exercises/questions/form.htm	https://www.youtube.com/watch ?v=mLefVAv KsRk
7	Conjunctions	https://www.englisch-hilfen.de/en/exercises/word_order/conjunctions2.htm	https://www.youtube.com/watch ?v=- FdEaeD1MdY
8	Sequencers	https://www.liveworksheets.com/worksheets/en/English_as_a_Second_Language_(ESL)/Sequence_words/Sequencer_hd35532qf	https://www.youtube.com/watch ?v=sFrHK7c HzkA
9	Phrases and Clauses	https://www.softschools.com/quizzes/grammar/phrase_or_clause/quiz282 5.html	https://www.youtube.com/watch ?v=z45UdL0 WTro
10	Direct and Indirect Speech	https://www.perfect-english-grammar.com/reported-speech-exercise-10.html	https://www.youtube.com/watch ?v=LVB4O0 BSZBQ

Vocabulary

Sno	Topic	Link
1	Compound Words	https://www.englisch-hilfen.de/en/exercises/structures/compounds.htm
2	Acronyms	https://www.tolearnenglish.com/exercises/exercise-english-2/exercise-english-113150.php
3	Guessing meaning from context	https://www.grammarbank.com/context-clues-worksheet.html
4	Homophones	https://agendaweb.org/vocabulary/homonyms-exercises.html
5	Blend words	https://www.myenglishpages.com/site_php_files/grammar-lesson-blending.php

Course Contents and Lecture Schedule

No	Topic	Hours
1	Module 1: Introduction to Technical Communication	9 hrs
1.1	Importance & Benefits of Active Listening, Appreciative Listening	2
1.2	Importance of vocal cues, Role Plays	2
1.3	Introduction to Effective Reading, Benefits of Effective Reading, KWL technique, Speed of Reading, Tips to develop Reading Habits, Skimming documents	2
1.4	Structure and Types of Paragraphs	1
1.5	Simple, Compound & Complex sentences, Imperatives, Compound words	2
2	Module 2: English for Business Communication	9 hrs
2.1	Emphatic listening- Strategies and practice	2
2.2	The three Vs of communication, Telephonic Conversation Practice	1
2.3	Efficient & Inefficient readers, Four basic steps to reading, Comprehensive Reading, Comprehensive Reading techniques	2
2.4	Letter to the Editor and Business Letters	2
2.5	Regular /Irregular Verbs, Transitive /Intransitive Verbs, Acronyms	2
3	Module 3: English for Academic Purposes	10 hrs
3.1	Comprehensive Listening Strategies & Practice	2
3.2	Barriers to effective speaking, Debate	1
3.3	Barriers to effective reading, Critical reading	1
3.4	Introduction to Review Writing, Parts of a Review	2
3.5	Conditionals, Framing Questions, Guessing meaning from the context	4
4	Module 4: English for Organizational Skills	10 hrs
4.1	Critical or Analytical listening & Practice	2
4.2	Reasons for Incorrect pronunciation, Received Pronunciation, Practice Impromptu speeches	2
4.3	Predicting and Problem Solving, Surveying a text using an Index, Practice the art of Extensive Reading Importance, structure & types of reports, Preparing Technical and Newspaper reports	4
4.4	Conjunctions, Sequencers, Homophones	2
5	Module 5: English for Professional Communication	10 hrs
5.1	Three basic listening models	2
5.2	Strategies for Speaking, Tips for effective Presentation, Practice Presentation Skills	2

5.3	Methods of Reading -Sub-vocalized, Speed reading, Photo reading, SPE, Multiple intelligences-based method Approaches to Reading	2
5.4	Difference between Technical & Creative Writing, Poster Designing, Advertisements, Tweeting & Blogging	2
5.5	Phrases and Clauses, Direct and Indirect Speech, Blend words	2

24SJINMCA104	INTRODUCTION TO DISCRETE MATHEMATICS	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	Concepts and notations from discrete mathematics are useful in studying and describing objects and problems in branches of computer science. This course introduces the concepts of Logic, Mathematical induction, Number Theory and Graph theory.
Prerequisite:	NIL

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Recognize and apply the concepts needed to test the logic of a program using propositions.	K3
CO2	Apply the principle of mathematical induction and pigeon hole principle to solve problems	K3
CO3	Explain number theory and apply it to ensure secure communication.	K3
CO4	Use a combination of theoretical knowledge and independent mathematical thinking in creative evaluation of questions in graph theory.	K3
CO5	Analyse the properties of trees and implement tree algorithms.	K3

Mapping of course outcomes with program outcomes								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	3	3	3					1
CO2	3	3	3					1
CO3	3	3	3					1
CO4	3	3	3					1
CO5	3	3	3					1

Mark distribution

Continuous Internal Evaluation Pattern:

Attendance : 8 marks
Continuous Assessment Test (2numbers) : 20 marks
Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern: There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question caries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks

Course Level Assessment Questions:

Course Outcome (CO1):

1. Describe the Logical Operators Conjunction, Disjunction, Negation
2. Differentiate between Tautology and Contradiction.
3. Show that given propositions are logically equivalent without using truth table.

Course Outcome 2 (CO2):

1. Describe the principle of mathematical induction.
2. Explain the generalized pigeonhole principle.
3. Use pigeonhole principle to show that among any n+1 positive integers not exceeding 2n there must be integer that divides one of the other integers.

Course Outcome 3 (CO3):

1. Determine the gcd and lcm of (231, 1575).
2. Explain the fundamental theorem of arithmetic
3. Evaluate the smallest positive integer which leaves the remainder 1,2,3,4 when divided by the prime numbers 2, 3, 5, 11 respectively using Chinese remainder theorem.

Course Outcome 4 (CO4):

1. Determine the adjacency matrix for K_n.
2. Determine the given pair of graph is isomorphic. Exhibit an isomorphism or provide a rigorous argument that none exists.

3. Describe Dijkstra's algorithm

Course Outcome 5 (CO5):

1. Differentiate between tree and forest.
2. Discuss about the traversal algorithms.
3. Illustrate the order in which a preorder, inorder, postorder traversal visits the vertices of any ordered rooted tree.

SYLLABUS

Module 1

Logic: Logical operators Conjunction, Disjunction, Negation, Conditional and biconditional, Truth tables, Equivalence and Implication, Tautology and Contradiction, Inference Theory, Validity by Truth Table, Rules of Inference for propositional logic, Predicates, Quantifiers, De-Morgan's law for Quantifiers.

