



AMAL JYOTHI
COLLEGE OF ENGINEERING
AUTONOMOUS
KANJIRAPPALLY

CURRICULUM

MCA Regular (REG)
SEMESTER II - 2024

Computer Applications

Amal Jyothi College of Engineering(Autonomous)
Kanjirappally, Koovappally P.O

Affiliated to
APJ Abdul Kalam Technological University

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VISION

To promote an academic and research environment conducive for innovation centric technical education.

MISSION

- a) Provide foundations and advanced technical education in both theoretical and applied Computer Applications in-line with Industry demands.
- b) Create highly skilled computer professionals capable of designing and innovating real life solutions.
- c) Sustain an academic environment conducive to research and teaching focused to generate up-skilled professionals with ethical values.
- d) Promote entrepreneurial initiatives and innovations capable of bridging and contributing with sustainable, socially relevant technology solutions.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1 : Be successfully employed in computing profession as well as multidisciplinary domains in supportive and leadership roles.

PEO2 : Participate in life-long learning through the successful completion of advanced degrees, continuing education, certifications and/or other professional developments.

PEO3 : Promote design, research, product implementation and services in the field of Computer Science and Applications through strong technical, communication and entrepreneurial skills.

PROGRAM OUTCOMES (POs)

Graduates will be able to:

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 analyse problems for primarily focussing 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 development of algorithms with an understanding of the limitations including human biases.

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

PO6 : (Project Management and Finance): Use the principles of project management such as scheduling, work breakdown structure and be conversant with the principles of Finance for profitable project management.

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

PO8 : (Life-long learning): Change management skills and the ability to learn, keep up with contemporary technologies and ways of working.

PROGRAMME SPECIFIC OUTCOME (PSOs)

Programme Specific Outcomes of the Programme (REG) are

PSO1 : Apply Engineering knowledge to analyze, design and develop computing solutions by employing modern computer languages, environments and platforms that can solve complex problems.

PSO2 : Anticipate the changing direction of computational technology, evaluate it and communicate the likely utility of that for building software systems that would perform tasks related to Industry, Research and Education.

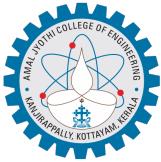
PSO3 : Inculcate the knowledge of Engineering and Management principles to manage projects effectively and create innovative career path

SCHEME OF THE PROGRAMME

- MCA - REG - SEMESTER II - 2024														
No	Course Code	Category	Course	Hours/week				Hours	CIE Marks	ESE Marks	Total	ESE Pass	Total Pass	Credits
				L	T	P	R							
1	24MCAT102	PCC	Advanced Database Management Systems	2	1	0	0	3	50	50	100	20	50	3
2	24MCAT104	PCC	Advanced Computer Networks	3	1	0	0	4	50	50	100	20	50	4
3	--		Elective I	-	-	-	-	0	50	50	100	20	50	4
4	--		Elective II	-	-	-	-	0	50	50	100	20	50	4
5	24MCAL192	PCC	Object Oriented Programming Lab	0	1	3	0	4	50	50	100	20	50	2
6	24MCAL194	PCC	Advanced DBMS Lab	0	1	3	0	4	50	50	100	20	50	2
7	24MCAL196	PCC	Mobile Application Development Lab	0	1	3	0	4	50	50	100	20	50	2
8	24MCAR198	PCC	Documentation and Interview skills for Software Engineers	0	0	2	0	2	100	0	100	0	50	1
													800	
														22

Elective I	
24MCAT112	Applied Statistics
24MCAT122	Organizational Behaviour
24MCAT132	Digital Marketing
24MCAT142	Advanced Web Programming and Digital Public Infrastructure
24MCAM152	NPTEL MOOC 1
Elective II	
24MCAT114	Business Management
24MCAT124	Digital Image Processing
24MCAT134	Computer Graphics
24MCAT144	Artificial Intelligence
24MCAT154	IPR and Cyber Laws





AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT102	ADVANCED DATABASE MANAGEMENT SYSTEMS	PCC	2	1	0	0	3	2024

Preamble :

An Advanced Database Management System (ADBMS) equips users with comprehensive knowledge of relational database foundations, database design principles, and transaction management. It covers crucial aspects such as data storage, query optimization, and the implementation of advanced technologies like Big Data, distributed databases, and cloud services. This system ensures robust data integrity, security, and performance, enabling effective data utilization and strategic decision-making.

Prerequisite :

Basic Database Knowledge, Programming Skills, Data Structures and Algorithms

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Analyze the core principles of relational database systems by examining various data models, database architectures, and Entity-Relationship (ER) modeling features to design and evaluate structured database solutions
CO2	Analyze and apply various normalization techniques to optimize database design by reducing redundancy, improving data integrity, and enhancing query performance
CO3	Assess fundamental issues in transaction processing and concurrency control to ensure data consistency, integrity, and efficient multi-user database operations
CO4	Analyze fundamental database storage mechanisms, file organization strategies, and database accessing techniques to optimize data retrieval, performance, and storage efficiency
CO5	Develop proficiency in Distributed Database Management by designing, implementing, and managing distributed database systems to ensure data consistency, scalability, and efficient query processing

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	10	10	10
Understand	20	20	20
Apply	20	20	20
Evaluate			
Create			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5hrs

End Semester Examination Pattern(2.5hrs)

Part	Total Qns	No: of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6

Continuous Internal Evaluation Pattern :

Attendance	10 marks
Continuous Assessment Tests(2)	25 marks
Assignment/Quiz/Course project	15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

References :

Text Books

1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan," Database System Concepts", McGraw Hill Education, 6th Edition, 2011. (for Module 1 Refer Chapter 1 [1.1 to 1.3, 1.9,1.12], Chapter 2 [2.1-2.3,2.5], Chapter 6 [6.1], Chapter 7 [7.2, 7.3, 7.8(7.81. To 7.8.5)], for Module 4 Refer Chapter 10 [10.3, 10.5, 10.6], Chapter 11 [11.1, 11.2, 11.3(11.3.1), 11.4.5 and module 5 Refer Chapter 19 [19.1,19.2, 19.3 - Distributed Databases], Refer Chapter 22 [22.1 to 22.6 - Object Based Databases]).
2. Ramez Elmasri, Shamkant B.Navathe, " Fundamentals of Database Systems ", Pearson Education, 5th Edition, 2007. (for Module 1 - Refer Chapter 7 [7.1] - 7.1.1 -
1. Relational Database Design using ER- to Relational Mapping]) and for Module 2 - Refer Chapter 10 [10.2.2 and 10.2.4], Refer Chapter 11 [11.4 - Join dependencies and Fifth Normal Form].
3. Guy Harrison, "Next Generation Databases: NoSQL, NewSQL, and Big Data", Apress, 1st Edition, 14 December 2015. Refer Chapters 8 and 3 (for Module 5 - Next Generation Databases and CAP Theorem).
4. Rob, Peter and Carlos Coronel, "Database Principles: Fundamentals of Design, Implementation and Management", 9th Edition, 2011. (for Module 2, refer chapter 6) and (for module 3, refer chapter 10) and (for Module 5, refer Chapter 14 -XML).

Reference Books

1. Ashutosh Kumar Dubay, "Database Management Concepts", S.K. Kataria & Sons, 1st Edition (2012).
2. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", McGraw Hill, 3rd Edition (2014).
3. Thomas M Connolly and Carolyn E Begg, "Database systems- A Practical Approach to Design, Implementation and Management", Pearson Education, 4th Edition (2014).

Web Resources

1. Introduction to Databases (nptel) <https://nptel.ac.in/courses/106/106/106106220/>
2. Database Design (nptel) <https://nptel.ac.in/courses/106/106/106106093/>
3. Introduction to Database Systems and Design
<https://nptel.ac.in/courses/106/106/106106095/>
3. 4. Fundamentals of Database Systems
<https://nptel.ac.in/courses/106/104/106104135/#>
5. Database Management Essentials (Coursera)
<https://www.coursera.org/learn/database-management>
6. Database Systems Concepts & Design
<https://www.udacity.com/course/database-systems-concepts-design--ud150>

Syllabus

Module 1 (7 Hours)

Foundations of Relational Databases - Introduction to Database Systems: Purpose of Database Systems, Database System Applications View of Data : Data Abstraction, Instances and Schemas, Data Models Database Architecture: Database Users and Administrators-Database Users and Interfaces, Database Administrator (DBA) Introduction to the Relational Model: Structure of Relational Databases, Database Schema , Keys in Relational Databases, Relational Query Language (SQL) The Relational Algebra: Fundamental Operations, Formal Definition of Relational Algebra, Additional Relational Algebra Operations.

Module 2 (6 Hours)

Database Design - Database Tables and Normalization – The Need for Normalization The Normalization Process: Inference Rules for Functional Dependencies (proof not needed) - Minimal set of Functional Dependencies - Conversion to First Normal Form, Conversion to Second Normal Form, Conversion to Third Normal Form Improving the Design - Surrogate Key Considerations Higher Level Normal Forms: Boyce/Codd Normal Form, Fourth Normal Form, Join dependencies and Fifth Normal Form – Normalization and Database Design. .

Module 3 (7 Hours)

Transaction Management and Concurrency Control - Transaction: Evaluating Transaction Results, Transaction Properties, Transaction Management with SQL, The Transaction Log Concurrency Control: Lost Updates, Uncommitted Data, Inconsistent Retrievals, The Scheduler Concurrency Control with Locking Methods: Lock Granularity, Lock Types, Two Phase Locking to Ensure Serializability, Deadlocks – Concurrency Control with Timestamping Methods: Wait/Die and Wait/Wound Schemes – Concurrency Control with Optimistic Methods .

Module 4 (8 Hours)

Data Storage and Querying - RAID – File Organization – Organization of Records in Files – Indexing and Hashing: Basic concept, Ordered Indices, B+ tree Index Files: Structure of a B+-Tree (structure only, algorithms not needed) - B tree index files Static Hashing – Dynamic Hashing Query Processing: Overview - Selection Operation. .

Module 5 (8 Hours)

Advanced Database Technologies - Distributed Databases: Homogeneous and Heterogeneous Databases, Distributed Data Storage, Distributed Transactions Object Based Databases: Overview, Complex Data types, Structured types and inheritance in SQL, Table Inheritance Next Generation Databases: Distributed Relational Databases - Nonrelational databases Distributed Databases - MongoDB Sharding and Replication - Hbase - Cassandra - CAP Theorem .

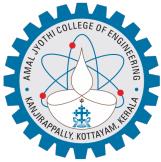
Module i: Industry, Innovation, and Emerging Technologies

Big Data Storage and Management - Introduction to Big Data Storage Solutions: The importance and benefits of cloud-based data storage solutions, including scalability, flexibility, and cost-effectiveness. . Big Data Processing and Analytics - Introduction to Big Data Analytics: The role of data analytics in driving industry innovation , different types of analytics (descriptive, predictive, prescriptive). Emerging Technologies in Big Data: The integration of machine learning and AI with big data technologies, real-time analytics and stream processing solutions, and the role of blockchain in enhancing data security and integrity. .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
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	Module 1	(7 Hours)
1.1	Foundations of Relational Databases Introduction to Database Systems: Purpose of Database Systems, Database System Applications; View of Data : Data Abstraction, Instances and Schemas, Data Models; Database Architecture: Database Users and Administrators-Database Users and Interfaces, ;Database Administrator (DBA); Introduction to the Relational Model: Structure of Relational Databases, Database Schema, ;Keys in Relational Databases, Relational Query Language (SQL); The Relational Algebra: Fundamental Operations, Formal Definition of Relational Algebra, Additional Relational Algebra Operations	
	Module 2	(6 Hours)
2.1	Database Design Database Tables and Normalization – The Need for Normalization ; The Normalization Process: Inference Rules for Functional Dependencies (proof not needed) - ;Minimal set of Functional Dependencies - Conversion to First Normal Form, Conversion to Second Normal Form, Conversion to Third Normal Form ; Improving the Design - Surrogate Key Considerations ; Higher Level Normal Forms: Boyce/Codd Normal Form, Fourth Normal Form, Join dependencies and Fifth Normal Form – Normalization and Database Design.	
	Module 3	(7 Hours)
3.1	Transaction Management and Concurrency Control Transaction: Evaluating Transaction Results, ; Transaction Properties, Transaction Management with SQL, The Transaction Log ; Concurrency Control: Lost Updates, Uncommitted Data, Inconsistent Retrievals, The Scheduler; Concurrency Control with Locking Methods: Lock Granularity, Lock Types, Two Phase Locking to Ensure Serializability, ; Deadlocks – Concurrency Control with Timestamping Methods: Wait/Die and Wait/Wound Schemes – Concurrency Control with Optimistic Methods	
	Module 4	(8 Hours)
4.1	Data Storage and Querying RAID – File Organization – Organization of Records in Files –; Indexing and Hashing: Basic concept, Ordered Indices, B+ tree Index Files: Structure of a B+-Tree (structure only, algorithms not needed) - B tree index files ; Static Hashing – Dynamic Hashing ; Query Processing: Overview - Selection Operation.	
	Module 5	(8 Hours)
5.1	Advanced Database Technologies Distributed Databases: Homogeneous and Heterogeneous Databases, Distributed Data Storage, Distributed Transactions ; Object Based Databases: Overview, Complex Data types, Structured types and inheritance in SQL, Table Inheritance ; Next Generation Databases: Distributed Relational Databases - Nonrelational databases ; Distributed Databases - MongoDB Sharding and Replication - Hbase - Cassandra - CAP Theorem	
	Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)	
I.1	Big Data Storage and Management Introduction to Big Data Storage Solutions: The importance and benefits of cloud-based data storage solutions, including scalability, flexibility, and cost-effectiveness.	
I.2	Big Data Processing and Analytics Introduction to Big Data Analytics: The role of data analytics in driving industry innovation , different types of analytics (descriptive, predictive, prescriptive). ; Emerging Technologies in Big Data: The integration of machine learning and AI with big data technologies, real-time analytics and stream processing solutions, and the role of blockchain in enhancing data security and integrity.	
	Total Hours	36



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT104	ADVANCED COMPUTER NETWORKS	PCC	3	1	0	0	4	2024

Preamble :

This course on advanced computer networks, explore the modern networking technologies, protocols, and architectures. The course delve into topics such as routing, switching, security, and beyond, equipping students with the tools needed to navigate the complexities of networked systems in today's interconnected world.

Prerequisite :

Basic understanding of fundamental networking concepts and basic programming skills.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Analyze protocol layers in network communication and implement application layer protocols.
CO2	Comprehend and analyse various transport layer protocols to evaluate end-to-end communication.
CO3	Compare and analyze various routing algorithms to evaluate their efficiency, scalability for different network scenarios.
CO4	Comprehend and analyze the link layer and physical layer to evaluate their roles in data transmission and network performance
CO5	Analyze the working principles of modern cellular and wireless networks to evaluate their performance.

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	10	10	10
Understand	20	20	20
Apply	20	20	20
Analyse			
Evaluate			
Create			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 Hours

Continuous Internal Evaluation Pattern :

Attendance: 10 marks

Continuous Assessment Test (2 numbers) : 25 marks

Assignment/Quiz/Course project: 15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

Book of Study :

Textbooks:

1. Behrouz A Forouzan, Firouz Mosharraf, "Computer Networks: A top down Approach", McGraw Hill Education, 1 st Edition (2011).
2. James F Kurose and Keith W Ross, "Computer Networking: A Top - Down Approach", Pearson Education; 6 th Edition (2017).

References :

Reference Books:

1. Kevin R. Fall, W. Richard Stevens, "TCP/IP Illustrated, Volume 1 -The Protocols", Pearson Education, 2 nd Edition (2014).
2. Larry Peterson, Bruce Davie, "Computer Networks, A systems Approach", Morgan Kaufmann Publishers, 5th Edition (2011).
3. Uyless Black, "Computer Networks: Protocols, Standards and Interface", Prentice HallIndia Learning Private Limited, 8 th Edition (2015).
4. William Stallings, "Foundations of Modern Networking: SDN, NFV, QoE, IoT, and Cloud", Pearson Education, 1 st Edition (2016).
5. The Illustrated Network: How TCP/IP Works in a Modern Network 2nd edition Walter Goralski Morgan Kaufmann Publications.

Syllabus

Module 1: Overview of Computer Networks and the Internet: (10 Hours)

Overview of Computer Networks and the Internet. Protocols, Packet switching. Basic ideas about delay, queuing, throughput. Concept of Quality of Service, Protocol layering . OSI model and TCP/IP model. Client-server paradigm, Peer-to-peer paradigm. Application layer protocols - Web, HTTP, FTP, SMTP, POP3, and DNS..

Module 2: Transport Layer Protocols: (10 Hours)

Introduction to Transport Layer. Multiplexing and de-multiplexing. Principles of Reliable data transfer - Stop-and-wait and Go-back- N design and evaluation. Connection oriented transport TCP. Connectionless transport UDP. Principles of congestion control - efficiency and fairness..

Module 3: Network Layer Protocols: (10 Hours)

Virtual circuits and datagrams. Principles of routing. Internet protocol Ipv4 CIDR. Routing algorithms: Link-state and distance vector routing. Routing on the internet RIP, OSPF and BGP, Multicast routing. Introduction to IPV6..

