

UNIVERSITY OF JAMMU

(NAAC ACCREDITED 'A' GRADE UNIVERSITY)
(Baba Sahib Ambedkar Road, Jammu-180006 (J&K))

Academic Section

Email: academicsectionju14@gmail.com

NOTIFICATION (24/April/Adp./24)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Academic Council, is pleased to authorize the adoption of the Syllabi and Courses of Studies of the subject of **Information Technology** of Semester Vth, VIth, VIIth and VIIIth for Four Year Under Graduate Programme (FYUGP) as per NEP-2020 (as given in the annexure) for the examinations to be held in the years as per the details given below:

Subject	Semester	For the examinations to be held in the year
Information Technology	Semester- V	December 2024, 2025 and 2026
	Semester-VI	May 2025, 2026 and 2027
	Semester-VII	December 2025, 2026 and 2027
	Semester- VIII	May 2026, 2027 and 2028

The Syllabi of the courses is also available on the University website: www.jammuuniversity.ac.in.

Sd/-

DEAN ACADEMIC AFFAIRS

No. F. Acd/II/24/ 059-898

Dated: 22/4/24

Copy for information and necessary action to:

1. Dean, Faculty of Mathematical Sciences
2. HOD/Convener, Board of Studies in Computer Science & IT
3. Sr. P.A. to the Controller of Examinations
4. All members of the Board of Studies
5. Confidential Assistant to the Controller of Examinations
6. I/C Director, Computer Centre, University of Jammu
7. Deputy Registrar/Asst. Registrar (Conf. /Exams. UG)
8. Incharge, University Website for Uploading of the notification.

Sumitasharma
19/4/24
Deputy Registrar (Academic)

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19/4/24

B. A. / B. Sc. Honours
IN
INFORMATION TECHNOLOGY

SYLLABUS

Four Year Undergraduate Programme

As per NEP 2020 guidelines

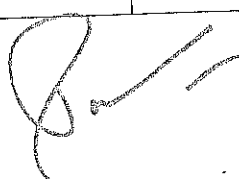
Under Choice based Credit System

FOR THE STUDENTS TO BE ADMITTED IN THE SESSIONS
2022-23, 2023-24, 2024-25



Course Details for Four Year UG Programme

S. NO.	COURSES	DISCIPLINES
1	Computer Applications (CA)- Arts & Science	Natural Science and Arts & Humanities
2	Information Technology (IT)- Arts & Science	Natural Science and Arts & Humanities
3	Bachelor of Computer Applications (BCA)	Computer Applications (for BCA degree)
	BCA (Web Technology)	
	BCA (Data Science)	
	BCA (Software Development)	



COURSES OF STUDY**Semester - I**

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITT101	Fundamentals of IT	4(3L+1P)	15	60	10	15	100
2	Minor	UMIITT102	Basics of Computation	4(3L+1T)	15	60	10	15	100
3	MD	UMDITT103	IT : Basics and Application	3	15	60	NA	NA	75
4	SEC	USEITT104	Office Tools	2	10	40	NA	NA	50

Semester - II

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITT201	Internet and Web Designing using HTML	4(3L+1P)	15	60	10	15	100
2	Minor	UMIITT202	Programming Concepts and Paradigms	4(3L+1P)	15	60	10	15	100
3	MD	UMDITT203	Technical Communication	3	15	60	NA	NA	75
4	SEC	USEITT204	Understanding e-Services	2	10	40	NA	NA	50

Semester-III

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITT301	Programming in C	4(3L+1P)	15	60	10	15	100
2	Major	UMJITT302	Data communication and Networking	4(3L+1P)	15	60	10	15	100
3	Minor	UMIITT303	Digital Electronics	4(3L+1T)	15	60	10	15	100
4	MD	UMDITT304	E-commerce	3	15	60	NA	NA	75
5	SEC	USECAT305	Cyber Security	2	10	40	NA	NA	50

Semester-IV

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITT401	Database Management System & SQL	4(3L+1P)	15	60	10	15	100
2	Major	UMJITT402	Data Structure using C Language	4(3L+1T)	15	60	10	15	100
3	Major	UMJITT403	Software Engineering	4(3L+1T)	15	60	10	15	100
4	Major	UMJITT404	Fundamentals of Operating System	4(3L+1T)	15	60	10	15	100
5	Minor	UMIITT405	Operating System	4(3L+1T)	15	60	10	15	100

Semester - V

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITT501	OOPs using Java	4(3L+1P)	15	60	10	15	100
2	Major	UMJITT502	Computer Architecture and Organization	4(3L+1T)	15	60	10	15	100
3	Major	UMJITT503	Cloud Computing Technologies	4(3L+1T)	15	60	10	15	100
4	Major	UMJITT504	Fundamental of AI	2	10	40	NA	NA	50
5	Minor	UMIITT505	OOPs using Java	4(3L+1P)	15	60	10	15	100
6	SEC	USEITI506	Summer Internship	2	NA	NA	NA	NA	50

Semester - VI

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITT601	Multimedia Technologies	4(3L+1T)	15	60	10	15	100
2	Major	UMJITT602	Computer Graphics	4(3L+1P)	15	60	10	15	100
3	Major	UMJITT603	Machine Learning Basics	4(3L+1T)	15	60	10	15	100
4	Major	UMJITT604	Python Programming	4(3L+1P)	15	60	10	15	100
5	Minor	UMIITT605	Multimedia Technologies	4(3L+1T)	15	60	10	15	100