Module 2

Mathematical Induction and Pigeonhole Principle: Mathematical Induction, strong form of Mathematical Induction, Pigeonhole Principle.

Module 3

Number Theory: Introduction, Division, Primes Division Algorithm, LCM and GCF, Modulo Arithmetic, Euclidean Algorithm (without proof), Linear Congruences, Chinese Remainder Theorem (without proof).

Module 4

Graph Theory: Basic terminology: Different Types of Graphs Directed and Undirected, Simple, Pseudo, Complete, Regular, Bipartite, Incidence and Degree, Pendant and Isolated Vertex and Null graph, Isomorphism, Sub Graphs. Operations on Graphs, Matrix Representation of Graphs, Walk, Path and Circuit, Connected and Disconnected Graphs, Euler Circuits and Paths, Necessary and Sufficient Conditions (without proof) Hamiltonian Circuits and Paths, Dirac's and Ore's theorem (without proof), Dijkstra's algorithm (Section 10.2-excluding matchings and colorings).

Module 5

Trees: Introduction, Properties, Rooted Trees, Binary and m- ary Trees, Tree Traversal, Spanning Trees (definition and examples only), Kruskal's and Prim's Algorithm.

Text Books

1. Kenneth H Rosen, "Discrete Mathematics and Its Applications", 7th Edition, Tata McGraw Hill

References

1. J.P.Tremblay and R Manohar, “Discrete Mathematical Structures with Applications to Computer Science”, 1997 Edition, Tata McGraw-Hill Publications.
2. Narsingh Deo, “Graph Theory”, 2nd Edition, Prentice Hall of India
3. C. L. Liu and D. P. Mohapatra, "Elements of Discrete Mathematics", 4th Edition, Tata McGraw- Hill.

Suggested MOOC

1. Graph Theory: http://www.nptel.ac.in/courses/106108054/2#
2. Chinese Reminder Theorem: http://nptel.ac.in/courses/106103015/11

Course Contents and Lecture Schedule

No	Topic	No. of Lectures
1	**Module 1: Logic**	**10**
1.1	Logical operators Conjunction, Disjunction, Negation, Conditional and bi conditional	1
1.2	Truth tables	1
1.3	Equivalence and Implication	1
1.4	Tautology and Contradiction	1
1.5	Inference Theory	1
1.6	Validity by Truth Table	1
1.7	Rules of Inference for propositional logic	1
1.8	Predicates, Quantifiers	1
1.9	De-Morgan’s law for Quantifiers	2
2	**Module 2: Mathematical Induction and Pigeonhole Principle**	**7**
2.1	Mathematical Induction	2
2.2	Strong form of Mathematical Induction	2
2.3	Pigeonhole Principle	3
3	**Module 3: Number Theory**	**8**
3.1	Introduction	1
3.2	Division, Primes Division Algorithm	2
3.3	LCM and GCF	1
3.4	Modulo Arithmetic, Euclidean Algorithm (without proof)	1
3.5	Linear Congruence	1
3.6	Chinese Remainder Theorem (without proof	2

4	**Module 4: Graph Theory**	**14**
4.1	Basic terminology: Different Types of Graphs Directed and Undirected Graphs	1
4.2	Simple, Pseudo, Complete, Regular, Bipartite, Incidence and Degree, Pendant and Isolated Vertex and Null graph	2
4.3	Isomorphism	2
4.4	Sub Graphs, Operations on Graphs	1
4.5	Matrix Representation of Graphs	1
4.6	Walk, Path and Circuit, Connected and Disconnected Graphs	2
4.7	Euler Circuits and Paths, Necessary and Sufficient Conditions(without proof)	2
4.8	Hamiltonian Circuits and Paths, Dirac's and Ore's theorem(without proof)	2
4.9	Dijkstra's algorithm	1
	Module 5:Trees	**9**
5.1	Introduction, Properties	2
5.2	Rooted Trees, Binary and m- ary Trees, Tree Traversal	2
5.3	Spanning Trees	3
5.4	Kruskal's and Prim's Algorithm	2

24SJINMCA106	INTRODUCTION TO DIGITAL SYSTEMS & LOGIC DESIGNS	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	This course introduces students to some basic digital electronics and Single Board Computers which are the core of MCA course. It also introduces the concepts of Boolean algebra, Sequential Circuits, Combinational Circuits, Registers and System-on-Chip.
Prerequisite:	A basic knowledge of arithmetic operations.

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Gain knowledge in different types of number systems and their conversions.	K3
CO2	Understand the basics of Boolean Algebra and Design various complex logic gates.	K2
CO3	Minimization technique to implement Boolean functions.	K3
CO4	Analyze and design various sequential and combinational circuits.	K3
CO5	Examine the structure of shift registers, counters and programmable logic chip.	K2

Mapping of course outcomes with program outcomes								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	3	2	2	1				2
CO2	3	2	2	2				2
CO3	2	2	3	3				2
CO4	3	1	3	3				1
CO5	2	3	3	2				

Mark distribution

Continuous Internal Evaluation Pattern:

Attendance : 8 marks
Continuous Assessment Test (2numbers) : 20 marks
Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern: There will be two parts; Part A and Part B. Part A contain 10 questions with 2 questions from each module, having 3 marks for each question. Students should answer all questions. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks.

Course Level Assessment Questions

Course Outcome (CO1):

1. Discuss various methods for the representation of signed numbers? (K2)
2. Convert the following hexadecimal number to decimal number $(FACE)_{16}$. (K5)
3. Generate 8-bit sign magnitude, 1's complement and 2's complement representation for $(57)_{10}$. (K6)

Course Outcome 2 (CO2)

1. Define basic laws of Boolean Algebra. (K1)
2. State and prove DeMorgan's Theorem. (K1)
3. Apply DeMorgan's theorem to the expression ((ABC)'+D+E)' (K3)
4. Draw the logic symbol and truth table of XNOR. (K2)
5. With logic symbol, truth table explain the operations of basic logic gates. (K2)
6. Demonstrate the negative-OR equivalent operation of a NAND gate. (K3)

Course Outcome 3 (CO3):

1. Describe standard forms of Boolean Expression? (**K1**)
2. Illustrate the working of S-R flip flop with neat diagram. (K3)
3. Minimize the following Boolean function using K-Map – A'+AB'+ABC'+AD'. (K5)

Course Outcome 4 (CO4):

1. Draw and explain BCD to Decimal Decoder. (K2)
2. Illustrate the working of JK Flip Flop with neat diagram. (K3)
3. Compare latches and flip-flops. (K5)

Course Outcome 5 (CO5):

1. Write the applications of registers. (K3)
2. Compare synchronous and asynchronous counters. (K5)
3. With the diagrammatic illustration discuss the working of Serial In Parallel Out shift register. (K4)

Syllabus

Module I

Number System - Decimal, Binary, Octal, Hexadecimal, Conversion of one number system to other number system, Arithmetic operations on Binary numbers - Addition and Subtraction, Multiplication, Division. Representation of signed numbers – sign magnitude form, 1's and 2's Compliment form.