Module 4: Link layer and Physical Layer: (8 Hours)

Introduction to link layer - Error detection (parity, checksum, and CRC). Multiple access protocols (collision and token based). IEEE 802.3 Ethernet, Switching and bridging, Media. Data encoding. Ethernet switches..

Module 5: Wireless and Cellular networks: (10 Hours)

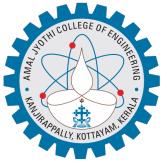
IEEE 802.11 Wi-Fi, Bluetooth, and cellular networks. Threats and attacks. Network Address Translation. Firewalls, VPNs. Introduction to network management, SNMP..

Module i: Industry, Innovation, and Emerging Technologies (8 Hours)

Google Cloud Computing Foundations: Cloud Computing Fundamentals - 1. Google Cloud Computing Foundations: Cloud Computing Fundamentals 2. Google Cloud Computing Foundations: Infrastructure in Google Cloud 3. Google Cloud Computing Foundations: Networking and Security in Google Cloud 4. Google Cloud Computing Foundations: Data, ML, and AI in Google Cloud AWS Cloud Foundations Introduction to cloud, Cloud concepts overview,cloud economics and billing,AWS cloud infrastructure,cloud security .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: Overview of Computer Networks and the Internet:	(10 Hours)
1.1	Overview of Computer Networks and the Internet. ;Protocols, Packet switching. ;Basic ideas about delay, queuing, throughput. ;Concept of Quality of Service, Protocol layering . ;OSI model and TCP/IP model. ;Client-server paradigm, Peer-to-peer paradigm. ;Application layer protocols - Web, HTTP, FTP, SMTP, POP3, and DNS.	
	Module 2: Transport Layer Protocols:	(10 Hours)
2.1	Introduction to Transport Layer.;Multiplexing and de-multiplexing.;Principles of Reliable data transfer -Stop-and-wait and Go-back- N design and evaluation.;Connection oriented transport TCP.;Connectionless transport UDP.;Principles of congestion control - efficiency and fairness.	
	Module 3: Network Layer Protocols:	(10 Hours)
3.1	Virtual circuits and datagrams.;Principles of routing.;Internet protocol Ipv4 CIDR.;Routing algorithms: Link-state and distance vector routing.;Routing on the internet RIP, OSPF and BGP, Multicast routing. ;Introduction to IPV6.	
	Module 4: Link layer and Physical Layer:	(8 Hours)
4.1	Introduction to link layer - Error detection (parity, checksum, and CRC).;Multiple access protocols (collision and token based).;IEEE 802.3 Ethernet, Switching and bridging, Media.;Data encoding. ;Ethernet switches.	
	Module 5: Wireless and Cellular networks:	(10 Hours)
5.1	IEEE 802.11 Wi-Fi, Bluetooth, and cellular networks.;Threats and attacks.;Network Address Translation.;Firewalls, VPNs.;Introduction to network management, SNMP.	
	Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)	(8 Hours)
I.1	Google Cloud Computing Foundations: Cloud Computing Fundamentals1. Google Cloud Computing Foundations: Cloud Computing Fundamentals 2. Google Cloud Computing Foundations: Infrastructure in Google Cloud 3. Google Cloud Computing Foundations: Networking and Security in Google Cloud 4. Google Cloud Computing Foundations: Data, ML, and AI in Google Cloud ;AWS Cloud Foundations Introduction to cloud, Cloud concepts overview,cloud economics and billing,AWS cloud infrastructure,cloud security	
	Total Hours	56



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT132	DIGITAL MARKETING	OEC	3	1	0	0	4	2024

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Demonstrate the key concepts related to e-marketing for the given case.
CO2	Demonstrate the use of different electronic media for designing marketing activities.
CO3	Analyze the role of search engine in improving digital marketing
CO4	Analyze role of social media marketing for the given problem
CO5	Analyze technical solutions to overcome social media threats

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	5	5	10
Understand	15	15	20
Apply	15	15	15
Analyze	15	15	5
Evaluate			
Create			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 hours

Continuous Internal Evaluation Pattern :

Attendance : 10 marks

Continuous Assessment Test (2 numbers) : 25 marks

Assignment/Quiz/Course project : 15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

Book of Study :

Seema Gupta "Digital Marketing" Mc-Graw Hill 1st Edition – 2017

References :

1. Ian Dodson "The Art of Digital Marketing" Wiley Latest Edition
2. Puneet Singh Bhatia "Fundamentals of Digital Marketing" Pearson 1st Edition – 2017
3. Prof. Nitin C. Kamat, Mr. Chinmay Nitin Kamat Digital Social Media Marketing Himalaya Publishing House Pvt. Ltd. Latest Edition

Syllabus

Module 1: Introduction to Digital Marketing (10 Hours)

Introduction to Digital Marketing Evolution of Digital Marketing from traditional to modern era, Role of Internet; Current trends, Info-graphics, implications for business & society; Emergence of digital marketing as a tool; Drivers of the new marketing environment; Digital marketing strategy; P.O.E.M. framework, Digital landscape, Digital marketing plan, Digital marketing models..

Module 2: Internet Marketing and Digital Marketing Mix (8 Hours)

Internet Marketing and Digital Marketing Mix – Internet Marketing, opportunities and challenges; Digital marketing framework; Digital Marketing mix, Impact of digital channels on IMC; Search Engine Advertising: - Pay for Search Advertisements, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation Display marketing: - Types of Display Ads - Buying Models - Programmable Digital Marketing - Analytical Tools - YouTube marketing. .

Module 3: Social Media Marketing (10 Hours)

Social Media Marketing – Role of Influencer Marketing, Tools & Plan– Introduction to social media platforms, penetration & characteristics; Building a successful social media marketing strategy Facebook Marketing: - Business through Facebook Marketing, Creating Advertising Campaigns, Adverts, Facebook Marketing Tools Linkedin Marketing: - Introduction and Importance of Linkedin Marketing, Framing Linkedin Strategy, Lead Generation through Linkedin, Content Strategy, Analytics and Targeting Twitter Marketing: - Introduction to Twitter Marketing, how twitter Marketing is different than other forms of digital marketing, framing content strategy, Twitter Advertising Campaigns Instagram and Snapchat: - Digital Marketing Strategies through Instagram and Snapchat Mobile Marketing: - Mobile Advertising, Forms of Mobile Marketing, Features, Mobile Campaign Development, Mobile Advertising Analytics Introduction to social media metrics.

Module 4: Introduction to SEO (10 Hours)

Introduction to SEO, SEM, Web Analytics, Mobile Marketing, Trends in Digital Advertising– Introduction and need for SEO, How to use internet & search engines; search engine and its working pattern, On-page and off-page optimization, SEO Tactics - Introduction to SEM Web Analytics: - Google Analytics & Google AdWords; data collection for web analytics, multichannel attribution, Universal analytics, Tracking code Trends in digital advertising..

Module 5: Social Media Channels (10 Hours)

Social Media Channels: Introduction, Key terms and concepts, Traditional media vs Social media. Social media channels: Social networking. Content creation, Bookmarking & aggregating and Location & social media. Tracking social media campaigns. Social media marketing: Rules of engagement. Advantages and challenges..Social Media Strategy: Introduction, Key terms and concepts. Using social media to solve business challenges. Step-by-step guide to creating a social media strategy. Documents and processes. Dealing with opportunities and threats. Step-by-step guide for recovering from an online brand attack. Social media risks and challenges.

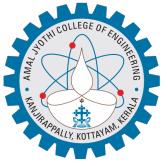
Module i: Industry, Innovation, and Emerging Technologies (8 Hours)

Familiarization of digital marketing tools - Analytics and Tracking:Google Analytics,Adobe Analytics,Hotjar

Search Engine Optimization (SEO):SEMrush, Ahrefs, Moz Content Creation and Management:Canva, Buffer, WordPress Email Marketing: Mailchimp, Constant Contact, HubSpot Social Media Management: Hootsuite, Sprout Social, Later Advertising and PPC (Pay-Per-Click): Google Ads,Facebook Ads Manager,LinkedIn Campaign Manager CRM (Customer Relationship Management): Salesforce,HubSpot CRM,Zoho CRM .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
Module 1: Introduction to Digital Marketing		(10 Hours)
1.1	Introduction to Digital Marketing Evolution of Digital Marketing from traditional to modern era, ;Role of Internet; Current trends, Info-graphics, implications for business & society;; Emergence of digital marketing as a tool; Drivers of the new marketing environment; ; Digital marketing strategy; P.O.E.M. framework, Digital landscape, Digital marketing plan, Digital marketing models.	
Module 2: Internet Marketing and Digital Marketing Mix		(8 Hours)
2.1	Internet Marketing and Digital Marketing Mix – Internet Marketing, opportunities and challenges; Digital marketing framework; Digital Marketing mix, ; Impact of digital channels on IMC; Search Engine Advertising: - Pay for Search Advertisements, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation; Display marketing: - Types of Display Ads - Buying Models - Programmable Digital Marketing - Analytical Tools - YouTube marketing.	
Module 3: Social Media Marketing		(10 Hours)
3.1	Social Media Marketing – Role of Influencer Marketing, Tools & Plan– Introduction to social media platforms, penetration & characteristics; ;Building a successful social media marketing strategy Facebook Marketing: - Business through Facebook Marketing, Creating Advertising Campaigns, Adverts, Facebook Marketing Tools; Linkedin Marketing: - Introduction and Importance of Linkedin Marketing, Framing Linkedin Strategy, Lead Generation through Linkedin, Content Strategy, Analytics and Targeting ;Twitter Marketing: - Introduction to Twitter Marketing, how twitter Marketing is different than other forms of digital marketing, framing content strategy, Twitter Advertising Campaigns ;Instagram and Snapchat: - Digital Marketing Strategies through Instagram and Snapchat Mobile Marketing: - Mobile Advertising, Forms of Mobile Marketing, Features, Mobile Campaign Development, Mobile Advertising Analytics Introduction to social media metrics	
Module 4: Introduction to SEO		(10 Hours)
4.1	Introduction to SEO, SEM, Web Analytics, Mobile Marketing,;Trends in Digital Advertising– Introduction and need for SEO, How to use internet & search engines; search engine and its working pattern, On-page and off-page optimization, SEO Tactics - ;Introduction to SEM Web Analytics: - Google Analytics & Google AdWords; data collection for web analytics, multichannel attribution, Universal analytics, Tracking code Trends in digital advertising.	
Module 5: Social Media Channels		(10 Hours)
5.1	Social Media Channels:;Introduction, Key terms and concepts, Traditional media vs Social media. Social media channels: Social networking. Content creation, Bookmarking & aggregating and Location & social media. Tracking social media campaigns. Social media marketing: Rules of engagement. Advantages and challenges.	
5.2	Social Media Strategy:;Introduction, Key terms and concepts. Using social media to solve business challenges. Step-by-step guide to creating a social media strategy. Documents and processes. Dealing with opportunities and threats. Step-by-step guide for recovering from an online brand attack. Social media risks and challenges	
Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)		(8 Hours)
I.1	Familiarization of digital marketing tools Analytics and Tracking:Google Analytics,Adobe Analytics,Hotjar ;Search Engine Optimization (SEO):SEMrush, Ahrefs, Moz ;Content Creation and Management:Canva, Buffer, WordPress ;Email Marketing: Mailchimp, Constant Contact, HubSpot ;Social Media Management: Hootsuite, Sprout Social, Later ;Advertising and PPC (Pay-Per-Click): Google Ads,Facebook Ads Manager,LinkedIn Campaign Manager ;CRM (Customer Relationship Management): Salesforce,HubSpot CRM,Zoho CRM	
Total Hours		56



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT122	ORGANIZATIONAL BEHAVIOUR	OEC	3	1	0	0	4	2024

Preamble :

Preamble: This course is designed primarily for students who are being exposed to Organizational Behaviour for the first time. Primary aim of this course is to help students to understand the organizational culture and its dynamics and to acquire skills to take rational decisions in groups or organizations

Prerequisite :

NIL

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Identify managers' challenges and opportunities in applying OB concepts.
CO2	Analyse various characteristics of individual behaviour and its impact on organizational performance.
CO3	Acquire knowledge about the complexities associated with management of individual behaviour in the organization.
CO4	Understand group behaviour and develop inter-personal skills and group dynamics.
CO5	Understand organizational structures and analyze the behavioral implications of different organizational designs.

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	10	10	20
Understand	20	20	30
Apply	20	20	10
Analyse			
Evaluate			
Create			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 hours

Continuous Internal Evaluation Pattern :**Continuous Internal Evaluation Pattern :**

Attendance 10

Continuous Assessment Test (2 numbers) 25

Assignment/Quiz/Course project (3 numbers marks each) 15

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

Book of Study :

1. K Aswathappa, *Organizational Behaviour*, Himalaya Publishing House, 2018.
2. Robbins, Stephen, Timothy, A & Sanghi, S. "*Organizational Behavior*", 13th Edn, Pearson Education. 2009

References :

1. Mc Shane & Von Glinow, "*Organizational Behavior*", Mc Graw Hill Publications, New Delhi, 2008
2. *Understanding Organizational Behaviour* by Udai Pareek, Oxford University Press (Third Edition)
3. *Behaviour in Organizations* by Jerald Greenberg and Robert A. Baron, PHI learning private Ltd, New Delhi (Ninth Edition).
4. Laurie J. Mullins, *Management and Organisational Behaviour*, Oxford Publishers, New Delhi, 2007.
5. *ORGB* by Nelson, Quick and Khandelwal, Cengage Learning New Delhi (second edition).

Syllabus

Module 1: Introduction (8 Hours)

Nature of Organisational Behaviour – Foundations of OB Contemporary OB – Scope of Organisational Behaviour Evolution of OB – OB Model. unit 2 - Challenges in OB Managing Inclusivity / Diversity – Career Management – Talent Management – Globalisation.

Module 2: Foundations of Individual Behaviour: (10 Hours)

Personal Factors – Environmental Factors – This topic can be imported as course plan, so that we can avoid unnecessary work..Personality: Nature of Personality – The Shaping of Personality – Determinants of Personality .Perception and Attribution Perception: Meaning and Definition – Factors Influencing Perception Perceptual Process – Perception and OB.Learning: How Learning Occurs? – Principles of Learning – Learning and OB.

Module 3: Attitudes and Values: (10 Hours)

Nature of Attitudes – Components of Attitudes – Formation of Attitudes Functions of Attitudes – Changing Attitudes – Work-related Attitude.Motivation Nature of Motivation – Importance of Motivation – Motivational Challenges – Theories on Motivation Work Stress: Work Stress Model – Burnout – Stress Management – Stress and Performance.

Module 4: Group Behaviour (10 Hours)

Group Dynamics Nature of Groups – Types of Groups – Group Development – Usefulness & Pitfalls of Groups .Team Dynamics: Teams vs. Groups – Benefits from Teams – Types of Teams – Implementing Teams in Organisations.Workplace Behaviour Nature of Conflict – Changing Views of Conflict – Functional and Dysfunctional Conflict – The Process of Conflict Negotiation and Conflict Resolution.

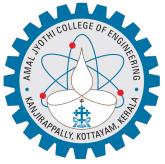
Module 5: Organisation culture (10 Hours)

Cultural Dimensions How is Culture Created? – Sustaining Culture – Effects of Culture – Changing Organisational Culture.Organisational Change and Development Nature of Change – Levels of Change – Types of Change – Forces for Change in Organisations Resistance to Change – The Change Process – .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
Module 1: Introduction		(8 Hours)
1.1	Nature of Organisational Behaviour – Foundations of OB ;Contemporary OB – Scope of Organisational Behaviour ;Evolution of OB – OB Model	
1.2	unit 2 Challenges in OB;Managing Inclusivity / Diversity – Career Management – Talent Management – Globalisation	
Module 2: Foundations of Individual Behaviour:		(10 Hours)
2.1	Personal Factors – Environmental Factors – ;This topic can be imported as course plan, so that we can avoid unnecessary work.	
2.2	Personality: ;Nature of Personality – The Shaping of Personality – Determinants of Personality	
2.3	Perception and Attribution;Perception: Meaning and Definition – Factors Influencing Perception;Perceptual Process – Perception and OB	
2.4	Learning:;How Learning Occurs? – Principles of Learning – Learning and OB	

Module 3: Attitudes and Values:		(10 Hours)
3.1	Nature of Attitudes – Components of Attitudes – Formation of Attitudes; Functions of Attitudes – Changing Attitudes – Work-related Attitude	
3.2	Motivation; Nature of Motivation – Importance of Motivation – Motivational Challenges – Theories on Motivation; Work Stress: Work Stress Model – Burnout – Stress Management – Stress and Performance	
Module 4: Group Behaviour		(10 Hours)
4.1	Group Dynamics; Nature of Groups – Types of Groups – Group Development – Usefulness & Pitfalls of Groups	
4.2	Team Dynamics: ; Teams vs. Groups – Benefits from Teams – Types of Teams – Implementing Teams in Organisations	
4.3	Workplace Behaviour; Nature of Conflict – Changing Views of Conflict – Functional and Dysfunctional Conflict – The Process of Conflict; Negotiation and Conflict Resolution	
Module 5: Organisation culture		(10 Hours)
5.1	Cultural Dimensions ; How is Culture Created? – Sustaining Culture – Effects of Culture – Changing Organisational Culture	
5.2	Organisational Change and Development; Nature of Change – Levels of Change – Types of Change – Forces for Change in Organisations; Resistance to Change – The Change Process –	
Total Hours		48



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT112	APPLIED STATISTICS	OEC	3	1	0	0	4	2024

Preamble :

This course introduces the concepts and application of probability distribution, Correlation, Regression and testing of hypothesis. The topics treated in this course have applications in Computer Science.