Semester-VII

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1.	Major	UMJITT701	PHP Programming	4(3L+1P)	15	60	10	15	100
2.	Major	UMJITT702	Web Technologies	4(3L+1P)	15	60	10	15	100
3.	Major	UMJITT703	IoT and its applications	4(3L+1T)	15	60	10	15	100
4.	Major	UMJITT704	Research Methodology and Research Ethics	4(3L+1T)	15	60	10	15	100
5.	Minor	UMIITT705	Web Technologies	4(3L+1P)	15	60	10	15	100

Semester-VIII (UG Honours)

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITP801	Project Work	12	NA	NA	NA	NA	300
2	Major	UMJITT802	Android Programming	4(3L+1P)	15	60	10	15	100
3	Minor	UMIITT803	Android Programming	4(3L+1P)	15	60	10	15	100

Semester-VIII (UG Honours with Research)

S. No.	Course Type	Course No.	Course Title	Credits	Marks				Total Marks
					Theory		Practical/Tutorial		
					Mid Semester	End Exam	Assessment	Exam	
1	Major	UMJITT804	Cyber Security	4(3L+1T)	15	60	10	15	100
2	Minor	UMIITT805	Cyber Security	4(3L+1T)	15	60	10	15	100
3	SEC	USEITP806	Research Project/ Dissertation	12	NA	NA	NA	NA	300

IT (Arts and Science) - FIFTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: OOPs using Java
 Course Code: UMJITT501
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

Course objectives & learning outcomes:

1. To improve the analytical skills of object oriented programming.
2. Formal introduction to Java programming language.
3. Overall development of problem solving and critical analysis.

UNIT - I

Introduction to OOP's, Concepts of OOP's, Introduction to Java : Basics of Java programming, Data types, Variables, Constants, Operators, Control structures including selection, Looping, Java methods, Overloading, Math class, Arrays in java.

15 Hours

UNIT - II

Objects and Classes : Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, StringBuffer, File, this reference.

15 Hours

UNIT - III

Inheritance and Polymorphism : Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java, UTIL package.

15 Hours

UNIT - IV

Event and GUI programming : Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle.

15 Hours

Suggested readings/ references:

1. Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition, Pearson.
2. Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.
3. Murach's Beginning Java 2, Doug Lowe, Joel Murach and Andrea Steelman, SPD.
4. Core Java Volume-I Fundamentals, Eight Edition, Horstmann & Cornell, Pearson Education.
5. The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
6. Java Programming, D. S. Malik, Cengage Learning.

IT (Arts and Science) - FIFTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: OOPs using Java
 Course Code: UMJITT501
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

The question paper will be divided into the following two sections. No question will be repeated in the question paper.

Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks. (4 x 3 = 12 marks)

Section B shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks. (4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – FIFTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Computer Architecture and Organization
 Course Code: UMJITT502
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

Course objectives & learning outcomes:

1. To understand Number Systems, Computer arithmetic, basics of Logic gates and Boolean algebra.
2. To familiarize students with the combinational circuits, basic building block of memory and the working of different types of Flip Flops.
3. To understand the Counters (Synchronous and Asynchronous) and registers.
4. To explain the architecture of computer and the working of ALU.

UNIT-I

Number Systems: Binary, Octal, Decimal, Hexadecimal, Number Based Conversions, Binary Arithmetic, 1's and 2's compliment of binary numbers. r and r-1's Complement. Logic Gates: NOT, OR, AND, Exclusive-OR, X-NOR, Universal Gates (NAND, NOR).

15 Hours

UNIT-II

Boolean Algebra: Logic Simplification, Laws and rules of Boolean Algebra, De-Morgan's Theorems, Sum of Product and Product of Sum form, Standard SOP and POS forms. Karnaugh Map and Tabular Simplification: Karnaugh Map, Plotting a Karnaugh Map, Representing standard SOP and POS on K-Map, Simplification of SOP expressions, Don't care Condition, Simplification of POS expressions.

15 Hours

UNIT-III

Combinational Circuits: Half Adder, Full Adder, Basic Binary Decoder, 4 bit Decoder, BCD to Decimal Decoder, Decimal to BCD Encoder. Sequential Circuits: Introduction, Latches: SR Latch, D Latch, Flip Flops: RS Flip flop, T Flip flop, D Flip flop, JK Flip flop. Conversion of SR Flip-Flop To JK Flip-Flop, Application of Flip- Flops.

15 Hours

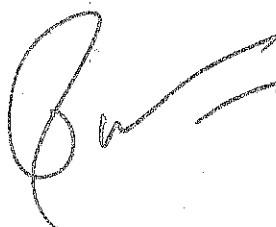
UNIT-IV

Counters: Introduction, Counter applications. Asynchronous Counters: 2-bit Asynchronous Binary Counter, 3-bit Asynchronous Binary Counter, Asynchronous Decade Counter Synchronous Counters: 2-bit Synchronous Binary Counter, 3-bit Synchronous Binary Counter, 4-bit Synchronous Decade counter.

15 Hours

Suggested readings/ references:

1. Kumar A. Anand, "Fundamentals of Digital circuits", PHI.
2. Tocci J. Ronald, "Digital Systems Principles & Applications", Pearson Education.
3. M. Morris Mano, "Digital Logic & Computer Design", PHI.
4. M. Morris Mano, "Digital Design", 3rd Edition, PHI.
5. Hamacher, Computer Organization, 5th Edition,
6. W. Stallings, Computer Organization and Architecture, 7th Edition



IT (Arts and Science) – FIFTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Computer Architecture and Organization
 Course Code: UMJITT502
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

NOTE FOR PAPER SETTERS FOR EXAMINATIONS –

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Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks. (4 x 3 = 12 marks)

Section B shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks. (4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – FIFTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Cloud Computing Technologies
 Course Code: UMJITT503
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

Course objectives & learning outcomes:

1. Articulate the main concepts, key technologies, strengths, limitations of cloud computing and the possible applications for state-of-the-art cloud computing.
2. Identify the architecture and infrastructure of cloud computing, including cloud delivery and deployment models.
3. Analyze the core issues of cloud computing such as security, privacy, and interoperability.
4. Identify problems, analyze, and evaluate various cloud computing solutions.
5. Analyze appropriate cloud computing solutions and recommendations according to the applications used.