Module II

Logic Gates - AND, OR, NOT, XOR, XNOR - logic functions, logic symbols, truth tables. Universal Gates - NOR, NAND - logic functions, logic symbols, truth tables. Introduction to Boolean Algebra - Laws and Rules of Boolean Algebra, De Morgan's Theorem.

Module III

Standard forms of Boolean Expressions, Minimization of Boolean function using K-map method - SOP, POS. Sequential Circuits: Introduction to Latches, Flip-Flops - SR, JK, T, D, MS.

Module IV

Combinational Circuits: Full Adder, Half Adder, Full Subtractor, Half Subtractor. Decoders – Basic Binary Decoder, 4-bits decoder, BCD to Decimal Decoder, Encoders – Decimal to BCD Encoder, Multiplexer – 4x1 and 8x1, Demultiplexer – 1x4 and 1x8. Comparator-1-bit magnitude and 2-bit magnitude comparator.

Module V

Registers - Serial in serial out, Serial in parallel out, Parallel in serial out, parallel in parallel out. Counters – 2, 3, 4 bits Synchronous Counters and 2, 3, 4 bits Asynchronous Counters. Introduction to System-On-Chip – A basic SOC system model.

Text Books

1. Floyd, "Digital Fundamentals", Pearson Education, 10th Edition (2011).
2. A. Anand Kumar, "Fundamentals of Digital Circuits", PHI Learning Pvt. Ltd., (2003).
3. Michael J. Flynn, Wayne Luk, "Computer System Design System-on-Chip", Wiley (2011).

References

1. Mano, "Digital Design: With an Introduction to Verilog HDL", Pearson Education, 5th Edition (2014).
2. Morris Mano, "Logic and Computer Design Fundamentals",4th Edition (2013).
3. Wael Badawy, Graham A. Jullien, "System-on-Chip for Real-Time Applications", Springer Science + Business Media (2003).
4. Morris Mano, "Digital logic and Computer design", Pearson Education, 1st Edition (2004).Edition (2014)

Web Resources

1. Digital Systems - http://nptel.ac.in/courses/106108099/
2. Digital Systems Design - http://nptel.ac.in/courses/117105080/

3. Introduction to Digital Circuits - http://nptel.ac.in/courses/117106086/1
4. Build a Modern Computer from First Principles - https://www.coursera.org/learn/build-a-computer

Course Contents and Lecture Schedule

No	Topic	No. of Lectures
	Module 1	**10 hrs**
1.1	Number Systems	3
1.2	Conversions	4
1.3	Arithmetic operations on Binary Numbers	2
1.4	Representation of signed numbers	1
	Module 2	**8 hrs**
2.1	Logic Gates	4
2.2	Universal Gates	2
2.3	De Morgan's Theorem	2
	Module 3	**10 hrs**
2.1	K-Map	3
2.2	Minimization of Boolean function using K-Map	3
2.3	Latches	1
2.4	Flip-Flops	3
4	**Module4**	**10 hrs**
4.1	Adders	2
4.2	Subtractors	1
4.3	Encoder	1
4.4	Decoder	1
4.5	Multiplexer	2
4.6	Demultiplexer	2
4.7	Comparator	1
	Module 5	**10 hrs**
5.1	Registers	4
5.2	Counters	4
5.3	System-on-Chip	2

24SJINMCA108	PROBLEM SOLVING AND STRUCTURED PROGRAMMING	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	The syllabus is prepared with the view of preparing the MCA Graduates capable of writing readable C programs to solve computational problems that they may have to solve in their professional life. The course content is decided to cover the essential programming fundamentals which can be taught within the given slots in the curriculum
Prerequisite:	24SJINMCA105 Introduction to Programming.

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Understand computer programming fundamentals.	K2
CO2	Learn about different control statements in C programming.	K2
CO3	Apply the concept of implementing C programs with arrays and strings.	K3
CO4	Divide a given computational problem into a number of modules by defining user defined functions and to understand the concept of structure and union in C programming language.	K2
CO5	Understand the concept of pointers and file handling.	K2

Mapping of course outcomes with program outcomes								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	3	1	1	1				2
CO2	3	2	2	2				2
CO3	3	2	2	2	1			2
CO4	2	2	2	3	1			2
CO5	3	2	2	2	1			2

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	**40**	**60**	3 hours

Continuous Internal Evaluation Pattern:

Attendance : 8 marks
Continuous Assessment Test (2 numbers) : 20 marks
Assignment/Quiz/Course project : 12 marks

End Semester Examination Pattern:

There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question caries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks

Course Level Assessment Questions

Course Outcome 1 (CO1):

1. Define three types of computer Languages.
2. Define C Tokens. (K1)

Course Outcome 2 (CO2):

1. Explain single character Input and Output.
2. Discuss User-Defined Data Type.

Course Outcome 3(CO3):

1. Apply the area of a Circle of radius r, in C program.
2. Apply the logic to write a C program to process the marks obtained by n students of a class and prepare their rank list based on the sum of the marks obtained. There are 3 subjects for which examinations are conducted and the third subject is an elective where a student is allowed to take any one of the two courses offered.
3. Evaluate C program to process a set of n natural numbers and to find the Biggest number and smallest number from the given set of numbers.

Course Outcome 4 (CO4):

1. Demonstrate basic concepts of Array, Initialization of Array, with an example program.
2. Evaluate Nested Loop Statement in C with example.
3. Design a C program to find the value of a mathematical function f, which is defined as follows. f(n) = n! / (sum of factors of n), if n is not prime and f(n) = n! / (sum of digits of n), if n is prime.
4. Design a C program to generate Armstrong numbers between 2 limits.