Prerequisite :

Learner should have the basic knowledge in school level Mathematics especially in counting principles.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Apply the concept of discrete probability distributions in determining the parameters of the distribution and hence to solve different problems
CO2	Apply the concept of continuous probability distribution in solving different problems
CO3	Apply the principles of correlation and regression in practical problems.
CO4	Develop confidence intervals for various problems.
CO5	Test the given hypothesis on the basis of known criteria.

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	10	10	10
Understand	20	20	20
Apply	20	20	20
Analyse			
Evaluate			
Create			

Continuous Internal Evaluation Pattern :

1. Attendance : 10 marks
2. Continuous Assessment Test (2 numbers) : 25 marks
3. Assignment/Quiz/Course project : 15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

Book of Study :

1. 1. Veerarajan T, "Probability and Random Process", 3rd Edition, Tata McGraw-Hill(2002)
2. Gupta S.C and Kapoor V .K, "Fundamentals of Mathematical Statistics", Sultan Chand and Sons (2014).

References :

1. 1. David S. Moore and George P. McCabe, "Introduction to practice of statistics", W.H.Freeman & Company, 5th Edition (2005).
2. G. Jay Kerns, "Introduction to Probability and Statistics Using R", Chapman & Hall (2010)
3. Douglas C. Montgomery and George C. Runger, "Applied Statistics and Probability for Engineers", Wiley India, 5th Edition (2012).

Internet Study Material :

1. Probability and statistics EBook
<http://wiki.stat.ucla.edu/socr/index.php/EBook>
2. <https://www.openintro.org/stat/textbook.php>
3. <http://www.math.uah.edu/stat/index.html>
4. Statistics Online Computational Resource
<http://www.socr.ucla.edu/>

Syllabus

Module 1: Discrete random Variables (9 Hours)

Probability and Random Variables - Introduction – Random Experiment, Random Variables Discrete Random Variables, Probability Distributions and Probability Mass Functions Mean and Variance of a Discrete Random Variable .Discrete Uniform Distribution -Mean and Variance . Binomial Distribution-Mean Variance .Geometric Distribution - Mean and Variance, Poisson Distribution -Mean Poisson Distribution - Variance .

Module 2: Continuous Random Variables (9 Hours)

Probability Density Functions, Probability Density Function Mean and Variance of a Continuous Random Variable .Continuous Uniform Distribution- Mean Variance .Normal Distribution Mean Variance .Exponential distribution -

Module 3: 2D random Variables (9 Hours)

Curve fitting - Principle of least squares Fitting a straight line Fitting a parabola .linear correlation and regression Karl's Pearson's Coefficient of Correlation .Joint probability distribution Marginal probability distribution .Conditional probability distribution Independent random variable .

Module 4: Sampling and Estimation (9 Hours)

Introduction to sampling Random sampling .Sampling distribution Standard error .Estimation Interval estimates and confidence interval Estimation of population mean Estimation of population proportions .

Module 5: Testing of hypothesis (9 Hours)

Introduction basic concepts .Hypothesis concerning a mean Equality of means .Hypothesis concerning one proportion Difference of two proportions .

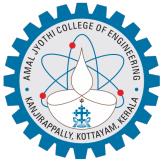
Module i: Industry, Innovation, and Emerging Technologies (6 Hours)

Normal Distributions - [www.statology.org > example-of-normal-distribution](http://www.statology.org/example-of-normal-distribution) .Curve Fitting - [www.wallstreetmojo.com > curve-fitting](http://www.wallstreetmojo.com/curve-fitting) .Testing of Hypothesis - [www.scribbr.com > statistics > hypothesis-testing](http://www.scribbr.com/statistics/hypothesis-testing) .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
Module 1: Discrete random Variables		(9 Hours)
1.1	Probability and Random Variables Introduction – Random Experiment, Random Variables ;Discrete Random Variables, Probability Distributions and Probability Mass Functions ;Mean and Variance of a Discrete Random Variable	
1.2	Discrete Uniform Distribution -Mean and Variance	
1.3	Binomial Distribution-Mean ;Variance	
1.4	Geometric Distribution - Mean and Variance, ;Poisson Distribution -Mean ;Poisson Distribution - Variance	
Module 2: Continuous Random Variables		(9 Hours)
2.1	Probability Density Functions, ;Probability Density Function ;Mean and Variance of a Continuous Random Variable	
2.2	Continuous Uniform Distribution- Mean ;Variance	
2.3	Normal Distribution ;Mean ;Variance	

2.4	Exponential ditribution	
	Module 3: 2D random Variables	(9 Hours)
3.1	Curve fitting Principle of least squares ;Fitting a straight line ;Fitting a parabola	
3.2	linear correlation and regression ; Karl's Pearson's Coefficient of Correlation	
3.3	Joint probability distribution ;Marginal probability distribution	
3.4	Conditional probability distribution ;Independent random variable	
	Module 4: Sampling and Estimation	(9 Hours)
4.1	Introduction to sampling ;Random sampling	
4.2	Sampling distribution ;Standard error	
4.3	Estimation ;Interval estimates and confidence interval ;Estimation of population mean ;Estimation of population proportions	
	Module 5: Testing of hypothesis	(9 Hours)
5.1	Introduction ;basic concepts	
5.2	Hypothesis concerning a mean ;Equality of means	
5.3	Hypothesis concerning one proportion ;Difference of two proportions	
	Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)	(6 Hours)
I.1	Normal Distributions www.statology.org > example-of-normal-distribution	
I.2	Curve Fitting www.wallstreetmojo.com > curve-fitting	
I.3	Testing of Hypothesis www.scribbr.com > statistics > hypothesis-testing	
	Total Hours	51



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

Course Code	Course Name	Category	L	T	P	R	Credit	Year of Introduction
			3	1	0	0		
24MCAT142	ADVANCED WEB PROGRAMMING AND DIGITAL PUBLIC INFRASTRUCTURE	PEC	3	1	0	0	4	2024

Preamble :

This course provides a comprehensive journey into advanced web programming techniques, covering front-end and back-end technologies. Additionally, we explore the significance of Digital Public Infrastructure (DPI) components like digital identity and payments.

Prerequisite :

Web Programming basics

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Develop the ability to design and build modern, responsive web applications using HTML, CSS, JavaScript, and Bootstrap. Utilize advanced tools such as Git for version control, and implement dynamic content handling with jQuery and AJAX for efficient client-server communication.
CO2	Design and develop dynamic web applications using server-side programming (PHP, Node.js, or Django), implement database solutions, and create and consume RESTful APIs while integrating third-party services to enhance functionality and scalability
CO3	Demonstrate an understanding of domain and DNS fundamentals, including registration processes, DNS records, propagation, and Content Delivery Networks (CDNs), and effectively manage custom email services
CO4	Apply web hosting principles to effectively manage domain and server configurations for deploying and maintaining web applications
CO5	Analyze the significance of Digital Public Infrastructure (DPI) and evaluate emerging trends in web programming to adapt to evolving technological landscapes.

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests	
	1	2
Remember		
Understand	5	5
Apply	5	5
Analyse	10	10
Evaluate	10	10
Create	20	20

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	100	0	0

Continuous Internal Evaluation Pattern :

Certifications	Course project/Case Studies	Attendance	Seminar/Practice
30 marks	40 marks	5 marks	25 Marks

Book of Study :

HTML and CSS: Design and Build Websites - Jon Duckett

JavaScript and jQuery: Interactive Front-End Web Development - Jon Duckett

The Third Way - India's Revolutionary Approach to data Governance - Rahul Matthan

Internet Study Material :

<https://olympus.mygreatlearning.com/courses/102983>

Syllabus

Module 1: Introduction to Advanced Front-end Development Technologies (12 Hours)

Overview of web development technologies and frameworks
Introduction to HTML, CSS, and JavaScript
Basics of responsive web design with Bootstrap
Emerging Code Editors and AI Support
Version control with Git
DOM manipulation and event handling
Leveraging the jQuery library and plugins
AJAX with jQuery for asynchronous communication.

Module 2: Server side Development and API Integration (12 Hours)

Introduction to server-side programming with PHP or Node.js or Django
Database fundamentals (SQL and/or NoSQL)
Building dynamic web pages with PHP and MySQL/MariaDB
Building RESTful APIs
Consuming APIs and integrating third-party services.
Case study 1 : Develop a web application with database integration, leveraging Bootstrap for responsive design, jQuery and AJAX for dynamic content updates, API services for external data handling, and Git for version control..

Module 3: Introduction to Domain Name System (8 Hours)

Domain & Domain name system (DNS) fundamentals
Domain hierarchy, Domain registrars, Registration process. Understanding DNS records, DNS propagation
Geographic redundancy and Content Delivery Networks (CDNs).Email services - Custom Email.

Module 4: Introduction to Hosting Services (8 Hours)

Overview of web hosting services - Types of hosting services
Setup Hosting with Cloud & Private VPS
AWS - Instances and S3 Storage
Serverless computing and Function as a Service (FaaS)
platforms.Case study 2 : Set up your website with a custom domain and host it on a server of your choice. Use AWS S3 Bucket for file storage and create a personalized email address linked to your domain..

Module 5: Digital Public Infrastructure (DPI) and Future Trends (8 Hours)

Overview of Digital Public Infrastructure (DPI) and its significance
Case studies of DPI implementations around the world
Understanding DPI components - Digital identity, Digital payments, Open data, Accessibility and Security
Developing applications with DPI principles
Exploring emerging trends in web programming and DPI - Progressive Web Apps (PWAs), WebAssembly and Decentralized web technologies.

Module i: Industry, Innovation, and Emerging Technologies / Indian Knowledge System /Sustainable Development Goals (6 Hours)

Introduction to GraphQL and its use in modern web development - Creating GraphQL Schema
Features of GraphQL
Introduction to GraphQL .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: Introduction to Advanced Front-end Development Technologies	(12 Hours)
1.1	Overview of web development technologies and frameworks;Introduction to HTML, CSS, and JavaScript;Basics of responsive web design with Bootstrap;Emerging Code Editors and AI Support;Version control with Git	
1.2	DOM manipulation and event handling;Leveraging the jQuery library and plugins;AJAX with jQuery for asynchronous communication	
	Module 2: Server side Development and API Integration	(12 Hours)

2.1	Introduction to server-side programming with PHP or Node.js or Django;Database fundamentals (SQL and/or NoSQL);Building dynamic web pages with PHP and MySQL/MariaDB;Building RESTful APIs;Consuming APIs and integrating third-party services	
2.2	Case study 1 : Develop a web application with database integration, leveraging Bootstrap for responsive design, jQuery and AJAX for dynamic content updates, API services for external data handling, and Git for version control.	
Module 3: Introduction to Domain Name System		(8 Hours)
3.1	Domain & Domain name system (DNS) fundamentals;Domain hierarchy, Domain registrars, Registration process.;Understanding DNS records, DNS propagation;Geographic redundancy and Content Delivery Networks (CDNs)	
3.2	Email services - Custom Email	
Module 4: Introduction to Hosting Services		(8 Hours)
4.1	Overview of web hosting services - Types of hosting services;Setup Hosting with Cloud & Private VPS;AWS - Instances and S3 Storage;Serverless computing and Function as a Service (FaaS) platforms	
4.2	Case study 2 : Set up your website with a custom domain and host it on a server of your choice. Use AWS S3 Bucket for file storage and create a personalized email address linked to your domain.	
Module 5: Digital Public Infrastructure (DPI) and Future Trends		(8 Hours)
5.1	Overview of Digital Public Infrastructure (DPI) and its significance;Case studies of DPI implementations around the world;Understanding DPI components - Digital identity, Digital payments, Open data, Accessibility and Security;Developing applications with DPI principles;Exploring emerging trends in web programming and DPI - Progressive Web Apps (PWAs), WebAssembly and Decentralized web technologies	
Module I: Industry, Innovation, and Emerging Technologies / Indian Knowledge System /Sustainable Development Goals (non-instructional hours)		(6 Hours)
I.1	Introduction to GraphQL and its use in modern web development Creating GraphQL Schema ;Features of GraphQL ;Introduction to GraphQL	
Total Hours		54



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAM152	NPTEL MOOC 1	OEC	3	1	0	0	4	2024

Preamble :

The inclusion of NPTEL MOOCs in the syllabus is a forward-thinking initiative that promises to transform the educational experience. It empowers students with the flexibility to learn at their own pace, access top-tier educational resources, and develop the skills necessary for their future careers. As we embrace this hybrid model of education, we pave the way for a more inclusive, dynamic, and effective learning ecosystem.

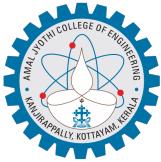
Course Outcomes(CO): Upon successful completion of this course, students should be able to:

Mapping of course outcomes with program outcomes

#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-

Massive Open Online Courses (MOOCs) :

The department will publish the list of applicable courses in due time.



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT144	ARTIFICIAL INTELLIGENCE	PEC	3	1	0	0	4	2024

Preamble :

Intelligent machines have mostly supplanted human capacities. Building intelligent machines with human-like behaviour and thought processes is the aim of artificial intelligence. Expert systems, gaming, machine learning, and other computer science research topics are only a few of the topics covered in this course.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Evaluate and critically analyze various Artificial Intelligence (AI) methods, demonstrating a thorough understanding of their underlying principles, foundations, and applications in real-world scenarios.
CO2	Analyze the role of search algorithms in problem-solving and illustrate their application through practical examples, demonstrating an understanding of their significance and efficiency in various computational contexts.
CO3	Demonstrate an understanding of reasoning and knowledge representation techniques, applying them to solve real-world problems effectively and efficiently.
CO4	Apply fundamental principles of Artificial Intelligence to develop solutions that require understanding, learning, and adaptation in dynamic environments.
CO5	Design and develop an expert system by implementing advanced Artificial Intelligence techniques, demonstrating the ability to integrate knowledge-based reasoning and decision-making in complex scenarios.

Mapping of course outcomes with program outcomes

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 hours

Continuous Internal Evaluation Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	5	5	10
Understand	15	15	20
Apply	15	15	15
Analyze	15	15	5
Evaluate			
Create			

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

References :

1. Stuart Russel and Peter Norvig, "Artificial Intelligence – A Modern Approach", PHI, 4 th Edition, 2020
2. Elaine Rich and Kevin Knight, B. Sivasankar Nair,"Artificial Intelligence", Tata McGraw Hill 3rd Edition,2013.
3. Dan W. Patterson, "Introduction to Artificial intelligence and expert system", PHI,3rd Edition,2012

Syllabus

Module 1: Introduction (9 Hours)

Introduction to AI :- Evolution of AI, Different Types of Artificial Intelligence- Applications of AI..Intelligent Agents, Agents-Environments and its Types..

Module 2: Problem Solving based on Searching (9 Hours)

Problem Solving by searching Methods :- State Space search, Uninformed Search Methods – Uniform Cost Search, Breadth First Search- Depth First Search-Depth limited search, Iterative deepening search, Bidirectional, Informed Search Methods- Best First Search, A* and AO* Search..Heuristic Search , Min-max algorithm, Alpha-Beta Pruning.

Module 3: Knowledge Representation and Reasoning (9 Hours)

Knowledge Based systems :- Knowledge Types, Propositional Logic, First Order Predict Logic, Inference rules in Propositional and First Order Logic, Resolution .

Module 4: Learning and Learning Systems (9 Hours)

Learning :- Rote Learning, Learning by taking advice, Learning by Problem Solving, Version Space, Winston's learning program, Candidate Elimination Algorithm, Explanation based learning .Introduction to Machine Learning - Supervised, Unsupervised, Reinforcement Learning.

Module 5: Expert Systems (9 Hours)

Expert Systems :- Expert system architecture, Stages in the development of an Expert System, Applications of Expert Systems.