UNIT-1

Cloud Computing fundamentals: Essential characteristics, Architectural Influences, Technological Influences, and Operational Influences. Cloud Computing Architecture: Cloud Delivery models, The SPI Framework, Cloud Software as a Service (SaaS), Cloud Platform as a Service(PaaS), Cloud Infrastructure as a Service(IaaS).

15 Hours

UNIT-II

Cloud deployment models, Public Clouds, Community Clouds, Hybrid Clouds, Alternative Deployment models, Expected benefits. Cloud Computing Software Security fundamentals: Cloud Information Security Objectives, Confidentiality, Integrity, Availability, Cloud Security Services, Relevant Cloud Security Design Principles, Secure Cloud Software Requirements, Secure Development practices,

15Hours

UNIT-III

Cloud Computing Risk Issues: The CIA Traid, Privacy and Compliance Risks, Threats to Infrastructure, Data and Access Control, Cloud Access Control Issues, Cloud Service Provider Risks. Cloud Computing Security challenges: Security Policy Implementation, Policy Types, and Computer Security Incident Response Team (CSIRT).

15Hours

UNIT-IV

Cloud Computing Security Architecture: Architectural Considerations, General Issues, Trusted Cloud Computing, Secure Execution environments and Communications, Micro architectures, Identity Management and Access Control, Autonomic Security.

15 Hours

Suggested readings/ references:

1. John W. itinghouse james F.Ransome, "Cloud Computing Implementation, Management and security", CRC Press.
2. Borko Furht. Armando Escalante, "Handbook of Cloud Computing", Springer
3. Charles Badcock, "Cloud Revolution", TMH

IT (Arts and Science) – FIFTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Cloud Computing Technologies
 Course Code: UMJITT503
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

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Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks. (4 x 3 = 12 marks)

Section B shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks. (4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc. 10 marks

Final Examination 15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks



IT (Arts and Science) – FIFTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (2-0-0)
 Total marks: 50

Course Title: Fundamentals of AI
 Course Code: UMJITT504
 Mid Semester assessment: 10 Marks of 1.5 hours duration
 End Semester assessment: 40 Marks of 2.5 hours duration

For examinations to be held in Dec 2024, 2025 and 2026

Course objectives & learning outcomes:

1. To understand basic concepts of Artificial intelligence.
2. To understand the applicability, strengths, and weaknesses of the basic knowledge representation.
3. Implement a search problem as a state space, and how different types of search algorithms work.
4. To understand basic concepts of Multi Agent Systems and Fuzzy Sets.
5. To understand the Artificial Neural Networks, types and its various techniques

UNIT -I

Introduction to Artificial Intelligence: Foundation and History of Artificial Intelligence, Agents, types of Agents, Intelligent Agents, Structure of Intelligence Agents; Knowledge Based Agent, Environments and its types, Relationship between Environment and Agent. Introduction to Knowledge representation, Hypothesis, Knowledge Levels, Knowledge Classification, Knowledge Representation Schemas; Logic Based, Procedural, Network and Structural Representations. 15 Hours

UNIT -II

Searching and Problem Solving: Searching in Problem Solving, Problem Solving Agents; Uninformed Search Strategies, Breadth First Search, Iterative Deepening Search, Bidirectional Search, Informed Search Strategies; Action and Path Costs, Heuristic Functions, Greedy Best First Search, A* Search, IDA* Search. 15 Hours

UNIT-III

Multi Agent Systems and Fuzzy Sets: Agents and Objects; Agents and Expert Systems; Generic Structure of Multiagent System, Semantic Web, Agent Communication, Knowledge Sharing using Ontologies, Agent Development Tools. Notion of Fuzziness, Membership Functions, Fuzzification and Defuzzification; Operations on Fuzzy Sets, Fuzzy Functions and Linguistic Variables; Fuzzy Relations, Fuzzy Rules and Fuzzy Inference; Fuzzy Control System and Fuzzy Rule Based Systems. 15 Hours

UNIT-IV

Neural Network: Neuron, Artificial Neural Networks (ANNs), Perceptrons, Gradient Descent, Backpropagation, Deep learning, Deep Neural Network, Hierarchical Representation, Unsupervised pre training, Activation Functions. 15 Hours

Suggested readings/ references:

1. Night, R, "Introduction to Artificial Intelligence", TMH.
2. Patterson, D W, "Introduction to Artificial Intelligence and Expert Systems", Indian Reprint, PHI.
3. Martin T. Hagan, Howard B. Demuth, Mark Beale, Orlando De Jesús, "Neural Network design", China Machine Press



IT (Arts and Science) - FIFTH SEMESTER

Course: Major
Course Credits: (L-P-T).
(2-0-0)
Total marks: 50

Course Title: Fundamentals of AI
Course Code: UMJITT504
Mid Semester assessment: 10 Marks of 1.5 hours duration
End Semester assessment: 40 Marks of 2.5 hours duration

For examinations to be held in Dec 2024, 2025 and 2026

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

The question paper will be divided into the following two sections. No question will be repeated in the question paper.

Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 2.5 Marks.

(4 x 2.5 = 10 marks)

Section B shall consist Eight (6) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 10 Marks.