Course Outcome 5 (CO5):

1. Analyse different random accessing file functions, with example
2. Design a C program to generate Mark List of N students, each students having roll no, name, marks of three subjects and total, using array of structure.

SYLLABUS

Module 1

Introductory concepts: Machine, Assembly and High level Language. Introduction to C Language, The C character set, C Tokens: Keywords, Identifiers, Constant, Operators, Special Characters and Strings. Data Types: Basic Data Type, Derived Data Type and User-defined Type, Void Data Type. Integer Data Type, Characters, Floats and Doubles.

Data Input and Output: Single Character Input, Single Character Output, Entering Input Data, Writing Output Data, **gets()** and **puts()** function, Interactive programming, Type Conversion.

Module 2

Control Statements: Introduction, the **if** statement, **if-else** statement, **nested if-else** statement, **if-else-if ladder** statement, **break** statement, **continue** statement, **goto** statement.

Loop Control- **for loop**, **while loop**, **do-while** loop, nested **for** loops.

Module 3

Arrays and strings: Arrays Introduction, declaration and Initialization, One-Dimensional Array, Operations with Array, Two-Dimensional Array and Operations. **String**: Declaration and Initialization of String, programs without standard string functions, String handling functions.

Module 4

Functions: Introduction, Function Definition, the return Statement, Types of Function, Call by Value, Recursion. **Storage Classes**: Introduction, Automatic variables, External Variables, Static variables, Register Variables. **Sructure and union**: Introduction, Declaration and Initialization of Structures, Array of Structures, Structure and Function, Union: introduction, difference between structure and union.

Module 5

Pointers and Files: Pointers: Introduction, Features, Pointers and Address, **void** Pointer, wild Pointers, constant Pointers, Pointers and Array, Array of Pointers, Pointers and Two-Dimensional Array, Pointers and Strings, function call by Reference. **Files**: Introduction, file operations, other file functions.

Text Books

1. Ashok N. Kamthane, "Programming in C", Pearson Education, 2nd Edition (2013).
2. Byron S Gottfried, "Programming with C", Schaum's outline, 2nd Edition, McGraw Hill (2006).

Reference Books

1. E. Balagurusamy "Programming in ANSI C "6th Edition, McGraw Hill (2012).
2. Brian W Kernighan & Dennis Ritchie, "The C programming language", 2nd Edition, Prentice Hall (2015).
3. K N King, "C Programming: A Modern Approach", W. W. Norton & Co, 2nd Edition (1996).
4. Reema. Thareja, "Programming in C", Oxford University Press, 2nd Edition (2016).
5. Stephen Prata K, "C Primer Plus", Pearson Education, 5th Edition (2013).

Web Resources

1. https://www.edx.org/course/programming-basics-iitbombayx-cs101-1x

Course Contents and Lecture Schedule

No.	Topic	No. of Lectures
1	**Module 1**	**7 Hrs**
1.1	Introductory concepts: Machine, Assembly and High level Language. Introduction to C Language, The C character set, C Tokens: Keywords, Identifiers, Constant, Operators, Special Characters and Strings. Data Types: Basic Data Type, Derived Data Type and User-defined Type, Void Data Type. Integer Data Type, Characters and Floats and Doubles.	5
1.2	Data Input and Output: Single Character Input, Single Character Output, Entering Input Data, Writing Output Data, gets() and puts() function, Interactive programming. Type Conversion	2
2	**Module 2**	**8 Hrs**
2.1	Control Statements: Introduction, the **if** statement, **if-else** statement, **nested ifelse**	4

	statement, **if-else-if ladder** statement, **break** statement, **continue** statement, **goto** statement.	
2.2	Loop Control- **for loop**, **while loop**, **do-while loop**, nested **for loops**.	4
3	**Module 3**	**12 Hrs**
3.1	Arrays and strings, Arrays Introduction, declaration and Initialization, One- Dimensional Array, Operations with Array, Two-Dimensional Array and Operations	7
3.2	String: Declaration and Initialization of String, programs without standard string functions, String handling functions	5
4	**Module 4**	**12 Hrs**
4.1	Functions: Introduction, Function Definition, the return Statement, Types of Function, Call by Value, Recursion.	4
4.2	Storage Classes: Introduction, Automatic variables, External Variables, Static variables, Register Variables.	2
4.3	Structure and union: Introduction, Declaration and Initialization of Structures, Array of Structures, Structure and Function, Union: introduction, difference between structure and union	6
5	**Module 5**	**9 Hrs**
5.1	Pointers: Introduction, Features, Pointers and Address, **void** Pointer, wild Pointers, constant Pointers, Pointers and Array, Array of Pointers, Pointers and Two-Dimensional Array, Pointers and Strings, function call by Reference	5
5.2	Files: Introduction, file operations, other file functions.	4

24SJINMCA110	PERSONALITY DEVELOPMENT AND SOFT SKILLS	CATEGORY	L	T	P	CREDIT
		GENERAL	3	1	0	4

Preamble:	Soft skills are those competencies that help an individual to be resourceful and positive while taking on life's ups and downs. Development of one's personality by being aware of the self, connecting with others, leading and generating change, and staying rooted in values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to various aspects that help in personal and professional success, and help them acquire the skills needed to apply various principles in their lives and careers.
Prerequisite:	NIL

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Describe personality types and interpersonal skills.	K1
CO2	Create a SWOT analysis to assess their career perspective	K2
CO3	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.	K2
CO4	Demonstrate appropriate etiquettes in meetings, group discussions and interviews.	K3
CO5	Develop creative CVs and present their skills and abilities to employers.	K3

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1	1	1	1	3	1	1	1
CO2	1	3	1	1	1	1	1	1
CO3	1	2	1	1	2	1	1	3
CO4	1	1	1	1	3	1	1	1
CO5	3	1	1	1	1	1	1	1

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	40	60	3 hours

Continuous Internal Evaluation Pattern:

Attendance : 8 marks
Continuous Assessment Test (2 numbers) : 20 marks
Assignment/Quiz/Course project : 12 marks

Regular assessment

Group Discussion (Marks: 5)

Create groups of about 6 students each and engage them on a GD on a suitable topic for about 20 minutes.
Parameters to be used for evaluation are as follows:
- Communication Skills : 2 marks
- Subject Clarity: 2 marks
- Group Dynamics : 1 marks

Presentation Skills (Marks: 5)

Identify a suitable topic and ask the students to prepare a presentation (preferably a power point presentation) for about 10 minutes.
Parameters to be used for evaluation are as follows:
- Communication Skills : 2 marks
- Platform Skills : 2 marks
- Subject Clarity : 1 marks

CV preparation (Marks: 2)

End Semester Examination Pattern:

There will be two parts; Part A and Part B. Part A contains 10 compulsory short answer questions, 2 from each module. Each question caries 3 marks. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 6 marks

Course Level Assessment Questions

Course Outcome 1 (CO1):
1. Explain various personality types.
2. Describe interpersonal skills.