Module 6: Industry, Innovation, and Emerging Technologies (4 Hours)

Familiarization of AI Tools - Familiarization of Amazon Rekognition, OpenCV, Clarifai, IBM Watson Studio etc. .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: Introduction	(9 Hours)
1.1	Introduction to AI :- Evolution of AI, Different Types of Artificial Intelligence- Applications of AI.	
1.2	Intelligent Agents, Agents-Environments and its Types.	
	Module 2: Problem Solving based on Searching	(9 Hours)
2.1	Problem Solving by searching Methods :- State Space search, Uninformed Search Methods – Uniform Cost Search, Breadth First Search- Depth First Search-Depth limited search, Iterative deepening search, Bidirectional, Informed Search Methods- Best First Search, A* and AO* Search.	
2.2	Heuristic Search , Min-max algorithm, Alpha-Beta Pruning	
	Module 3: Knowledge Representation and Reasoning	(9 Hours)
3.1	Knowledge Based systems :- Knowledge Types, Propositional Logic, First Order Predict Logic, Inference rules in Propositional and First Order Logic, Resolution	
	Module 4: Learning and Learning Systems	(9 Hours)
4.1	Learning :- Rote Learning, Learning by taking advice, Learning by Problem Solving, Version Space, Winston's learning program, Candidate Elimination Algorithm, Explanation based learning	
4.2	Introduction to Machine Learning - Supervised, Unsupervised, Reinforcement Learning	

Module 5: Expert Systems		(9 Hours)
5.1	Expert Systems :- Expert system architecture, Stages in the development of an Expert System, Applications of Expert Systems	
Module 6: Industry, Innovation, and Emerging Technologies		(4 Hours)
6.1	Familiarization of AI Tools Familiarization of Amazon Rekognition, OpenCV, Clarifai, IBM Watson Studio etc.	
Total Hours		49



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT154	IPR AND CYBER LAWS	PEC	3	1	0	0	4	2024

Preamble :

This course offers a comprehensive exploration of Intellectual Property Rights (IPR) and Cyber Laws. It delves into various forms of IPR, equipping you with the knowledge to navigate the application processes for copyrights and patents. You'll gain insights into the legal aspects of IPR, enabling you to avoid plagiarism and other IPR-related offenses. The course examines the effectiveness of cyber-laws and countermeasures in combating cybercrime and cyberwarfare. It explores the diverse spectrum of IPR issues arising in the digital landscape, analyzing the ongoing development of the legal framework in this ever-evolving domain. While this course provides a solid foundation, further exploration can be facilitated through seminars, assignments, and guest lectures by industry experts, fostering a deeper understanding of this critical field.

Prerequisite :

A basic understanding of a few areas will be helpful for learning this course.

a) Basic Knowledge of Legal Concepts: Understanding fundamental legal concepts and terminology will be beneficial for grasping the complexities of intellectual property rights and cyber laws.

b) Awareness of Technology and Internet Usage: Familiarity with technology and internet usage is essential as cyber laws often revolve around digital platforms and online activities.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Discusses the necessity of intellectual property protection, including an explanation of the TRIPS Agreement and illustrations of various types of patent applications.
CO2	Delivers an understanding of intellectual property rights, covering topics such as trademark infringement and protection, the rights conferred by copyright, the registration and ownership of copyrights, and the specific area of software copyright.
CO3	Examines the necessity of design protection, explaining the fundamental concepts of Geographic Indications and their protection, and detailing the process of discovering and safeguarding trade secrets.
CO4	Provides insight into the laws governing cyberspace, with an analysis of the role of Internet Governance in framing policies for Internet security.
CO5	Offers a comprehensive overview of the Indian IT Act, its amendments, data protection rules, privacy violations, cybercrimes related to intermediaries, ethical codes, protected systems, misrepresentation, and the punishments for aiding and attempting offenses.

Mapping of course outcomes with program outcomes

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

#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO6	-	-	-	-	-	-	-	-

Assessment Pattern :

Bloom's Category	Continuous Assessment Test 1	Continuous Assessment Test 2	End Semester Examination
Remember	10	10	10
Understand	20	30	25
Apply	20	10	25
Analyse	-	-	-
Evaluate	-	-	-
Create	-	-	-

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 Hours

Continuous Internal Evaluation Pattern :

Attendance : 10 marks

Continuous Assessment Test (2 Numbers) : 25 marks

Assignment/Quiz/Course project (3 Numbers) : 15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

Book of Study :

Dr. R. Radhakrishnan and Dr. S. Balasubramanian, "Intellectual Property Rights: Text and Cases",

1. Excel Books.

2. Harish Chander, "Cyber Law and IT Protection", PHI Learning Pvt.Ltd.

References :

1. D.Bainbridge, "Introduction to Computer Law", Pearson Education
2. RohasNagpal, "Cyber Crime & Corporate Liability", CCH, 2008

Internet Study Material :

1. <https://copyright.gov.in/>
2. <https://www.coursera.org/specializations/introduction-intellectual-property>
3. <https://www.wipo.int/portal/en/index.html>
4. <https://infosecawareness.in/cyber-laws-of-india>
5. <https://iclg.com/practice-areas/cybersecurity-laws-and-regulations/india>
6. <https://www.lawctopus.com/academike/cyber-crimes-other-liabilities/>

Industry, Innovation, and Emerging Technologies (Material) :

1. <https://www.coursera.org/learn/introduction-intellectual-property?action=enroll#modules>
2. <https://www.udemy.com/course/intellectual-property-inventors-entrepreneurs-creators/learn/lecture/5620130#overview>

Syllabus**Module 1: Fundamentals of IPR and Patents (10 Hours)**

Intellectual Property Rights - Introduction, IPR in India Fundamentals of IPR Need for protection of intellectual property Intellectual property and its three facets WIPO and its core activities, Function of WIPO in IPR and development Treaty, TRIPS and TRIPS Agreements, Conflicts on TRIPS Patent-Introduction to Patent -Features of Patent Need for Patent System, Patentable and non-patentable inventions Types of Patent Applications in India, Guidelines for registration of Patent Patent Filing-Publication, Examination and Grant of Patent, Service of Patent Attorney/Agent Patent Opposition in India -pre- grant opposition and post-grant opposition.

Module 2: Trademarks, Copyrights and Software Copyrights (10 Hours)

Trademarks - Introduction, Characteristics of Trademark Types of Trademarks, Trademarks vs Service mark, Basis of Trademark classification Guidelines for registration, Registration of Trademark Protection of Trademark - Registration, Maintenance, Watching and Enforcement, Infringement of Trademark - Direct and Indirect, Remedy Copyright - Introduction, Copyrightable and Non-Copyrightable works Rights conferred by Copyright, Registration - Neighboring Rights - Terms - Transfer of Copyright Copyright - Infringement, Databases and Copyright Software Copyright - Introduction and Need Classification of software according to Copyright Software Auditing, Copyright Notice and Transfer of Copyright.

Module 3: Industrial Designs–Geographic Indications, Trade Secrets (10 Hours)

Industrial Design -Introduction and Concept Need for protection of Design Requirements for registration of Design Duration and Application Procedure for the registration of a Design Geographic Indication- Introduction Filing and Granting of GI GI Registration Procedure Benefits of GI Registration, Protection of Geographical Indicator, Non-Registrable GIs Trade Secret -Introduction, Concept Discovering and Protecting Trade Secret.

Module 4: Cyber Laws (8 Hours)

Cyber Law - Introduction, Need for Cyber Laws The Cyberspace, Deception by squatting in Cyberspace Recognizing Cybersquatting and Dispute Resolution Protection of Copyright on cyberspace Copyright Infringement in cyberspace Linking, Hyper Linking, Deep Linking and Framing ISP in Cyberspace Cyberspace and protection of patents in India.

Module 5: Information Technology Act and Punishments (10 Hours)

Information Technology Act and Punishments - Introduction to IT Act 2000 IT Act (Amendment) Rules 2018, Amendments on IT Act-Section 66A, 69A, 43A Sensitive Personal Data or Information Rules 2011, Digital Personal Data Protection Act in 2023 Violation of right of privacy in cyberspace/ internet Punishment for violation of privacy Breach of confidentiality and privacy under IT Act Terrorism on cyberspace, Overview of cybercrimes, Section 67A Offences by intermediaries, Intermediary Guidelines and Digital Media Ethics Code Rules, 2021 and 2023 Offenses related to protected system, Offences of misrepresentation Punishment for Abetment and Attempt to commit offences under the IT Act.

Module i: Industry, Innovation, and Emerging Technologies (6 Hours)

This course a comprehensive exploration of Intellectual Property (IP), focusing on its fundamental concepts, legal frameworks, economic implications, and practical strategies for protection.

Foundations of Intellectual Property: Value Creation and Protection. Follow the link to get access to the online resource (<https://www.udemy.com/course/intellectual-property-inventors-entrepreneurs-creators/learn/lecture/5620130#overview>). Legal Frameworks: Copyrights, Trademarks, and Patents. (Course Link :<https://www.coursera.org/learn/introduction-intellectual-property?action=enroll#modules>)

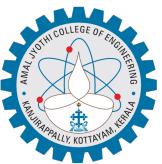
Economic Impact and Policy Rationale of Intellectual Property Law (Course Link: <https://www.coursera.org/learn/introduction-intellectual-property?action=enroll#modules>)

Innovative Approaches and Case Studies in Intellectual Property Management (Course Link: <https://www.coursera.org/learn/introduction-intellectual-property?action=enroll#modules>) .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: Fundamentals of IPR and Patents	(10 Hours)
1.1	Intellectual Property Rights - Introduction, IPR in India;Fundamentals of IPR;Need for protection of intellectual property;Intellectual property and its three facets;WIPO and its core activities, Function of WIPO in IPR and development;Treaty, TRIPS and TRIPS Agreements, Conflicts on TRIPS;Patent- Introduction to Patent - Features of Patent;Need for Patent System, Patentable and non-patentable inventions;Types of Patent Applications in India, Guidelines for registration of Patent;Patent Filing-Publication, Examination and Grant of Patent, Service of Patent Attorney/Agent;Patent Opposition in India -pre- grant opposition and post-grant opposition	
	Module 2: Trademarks, Copyrights and Software Copyrights	(10 Hours)
2.1	Trademarks - Introduction, Characteristics of Trademark;Types of Trademarks, Trademarks vs Service mark, Basis of Trademark classification;Guidelines for registration, Registration of Trademark;Protection of Trademark - Registration, Maintenance, Watching and Enforcement.;Infringement of Trademark - Direct and Indirect, Remedy;Copyright - Introduction, Copyrightable and Non-Copyrightable works ;Rights conferred by Copyright, Registration - Neighboring Rights - Terms -Transfer of Copyright;Copyright - Infringement, Databases and Copyright;Software Copyright -Introduction and Need;Classification of software according to Copyright;Software Auditing, Copyright Notice and Transfer of Copyright	
	Module 3: Industrial Designs–Geographic Indications, Trade Secrets	(10 Hours)
3.1	Industrial Design -Introduction and Concept;Need for protection of Design;Requirements for registration of Design;Duration and Application Procedure for the registration of a Design;Geographic Indication-Introduction;Filing and Granting of GI;GI Registration Procedure;Benefits of GI Registration, Protection of Geographical Indicator, Non-Registrable GIs;Trade Secret -Introduction, Concept;Discovering and Protecting Trade Secret	
	Module 4: Cyber Laws	(8 Hours)

4.1	Cyber Law - Introduction, Need for Cyber Laws;The Cyberspace, Deception by squatting in Cyberspace;Recognizing Cybersquatting and Dispute Resolution;Protection of Copyright on cyberspace;Copyright Infringement in cyberspace;Linking, Hyper Linking, Deep Linking and Framing;ISP in Cyberspace;Cyberspace and protection of patents in India	
Module 5: Information Technology Act and Punishments		(10 Hours)
5.1	Information Technology Act and Punishments - Introduction to IT Act 2000;IT Act (Amendment) Rules 2018, Amendments on IT Act-Section 66A, 69A, 43A;Sensitive Personal Data or Information Rules 2011, Digital Personal Data Protection Act in 2023;Violation of right of privacy in cyberspace/ internet;Punishment for violation of privacy;Breach of confidentiality and privacy under IT Act;Terrorism on cyberspace, Overview of cybercrimes, Section 67A;Offences by intermediaries, Intermediary Guidelines and Digital Media Ethics Code Rules, 2021 and 2023;Offenses related to protected system, Offences of misrepresentation;Punishment for Abetment and Attempt to commit offences under the IT Act	
Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)		(6 Hours)
I.1	This course a comprehensive exploration of Intellectual Property (IP), focusing on its fundamental concepts, legal frameworks, economic implications, and practical strategies for protection.;Foundations of Intellectual Property: Value Creation and Protection. Follow the link to get access to the online resource (https://www.udemy.com/course/intellectual-property-inventors-entrepreneurs-creators/learn/lecture/5620130#overview).;Legal Frameworks: Copyrights, Trademarks, and Patents. (Course Link : https://www.coursera.org/learn/introduction-intellectual-property?action=enroll#modules);Economic Impact and Policy Rationale of Intellectual Property Law (Course Link: https://www.coursera.org/learn/introduction-intellectual-property?action=enroll#modules);Innovative Approaches and Case Studies in Intellectual Property Management (Course Link: https://www.coursera.org/learn/introduction-intellectual-property?action=enroll#modules)	
Total Hours		54



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT114	BUSINESS MANAGEMENT	OEC	3	1	0	0	4	2024

Preamble :

The primary aim of this course is to understand basic principles of management and accounting. In our day to day life managers will have to manage so many resources in the present day complex business environment. By effective and efficient management the goals of the organisation can be attained. This course is intended to give an idea regarding managing the resources for the effective performance of the organisation and decision making in everyday life. Basic idea regarding book keeping and accounting is also required for managers for taking decisions.

Prerequisite :

NIL

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Understand management as a process.
CO2	Perform planning and organising for an organisation
CO3	Do staffing and related human resource development function
CO4	Perform controling activity and Take proper decisions to get competitive advantage
CO5	Analyse and prepare book keeping and accountingprocess

Mapping of course outcomes with program outcomes

#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	1	1	1	1	1	1	-	-
CO2	1	1	1	1	-	-	-	-
CO3	1	1	1	1	-	-	-	-
CO4	1	1	1	1	-	-	-	-
CO5	1	1	1	1	-	-	-	-
CO6	-	-	-	-	-	-	-	-

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	10	10	20
Understand	20	20	20
Apply	20	20	10
Analyse			
Evaluate			
Create			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 hours

Continuous Internal Evaluation Pattern :

Continuous Internal Evaluation Pattern:

Attendance: 10 marks

Continuous Assessment Test (2 numbers) : 25 marks

Assignment/Quiz/Course project: 15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

References :

References

1. L M Prasad, "Principles of Management", Sultan Chand & Sons, 8th Edition (2010)
2. Peter F Drucker, "The Practice of Management", Butterworth-Heinemann publication, 2nd Edition (2007)
3. Harold Koontz and Heinz Weihrich, "Essentials of Management", McGraw Hill Education, 10th Edition (2015).
4. Robbins and Coulter, Management, Pearson Education 13th Edition, 2016,
5. R N Gupta, "Principles of Management", S. Chand & Company Ltd., (2010)
6. Tripathi, "Principles of Management", McGraw Hill Education, 5th Edition (2012)
7. Double Entry book Keeping – Batliboi
8. A Systematic approach to Accounting: Dr K.G. Chandrasekharan Nair

Internet Study Material :

1. http://www.ibscdc.org/Case_Studies/Social%20Networking/SNW0002.htm (for case study)

Massive Open Online Courses (MOOCs) :

1. Management Functions <http://nptel.ac.in/courses/122108038/>
2. Leadership <http://nptel.ac.in/courses/110105033/33>

Syllabus

Module 1: Introduction to Management (10 Hours)

Basic Managerial Concepts - Early Contributions in Management, Classical approach, scientific management, contributions of Taylor, Gilbreths, Fayol's 14 principles of management. Human relation approach - contribution of Elton Mayo Systems approach - organization as an open system and Contingency approach, Levels of management, Managerial Skills, Managerial role. Management functions- Planning, Organising, Staffing, leading and Controlling. .

Module 2: Planning and Organising (10 Hours)

Planning: - Nature and importance of planning, types of plans - Steps in planning, Levels of planning The Planning Process - MBO definition and process, SWOT Analysis, importance. Organising : Nature of organizing,-span of control in management, factors affecting span of control- Authority and responsibility .

Module 3: Staffing and Directing: (10 Hours)

Staffing - meaning, nature, staffing process, Job analysis and manpower planning, job description and job specification Directing, meaning, elements, Manages vs leaders leadership styles .

Module 4: Controlling and Managerial Decision Making (8 Hours)

Controlling - Controlling, Importance of controlling, Techniques of controlling- Break Even Analysis, Decision Making - Importance of Decision making –types of decisions, decision making process, .

Module 5: Book- Keeping and Accountancy - (10 Hours)

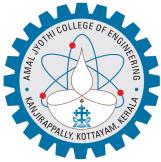
Book- Keeping and Accountancy - - Elements of Double Entry -Book- Keeping - rules for journalizing - Ledger accounts Trial Balance- Method of Balancing accounts Final accounts: Preparation of trading and profit and loss Account- Balance sheet .