(3 x 10 = 30 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.



IT (Arts and Science) – FIFTH SEMESTER

Course: Minor
Course Credits: (L-P-T)
(3-1-0)
Total marks: 100

Course Title: OOPs using Java
Course Code: UMITT505
Mid Semester assessment: 15 Marks of 1.5 hours duration
End Semester assessment: 60 Marks of 2.5 hours duration
Practical: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

Course objectives & learning outcomes:

1. Formal introduction to Java programming language.
2. To improve the analytical skills of object oriented programming.
3. Overall development of problem solving and critical analysis.

UNIT-I

Introduction to OOP's, Concepts of OOP's, Introduction to Java : Basics of Java programming, Data types, Variables, Constants, Operators, Control structures including selection, Looping, Java methods, Overloading, Math class, Arrays in java.

UNIT-II

Objects and Classes : Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, StringBuffer, File, this reference.

UNIT-III

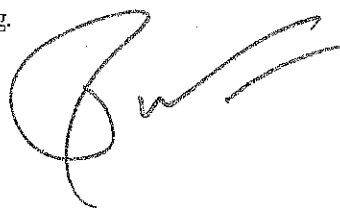
Inheritance and Polymorphism : Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java, UTIL package.

UNIT-IV

Event and GUI programming : Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle.

Suggested readings/ references:

1. Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition, Pearson.
2. Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.
3. Murach's Beginning Java 2, Doug Lowe, Joel Murach and Andrea Steelman, SPD.
4. Core Java Volume-I Fundamentals, Eight Edition, Horstmann & Cornell, Pearson Education.
5. The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
6. Java Programming, D. S. Malik, Cengage Learning.



IT (Arts and Science) – FIFTH SEMESTER

Course: Minor
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: OOPs using Java
 Course Code: UMIIT505
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 2.5 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2024, 2025 and 2026

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

The question paper will be divided into the following two sections. No question will be repeated in the question paper.

Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks. (4 x 3 = 12 marks)

Section B shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks. (4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

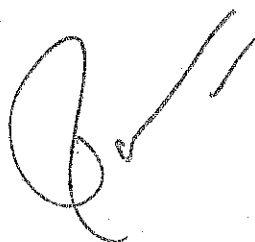
15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks



IT (Arts and Science) - FIFTH SEMESTER

Course: Skill Enhancement Course
Course Credits: (0-2-0)
Total marks: 50

Course Title: Summer Internship
Course Code: USEIT1506
End Semester assessment: 50 Marks

For examinations to be held in Dec 2024, 2025 and 2026

It shall be a short-term internship of 15 days duration for a job/professional training in a suitable organization or hands on training or activity-based course at college level in order to gain work experience.

All students will undergo internships/ Apprenticeships in a firm, industry, or organization or Training in labs with faculty and researchers in their own or other HEIs/research institutions during the summer term. Students will be provided with opportunities for internships with local industry, business organizations, health and allied areas, local governments (such as panchayats, municipalities). Parliament or elected representatives, media organizations, artists, crafts persons, and a wide variety of organizations so that students may actively engage with the practical side of their learning and, as a by-product, further improve their employability.

Community engagement and service: The curricular component of 'community engagement and service' seeks to expose students to the socio-economic issues in society so that the theoretical learning can be supplemented by actual life experiences to generate solutions to real-life problems. This can be part of summer term activity.

Field-based learning/minor project: The field-based learning/minor project will attempt to provide opportunities for students to understand the different socio-economic contexts. It will aim at giving students exposure to development-related issues in rural and urban settings. It will provide opportunities for students to observe situations in rural and urban contexts, and to observe and study actual field situations regarding issues related to socioeconomic development. Students will be given opportunities to gain a first-hand understanding of the policies, regulations, organizational structures, processes, and programmes that guide the development process. They would have the opportunity to gain an understanding of the complex socio-economic problems in the community., and innovation practices required to generate solutions to the identified problems. This may be a summer term project.

SCHEME OF EXAMINATIONS -

The internship shall be under a college teacher who will be designated as Internship Supervisor. After completion of summer internship, students will have to produce a report related to the work carried out along with a course completion certificate from the concerned organization/industry/ institute. The internship shall be evaluated internally based on presentation and viva-voce by Board of Examiners nominated by the principal of the college.



IT (Arts and Science) -SIXTH SEMESTER

Course: Major
Course Credits: (L-P-T)
(3-0-1)
Total marks: 100

Course Title: Multimedia Technologies
Course Code: UMJITT601
Mid Semester assessment: 15 Marks of 1.5 hours duration
End Semester assessment: 60 Marks of 3.0 hours duration
Tutorial: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To learn the basics of multimedia technologies and protocols.
2. To analyze, design and develop animation movies involving computer graphics and video analytics using advanced techniques and tools.
3. To apply media security in virtual reality video processing using IoT for multimedia applications.

UNIT-I

Introduction to Multimedia, Multimedia Definition and Concepts, Need of Multimedia, Areas of use, Development platforms for multimedia, Identifying Multimedia elements-Text, Images, sound, Animation and video, Multimedia Hardware and Software requirement, Making simple Multimedia with Power Point text as a component of Multimedia.

UNIT-II

Features of Multimedia, Application of Multimedia, Application of multimedia in Education, Entertainment, Journalism etc. Future of Multimedia, career in Multimedia Production, Virtual reality as new technology in Multimedia, Application of Virtual Reality.

UNIT-III

Sound in multimedia, Importance of sound in multimedia, sound and its attributes tone, intensity, frequency, wavelength, pitch. Mono v/s stereo sound, Analog vs. Digital sounds, Concept of MIDI: Musical Instrument Digital Interface.