Course Outcome 2 (CO2):
1. Perform a personal SWOT analysis.
2. Prepare a time management policy for yourself.

Course Outcome 3(CO3):

1. Explain how personality types affect interpersonal communication.
2. Describe the reasons for interpersonal conflicts.

Course Outcome 4 (CO4):
1. Elucidate on the body language skills that can be applied to become successful in interviews and group discussions?
2. Suggest a few points to become successful in interviews.

Course Outcome 5 (CO5):
1. Describe various interview techniques.
2. Prepare a personal CV.
3. Suggest appropriate e-learning courses for professional development.
4. List out the benefits of e-learning.

SYLLABUS

Module 1
Personality Development: Definition Personality, Interpersonal Skills Personality Types and Leadership Qualities, Personality Tests

Module 2
Self-awareness – Self-awareness: definition, need for self-awareness; tools and techniques of SA: questionnaires, journaling, reflective questions, meditation, mindfulness, psychometric tests, feedback. Stress Management: Stress, reasons and effects, identifying stress, stress diaries, the four A's of stress management, techniques, Time management, Attitude, Confidence building, Personal SWOT

Module 3
Soft Skills - Creativity and Lateral thinking, Morals, Values and Ethics: Integrity, Respect for Others, Living Peacefully. Caring, Sharing, Honesty, Courage, Avoiding Procrastination, Empathy Emotional intelligence/Emotional Quotient, Coping with emotions: Identifying and managing emotions, harmful ways of dealing with emotions, PATH method and relaxation techniques. Interpersonal skills –conflict management, types of conflict, Conflict resolution skills-seeking a win – win solution.

Module 4
Non-verbal Communication and Body Language: Forms of non-verbal communication, Emotions displayed through Body Language, Handshakes, Eyes, Personal Zones; Effective use of body language, Body Language at Professional Interactions: Interviews, Group; Discussions & Video-conference.

Module 5
Job Interviews: Preparing Curriculum Vitae, Group Discussions: Types of GD, Active Listening and Skills exhibited in a GD, Types of Interviews, Probable Interview Questions; 53

e-learning Concepts and Techniques: e-learning, Benefits, Disadvantages, Types of e-learning, elearning Technologies, Career Growth Benefits and Future of e-learning.

Text Books

1. Barun K. Mitra, "Personality Development & Soft Skills", 1st Edition, Oxford Publishers (2011)
2. Remesh S., Vishnu R.G., "Life Skills for Engineers", Ridhima Publications, First Edition, 2016.

Reference Books

1. Alessio Robertio, "The ultimate introduction to Neuro-linguistic Programming", Harpercollins (2013)
2. Maxwell John, "The 5 Levels of Leadership", Centre Street, A Hachette Book Group Inc. New York (2015)
3. Mishra B K, "Psychology the study of human behavior", PHI Learning Pvt Ltd, New Delhi (2008)
4. Shalini Verma, "Development of Life Skills and Professional Practice", 1st Edition, Vikas Publishing House, New Delhi (2014)
5. Subramaniam R., "Professional Ethics", Oxford University Press (2013)
6.https://2012books.lardbucket.org/books/a-primer-on-communication-studies/s06-02-conflictand- interpersonal-com.html
7. The Ace of Soft Skills: Attitude, Communication and Etiquette for Success, Pearson Education; 1 edition, 2013.

Suggested MOOC

1. Introduction to Time Management: https://alison.com/courses/Introduction-to-TimeManagement

Course Contents and Lecture Schedule

No	Topic	No. of Lecturer
1	**Module 1: Personality Development**	**8 Hours**
1.1	Personality Development: Definition Personality,	2
1.2	Interpersonal Skills Personality Types and Leadership Qualities,	4
1.3	Personality Tests	2
2	**Module 2: Self-awareness**	**10 Hours**
2.1	Self-awareness: definition, need for self-awareness	1
2.2	Tools and techniques of SA: questionnaires,	1

2.3	Journaling, reflective questions	1
2.4	Meditation, mindfulness,.	**1**
2.5	Psychometric tests, feedback	1
2.6	Stress Management:,	1
2.7	Stress, reasons and effects, identifying stress	1
2.8	Stress diaries, the four A's of stress management, techniques	1
2.9	Time management, Attitude	**1**
2.10	Confidence building, Personal SWOT;	1
3	**Module 3: Soft Skills**	**10 Hours**
3.1	Creativity and Lateral thinking,.	1
3.2	Morals, Values and Ethics: Integrity, Respect for Others, Living Peacefully	1
3.3	Caring, Sharing, Honesty, Courage, Avoiding Procrastination,Empathy	1
3.4	Emotional intelligence/Emotional Quotient, Coping with emotions:	1
3.5	Identifying and managing emotions, harmful ways of dealing with emotions,	2
3.6	PATH method and relaxation techniques.	2
3.7	Interpersonal skills – Conflict management ,types of conflict	1
3.8	Conflict resolution skills-seeking a win –win solution,	1
4	**Module 4: Non-verbal Communication and Body Language**	**10 Hours**
4.1	Forms of non-verbal communication,	2
4.2	Emotions displayed through Body Language	2
4.3	Handshakes, Eyes, Personal Zones;	1
4.4	Effective use of body language,.	1
4.5	Body Language at Professional Interactions: Interviews	2
4.6	Body Language at Professional Interactions: Group; Discussions & Videoconference	2
5	**Module 5: Job Interviews**	**10 Hours**
5.1	Job Interviews: Preparing Curriculum Vitae,	2
5.2	Group Discussions: Types of GD, Active Listening and Skills exhibited in a GD,	2
5.3	Types of Interviews, Probable Interview Questions;	2
5.4	E-learning Concepts and Techniques:	1
5.5	E learning, Benefits, Disadvantages	1
5.6	Types of E-learning, E-learning Technologies	1
5.7	Career Growth Benefits and Future of e-learning	1

24SJINMCA132	**PROBLEM SOLVING AND STRUCTURED PROGRAMMING LAB**	**CATEGORY**	**L**	**T**	**P**	**CREDIT**
		GENERAL	**0**	**0**	**4**	**1**

Preamble:	The syllabus is prepared with the view of preparing the MCA Graduates capable of writing C programs to solve computational problems that they may have to solve in their professional life. The students can explore various programming constructs and data structures for the basic problem solving in C language. The course content is decided to cover the essential programming fundamentals. The students are expected to come prepared with the required program written in the rough record for the lab classes.
Prerequisite:	24SJINMCA108 Problem Solving and Structured Programming, 24SJINMCA105 Introduction to Programming.