Module i: Industry, Innovation, and Emerging Technologies (5 Hours)

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: Introduction to Management	(10 Hours)
1.1	Basic Managerial Concepts Early Contributions in Management, Classical approach, scientific management, contributions of Taylor, Gilbreths, Fayol's 14 principles of management. Human relation approach - contribution of Elton Mayo Systems approach - organization as an open system and Contingency approach, ;Levels of management, Managerial Skills, Managerial role. Management functions- Planning, Organising, Staffing, leading and Controlling.	
2.1	Module 2: Planning and Organising	(10 Hours)
2.2	Planning: Nature and importance of planning, types of plans - Steps in planning, Levels of planning The Planning Process - MBO definition and process, SWOT Analysis, importance. ;Organising : Nature of organizing,-span of control in management, factors affecting span of control- Authority and responsibility	
	Module 3: Staffing and Directing:	(10 Hours)
3.1	Staffing meaning, nature, staffing process, Job analysis and manpower planning, job description and job specification ;Directing, meaning, elements, Manages vs leaders leadership styles	

Module 4: Controlling and Managerial Decision Making		(8 Hours)
4.1	Controlling Controlling, Importance of controlling, Techniques of controlling- Break Even Analysis, ;Decision Making - Importance of Decision making –types of decisions, decision making process,	
Module 5: Book- Keeping and Accountancy -		(10 Hours)
5.1	Book- Keeping and Accountancy -Elements of Double Entry -Book- Keeping - rules for journalizing - Ledger accounts ;Trial Balance- Method of Balancing accounts ;Final accounts: Preparation of trading and profit and loss Account- Balance sheet	
Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)		(5 Hours)
Total Hours		53



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT124	DIGITAL IMAGE PROCESSING	PEC	3	1	0	0	4	2024

Preamble :

Digital Image Processing is a foundational course that explores the theory, techniques, and algorithms used to manipulate and analyze digital images. This course provides students with a comprehensive understanding of image processing fundamentals, enabling them to develop practical skills for enhancing, analyzing, and interpreting digital images.

Prerequisite :

A foundational understanding of computer programming concepts and techniques is essential for students to grasp the programming aspects of image processing algorithms.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Compare different methods for image acquisition, storage and representation in digital devices and computers
CO2	Appreciate role of image transforms in representing, highlighting, and modifying image features
CO3	Interpret the mathematical principles in digital image enhancement and apply them in spatial domain and frequency domain
CO4	Apply various methods for segmenting image and identifying image components
CO5	Different reshaping operations using image segmentation

Mapping of course outcomes with program outcomes

Scheme of Evaluation :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	10	10	10
Understand	20	20	20
Apply	20	20	20
Analyse			
Evaluate			
Create			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 hours

Continuous Internal Evaluation Pattern :

Attendance: 10 marks

Continuous Assessment Test (2 numbers) : 25 marks

Assignment/Quiz/Course project: 15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

Book of Study :

1. A K. Jain, Fundamentals of digital image processing, Prentice Hall of India, 1989.
2. Rafael C. Gonzalez, Richard E. Woods, Digital Image Processing (English) 3rd Edition, Pearson India, 2013.

References :

1. Al Bovik, The Essential Guide to Image Processing, Academic Press, 2009.
2. Milan Sonka, Vaclav Hlavac and Roger Boyle, Image Processing, Analysis, and Machine Vision, Thomson Learning, 2008.
3. S Jayaraman, S Esakkirajan and T Veerakumar, Digital Image Procesing, McGraw Hill Education , 2009.

Syllabus

Module 1: Introduction to Image processing (9 Hours)

Fundamental steps in image processing Components of image processing system, Pixels, coordinate conventions .Imaging Geometry, Spatial Domain, Frequency Domain.Sampling and quantization, Basic relationship between pixels Applications of Image Processing.

Module 2: Image transforms and its properties (10 Hours)

Image transforms and its properties .Unitary transform, Discrete Fourier Transform, Discrete Cosine Transform, .Walsh Transform, Hadamard Transform, .

Module 3: Image Enhancement in spatial domain (14 Hours)

Basic Gray Level Transformation functions Image Negatives, Log Transformations, Power-Law Transformations..Piecewise-Linear Transformation Functions: Contrast Stretching, Gray Level Slicing, Bit Plane Slicing, Histogram Processing–Equalization, Specification..Basics of Spatial Filtering – Smoothing Linear Filters, Ordered Statistic Filters, Sharpening.

Module 4: Image Enhancement in Frequency Domain (7 Hours)

Basics of Filtering in Frequency Domain.Filters - Smoothing Frequency Domain Filters : Ideal Low Pass Filter, Gaussian Low Pass Filter.Sharpening Frequency Domain Filters: Ideal High Pass Filter Gaussian High Pass Filter.

Module 5: Image Segmentation (8 Hours)

Pixel-Based Approach- Multi-Level Thresholding, Local Thresholding, Threshold Detection Method.Region-Based Approach- Region Growing Based Segmentation, Region Splitting, Region Merging, Split and Merge.Edge Detection - Edge Operators; Line Detection, Corner Detection..

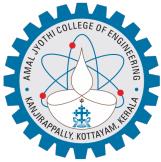
Module 6: Industry, Innovation, and Emerging Technologies (8 Hours)

Image processing technology, Future scope.In production automation In agricultural landscape, Disaster management.Biomedical and other healthcare application.

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
Module 1: Introduction to Image processing		(9 Hours)
1.1	Fundamental steps in image processing ;Components of image processing system, Pixels, coordinate conventions	
1.2	Imaging Geometry, Spatial Domain, Frequency Domain	
1.3	Sampling and quantization, Basic relationship between pixels ;Applications of Image Processing	
Module 2: Image transforms and its properties		(10 Hours)
2.1	Image transforms and its properties	
2.2	Unitary transform, Discrete Fourier Transform, Discrete Cosine Transform,	
2.3	Walsh Transform, Hadamard Transform,	
Module 3: Image Enhancement in spatial domain		(14 Hours)
3.1	Basic Gray Level Transformation functions;Image Negatives, Log Transformations, Power-Law Transformations.	
3.2	Piecewise-Linear Transformation Functions: Contrast Stretching, Gray Level Slicing, Bit Plane Slicing, ;Histogram Processing–Equalization, Specification.	

3.3	Basics of Spatial Filtering – Smoothing;Linear Filters, Ordered Statistic Filters, Sharpening	
Module 4: Image Enhancement in Frequency Domain		(7 Hours)
4.1	Basics of Filtering in Frequency Domain	
4.2	Filters - Smoothing Frequency Domain Filters : Ideal Low Pass Filter, Gaussian Low Pass Filter	
4.3	Sharpening Frequency Domain Filters: Ideal High Pass Filter;Gaussian High Pass Filter	
Module 5: Image Segmentation		(8 Hours)
5.1	Pixel-Based Approach- Multi-Level Thresholding, Local Thresholding, Threshold Detection Method	
5.2	Region-Based Approach- Region Growing Based Segmentation, Region Splitting, Region Merging, Split and Merge	
5.3	Edge Detection - Edge Operators; Line Detection, Corner Detection.	
Module 6: Industry, Innovation, and Emerging Technologies		(8 Hours)
6.1	Image processing technology, Future scope	
6.2	In production automation ;In agricultural landscape, Disaster management	
6.3	Biomedical and other healthcare application	
Total Hours		56



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAT134	COMPUTER GRAPHICS	PEC	3	1	0	0	4	2024

Preamble :

The purpose of this course is to make awareness about strong theoretical relationships between computer graphics and image processing. This course helps the learner to understand three-dimensional environment representation in a computer, transformation of 2D/3D objects, basic mathematical techniques and algorithms used to build useful applications, imaging, and image processing techniques. The study of computer graphics and image processing develops the ability to create image processing frameworks for different domains and develops algorithms foremerging display technologies.

Prerequisite :

A sound knowledge of Mathematics and a Programming Language.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Understand the basics of computer graphics, different graphics systems and applications of computer graphics.
CO2	Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.
CO3	Use of geometric transformations on graphics objects and their application in composite form.
CO4	Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.
CO5	Render projected objects to naturalize the scene in 2D view and use of illumination, tracing and shading models for this.

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember(K1)	10	10	10
Understand(K2)	10	10	15
Apply(K3)	10	10	15
Analyse(K4)	10	10	10
Evaluate(K5)	10	10	10
Create(K6)			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2.5 hours

Continuous Internal Evaluation Pattern :

Attendance : 10 marks

Continuous Assessment Test (2 numbers) : 25 marks

Assignment/Quiz/Course project : 15 marks

End Semester Examination Pattern (2.5 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	10	10	2
Part B	10	5	6
Total Marks			50

Book of Study :

- Donald Hearn & M. Pauline Baker, "Computer Graphics with OpenGL", Third Edition, 2004, Pearson Education, Inc. New Delhi.
- Computer Graphics : Principles and Practice, Hughes and Van Dam, Pearson Education
- Nvidia Developer, "Nvidia Ray Tracing Documentation", Nvidia Documentation,<https://raytracing-docs.nvidia.com/>
- Donald Hearn and M. Pauline Baker, "Computer Graphics", 2nd Edtn. PHI, 1996.

References :

- Peter Shirley, Steve Marschner: "Fundamentals of Computer Graphics", 4th Edtn. AK Peters, 2015.
- Computer Graphics with virtual reality systems, R. K. Maurya, Wiley-India
- Procedural Methods for computer graphics, Rogers, TMH
- Computer Graphics, Sinha & Uday, TMH

Internet Study Material :

- OpenGL Documentation - <https://www.khronos.org/opengl/>
- Vulkan Documentation - <https://www.khronos.org/vulkan/>
- Computer Graphics - https://onlinecourses.nptel.ac.in/noc20_cs90/preview
- Computer Graphics - <https://www.edx.org/learn/computer-graphics>

Syllabus

Module 1: Introduction to Graphics System (8 Hours)

Graphics Systems : Video Display Devices, Raster Scan Systems, Random Scan Systems, Graphics Monitors and Work Stations..Graphics Input Devices: Keyboard, Mouse, Track-ball, space ball, Joysticks, data Glove, Light Pen, Digitizer, Image scanners, touch panels..What is computer Graphics?, Area of Computer Graphics, Design and Drawing.Animation Multimedia applications, Simulation.How are pictures actually stored and displayed, Difficulties for displaying pictures..

Module 2: Graphics Primitives (11 Hours)

Point and Lines, Line Drawing Algorithms: Simple, DDA, Bresenham's Line Drawing algorithm.Circle and Ellipse drawing algorithm.Polygon drawing: Representation of polygon; Conventional methods for drawing polygons .Fill area primitives including scan-line polygon filling, inside-outside test, boundary and flood-fill.Character generation, line attributes, area-fill attributes, Antialiasing.

Module 3: 2D Viewing and Transformations (11 Hours)

2D Viewing: Viewing pipeline, Window-to-viewport transformation.2-D Clipping, Chen-Sutherland Line Clipping, Mid-point subdivision algorithm, Liang-Barsky clipping, Cyrus-Beck line clipping.Polygon Clipping: Sutherland-Hodgeman and Weiler-Atherton polygon clipping.Scaling, Rotation, Translation, Shearing, Reflection.Character Clipping.

Module 4: 3D Transformations (10 Hours)

Scaling, Rotation, Translation, Shearing, Reflection.Homogeneous coordinates, Composite Transformations, Affine transformation, 3-D concepts and representation, Solid Body transformations.Projections: Perspective, Orthographic, Axonometric, Oblique projections.Curves and surfaces: Spline representations, Bezier curves and surfaces, B-spline curves and surfaces.Visible surface detection methods: Back-face detection, depthbuffer, A-buffer, Z- buffer , scan-line.

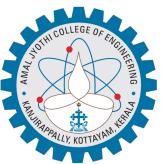
Module 5: Ray Tracing and Shading (8 Hours)

Ray Tracing: Basic Ray Tracing Algorithms, Perspective, Computing Viewing Rays, Ray-Object Intersection Shading.Shadows, Ideal Specular Reflection. Ray Tracing Program, Transparency and Refraction, Constructive Solid Geometry.Surface shading: Diffuse Shading, Phong Shading, Artistic Shading.. - Texture Mapping: .2D and 3D Mapping, Texture Mapping for Rasterized Triangles, Bump Textures, Displacement Mapping, Shadow Maps.Data Structures for Graphics: Triangle Meshes, Scene Graphs, Spatial Data Structures, BSP Tree for visibility, Tiling Multidimensional Arrays.

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
Module 1: Introduction to Graphics System		(8 Hours)
1.1	Graphics Systems : Video Display Devices, Raster Scan Systems, Random Scan Systems, Graphics Monitors and Work Stations.	
1.2	Graphics Input Devices: Keyboard, Mouse, Track-ball, space ball, Joysticks, data Glove, Light Pen, Digitizer, Image scanners, touch panels.	
1.3	What is computer Graphics?, Area of Computer Graphics, Design and Drawing	
1.4	Animation Multimedia applications, Simulation	
1.5	How are pictures actually stored and displayed, Difficulties for displaying pictures.	
Module 2: Graphics Primitives		(11 Hours)
2.1	Point and Lines, Line Drawing Algorithms: Simple, DDA, Bresenham's Line Drawing algorithm	

2.2	Circle and Ellipse drawing algorithm	
2.3	Polygon drawing: Representation of polygon; Conventional methods for drawing polygons	
2.4	Fill area primitives including scan-line polygon filling, inside-outside test, boundary and flood-fill	
2.5	Character generation, line attributes, area-fill attributes, Antialiasing	
Module 3: 2D Viewing and Transformations		(11 Hours)
3.1	2D Viewing: Viewing pipeline, Window-to-viewport transformation	
3.2	2-D Clipping, Chen-Sutherland Line Clipping, Mid-point subdivision algorithm, Liang-Barsky clipping, Cyrus-Beck line clipping	
3.3	Polygon Clipping: Sutherland-Hodgeman and Weiler-Atherton polygon clipping	
3.4	Scaling, Rotation, Translation, Shearing, Reflection	
3.5	Character Clipping	
Module 4: 3D Transformations		(10 Hours)
4.1	Scaling, Rotation, Translation, Shearing, Reflection	
4.2	Homogeneous coordinates, Composite Transformations, Affine transformation, 3-D concepts and representation, Solid Body transformations	
4.3	Projections: Perspective, Orthographic, Axonometric, Oblique projections	
4.4	Curves and surfaces: Spline representations, Bezier curves and surfaces, B-spline curves and surfaces	
4.5	Visible surface detection methods: Back-face detection, depthbuffer, A-buffer, Z-buffer , scan-line	
Module 5: Ray Tracing and Shading		(8 Hours)
5.1	Ray Tracing: Basic Ray Tracing Algorithms, Perspective, Computing Viewing Rays, Ray-Object Intersection Shading	
5.2	Shadows, Ideal Specular Reflection. Ray Tracing Program, Transparency and Refraction, Constructive Solid Geometry	
5.3	Surface shading: Diffuse Shading, Phong Shading, Artistic Shading.. - Texture Mapping:	
5.4	2D and 3D Mapping, Texture Mapping for Rasterized Triangles, Bump Textures, Displacement Mapping, Shadow Maps	
5.5	Data Structures for Graphics: Triangle Meshes, Scene Graphs, Spatial Data Structures, BSP Tree for visibility, Tiling Multidimensional Arrays	
Total Hours		48



AMAL JYOTHI

COLLEGE OF ENGINEERING

(AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAL192	OBJECT ORIENTED PROGRAMMING LAB	PCC	0	1	3	0	2	2024

Preamble :

This course enables the students to understand the concepts of object-oriented programming and to develop skills using these paradigms using Java.

Prerequisite :

Knowledge of any programming language preferred.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Understand the concepts of object-oriented concepts such as classes, objects, constructors and method overloading.
CO2	Implement object-oriented concepts like inheritance, overriding and interfaces
CO3	Effectively design, implement, and manage modular code using packages, handle errors with robust exception handling, develop concurrent applications through multithreading, and create flexible, type-safe components using generic programming techniques.
CO4	Develop applications to handle events using applets
CO5	Create applications using files and networking concepts

Mapping of course outcomes with program outcomes

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

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
Remember			
Understand			
Apply	10	10	10
Analyse	20	20	20
Evaluate	20	20	20

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2 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 Pattern (2 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	1	1	20
Part B	1	1	15
Total Marks			35

Sample program list :

Course Outcome 1

- Define a class 'product' with data members pcode, pname and price. Create 3 objects of the class and find the product having the lowest price.
- Read 2 matrices from the console and perform matrix addition.
- Add complex numbers
- Read a matrix from the console and check whether it is symmetric or not.
- Create CPU with attribute price. Create inner class Processor (no. of cores, manufacturer) and static nested class RAM (memory, manufacturer). Create an object of CPU and print information of Processor and RAM.

Course Outcome 2

- Program to Sort strings
- Search an element in an array.
- Perform string manipulations
- Program to create a class for Employee having attributes eNo, eName eSalary. Read n employ information and Search for an employee given eNo, using the concept of Array of Objects.

Course Outcome 3

- Area of different shapes using overloaded functions
- Create a class 'Employee' with data members Empid, Name, Salary, Address and constructors to initialize the data members. Create another class 'Teacher' that inherit the properties of class employee and contain its own data members department, Subjects taught and constructors to initialize these data members and also include display function to display all the data members. Use array of objects to display details of N teachers.
- Create a class 'Person' with data members Name, Gender, Address, Age and a constructor to initialize the data members and another class 'Employee' that inherits the properties of class Person and also contains its own data members like Empid, Company_name, Qualification, Salary and its own constructor. Create another class 'Teacher' that inherits the properties of class Employee and contains its own data members like Subject, Department, Teacherid and also contain constructors and methods to display the data members. Use array of objects to display details of N teachers.
- Write a program has class Publisher, Book, Literature and Fiction. Read the information and print the details of books from either the category, using inheritance.
- Create classes Student and Sports. Create another class Result inherited from Student and Sports. Display the academic and sports score of a student.