UNIT-IV

Graphics in Multimedia, Importance of graphics in Multimedia, Various attributes of Images- Size, color, Bit Depth, Resolution, Various Image file formats BMP, DIB, EPS, PIC and TIF format their features and limitations. Video and animation in multimedia, impact of video in multimedia, Basics of video, analog and digital video, Brief note on various video standards PAL, NTSC, Basics of animations, types of animation and use of animation.

Suggested readings/ references:

1. Tay Vaughan, "Multimedia: Making it Work", Tata McGraw-Hill, 8th Edition.
2. Hoi Zinger, "Firewall Media", Laxmi Publication Pvt. Ltd., New Delhi 5.
3. IAN Sinclair, "Multimedia on PC", BPB Publisher.
4. James E Shuman, "Multimedia in action", Vikas Publishing House.
5. Multimedia Basics Volume/Technology, Andreas.



IT (Arts and Science) -SIXTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Multimedia Technologies
 Course Code: UMJITT601
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

The question paper will be divided into the following two sections. No question will be repeated in the question paper.

Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks.

(4 x 3 = 12 marks)

Section B shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.

(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination


15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks



IT (Arts and Science) - SIXTH SEMESTER

Course: Major
Course Credits: (L-P-T)
(3-1-0)
Total marks: 100

Course Title: Computer Graphics
Course Code: UMJITT602
Mid Semester assessment: 15 Marks of 1.5 hours duration
End Semester assessment: 60 Marks of 3.0 hours duration
Practical: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To familiar students with the basic concept of application of computer graphics, input devices and graphic display.
2. To learn students about graphical user interfaces and study various graphics drawing algorithm.
3. To view point transformation and applied clipping techniques to clipping objects against display window.
4. To familiarize students with transformation techniques which include 2D and 3D rotation translation and scaling.

Unit-I

Introduction to computer graphics, Applications of Computer graphics, Graphical primitives, An Introduction to graphical devices, Display Devices (Refresh Cathode Ray Tube, Raster-Scan Displays, Random-Scan Displays, Color monitor, Video Graphic Array, Flat Panel Displays, Plasma Panels), Input Devices.

Unit-II

Graphical User Interface: Introduction, Types of Graphical User Interfaces, Designing a Graphical User Interface, Principles for Good Graphical User Interface. 2-D Graphics: DDA Algorithm, Bresenham's Line Algorithm, Midpoint Circle algorithm, Midpoint ellipse algorithm.

Unit-III

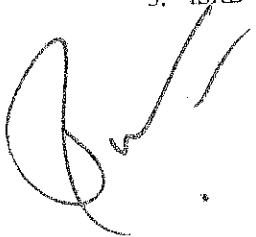
Polygon Filling: Boundary-Fill Algorithm, Flood-Fill algorithm. Windows & View-point: Introduction to window and view-point. Windows to view-point mapping. Clipping: Point Clipping, Line Clipping, Cohen Sutherland Line Clipping.

Unit-IV

Transformations: Introduction, Representation of a 2D object in matrix form, 2-D Transformations (Translation, Rotation, Scaling), Composite transformations, reflection, shearing. 3-D Transformation: Introduction, 3-D Transformations (Translation, Rotation, Scaling)

Suggested readings/ references:

1. Foley, Van Dam, Feiner, Huges, "Computer Graphics", Pearson Edition.
2. Steven Harrington, "Computer Graphics: A-Programming Approach", TMH.
3. ISRD Group "Computer Graphics", Tata McGraw Hill, New Delhi



IT (Arts and Science) - SIXTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Computer Graphics
 Course Code: UMJITT602
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

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Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks.

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(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SIXTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Machine Learning Basics
 Course Code: UMJITT603
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To understand the concepts of Machine Learning.
2. Understanding the real world applications of classification.
3. To understand complexity of Machine Learning algorithms and their limitations.
4. Analyzing various machine learning algorithms.

UNIT -I

Introduction, Types of machine learning: supervised, unsupervised, semi supervised and reinforcement learning Machine learning model, steps in the design of learning system, challenges in machine learning, Applications of machine learning.

15 HOURS

UNIT-II

Labelled data, Introduction to classification and its types, statistical summary of data, Data pre-processing, Normalization, Training and Testing cross Validation, steps in building a classifier in python. Classification algorithms: K-nearest neighbor, Support vector machine, Decision tree, etc., Classification evaluation metrics.

15 HOURS

UNIT-III

Feature selection: Introduction and its importance, Feature selection techniques, principal component analysis, Unlabeled data, Introduction to clustering and its applications, cluster formation methods, K-means algorithm, Hierarchical clustering, etc.

15 HOURS

UNIT-IV

Overfitting Underfitting Bias and Variance, Imbalanced dataset and its handling, Hyper-parameter tuning, Ensemble methods: Bagging and Boosting Ensemble voting.

15 HOURS

Suggested readings/ references:

1. Manohar Swamynathan "Mastering Machine Learning with python in Six Steps", Apress.
2. Machine Learning, A probabilistic perspective, MIT press, by Kevin Murphy.
3. Shai Shalev-Shwartz, Shai Ben-David, "Understanding Machine Learning: From Theory to Algorithms.
4. Mark Summerfield, "Programming in python 3: A Complete Introduction to python programming"
5. Tim Hall and J-P Stacey, "python 3 for Absolute Beginners"



IT (Arts and Science) – SIXTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Machine Learning Basics
 Course Code: UMJITT603
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

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(4 x 12 = 48 marks)

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Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SIXTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Python Programming
 Course Code: UMJITT604
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

Course objectives & learning outcomes:

1. Provide in-depth knowledge of developing and debugging python programs.
2. Illustrate and manipulate core data structures like lists, dictionaries, tuples and strings.
3. Understand the concept of files and exception handling.