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Analyse a computational problem and develop an algorithm/flowchart to find its solution.	K3
CO2	Apply the basic concepts of data input and output, operators and expression and control statement	K2
CO3	Implement structured programming using various programming constructs	K3
CO4	Illustrate the use of various data types with demonstration programs.	K2
CO5	Implement lab experiments in Linux and Windows platforms.	K3
CO6	Identify the use of structure and file in program development.	K1

Mapping of course outcomes with program outcomes

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	3	3	2	2	1			1
CO2	3	2	1	2	1			1
CO3	3	2	2	2	1			1
CO4	2	1	1	2				1
CO5	2	2	2	3	2	1		1
CO6	2	1	1	2		1		1

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	50	50	3 hours

Continuous Internal Evaluation Pattern:

Maximum Marks : 50	
Attendance	15%
Maintenance of daily lab record and GitHub management	20%
Regular class viva	15%
Timely completion of dat to day tasks	20%
Tests/Evaluation	30%

End Semester Examination Pattern

Lab exam will be conducted by internal examiner.

Course Level Assessment

Course Outcome 1 (C01):

1. Explore and draw flowchart of the problem of biggest among 2 nos.

2. Analyse and draw flow chart of the problem of the biggest of 3 nos.

Course Outcome 2 (C02):

1. Basic inputting and formatting in C program.

2. Basic outputting and formatting in C program.

Course Outcome 3 (C03):

1. Design C program to find biggest among 3 nos.

2. Design C program to calculate the grade of a student.

Course Outcome 4 (C04):

1. Use inbuilt formatting methods to input and output data.

Course Outcome 5 (C05):

1. Create a menu driven program for performing matrix addition, multiplication and finding the transpose. Use functions to (i) read a matrix, (ii) find the sum of two matrices, (iii) find the product of two matrices, (i) find the transpose of a matrix and (v) display a matrix.

Course Outcome 6 (CO6):

1. Creating structure and file program to store and retrieve students total mark

SYLLABUS

Computing basics, Data input and output, operators and expressions, Control statement, Arrays, Functions, Program structure, pointers, structures and unions, files, additional features of C.

Reference Books

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, Prentice Hall of India (2015).

2. Byron Gottfried, "Schaum's Outline of Programming with C", 2nd Edition, McGraw-Hill.

3. Deitel & Deitel, "C – How to Program", 6th Edition, Pearson Education Asia (2009).

4. E. Balaguruswamy, "Programming in ANSI C", 5th Edition, Tata McGraw-Hill (2011).

5. Forouzan, "Computer Science: A Structured Programming Approach Using C", 3rd Edition, Cengage Learning (2007).

6. PradipDey, Manas Ghosh, "Programming in C", 2nd Edition, Oxford Higher Education (2012).

7. Yashavant Kanetkar, "Understanding pointers in C", 4th Edition, BPB Publication (2009).

Web Resources

1.https://www.tutoriaspoint.com/cprogramming/

2.https://www.programiz.com/c-programming

3.https://www.edx.org/course/subject/computer-science

4. https://www.edx.org/course/programming-basics-iitbombayx-cs101-1x-0#

List of Lab Experiments

1. Familiarization of Hardware Components of a Computer.

2. Familiarization of environment – How to do Programming in C in the editor.

3. Familiarization of console I/O and operators in C

a. Display "Hello World".

b. Read two numbers, add them and display their sum.

c. Read the radius of a circle, calculate its area and display it.

d. Evaluate the arithmetic expression ((a -b / c * d + e) * (f +g)) and display its solution. Read the values of the variables from the user through console.

4. Read 3 integer values and find the largest among them.

5. Read a Natural Number and check whether the number is prime or not.

6. Read a Natural Number and check whether the number is Armstrong or not.

7. Read n integers, store them in an array and find their sum and average.

8. Read n integers, store them in an array and search for an element in the array using an algorithm for Linear Search.

9. Read n integers, store them in an array and sort the elements in the array using Selection Sort algorithm.

10. Read a string (word), store it in an array and check whether it is a palindrome word or not.

11. Read two strings, store them in arrays and concatenate them without using library functions.

12. Read a string, store it in an array and count the number of vowels, consonants and spaces in it.

13. Read a string and convert into upper case without using library functions.

14. Using structure, read and print data of n employees (Name, Employee Id and Salary)

15. Using structure, read and print Rank list of n students (Name, Roll no, 3 Marks and Total).

16. Find the factorial of a given Natural Number n using recursive and non-recursive functions.

17. Read a string (word), store it in an array and obtain its reverse by using a user defined function.

18. Write a menu driven program for performing matrix addition, multiplication and finding the transpose. Use functions to

(i) read a matrix,

(ii) find the sum of two matrices,

(iii) find the product of two matrices,

(iv) find the transpose of a matrix and

(v) display a matrix.

19. Do the following using pointers

a. add two numbers.

b. swap two numbers using a user defined function.

20. Input and print the elements of an array using pointers.

21. Compute sum of the elements stored in an array using pointers and user defined function

22. Create a file and perform the following

a. Write data to the file.

b. Read the data in a given file.

c. Display the file content on the console.

d. Append new data and display on console.

23. Open a text input file and count the number of characters, words and lines in it; and store the results in an output file.