Course Outcome 4

1. Create a Graphics package that has classes and interfaces for figures Rectangle, Triangle, Square and Circle. Test the package by finding the area of these figures.
 2. Create an Arithmetic package that has classes and interfaces for the 4 basic arithmetic operations. Test the package by implementing all operations on two given numbers
 3. Write a user defined exception class to authenticate the user name and password.
 4. Find the average of N positive integers, raising a user defined exception for each negative input.
 5. Define 2 classes; one for generating multiplication table of 5 and other for displaying first N prime numbers. Implement using threads. (Thread class)
 6. Define 2 classes; one for generating Fibonacci numbers and other for displaying even numbers in a given range. Implement using threads. (Runnable Interface)
 7. Producer/Consumer using ITC
 8. Program to create a generic stack and do the Push and Pop operations
- Course Outcome 5
1. Program to draw Circle, Rectangle, Line in Applet.
 2. Program to find maximum of three numbers using AWT.
 3. Find the percentage of marks obtained by a student in 5 subjects. Display a happy face if he secures above 50% or a sad face if otherwise.
 4. Using 2D graphics commands in an Applet, construct a house. On mouse click event, change the color of the door from blue to red.
 5. Implement a simple calculator using AWT components.
 6. Develop a program that has a Choice component which contains the names of shapes such as rectangle, triangle, square and circle. Draw the corresponding shapes for given parameters as per user's choice.
 7. Develop a program to handle all mouse events and window events
 8. Develop a program to handle Key events.
 9. Program to list the sub directories and files in a given directory and also search for a file name.
 10. Write a program to write to a file, then read from the file and display the contents on the console.
 11. Write a program to copy one file to another.
 12. Write a program that reads from a file having integers. Copy even numbers and odd numbers to separate files.
 13. Client server communication using Socket – TCP/IP
 14. Client Server communication using DatagramSocket - UDP

References :

1. Herbert Schildt, "Java The Complete Reference", Seventh Edition, Tata McGraw-Hill Edition
2. C. Thomas Wu, "An introduction to Object-oriented programming with Java", Fourth Edition, Tata McGraw-Hill Publishing company Ltd.
3. Cay S. Horstmann and Gary Cornell, "Core Java: Volume I – Fundamentals", Eighth Edition, Sun Microsystems Press.
4. K. Arnold and J. Gosling, "The JAVA programming language", Third edition, Pearson Education.
5. Paul Deitel and Harvey Deitel, "Java, How to Program", Tenth Edition, Pearson Education
6. Rohit Khurana, "Programming with Java", Vikas Publishing, 2014.
7. Timothy Budd, "Understanding Object-oriented programming with Java", Updated Edition, Pearson Education.
8. Y. Daniel Liang, "Introduction to Java programming", Seventh Edition, Pearson Education.

Internet Study Material :

- <https://www.hackerrank.com/domains/java>
- <https://www.geeksforgeeks.org/java-tutorial/>
- <https://www.w3resource.com/java-tutorial/>
- <https://www.w3resource.com/java-exercises/>
- <https://nptel.ac.in/courses/106/105/106105191/>
- <https://nptel.ac.in/noc/courses/noc20/SEM1/noc20-cs08/>
- <https://www.coursera.org/learn/object-oriented-java>
- <https://www.edx.org/course/object-oriented-programming-in-java-2>

Syllabus

Module 1: Understanding Object-oriented concepts (3 Hours)

Classes and Objects. Constructors Method Overloading Access Modifiers .Arrays and Strings Inner class – static and non-static.

Module 2: Implementation of Object-oriented concepts (3 Hours)

Inheritance. Method overriding, Abstract classes, Dynamic Method Dispatch. Interfaces.

Module 3: Package (6 Hours)

Implement Packages-User defined packages.Exception Handling - – User defines exceptions.Multithreading programming.

Module 4: Event Handling using Applets (3 Hours)

Applets, Graphics – 2D Event handling in Applet.

Module 5: Design applications using files and networking concepts. (2 Hours)

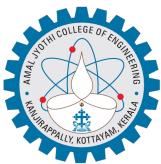
File.Socket Programming.

Module I: Industry, Innovation, and Emerging Technologies (8 Hours)

Advanced Java (JEE) - Database connectivity Networking Servlet Web-services JSP JDBC RMI .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
Module 1: Understanding Object-oriented concepts		(3 Hours)
1.1	Classes and Objects	
1.2	Constructors;Method Overloading ;Access Modifiers	
1.3	Arrays and Strings ;Inner class – static and non-static	
Module 2: Implementation of Object-oriented concepts		(3 Hours)
2.1	Inheritance	
2.2	Method overriding, Abstract classes, Dynamic Method Dispatch	
2.3	Interfaces	
Module 3: Package		(6 Hours)
3.1	Implement Packages-User defined packages	
3.2	Exception Handling - – User defines exceptions	
3.3	Multithreading programming	
Module 4: Event Handling using Applets		(3 Hours)
4.1	Applets, Graphics – 2D;Event handling in Applet	
Module 5: Design applications using files and networking concepts.		(2 Hours)
5.1	File	
5.2	Socket Programming	
Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)		(8 Hours)
I.1	Advanced Java (JEE) Database connectivity Networking Servlet Web-services JSP JDBC RMI	
Total Hours		25



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAL194	ADVANCED DBMS LAB	PCC	0	1	3	0	2	2024

Preamble :

The Advanced Database Management Systems (ADBMS) lab provides hands-on experience with cutting-edge database technologies, including relational, NoSQL, and big data systems. Students will engage in practical exercises to design, implement, and optimize databases, leveraging tools like SQL, Google Bigtable, and BigQuery, with a focus on cloud deployment. This lab aims to equip students with the skills needed to tackle complex data management challenges in industry and research.

Prerequisite :

Introduction to Database Systems, Data Structures and Algorithms, Cloud Computing Fundamentals

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Apply knowledge of relational database systems to design, develop, and implement efficient, scalable, and secure database solutions using modern tools and techniques to address real-world problems
CO2	Develop and implement database solutions using PL/SQL by applying procedural constructs, triggers, and stored procedures to enhance the efficiency, security, and automation of database processing in real-world applications
CO3	Analyze and compare relational and NoSQL databases based on data models, scalability, consistency, and performance to determine suitable database solutions for various real-world applications
CO4	Implement CRUD operations and data retrieval techniques in a NoSQL environment by utilizing appropriate querying methods and database models to manage and manipulate unstructured or semi-structured data efficiently
CO5	Design, develop, and deploy NoSQL databases to meet real-time requirements by selecting appropriate data models, ensuring scalability, and optimizing performance for dynamic and high-velocity data processing applications

Mapping of course outcomes with program outcomes

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2 hrs

Continuous Internal Evaluation Pattern

:

Total Marks : 50

Detailed Mark Distribution

Daily Evaluation : 27.5
 Attendance : 7.5
 Internal Exam : 15

End Semester Examination Pattern (2 Hours)

Part	Total Qns	No. of Qns to be answered	Marks
Part A	1	1	25
Part B	1	1	25
Total Marks			50

Sample program list :

- 1.DDL Commands
- 2.DML Commands
- 3.Accessing database (SELECT, Filtering using WHERE, HAVING, GROUP BY, ORDER BY Clauses)
- 4.Optimizing databases (Join, Aggregate & Set operations)
- 5.Trigger
- 6.Cursor
- 7.Stored Procedures
- 8.Functions
- 9.Installation and configuration of any one of the NoSQL databases
- 10.NoSQL Administration
- 11.Local Deployment - micro project

References :

1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan," Database System Concepts", McGraw Hill Education, 6th Edition (2011)
2. Guy Harrison, "Next Generation Databases: NoSQL, NewSQL, and Big Data", Apress, 1st Edition (14 December 2015)
- Reference Books
 1. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", McGraw Hill, 3rd Edition (2014).
 2. HBase: The Definitive Guide. Lars George O'Reilly Media; August 2011, ISBN: 9781449315771
 3. Shashank Tiwari. Professional NoSQL. John Wiley and Sons. ISBN: 978-0-470- 94224-6.
 4. MongoDB Administrator's Guide, Cyrus Dasadia, October 2017, Packet Publishing ISBN: 9781787126480
 5. Cassandra: The Definitive Guide Distributed Data at Web Scale, 1st Edition, Eben Hewitt, Jeff Carpenter, O'Reilly Media; November 2010

Internet Study Material :

1. Database Management System <https://nptel.ac.in/courses/106/105/106105175/>
2. Databases: SQL <https://www.edx.org/course/databases-5-sql>
3. Introduction to MongoDB <https://www.coursera.org/learn/introduction-mongodb>
4. Apache Cassandra <https://www.edureka.co/cassandra>
5. NoSQL systems <https://www.coursera.org/learn/nosql-databases>
6. <https://hbase.apache.org/>
7. <https://couchdb.apache.org/> <https://aws.amazon.com/dynamodb/>
8. <https://aws.amazon.com/dynamodb/>

Syllabus

Module 1: An overview of relational database design using MySQL/ MariaDB/ PostgreSQL etc. (Apply the following basic queries on an Employee/ Student database etc.) (6 Hours)

- a. DDL Commands
- b. DML Commands
- c. Imposing restrictions on database (DCL & TCL Commands)
- d. Accessing database (SELECT, Filtering using WHERE, HAVING, GROUP BY, ORDER BY Clauses, Subquery and View)
- e. Optimizing databases (Join, Aggregate & Set operations) .

Module 2: PL/SQL Programs (4 Hours)

Stored Procedures and Functions -

Module 3: NoSQL Databases (16 Hours)

Installation and configuration of any one of the NoSQL databases - MongoDB/ Cassandra/ HBase/ CouchDB/ Amazon DynamoDB/ Redis/ Neo4j etc Designing Databases using NoSQL Performing CRUD operations b. Retrieving Data from a NoSQL database c. Usage of aggregate functions, regular expressions etc. .

Module 4: NoSQL Administration (8 Hours)

- a. Security, Monitoring & Backup
- b. Create Users and Roles Perform Sharding, Replication (Master-Slave/ Master-Less/ Peer-to-Peer Architectures), Clustering, Partitioning, Indexing (Corresponding to the selected NoSQL Database) .

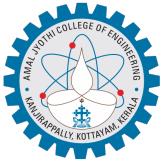
Module 5: Deployment (14 Hours)

- a. Local Deployment i. NoSQL and Front-End: PHP/Java/Python (MongoDB/ Cassandra etc.)
- b. Cloud Deployment i. NoSQL and Cloud: Amazon DynamoDB/ Google Bigtable/ Azure Cosmos DB Microproject .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: An overview of relational database design using MySQL/ MariaDB/ PostgreSQL etc. (Apply the following basic queries on an Employee/ Student database etc.)	(6 Hours)
1.1	a. DDL Commands b. DML Commands c. Imposing restrictions on database (DCL & TCL Commands) d. Accessing database (SELECT, Filtering using WHERE, HAVING, GROUP BY, ORDER BY Clauses, Subquery and View) e. Optimizing databases (Join, Aggregate & Set operations)	
	Module 2: PL/SQL Programs	(4 Hours)
2.1	Stored Procedures and Functions	
	Module 3: NoSQL Databases	(16 Hours)

3.1	Installation and configuration of any one of the NoSQL databases - MongoDB/ Cassandra/ HBase/ CouchDB/ Amazon DynamoDB/ Redis/ Neo4j etc;Designing Databases using NoSQL ;Performing CRUD operations b. Retrieving Data from a NoSQL database c. Usage of aggregate functions, regular expressions etc.	
Module 4: NoSQL Administration		(8 Hours)
4.1	a. Security, Monitoring & Backup b. Create Users and Roles; Perform Sharding, Replication (Master-Slave/ Master-Less/ Peer-to-Peer Architectures), Clustering, Partitioning, Indexing (Corresponding to the selected NoSQL Database)	
Module 5: Deployment		(14 Hours)
5.1	a. Local Deployment i. NoSQL and Front-End: PHP/Java/Python (MongoDB/ Cassandra etc.) b. Cloud Deployment i. NoSQL and Cloud: Amazon DynamoDB/ Google Bigtable/ Azure Cosmos DB;Microproject	
Total Hours		48



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAL196	MOBILE APPLICATION DEVELOPMENT LAB	PCC	0	1	3	0	2	2024

Preamble :

This is a practical course on Mobile Application Development and student will learn how to program in Android Platform and develop applications using SQLite that run on Andriod Operating System.

Prerequisite :

Basic understanding in Object Oriented Programming Language and Database Management Systems

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator
CO2	Write simple programs and develop small applications using the concepts of UI design, layouts and preferences
CO3	Develop applications with multiple activities using intents, array adapter, exceptions and options menu.
CO4	Implement activities with dialogs, spinner, fragments and navigation drawer by applying themes
CO5	Develop mobile applications using SQLite.

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	50	50	
Remember	10	10	10
Understand	10	10	10
Apply	30	30	30
Analyse			
Evaluate			
Create			

Mark distribution :

Total Marks	CIE	ESE	ESE Duration
100	50	50	2 hours

Continuous Internal Evaluation Pattern :

Maximum Marks: 50	
Attendance	71/2
Maintenance of daily lab record and GitHub management	10
Regular class viva voce	71/2
Timely completion of day-to-day tasks	10
Tests/Evaluation	15

Book of Study :

1. Joseph Annuzzi Jr, Lauren Darcey, Shane Condor, "Advanced Android Application Development, Developers Library", Pearson Education, 4th Edition (2015)
2. Lauren Darcey, Shane Condor, "Android, Wireless Application Development", Pearson Education, 3rd Edition.
3. Paul Deitel, Harvey Deitel, Alexander Wald, "Android 6 for programmers, An AppDriven Approach", Pearson Education
4. Rap Payne, "Beginning App Development with Flutter: Create Cross-Platform Mobile Apps", Apress (2019)

References :

1. Joseph Annuzzi Jr, Lauren Darcey, Shane Condor, "Advanced Android Application Development, Developers Library", Pearson Education, 4th Edition (2015)
2. Lauren Darcey, Shane Condor, "Android, Wireless Application Development", Pearson Education, 3rd Edition.
3. Paul Deitel, Harvey Deitel, Alexander Wald, "Android 6 for programmers, An AppDriven Approach", Pearson Education
4. Rap Payne, "Beginning App Development with Flutter: Create Cross-Platform Mobile Apps", Apress (2019)

Internet Study Material :

1. <https://developer.android.com/courses>
2. <https://www.geeksforgeeks.org/android-tutorial/>

Syllabus

Module 1: 1 (8 Hours)

Fundamentals: Basic Building blocks – Activities, Services, Broadcast Receivers and Content providers. UI Components – Views and notifications Components for communication -Intents and Intent Filters. Application Structure: AndroidManifest.xml, user-permission – sdk, Resources and R.java, Assets, Layouts and Drawable Resources. .

Module 2: 2 (10 Hours)

Activities and Activity lifecycle. .Emulator-Android Virtual Device: Launching emulator, Editing emulator settings, Emulator shortcuts, Logcat usage, Introduction to DDMS .Basic UI design: Form widgets, Text Fields, Validation of EditText, Layouts, [dip, dp, sip, sp] versus px .

Module 3: 3 (10 Hours)

Preferences: Shared Preferences, Preferences from xml .Menu: Option menu, Context menu, menu from xml, menu via code .

Module 4: 4 (10 Hours)

Intents: Explicit Intents, Implicit intents .UI design: Time and Date, Images and media, Android Adapter and ListView, Composite, Alert Dialogs and Toast, Popup, Fragments, Navigation drawer .

Module 5: 5 (10 Hours)

Tabs, Tab Activity Styles & Themes: styles.xml, drawable resources for shapes, gradients (selectors), style attribute in layout file, Applying themes via code and manifest file .Content Providers: SQLite Programming, SQLite Open Helper, SQLite Database, Cursor, Reading and updating Contacts, Reading bookmarks .