UNIT-I

Introduction: Basic concepts: Functional Programming OOP'S and Data structures Getting started: Running code in the Interactive Shell, Input processing and output, Editing, saving and Running a Script, working of Python, variables, Expressions, and statements: Values and Data Types, Variables, Keywords, string Literals, Escape sequences, operators and operands, Expressions and statements, Interactive mode and Script mode, Order of operations, Comments.

15 Hours

UNIT-II

Conditional statements and Loops: Modulus Operator, Boolean Expressions, Logical operators, conditional Execution "if statement", Alternative Execution "else clause", Chained conditionals "elif clause" nested Conditionals, while statement, for loop, Break and Continue statement.

15 Hours

UNIT-III

Functions Function calls, Type conversion Functions, Math Functions, composition, Adding new functions, Importing modules with "from", Recursion & stack Diagram for Recursive Functions. string Functions- Traversal, comparison, Searching, counting pre-defined string Functions.

15 Hours

UNIT-IV

Lists, Dictionaries and Tuples: Lists- List as a sequence, Traversing a list, List operations, List slices, List Map, filter and Reduce, Deleting Elements, Lists and Strings. Dictionaries-Dictionary as a set of counters, Looping and Dictionaries, Reverse Look up, Dictionaries and Lists, Tuples-Tuple Assignment, Tuples as return values, Variable length argument tuples, list and Tuples, Dictionaries and Tuples.

15 Hours

Suggested readings/ references:

1. Allen B. Downey, "Think python", o,Reilly, Sebastopol, California.
2. Aditya Kanetkar and yashavant Kanetkar " Let Us Python" BPB Publications.
3. John Zelle- "Python Programming: An Introduction to computer science", Franklin, Beedle & Associates Inc.
4. Martin C. Brown., "Python: The Complete Reference", McGraw Hill,
5. Harsh Bhasin, "python for beginners", New age international ltd

IT (Arts and Science) – SIXTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Python Programming
 Course Code: UMJITT604
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

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(4 x 12 = 48 marks)

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Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SIXTH SEMESTER

Course: Minor
Course Credits: (L-P-T)
(3-0-1)
Total marks: 100

Course Title: Multimedia Technologies
Course Code: UMIITT605
Mid Semester assessment: 15 Marks of 1.5 hours duration
End Semester assessment: 60 Marks of 3.0 hours duration
Tutorial: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To learn the basics of multimedia technologies and protocols.
2. To analyze, design and develop animation movies involving computer graphics and video analytics using advanced techniques and tools.
3. To understand types and uses of animations.

UNIT-I

Introduction to Multimedia, Multimedia Definition and Concepts, Need of Multimedia, Areas of use, Development platforms for multimedia, Identifying Multimedia elements-Text, Images, sound, Animation and video, Multimedia Hardware and Software requirement, Making simple Multimedia with Power Point text as a component of Multimedia.

UNIT-II

Features of Multimedia, Application of Multimedia, Application of multimedia in Education, Entertainment, Journalism etc. Future of Multimedia, Multimedia Planning and Production, career in Multimedia Production, Virtual reality as new technology in Multimedia, Application of Virtual Reality.

UNIT-III

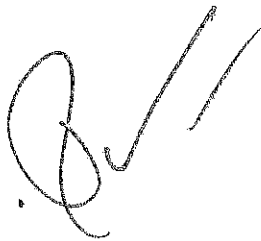
Sound in multimedia, Importance of sound in multimedia, sound and its attributes tone, intensity, frequency, wavelength, pitch. Mono v/s stereo sound, Analog vs. Digital sounds, Concept of MIDI: Musical Instrument Digital Interface.

UNIT-IV

Graphics in Multimedia, Importance of graphics in Multimedia, Various attributes of Images- Size, color, Bit Depth, Resolution, Various Image file formats BMP, DIB, EPS, PIC and TIF format their features and limitations. Video and animation in multimedia, impact of video in multimedia, Basics of video, analog and digital video, Basics of animations, types of animation and use of animation.

Suggested readings/ references:

1. Tay Vaughan, "Multimedia: Making it Work", Tata McGraw-Hill, 8th Edition.
2. Hoi Zinger, "Firewall Media", Laxmi Publication Pvt. Ltd., New Delhi 5.
3. IAN Sinclair, "Multimedia on PC", BPB Publisher.
4. James E Shuman, "Multimedia in action", Vikas Publishing House.
5. Multimedia Basics Volume/Technology, Andreas.



IT (Arts and Science) – SIXTH SEMESTER

Course: Minor
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Multimedia Technologies
 Course Code: UMIITT605
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in May 2025, 2026 and 2027

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

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(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: PHP Programming
 Course Code: UMJITT701
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To learn the use of PHP to add dynamic aspects to webpages.
2. To understand the difference between GET and POST requests.
3. To use cookies to store some data in the browser and pass it to the next request.