Course Contents and Lecture Schedule

No	Topic	No. of Lecture Hours
1	**Module 1**	**4 Hours**
1.1	Application of Various Input O/P operations and format.	2 Hours
1.2	Demonstration of different Data types and control strings.	2 Hours
2	**Module 2**	**8 Hours**
2.1	Demonstration of decision making and branching statements (Hint: Use if, ifelse, nested if, else if ladder).	6 Hours
2.2	Demonstration of switch case structure and control operators. (Hint: Menu driven programs).	2 Hours
3	**Module 3**	**12 Hours**
3.1	Demonstration of loops (Hint: Entry controlled and exit controlled).	5 Hours
3.2	Demonstration of nested loops (Hint: Pattern printing, between range programs).	7 Hours
4	**Module 4**	**12 Hours**
4.1	Implementation of Single and Multi-dimensional arrays	3 Hours
4.2	Demonstration of sorting & searching techniques.	3 Hours
4.3	Demonstration of various string operations (Hint: with and without String handling functions).	3 Hours
4.4	Pointers: Demonstration of pointer operations. Implementation of pointer to array and array of pointers, String pointers	3 Hours
5	**Module 5**	**12 Hours**
5.1	Implementation of functions (Hint: Demonstrate call by value, call by reference and passing of arrays).	3 Hours
5.2	Demonstration of recursion.	3 Hours
5.3	Implementation of structures (Hint: simple structure operations, array of structures, structures variable as an array, pointers to structures).	3 Hours
5.4	Demonstration of various file operations. (Hint: Text file).	3 Hours

24SJINMCA134	TECHNICAL COMMUNICATION LAB	CATEGORY	L	T	P	CREDIT
		GENERAL	0	0	4	1

Preamble:	Technical Communication is a means of conveying advanced technical concepts in a clear, accurate and comprehensive manner to the intended audience. The objective of this course is to equip the students with practical knowledge of advanced language skills.
Prerequisite:	Basic Communication Skills

Course Outcomes: After the completion of the course the student will be able to:		**K Level**
CO1	Develop effective communication skills in various situations	K3
CO2	Show efficiency in participating in formal discussions and delivering presentations through effective speaking skills.	K2
CO3	Demonstrate advanced listening skills, draw conclusions from discussions & oral presentations	K3
CO4	Compose letters, emails and other technical documents in well- organized and precise structure.	K2
CO5	Illustrate reading skills in comprehending and critically analyzing technical and non-technical texts.	K2
CO6	Develop technical and non- technical vocabulary for implementation in various contexts.	K3

Mapping of course outcomes with program outcomes								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1		2	3		3	3		2
CO2		2	1		3	3		
CO3		2			3	3		1
CO4			3		3	3		
CO5					3	3		1
CO6					3	3		1

Mark distribution

Total Marks	CIE	ESE	ESE Duration
100	50	50	3 hours

Continuous Internal Evaluation Pattern

Maximum Marks : 50	
Attendance	15%
Maintenance of daily lab record and GitHub management	20%
Regular class viva	15%
Timely completion of day to day tasks	20%
Tests/Evaluation	30%

End Semester Examination

Lab exam will be conducted by an internal examiner.

Course Level Assessment

Course Outcome 1 (CO1):

1. Explain the importance of Judgmental listening in workplace.

2. Analyse any article of your choice and get the meaning of 10 unfamiliar words and create sentences using them.

3. Summarize the different techniques for reading comprehension.

Course Outcome 2 (CO2):

1. Identify and practice the right pronunciation of the following words.
   a) Entrepreneur
   b) Vehicle
   c) Atheist
   d) Aesthetic
2. Create and practice self- introduction for job interviews.
3. Mark the intonation for the following sentences
   a) The box was empty.
   b) Is today Thursday?
   c) Cheer up!
   d) Would you like to have some tea?

Course Outcome 3 (CO3):

1. Analyze any Ted Talk of your choice and summarize the main points.

2. Listen to debates evaluate the points shared.

3. Listen to any documentary and practice discriminative listening by identifying the voices and opinions.

Course Outcome 4 (CO4):

1. Assume that you are doing research in Marketing Management and you would like to know about the marketing activities of ABC Company Pvt. Ltd. Create an e- mail to the Marketing Manager of the company asking for an appointment to discuss the same.

2. Assume that you are the Purchase Manager of your company and you had ordered for 12 HP scanners. After receiving the orders, you found out that you have received only half the number of your order, but got the bill for 12 scanners. Compose a letter to be sent to the Sales Manager of ABC Company, complaining about the matter and asking to send the remaining scanners.

3. Assume that you are the General Manager of your company and you are organizing a training programme for the newly joined employees of your company. Create an e- mail to be sent to a consultancy, who had been conducting training programmes in your company for many years, requesting their service, along with the list of the participants and other programme details

Course Outcome 5 (CO5):

1. Read the passage and answer the following questions.

An electron microscope is a sophisticated microscope that can magnify objects up to one million times their original size. Unlike a traditional microscope, an electron microscope can reveal some details of molecular structure and can be effectively used for chemical analysis. It has become an invaluable analytical tool, widely used in medical and industrial research establishments.

There are two types of electron microscope: the transmission electron microscope (TEM) and the scanning electron microscope (SEM). TEM have extremely high resolution and can provide detailed information about the structure of organisms most of which are far too small to be seen at all with a normal optical microscope. In fact, they are effectively used, both, to give information about the microstructure of new materials as they are being designed and also to help in the analysis of failures of materials. Most TEMs operate at accelerating voltage in the range of 50- 100,000 V.

On the other hand, SEM have very different uses as they are very useful for looking at the surfaces of objects and can provide a completely different range of information. They may produce an extremely fine beam of electrons, which is swept to- and- fro across the specimen. They are extremely useful in studying the details and contours of different surfaces. They provide many other striking views of plant and animal cells that cannot be obtained by other means.

(Passage referred from Ashraf Rizvi, “Effective Technical Communication”, 2nd Edition, McGraw Hill Education, 2017.)

a) What are the most remarkable features of TEM?
b) Do TEM and SEM serve different functions?

c) Why does TEMs allow us to see very fine details of specimens?
d) Can electron microscope accurately describe the nature of the material under examination?

2. Outline the steps for arranging sentences in a paragraph.
3. Compare paired, echo and choral reading.

Course outcome 6 (CO6):

1. Choose from the following options: order, in advance, view, reception.
   a) The is fantastic. We can see the whole city from here.
   b) I locked my key in my room and I couldn't find anyone at the . Where can I get the duplicate keys?
   c) Do I have to pay for the whole package?
   d) Sure, can I get the for 7 PM?