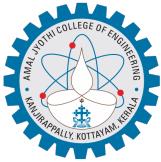
Module i: Industry, Innovation, and Emerging Technologies (6 Hours)

Free Flutter Course with Certificate- Introduction to Flutter Course Online
<https://www.simplilearn.com/free-flutter-foundation-course-skillup> Syllabus - Introduction, Introduction to Dart, Creating your first Flutter Project, Creating your first Flutter Project, Introduction to Widgets, Building an app in flutter, Conclusion .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: 1	(8 Hours)
1.1	Fundamentals: Basic Building blocks – Activities, Services, Broadcast Receivers and Content providers	
1.2	UI Components – Views and notifications Components for communication -Intents and Intent Filters	
1.3	Application Structure: AndroidManifest.xml, user-permission – sdk, Resources and R.java, Assets, Layouts and Drawable Resources.	
	Module 2: 2	(10 Hours)
2.1	Activities and Activity lifecycle.	
2.2	Emulator-Android Virtual Device: Launching emulator, Editing emulator settings, Emulator shortcuts, Logcat usage, Introduction to DDMS	
2.3	Basic UI design: Form widgets, Text Fields, Validation of EditText, Layouts, [dip, dp, sip, sp] versus px	
	Module 3: 3	(10 Hours)
3.1	Preferences: Shared Preferences, Preferences from xml	

3.2	Menu: Option menu, Context menu, menu from xml, menu via code	
	Module 4: 4	(10 Hours)
4.1	Intents: Explicit Intents, Implicit intents	
4.2	UI design: Time and Date, Images and media, Android Adapter and ListView, Composite, Alert Dialogs and Toast, Popup, Fragments, Navigation drawer	
	Module 5: 5	(10 Hours)
5.1	Tabs, Tab Activity Styles & Themes: styles.xml, drawable resources for shapes, gradients (selectors), style attribute in layout file, Applying themes via code and manifest file	
5.2	Content Providers: SQLite Programming, SQLite Open Helper, SQLite Database, Cursor, Reading and updating Contacts, Reading bookmarks	
	Module I: Industry, Innovation, and Emerging Technologies (non-instructional hours)	(6 Hours)
I.1	Free Flutter Course with Certificate- Introduction to Flutter Course Online https://www.simplilearn.com/free-flutter-foundation-course-skillup ;Syllabus - Introduction, Introduction to Dart, Creating your first Flutter Project, Creating your first Flutter Project, Introduction to Widgets, Building an app in flutter, Conclusion	
Total Hours		54



AMAL JYOTHI COLLEGE OF ENGINEERING (AUTONOMOUS)

COURSE CODE	COURSE NAME	CATEGORY	L	T	P	R	CREDIT	YEAR OF INTRODUCTION
24MCAR198	DOCUMENTATION AND INTERVIEW SKILLS FOR SOFTWARE ENGINEERS	PCC	0	0	2	0	1	2024

Preamble :

This course provides essential training in documentation and interview skills, ensuring participants can communicate complex information clearly and concisely while effectively presenting themselves and gathering valuable insights during interviews.

Prerequisite :

Basic proficiency in written and verbal communication, familiarity with standard office software (such as word processors and presentation tools), and a foundational understanding of professional etiquette and workplace dynamics.

Course Outcomes(CO): Upon successful completion of this course, students should be able to:

CO1	Identify and explain the key documents used in software development and their roles in the process.
CO2	Prepare a progress report that evaluates the current status, milestones achieved, and challenges encountered in a software development project.
CO3	Identify and explain the various legal and regulatory documents relevant to software development.
CO4	Create a compelling resume and optimized social media profile to enhance professional visibility and career opportunities.
CO5	Demonstrate effective communication, professionalism, and collaboration skills, while maintaining appropriate etiquette in group discussions and interviews.

Mapping of course outcomes with program outcomes

Assessment Pattern :

Bloom's Category	Continuous Assessment		Assessment 3	Assessment 4
	1	2		
Remember				
Understand	20	20	20	20
Apply	20	20	20	20
Analyse	10	10	10	10
Evaluate				
Create				

Mark distribution :

Total Marks	Assessment 1	Assessment 2	Assessment 3	Assessment 4
100	25	25	25	25

Continuous Internal Evaluation Pattern

:

Attendance : 10 Marks

Assessment[1,2,3 and 4]: 90 Marks

References :

1. Barun K. Mitra, "Personality Development & Soft Skills", 1st Edition, Oxford Publishers (2011)
2. " The Business Communication Handbook" Judith Dwyer, Pearson 11th edition 2020
3. The Ace of Soft Skills: Attitude, Communication and Etiquette for Success, Pearson Education; 1 edition, 2013.

Syllabus

Module 1: Software documentation (4 Hours)

Requirement documents, design documents, code documentation. - Technical reports - Research papers, case studies, feasibility studies .

Module 2: Project documentation (4 Hours)

Project plans, progress reports, meeting minutes - User documentation - Manuals, guides, FAQs .

Module 3: Legal and regulatory documentation (4 Hours)

Patents, contracts, compliance documents. -

Module 4: Resume and Social Media Profile Building (6 Hours)

Resume preparation, LinkedIn content creation, strategies ,and types - cover letter, acknowledgement letter, -

Module 5: Interview skills and Group Discussion (6 Hours)

Interviews - Types of interviews, FAQs-technical, HR, MR, strategies, mock interviews .Group Discussions - Types, skills, strategies and practice .

Course Contents and Lecture Schedule

Sl. No	Topic	No. of Lectures
	Module 1: Software documentation	(4 Hours)
1.1	Requirement documents, design documents, code documentation.	
1.2	Technical reports Research papers, case studies, feasibility studies	
	Module 2: Project documentation	(4 Hours)
2.1	Project plans, progress reports, meeting minutes	
2.2	User documentation Manuals, guides, FAQs	
	Module 3: Legal and regulatory documentation	(4 Hours)
3.1	Patents, contracts, compliance documents.	
	Module 4: Resume and Social Media Profile Building	(6 Hours)
4.1	Resume preparation, LinkedIn content creation, strategies ,and types	
4.2	cover letter, acknowledgement letter,	
	Module 5: Interview skills and Group Discussion	(6 Hours)
5.1	Interviews Types of interviews, FAQs-technical, HR, MR, strategies, mock interviews	
5.2	Group Discussions Types, skills, strategies and practice	
Total Hours		24

Reg no : _____

Name : _____

**AMAL JYOTHI COLLEGE OF ENGINEERING
(AUTONOMOUS)**

SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT102

Advanced Database Management Systems

Duration: **2.5 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 2 Marks.

1	Consider an e-commerce platform or a hospital management system. How does a database system, help in organizing, storing, and retrieving data efficiently in such a system? Illustrate its primary purpose in managing large volumes of data while ensuring consistency and accessibility. (2)
2	In a real-world database system, how do instances and schemas differ, with instances representing the current data and schemas defining the structure of the database? Could you provide practical examples to demonstrate this difference? (2)
3	In the context of database design, how does data normalization help reduce data redundancy and improve data consistency? Can you provide a real-life example where normalization plays a crucial role in organizing data effectively? (2)
4	In a real-life scenario, how do join dependencies in a database system ensure data integrity such as managing inventory or customer orders? Illustrate the features of join dependency with a practical example. (2)
5	In the context of a library management system, how do the ACID properties (Atomicity, Consistency, Isolation, Durability) ensure the integrity of the database during transactions such as borrowing, returning, or reserving books? Provide a real-life example to illustrate how each property contributes to reliable processing. (2)
6	In the context of an inventory shop system, how can strategies be employed to prevent, avoid, detect, or resolve deadlocks when multiple processes (e.g., order processing, stock updates, and billing) are trying to access resources simultaneously? Provide a practical example to illustrate each strategy. (2)
7	In the context of a warehouse management system, how do key disk-organization methods, such as sequential, indexed, and hashed storage, impact the efficiency of data retrieval and overall system performance? Provide a practical example to demonstrate how these techniques optimize storage and access. (2)

8	Static and Dynamic Hashing are techniques used to manage data in hash tables, differing in their handling of data growth. How do Static Hashing and Dynamic Hashing compare in terms of structure, scalability, and performance?	(2)
9	Arrays and Multisets are collection types in SQL used to store multiple values in a single column. How do these types differ in structure and use, and what are their applications in database design?	(2)
10	DTD and XML Schema are used to define the structure and constraints of XML documents. How do DTD and XML Schema differ in terms of features, flexibility, and data type support?	(2)

PART B

Answer any 1 questions from each module, each carries 6 Marks.

Module 1

11	In a system like a university management system, they need to collaborate to ensure efficient data management. Illustrate the components and layers of database architecture that helps them and provide examples to illustrate their role in organizing, storing, and accessing data effectively	(6)
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OR

12	Consider an online booking system. How are the operations classified, and how can we retrieve and transform data in such a relational database? Provide examples to demonstrate their role in querying and manipulating booking data	(6)
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Module 2

13	In a customer relationship management (CRM) system, they have to ensure consistency and normalization in their database design using inference rules for functional dependencies. Illustrate their application.	(6)
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OR

14	Using a real-world example, such as a university course registration system, demonstrate the process of converting a database schema to the Third Normal Form (3NF) by eliminating transitive dependencies and ensure full functional dependency on the primary key.	(6)
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Module 3

15	In an online banking system, they have to manage access to shared resources in a multi-user database environment, ensuring data consistency and preventing conflicts. How do locking methods in concurrency control help them? Discuss the types of locking methods and their impact on database performance	(6)
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OR

16	Consider an online shopping checkout process. They have to handle their transaction management to ensure reliable and consistent execution of database operations, following ACID properties. How SQL handles it? Discuss the key commands used to control transactions, such as COMMIT, ROLLBACK, and SAVEPOINT.	(6)
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Module 4

17	In a company's data backup system, how does RAID (Redundant Array of Independent Disks) improve file organization, performance, and reliability in data storage? Discuss the different RAID levels, such as RAID 0, RAID 1, and RAID 5.	(6)
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OR

18	Consider an e-commerce product search system. The system's query processing is to be evaluated and should optimize its performance. Illustrate how parsing, optimization, and execution is performed and contribute to efficient data retrieval from the system	(6)
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Module 5

19	Consider a multimedia management system for object-oriented databases and a global e-commerce platform for distributed databases, how do both differ in structure and functionality, and how do they address different data storage needs? Illustrate their respective use cases	(6)
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OR

20	In a large-scale e-commerce platform with MongoDB, they have to distribute data across multiple servers and ensure data availability. How do sharding and replication works for the same and discuss their effects on scalability, performance, and data redundancy, to illustrate their impact	(6)
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**AMAL JYOTHI COLLEGE OF ENGINEERING
(AUTONOMOUS)**

SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT104

Advanced Computer Networks

Duration: **2.5 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 2 Marks.

1	Explain protocol layering and its advantages	(2)
2	Describe the working of file transfer protocol with suitable figures.	(2)
3	Compare TCP and UDP at the transport layer	(2)
4	Explain multiplexing and de-multiplexing with diagrams.	(2)
5	Draw the format of the IPv6 packet header, highlighting the significance of each field.	(2)
6	Differentiate between routing and forwarding.	(2)
7	Explain token passing and polling-based multiple access protocol with examples	(2)
8	What is the use of the checksum method? A sender has two data items to send: 1 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 and 1 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1. Compute checksum for the data.	(2)
9	Explain the piconet and scatternet architecture of Bluetooth.	(2)
10	What is the use of VPN are the techniques to guarantee privacy for organizations using VPN?	(2)

PART B

Answer any 1 questions from each module, each carries 6 Marks.

Module 1

11	Explain the techniques and mechanisms that guarantee the quality of service of the network to deliver predictable service to an application program	(6)
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OR

12	Explain the layered architecture of the TCP/IP reference model.	(6)
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Module 2

13	How the flow and error control service is provided by the transport layer using Go-Back-N and Selective-Repeat protocols. Depict the working using timing diagrams.	(6)
OR		
14	Explain TCP segment structure with the frame format.	(6)
Module 3		
15	Explain how exterior routing is done using BGP.	(6)
OR		
16	Describe the format of IPv4 datagram with the help of a diagram, highlighting the significance of each field.	(6)
Module 4		
17	Explain CRC. Generate codeword at sender and perform checking of codeword at receiver. Assuming no error for the dataword 1100 and divisor 1101 using CRC.	(6)
OR		
18	Elucidate the techniques character-oriented framing and bit-oriented framing in data link control (DLC) to organize the bits that are carried by the physical layer.	(6)
Module 5		
19	With neat diagram explain the architecture of IEEE 802.11 Wireless LAN.	(6)
OR		
20	a) Elaborate the working of traffic analysis tools. b) Explain any 3 tools/ commands for troubleshooting used by network administrators.	(6)

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**AMAL JYOTHI COLLEGE OF ENGINEERING
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SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT132

Digital Marketing

Duration: **3 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 2 Marks.

1	Discuss the importance and advantages of digital marketing.	(2)
2	What is Digital Marketing? How digital marketing is different from traditional marketing ?	(2)
3	Discuss on Search Engine Advertising	(2)
4	Comment on various Analytical Tools	(2)
5	Comment on the role of Influencer Marketing	(2)
6	Discuss on Mobile Advertising Analytics	(2)
7	Illustrate Mobile Marketing	(2)
8	Explain On-page and Off-page optimization?	(2)
9	Social media marketing - Advantages and challenges.	(2)
10	List out the Digital Marketing Strategies through Instagram and Snapchat	(2)

PART B

Answer any 1 questions from each module, each carries 6 Marks.

Module 1

11	Summarize on digital marketing strategy	(6)
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OR

12	Summarize on emergence of digital marketing as a tool from traditional to modern era	(6)
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Module 2

13	Explain about Search Engine Advertising with examples	(6)
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OR

14	Summarize Digital marketing framework and illustrate the impact of digital channels	(6)
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Module 3

15	What is the use of LinkedIn ? How it is different from Facebook ? (b) How to set up a company profile in LinkedIn ?	(6)
OR		
16	How twitter Marketing is different than other forms of digital marketing? Illustrate Twitter framing content strategy.	(6)
Module 4		
17	Illustrate SEM Web Analytics	(6)
OR		
18	Illustrate SEO. Discuss the need for SEO	(6)
Module 5		
19	Differentiate Traditional media with Social media. List out the advantages and disadvantages	(6)
OR		
20	Illustrate the steps for recovering from an online brand attack	(6)

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**AMAL JYOTHI COLLEGE OF ENGINEERING
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SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT112

Applied Statistics

Duration: **2.5 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 2 Marks.

Module 1

1	Suppose that the probabilities are 0.4, 0.3, 0.2, and 0.1 that there will be 0, 1, 2, or 3 power failures in a certain city during the month of July. Find the mean	(2)																
2	A random variable X has the following probability distribution <table border="1"><tr><td>x</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>$p(x)$</td><td>k</td><td>$2k$</td><td>$2k$</td><td>$3k$</td><td>k^2</td><td>$2k^2$</td><td>$7k^2$</td></tr></table> Find (1) the value of k (2) $P(1.5 < X < 4.5 X > 2)$	x	1	2	3	4	5	6	7	$p(x)$	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2$	(2)
x	1	2	3	4	5	6	7											
$p(x)$	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2$											

Module 2

3	Derive the mean of uniform distribution.	(2)
4	The probability density function of a random variable X is given by $f(x) = \begin{cases} k(10 - x)x^2, & 0 \leq x \leq 1 \\ 0, & \text{otherwise} \end{cases}$. Find the value of k.	(2)

Module 3

5	Fit the straight line $y = ax+b$ for the data (2,4),(3,5),(5,7),(7,10),(9,15)	(2)
6	The density function of a two dimensional random variable (X, Y) is given by $f(x, y) = \begin{cases} e^{-(x+y)}, & x \geq 0, y \geq 0 \\ 0, & \text{otherwise} \end{cases}$. Find the marginal distribution function of X and Y. Are X and Y independent.	(2)

Module 4

7	Define standard error.	(2)
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8	A sample of size 49 is taken with mean 35 and standard deviation 11 from a population. Find the 99% confidence interval for the population mean.	(2)
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Module 5

9	The proportion of a characteristic of a population is $p=0.37$. Find the mean and variance of the sample proportion obtained from a sample of size 100	(2)
10	The mean blood pressure of 100 randomly selected persons from a target population is 127.3 units. Find a 95% confidence interval for the mean blood pressure of the population.	(2)

PART B

Answer any 1 questions from each module, each carries 6 Marks.

Module 1

11	Prove that Binomial distribution with parameters n and p can be approximated to Poisson distribution when n is large and p is small.	(6)
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OR

12	In a certain industrial facility, it is known that the probability of an accident on any given day is 0.005 and accidents are independent of each other. Use Poisson distribution to find the probability that in any given period of 400 days (i) there will be an accident on one day (ii) there are at most three days with an accident?	(6)
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Module 2

13	The marks obtained by a batch of students in a certain subject are normally distributed. 10% of students got less than 45 marks while 5% got more than 75. Find the percentage of students with score between 45 and 60.	(6)
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OR

14	Derive the mean and variance of exponential distribution.	(6)
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Module 3

15	Explain the principle of least squares for determining a parabola of best fit to a given data.	(6)
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OR

16	Given that the correlation between x and y is 0.5. What is the correlation between $2x-4$ and $3-2y$. Explain regression analysis.	(6)
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Module 4

17	What are the types of errors involved in statistical hypothesis testing. Explain the level of risk associated with each type of error	(6)
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OR	
18	Explain the term confidence level and level of significance. (6)
Module 5	
19	An ecologist collected random samples of a particular species of crab from two different beaches and counted the number of females in each sample .out of 100 samples from the first beach 44 were females whereas out of 200 samples from the second beach 96 were females,test at 95% confidence interval,whether the proportion of females differ significantly. (6)
OR	
20	A random sample is drawn from a population of known standard deviation 22.1. construct a 90% confidence interval for the population mean based on the information $n=121$ $\bar{x}=82.4$ (6)

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**AMAL JYOTHI COLLEGE OF ENGINEERING
(AUTONOMOUS)**

SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT144

Artificial Intelligence

Duration: **2.5 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 2 Marks.