UNIT-I

Introduction: History, Evaluation, Features, Installing PHP, Basic of PHP Development, Working of PHP Scripts, Data Types, Variables, Constants, Statements, Flow Control Statements, Expressions and Operators, Loops, Types of Errors, Namespaces. 15 Hrs

UNIT-II

Arrays: Types of Arrays, Operations on Arrays: Element Looping with Index based array, Looping with associative array using each() and foreach(), Some useful Library function. Strings: Introduction to Strings, Comparing Strings, Manipulating and Searching Strings Functions: Calling a Function, Define a function, Call by value and Call by reference, Recursive function. 15 Hrs

UNIT-III

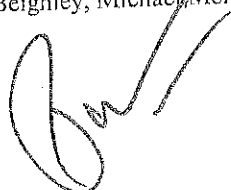
Form Handling: Working with Forms, GET Variable and POST Variable, REQUEST Variable, Combine HTML and PHP Code, Using Hidden Fields, Capturing Form Data" Form Validation, Creating the Upload Script, Redirecting the User. Understanding Exception and error, Try, catch, throw. 15 Hrs

UNIT-IV

Working with File and Directories: Understanding File and Directory, Opening and Closing a File, Copying, Renaming and Deleting a File, Working with Directories, File Uploading and Downloading. PHP with MySQL: Installing and Configuring MySQL, Performing Basic DML Database Operations: Insert, Delete, Update, Select, Cookies: Setting and Using Cookie Variables, Session: Managing User Preferences with Sessions. 15 Hrs

Suggested readings/ references:

1. Robin Nixon, "Learning PHP, MySQL & Javascript ", O'Reilly Media
2. Richard Blum, "PHP, MySQL & Javascript All-in-One For Dummies", Wiley,2018
3. Steven Holzner, "PHP; The Complete Reference". McGraw-Hill books,2017.
4. Lynn Beighley, Michael Morrison. "Head First PHP & MySQL: A Brain-Friendly Guide", O'Reilly.



IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: PHP Programming
 Course Code: UMJITT701
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

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(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Web Technologies
 Course Code: UMJITT702
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To understand basic web fundamentals.
2. To understand concepts of mailing protocols.
3. To gain knowledge on network protocols and their applications.
4. To brief the students about web designing and scripting concepts.

UNIT-I

Basics of Internet, World Wide Web, Overview of Protocols: Simple Mail Transfer Protocol, Gopher, Telnet, Emails, TFTP, Simple Network Management Protocol, Hyper Text Transfer Protocol, Client server computing concepts. Web Browser, Installing and Setting up a Browsers, Client-Side Scripting languages-VBScript and java Script, Active X control and Plug-ins, WebServer Architecture, Image maps, CGI and basics.

15 Hours

UNIT-II

Introduction to HTML, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR DFN, HR, LISTING, Comment, IMG), Color and Background of Web Pages, Design Tables and Forms, Lists and their Types, Image Tag, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Creating Table, Frame, Form and Style Sheet.

15 Hours

UNIT – III

Dynamic HTML, Document Object Model, Features of DHTML. Introduction to CSS and types, Defining Style, Inline Styles, Internal and External and embedded Stylesheets, CSS text boxes, Tables, Animations and other tags.

15 Hours

UNIT – IV

Introduction to JavaScript, Variables, Conditional and Loops Control Statement, Embedding javascript in HTML, Objects, Methods, Functions, Strings and Built-in Functions, Events and Event Handling. Tags, operators, Data Types, Literals and Type Casting in JavaScript Programming Construct, Array and Dialog Boxes, Relating javascript to DHTML, Dynamically Changing Text, Style, Content etc.

15 Hours

Suggested readings/ references:

1. Burdman, "Collaborative Web Development", Addison Wesley.
2. Deitel, "Internet and World Wide Web: How to program", Pearson Publications.
3. Sharma & Sharma, "Developing E-Commerce Sites", Addison Wesley
4. Ivan Bayross, "Web Technologies Part II", BPB Publications'
5. Mastering Javascript and Jscript, James Jaworski, 2e, BPB

IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Web Technologies
 Course Code: UM|ITT702
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

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(4 x 3 = 12 marks)

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(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: IoT and its Applications
 Course Code: UMJITT703
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To learn about various concepts, terminologies, and architecture of IoT systems.
2. To brief the students about sensors and actuators for design of IoT.
3. To gain knowledge on different protocols for design of IoT systems

UNIT –I

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architecture, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, IoT frameworks, IoT and M2M.

15 Hours

UNIT –II

Sensors Network: Definition, Types of Sensors, Types of Actuators, Examples and Working IoT Development Boards: Arduino IDE and Board Types, Raspberry Pi Development Kit, RFID Principles and components.

15 Hours

UNIT-III

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, ZigBee, Z-Wave, IP Based Protocols for IoT IPv6, 6LowPAN, RPL, REST, CoAP, MQTT. Edge connectivity and protocols.

15 Hours

UNIT-IV

Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.

15 Hours

Suggested readings/ references:

1. Hakima Chaouchi, "The internet of Things Connecting objects to the Web", Wiley Publications.
2. Olivier Hersent, David Boswarthick, and Omar Elloumi, "The Internet of Things: Key Applications and Protocols", Wiley Publications
3. J. Biron and J. Follett, "Foundational Elements of an IoT Solution", O'Reilly Media

IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: IoT and its Applications
 Course Code: UMJITT703
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

The question paper will be divided into the following two sections. No question will be repeated in the question paper.

Section A shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks.

(4 x 3 = 12 marks)

Section B shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.

(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Research Methodology and Research Ethics
 Course Code: UMJITT704
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To acquaint and enhance the knowledge of research methodology and ethics.
2. To provide insights as to how research is conducted.
3. Develop the ability to design robust research studies, including selecting appropriate methodologies, sampling techniques, and data collection methods.

Unit-1

Introduction to Research: The concept of research, characteristics of good research, Application of Research, Meaning and sources of Research problem, characteristics of good Research problem, Research process, outcomes, Meaning and types of Research hypothesis, Importance of Review of Literature, Organizing the Review of Literature. Types of Research: Types of research, pure (basic, fundamental) and applied research, qualitative and quantitative.