2. Find the meaning of the following words.
   a) Hub
   b) Transmit
   c) Breakthrough
   d) Default

3. Predict the right meaning and create sentences
   a) Diligent
   b) Spreadsheet
   c) Commute
   d) Flexi- time

SYLLABUS

Listening: Comprehensive, Specific Information, Judgemental, Analytical & Discriminative Listening. Speaking: Identifying mispronounced words, Self-introduction sessions, JAM sessions, Understanding stress & Intonation through News Reading & Dictionary Skills. Reading: Reading comprehension passages, Arranging sentences in a Paragraph, Fluency, Paired, Echo & Choral Reading, Analytical Reading (Case studies), Reading for Research. Writing: Creating short messages with emoticons, Framing e-mails, Preparing Flowcharts, Slides, Abstract for technical documents. Verbal Ability: Vocabulary on Workplace, Personality, Hobbies & Interest, Travel & Scientific Vocabulary.

Textbooks

1. Mindscapes: English for Technologists and Engineers, Orient Black Swan, 2012
2. Kumar Sanjay & Lata Pushp, "Communication Skills in English", Oxford University Press,(2015)

Web Resources

Introduction to Vocabulary	https://www.youtube.com/watch?v=53SIKuCuHv0
Workplace Vocabulary	https://www.youtube.com/watch?v=hoHCQboEyMA
Vocabulary on Personality	https://www.youtube.com/watch?v=-1k6wRsX0Q8
Vocabulary on Hobbies and Interest	https://www.youtube.com/watch?v=oADRAv9zmRA
Travel Vocabulary	https://www.youtube.com/watch?v=f7aaJ7d6QlQ
Scientific Vocabulary	https://www.youtube.com/watch?v=j0AlzkSrIfo

Suggested MOOC Course

1. English for Workplace
   https://www.futurelearn.com/courses/workplaceenglish?utm_source=BC_India_webiste&u medium=web
2. Business Communication
   https://www.edx.org/course/business-communication
3. Improving your English Communication Skills
   https://www.coursera.org/specializations/improve-english

Experiments

1. Practice comprehensive listening by identifying the main points from Ted talks.
2. Research and find the commonly mispronounced words in English.
3. Practice comprehensive reading by working out Reading Comprehensions
4. Identify the speed of reading by taking a Speed Reading test.
5. Enhance the ability to communicate through SMS writing & through the use of emoticons.
6. Listen and understand how to build vocabulary through a video on Vocabulary building.
7. Listen to a video on Workplace vocabulary and use the phrases learnt in different contexts.
8. Practice listening to specific information through telephonic communication.
9. Participating in Self Introduction session to improve confidence in speaking.
10. Arrange sentences in a Paragraph for effective reading.
11. Design e-mails for effective communication in workplaces.
12. Listen to a video on vocabulary to describe personality and use those phrases to describe different personalities.
13. Listen to debates and practice the art of judging the opinion of the opposing teams.
14. Participate in JAM sessions to improve fluency.
15. Practice fluency in reading through Paired, Echo & Choral reading.
16. Prepare Flowcharts to explain various processes.
17. Listen to vocabulary on Hobbies and Interest and use them in appropriate contexts.
18. Listen to Group Discussions and analyse the different opinions given.
19. Participate in Newspaper Reading to understand stress and intonation.
20. Read and analyse the different opinion presented in a case study.
21. Frame slides to do a presentation on a topic of social relevance.

22. Listen to a video on Travel vocabulary and use them in appropriate contexts.
23. Listen to documentaries and practice discriminative listening.
24. Apply dictionary skills to understand pronunciation and vocabulary.
25. Identify knowledge gaps in any area of interest –Reading for Research.
26. Practice the art of condensation by preparing abstracts for technical documents.
27. Listen to a video on scientific vocabulary and use the words learnt in appropriate context.

Course Contents and Lecture Schedule

No.	Topic	No. of Hours
1	Listening, Reading, Speaking, Writing & Verbal ability	10 hrs
1.1	Practice Comprehensive Listening -Ted Talks	2
1.2	Practice reading comprehension , Speed Reading	2
1.3	Identifying commonly mispronounced words	2
1.4	Framing SMS , Effective use of Emoticons	2
1.5	Introduction to Vocabulary ,Workplace Vocabulary	2
2	Listening, Reading, Speaking, Writing & Verbal ability	10 hrs
2.1	Practice listening to specific information through telephonic communication	2
2.2	Improve confidence by practicing Self introduction sessions	2
2.3	Arranging sentences in a Paragraph	2
2.4	Framing effective e-mails	2
2.5	Vocabulary on Personality	2
3	Listening, Reading, Speaking, Writing & Verbal ability	9 hrs
3.1	Practice judgmental listening through debates	2
3.2	Improve fluency by participating in JAM sessions	2
3.3	Improving Fluency-Practice Paired reading , Echo reading & Choral reading	2
3.4	Preparing Flowcharts	2
3.5	Vocabulary on Hobbies and Interest	1
4	Listening, Reading, Speaking, Writing & Verbal ability	9 hrs
4.1	Practice Analytical Listening through Group Discussions	2
4.2	Understanding Stress & Intonation through News Reading	2
4.3	Analytical Reading - Understanding case studies using comparing and contrasting techniques	2
4.4	Preparing slides for Presentations	2
4.5	Travel Vocabulary	1
5	Listening, Reading, Speaking, Writing & Verbal ability	10 hrs
5.1	Practice discriminative listening through documentaries	2
5.2	Understanding pronunciation & vocabulary through dictionary skills	2
5.3	Practice reading for research by identifying Knowledge gaps in any area of interest	2
5.4	Precise writing - Practice writing abstract for a technical document	3
5.5	Scientific Vocabulary	1

Department of
Computer Applications

Vision

To emerge as a center of excellence in the field of computer education with distinct identity and quality in all areas of its activities and develop a new generation of computer professionals with proper leadership, commitment, and moral values.

Mission

- Provide quality education in Computer Applications and bridge the gap between the academia and industry.
- Promote innovation, research, and leadership in areas relevant to the socio-economic progress of the country.
- Develop intellectual curiosity and a commitment to lifelong learning in students, with societal and environmental concerns.

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AUTONOMOUS

Vision

Developing into a world class, pace setting institute of Engineering and Technology with distinct identity and character, meeting the goals and aspirations of the society.

Mission

- To maintain a conducive infrastructure and learning environment for world class education.
- To nurture a team of dedicated, competent and research-oriented faculty.
- To develop students with moral and ethical values, for their successful careers, by offering variety of programs and services.