1	Analyse, evaluate, and create representations of an agent's environment, and assess how different types of environments influence agent behavior and decision-making processes.	(2)
2	Critically analyse, evaluate, and apply knowledge of the evolution and types of Artificial Intelligence, as well as their practical applications.	(2)
3	Critically evaluate and apply the concept of Iterative Deepening in search algorithms, assessing its advantages, limitations, and real-world applications.	(2)
4	Analyse, evaluate, and apply the concept of Alpha-Beta Pruning in game tree search, exploring its impact on the efficiency of the Min-Max algorithm.	(2)
5	Evaluate and analyse the role of predicate logic in knowledge representation, and apply it to real-world AI systems for efficient reasoning and decision-making.	(2)
6	Apply, analyse and evaluate various knowledge representation techniques in the context of AI, and assess their effectiveness in solving real-world problems.	(2)
7	Summarize, evaluate, and apply the concept of Rote Learning in AI, exploring its strengths, weaknesses, and applicability in various learning tasks.	(2)
8	Summarize, analyse, evaluate, and apply the steps involved in understanding complex AI learning processes, and demonstrate their impact on learning effectiveness in intelligent systems.	(2)
9	Assess and apply knowledge of various tools used for constructing expert systems, exploring their roles in system development and their suitability for different applications.	(2)
10	Investigate, assess, and implement the key features that define an expert system, understanding their role in system performance and their relevance in various applications.	(2)

PART B

Answer any 1 question from each module, each carries 6 Marks.

Module 1

11	Examine, assess, and apply insights into the development of Artificial Intelligence, the various types of AI, and how these types are applied across different industries.	(6)
12	Develop, examine and assess intelligent agents, focusing on their design and how they function within various environments.	(6)

Module 2

13	Analyse, evaluate, and apply search techniques in AI, exploring their classifications and practical uses in problem-solving.	(6)
14	Explore, assess, and apply the Best First Search and A* Search algorithms in AI problem-solving, understanding their operation, strengths, and limitations.	(6)

Module 3

15	Analyse, evaluate and apply concepts related to knowledge representation and optimization techniques like Alpha-Beta pruning, understanding their challenges and procedural steps.	(6)
16	Examine, assess, and implement fact representation in propositional and predicate logic, understanding their role in knowledge-based systems.	(6)

Module 4

17	Analyse, evaluate, and apply the concept of Explanation-Based Learning (EBL) in AI, demonstrating its use in problem-solving and understanding its advantages through real-world examples	(6)
18	Examine, assess, and apply various learning techniques in Artificial Intelligence, exploring how each approach works and their relevance in addressing real-world challenges.	(6)

Module 5

19	Analyse, evaluate, and apply the stages and tasks involved in developing an expert system, understanding their importance in building effective knowledge-based systems.	(6)
20	Explore, assess, and design the architecture of an expert system, understanding how each element functions and contributes to solving specific problems effectively.	(6)

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**AMAL JYOTHI COLLEGE OF ENGINEERING
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SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT154

IPR and Cyber Laws

Duration: **2.5 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 2 Marks.

1	Imagine a global company is looking to expand its intellectual property protections internationally. As the head of the company's IP department, you are tasked with finding an organization that facilitates international IP rights. What are the core activities of the World Intellectual Property Organization (WIPO) that would support your company's needs? (2)
2	Consider a startup in the tech industry that has just developed an innovative product. The company is deciding whether to file for a patent. As a business consultant, explain why having an efficient patent system would be crucial for the startup's success. (2)
3	A new restaurant chain is deciding whether to trademark its logo or register it as a service mark. Explain the difference between a trademark and a service mark, and give examples that help the restaurant make an informed decision. (2)
4	A famous author has just sold the film rights to their novel but is concerned about how their work will be used. As their lawyer, describe the moral rights associated with copyrights and explain how these rights protect the author's interests. (2)
5	A regional agricultural product in India is gaining popularity, and local farmers want to ensure the product is protected from unauthorized use. As a legal advisor, explain the benefits of registering this product as a Geographical Indication in India. (2)
6	A designer is submitting a new product design for legal protection. As part of the registration process, you are asked to identify the major elements of the design. What are these elements, and why are they important? (2)
7	A company finds that its brand name has been registered as a domain by a third party. As a legal expert, explain the different types of cybersquatting that could be involved in this case and how the company can respond. (2)
8	A global e-commerce platform is facing challenges related to illegal content uploaded by users. As the company's chief legal officer, discuss the importance of having explicit laws for cyberspace to address these issues effectively. (2)

9	A social media platform is being sued for hosting defamatory content posted by users. As the platform's legal advisor, explain the role of intermediaries in the context of the IT Act and how it applies to the platform's responsibilities.	(2)
10	A tech company wants to ensure compliance with legal frameworks related to digital data and cyber activities. As the company's head of legal affairs, explain the primary objectives of the IT Act of 2000 and how they impact the company's operations.	(2)

PART B

Answer any 1 questions from each module, each carries 6 Marks.

Module 1

11	A multinational corporation is expanding its business to several countries and needs to understand the intellectual property (IP) regulations that apply across borders. As the company's legal advisor, explain the TRIPS Agreement and its main objectives in ensuring fair international IP protections.	(6)
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OR

12	A small inventor has created a new device and is considering applying for a patent. As an expert in intellectual property law, define what constitutes a patent and explain the criteria that the invention must meet to be considered patentable.	(6)
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Module 2

13	A popular artist finds that someone has illegally copied and distributed their artwork without permission. As their legal counsel, explain what copyright infringement is and describe the various types of copyright infringements that could apply in this situation.	(6)
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OR

14	A business is looking to protect its brand identity by registering its logo as a trademark. As a trademark attorney, outline the key guidelines for registering a trademark and what the business needs to consider to ensure the application is successful.	(6)
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Module 3

15	A company wants to protect its secret formula for a new product from being leaked to competitors. As the company's legal advisor, explain the concept of trade secrets and the legal mechanisms available to protect them from unauthorized use.	(6)
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OR

16	A fashion designer has created a unique new clothing line and wishes to register the designs to prevent imitation. As an IP consultant, identify the essential requirements for the designer to register their designs.	(6)
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Module 4

17	A content creator is facing a situation where their work is being illegally uploaded to various websites. As their legal representative, explain the role of Internet Service Providers (ISPs) in cyberspace and how they can be involved in addressing online copyright issues.	(6)
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OR

18	A tech company is concerned about a competitor using its website content by linking to and framing their pages. As their legal counsel, distinguish between the concepts of linking and framing, and explain the legal implications of each in the context of cyberspace.	(6)
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Module 5

19	A startup in the digital space is looking to ensure compliance with India's laws regarding electronic transactions and cybersecurity. As the legal consultant, analyze the key aspects and provisions of the IT Act 2000 that would affect their operations.	(6)
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OR

20	A corporation has set up a secure IT infrastructure and wants to ensure it complies with legal standards concerning cybersecurity. As an IT security expert, explain the concept of protected systems and outline the various offences related to them under the IT Act 2000.	(6)
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**AMAL JYOTHI COLLEGE OF ENGINEERING
(AUTONOMOUS)**

SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT124

Digital Image Processing

Duration: 2.5 Hours

Maximum Marks: 50

PART A

Answer all questions, each carries 2 Marks.

1	Define and explain the concept of 'm-connectivity' in digital images. How does it influence image segmentation, and why is it important in image processing tasks such as object recognition and boundary detection?	(2)
2	Explain the components of an image processing system. How does each component contribute to the overall process of image manipulation and analysis? Illustrate your explanation with examples.	(2)
3	With the help of diagrams, explain the different color image models used in digital image processing.	(2)
4	Given a matrix representing a dataset, apply the Karhunen-Loeve (KL) transform to reduce its dimensionality.	(2)
5	Apply the convolution and periodicity properties of 2D DFT to solve practical problems.	(2)
6	Analyze and compare different image transforms (such as Fourier Transform, Wavelet Transform, etc.) in terms of their properties, applications, and limitations. Illustrate how these transforms affect image processing tasks such as compression, enhancement, and filtering	(2)
7	Explain the basic concepts of Spatial Filtering, including its types, applications, and significance in image processing.	(2)
8	Compare and contrast the characteristics, applications, and behavior of low-pass and high-pass filters.	(2)
9	Define and explain region-based approaches in image processing. Discuss their significance in tasks such as image segmentation and object recognition. Provide examples of these approaches and analyze their applications in real-world scenarios.	(2)
10	Demonstrate an understanding of edge detection methods by explaining their principles and comparing their effectiveness in different types of images.	(2)

PART B

Answer any 1 questions from each module, each carries 6 Marks.

Module 1		
11	Analyze the differences in frequency representation when applying the 2D Discrete Fourier Transform (DFT) and 2D Discrete Cosine Transform (DCT) to a gray-scale image. Discuss their computational efficiency, energy compaction properties, and practical applications in image processing.	(6)
12	Explain the principles of sampling and quantization in the context of digital image processing. Analyze the effects of increasing: (i) Sampling frequency on image resolution and quality. (ii) Quantization levels on the representation and accuracy of image data.	(6)
Module 2		
13	Analyze the Walsh Transform and Hadamard Transform in terms of their mathematical formulations, properties, and applications.	(6)
14	Demonstrate an understanding of unitary transforms by explaining their properties, mathematical formulation, and applications in signal processing or image compression.	(6)
Module 3		
15	Analyze the significance of Power-Law Transformations in image processing and demonstrate how it can enhance an image's contrast. Provide examples of its practical applications.	(6)
16	Apply the concept of spatial filtering to explain the different techniques used in image processing.	(6)
Module 4		
17	Analyze and compare the key characteristics of an Ideal Low Pass Filter and an Ideal High Pass Filter in terms of frequency response, cutoff behavior, and practical applications in signal processing.	(6)
18	Explain the principles of the Wiener filter and its role in image restoration. Derive the mathematical expression for the Wiener filter using the minimum mean square error (MMSE) approach.	(6)
Module 5		
19	Given the dataset: (4, 6), (5, 10), (8, 9), (3, 9), (2, 8), (8, 4), (5, 1), and (4, 2) and initial centroids: (3, 9) and (8, 4) a) Apply the K-Means clustering algorithm to segment the dataset into two clusters. b) Calculate the Euclidean distance between the points and centroids for cluster assignment.	(6)
20	Explain the concept of Multi-Level Thresholding and apply it to segment an image with multiple intensity levels. Discuss its importance in image processing and provide an example where this method is effectively used.	(6)

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**AMAL JYOTHI COLLEGE OF ENGINEERING
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SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAT134

Computer Graphics

Duration: **3 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 2 Marks.

1	Give the matrix representation for 2D Scaling.	(2)
2	Define Window and viewport.	(2)
3	State the concept of Interpolation.	(2)
4	List four text clipping techniques.	(2)
5	List any four types of Curves.	(2)
6	Define pixel and resolution.	(2)
7	List any four areas of applications of computer graphics.	(2)
8	Illustrate Geometric Transformation.	(2)
9	Define convex and concave polygon.	(2)
10	State the concept of Vanishing point.	(2)

PART B

Answer any 1 questions from each module, each carries 6 Marks.

Module 1

11	(a) Illustrate Flat-Panel Displays? (b) Explain Graphics Monitors and Workstations.	(6)
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OR

12	Illustrate Computer Graphics? Explain the use of Computer Graphics. Illustrate the main categories of Animation tools.	(6)
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Module 2

13	Explain Bresenham's Line Drawing Algorithm.	(6)
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OR

14	Explain the following concepts (a) Random Scan (b) Boundary Fill (c) Flood Fill	(6)
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Module 3

15	Explain Sutherland-Hodgeman Polygon Clipping.	(6)
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OR

16	Illustrate Composite Transformations.	(6)
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Module 4

17	Explain Classification of Visible –Surface Detection Algorithms.	(6)
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OR

18	Describe B-Spline Curves and Surfaces and its Properties.	(6)
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Module 5

19	Explain (a) Sweep Representation (b) Octree (c) Constructive Solid-Geometry Methods	(6)
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OR

20	(a) Illustrate Ray-Casting. (b) Explain Curved Surfaces.	(6)
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24MCAL192 - OBJECT ORIENTED PROGRAMMING LAB

Duration: 2 Hours

Total Marks: 50

Part A

(20 Marks)

Q1: Create a Java program that handles the following:

- Create a user-defined exception class called InvalidAgeException.
- In the main method, take an age input and throw an exception if the age entered is less than 18.
- Catch the exception and print a relevant message.

Part B

(15 Marks)

Q2: Create a client-server program where the client sends a message to the server and the server responds with a confirmation message.

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**AMAL JYOTHI COLLEGE OF ENGINEERING
(AUTONOMOUS)**

SEMESTER II MCA DEGREE EXAMINATION (Regular)

24MCAL194

Advanced DBMS Lab

Duration: **2 Hours**

Maximum Marks: **50**

PART A

Answer all questions, each carries 25 Marks.

- | | | |
|---|---|--------|
| 1 | A palindrome is a number that reads the same backward as forward. How can you write a PL/SQL program to check if a given number is a palindrome, and what steps are involved in the implementation? | (25) |
|---|---|--------|

PART B

Answer all questions, each carries 25 Marks.

- | | | |
|---|--|--------|
| 2 | A Book Shop Inventory form can store details such as title, author, genre, price, and quantity in stock, with the ability to manage the data. How would you implement CRUD operations in MongoDB to manage a Book Shop Inventory form, and what steps are involved in performing create, read, update, and delete actions? | (25) |
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FIRST SEMESTER M.C.A.DEGREE EXAMINATION, MODEL QUESTION PAPER

20MCA164 – Organisational Behaviour

Max. Marks: 60	Duration: 3 Hours
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PART A

<i>Answer all questions, each carries 3marks.</i>		Marks
1	Define organisational behaviour. What is the objective of learning this subject in this programme?	3
2	What is workforce diversity? How to manage diversity?	3
3	State and explain the foundations of individual behaviour.	3
4	Differentiate 'Classical conditioning' and 'Operant conditioning' behavioural theories.	3
5	Describe how an understanding of attitudes is useful for the study of organisational behaviour.	3
6	What is job design? Describe different approaches to job design.	3
7	What is a team? Can groups become teams? Defend your answer.	3
8	What is the difference between transformational leadership, transactional leadership and charismatic leadership?	3
9	What is creativity? How creativity can be enhanced in organisations?	3
10	What is Organisational Development? Why is it undertaken by organisations?	3

PART B

Answer any one question from each module. Each question carries 6 marks.

Module I

11	State your views on the following statement: "People influence organizations and organizations influence people".	6
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OR

12	Why have career management and talent management become important these days? Justify your points.	6
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Module II

13	What is personality? What are its determinants? As per your opinion, which of them are more important in shaping personality.	6
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OR

14	From your own experience, provide three examples of perceptual errors. Discuss the outcomes of each instance.	6
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Module III

15		Compare and contrast Maslow's need hierarchy theory with Herzberg's two- factor theory of motivation.	6
<i>OR</i>			
16		What is the relationship between stress and personality? What aspects of personality might tend to increase or decrease stress?	6
<i>Module IV</i>			
17		Why groupthink is to be avoided? How might a manager attempt to ensure that groupthink does not occur in his / her group?	6
<i>OR</i>			
18		What are the potential problems with upward and downward communications? How can managers alleviate these problems?	6
<i>Module V</i>			
19		What are the obstacles to change organisational culture? How can change be brought about?	6
<i>OR</i>			
20		What are the forces leading to change in organisations? Using Lewin's theory justify why the change is resisted.	6

		Total Pages:
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY		
SECOND SEMESTER M.C.A. DEGREE EXAMINATION		
Course Code:		
Course Name: BUSINESS MANAGEMENT		
Max. Marks: 60		Duration: 3 Hours
PART A		
	Answer all questions, each carries 3 marks	Marks
1	Define management. What are the levels of management?	(2)
2	Distinguish between efficiency and effectiveness in management.	(2)
3	Explain system approach in management.	(2)
4	Illustrate different types of plans	(2)
5	Explain matrix form of organisation.	(2)
6	What is meant by job analysis?	(2)
7	Explain bench marking.	(2)
8	What is product life cycle?	(2)
9	Explain the rules of debit and credit.	(2)
10	Explain the advantages of accounting softwares.	(2)
PART B		
Answer six questions, one full question from each module and carries 6 marks		
Module I		
11	What are the different roles that managers play in an organisation?	(6)
OR		
12	Explain the major contributions of F W Taylor to scientific management.	(6)
Module II		
13	Explain various steps involved in planning with a case example.	(6)
OR		
14	Explain any 3 types of organisation structures.	(6)
Module III		
15	Explain various steps involved in selection of employees for an organisation.	(6)
OR		
16	Discuss in detail the elements of directing. Describe different types of leadership styles	(6)
Module IV		
17	Illustrate the decision process in an industry by giving different steps involved in it.	(6)
OR		
18	Explain the marketing mix elements with a case example.	(6)
Module V		
19	What is a Journal? Explain the rules of journalising	(6)
OR		

20		What are final accounts? Explain the procedure of preparing balance sheet with a simple example.	(6)
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