15 Hrs

Unit-2

Research Design: Meaning, need, types of research design – Exploratory, Descriptive, Casual research Design, Components of research design, and Features of good Research design. Experiments, surveys and case study Research design. Qualitative and Quantitative Research. Sampling, Data Collection and analysis: Types and sources of data – Primary and secondary, Methods of collecting data, Concept of sampling and sampling methods – sampling frame, sample, characteristics of good sample, simple random sampling, purposive sampling, convenience sampling, snowball sampling

15 Hrs

Unit-3

Classification and tabulation of data, graphical representation of data, graphs and charts – Histograms, frequency polygon and frequency curves, bell shaped curve and its properties. Statistical Methods for Data Analysis: Applications of Statistics in Research, measures of central tendency and dispersion. Data Analysis: Data Preparation – Univariate analysis (frequency tables, bar charts, pie charts, percentages).

15 Hrs

Unit-4

Overview of Research Ethics, Definition and importance of research ethics. Ethical Principles in Research, Principles like beneficence, justice, and respect for persons. Ethics in Data Collection and Analysis Informed consent, confidentiality, and privacy. Ethical Publication and Communication Issues of plagiarism, data fabrication, and falsification. Qualities of good researcher.

15 Hrs

Suggested readings/ references:

1. Donald Cooper and PS Schindler (2009) Business Research Methods, 9th edition, Tata McGraw Hill.
2. Kothari C. R Research Methodology
3. Uma Sekaran (2010) Research Methods for Business, 4th edition, Wiley.
4. Ranjit Kumar (2009) Research Methodology, 2nd edition, Pearson Education

IT (Arts and Science) – SEVENTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Research Methodology and Research Ethics
 Course Code: UMJITT704
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

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(4 x 3 = 12 marks)

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(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – SEVENTH SEMESTER

Course: Minor
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Web Technologies
 Course Code: UMJITT705
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

Course objectives & learning outcomes:

1. To understand basic web fundamentals.
2. To understand concepts of mailing protocols.
3. To gain knowledge on network protocols and their applications.
4. To brief the students about web designing and scripting concepts.

UNIT I

Basics of Internet, World Wide Web, Overview of Protocols: Simple Mail Transfer Protocol, Gopher, Telnet, Emails, TFTP, Simple Network Management Protocol, Hyper Text Transfer Protocol, Client server computing concepts. Web Browser, Installing and Setting up a Browsers, Client-Side Scripting languages- VBScript and java Script, Active Xcontrol and Plug-ins, WebServer Architecture, Image maps, CGI and basics.

15 Hours

UNIT II

Introduction to HTML, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR DFN, HR, LISTING, Comment, IMG), Color and Background of Web Pages, Design Tables and Forms, Lists and their Types, Image Tag, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Creating Table, Frame, Form and Style Sheet.

15 Hours

UNIT – III

Dynamic HTML, Document Object Model, Features of DHTML. Introduction to CSS and types, Defining Style, Inline Styles, Internal and External and embedded Stylesheets, CSS text boxes, Tables, Animations and other tags,

15 Hours

UNIT – IV

Introduction to JavaScript, Variables, Conditional and Loops Control Statement, Embedding javascript in HTML, Objects, Methods, Functions, Strings and Built-in Functions, Events and Event Handling. Tags, operators, Data Types, Literals and Type Casting in javascript Programming Construct, Array and Dialog Boxes, Relating javascript to DHTML, Dynamically Changing Text, Style, Content etc.

15 Hours

Suggested readings/ references:

1. Burdman, "Collaborative Web Development", Addison Wesley.
2. Deitel, "Internet and World Wide Web: How to program", Pearson Publications.
3. Sharma & Sharma, "Developing E-Commerce Sites", Addison Wesley
4. Ivan Bayross, "Web Technologies Part II", BPB Publications'
5. Mastering Javascript and Jscript, James Jaworski, 2e, BPB

IT (Arts and Science) – SEVENTH SEMESTER

Course: Minor
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Web Technologies
 Course Code: UMIITT705
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in Dec 2025, 2026 and 2027

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

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(4 x 3 = 12 marks)

Section B shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.

(4 x 12 = 48 marks)

Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – EIGHTH SEMESTER

Course: Major
 Course Credits : (L-P-T)
 (0-12-0)
 Total marks: 300

Course Title: Project Work
 Course Code: UMJITP801
 Project Evaluation: 200 Marks
 Viva/Presentation: 100 Marks

For examinations to be held in May 2026, 2027 and 2028

To provide the hands on experience in analyzing, designing and implementing various projects, students will be assigned major projects based on the languages they have learned. The project work would be carried out in the department under the guidance of a faculty member. The project work will be assigned to the individual students or group of students in case of bigger project with prior permission of the faculty member of the department. The student is required to submit the certification of successful completion of project from the guide mentioning the total number of hours worked per week and conduct during the project period.

Based on the project work a formal project report should be prepared under the guidance of faculty and submitted to department for evaluation. The Project work shall be evaluated by Board of Examiners nominated by the principal of the college. Examiners will conduct the viva-voce; examine the presentation, project report and demonstration of the project.

Project Work = 12 credits (300 marks)
 Project Evaluation = 08 credits (200 marks)
 Viva/ Presentation = 04 credits (100 marks)

Guidelines:

1. The project proposal should be prepared in consultation with the guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. As far as possible, the Project should be on a real life problem.
2. The project work should compulsorily include the software development.
3. Synopsis of the project would be submitted to the department depicting the title of the project, DFDs, brief description of project etc.
4. Project proposal to be scrutinized by the Faculty of the Department and the progress of the project work should be continuously monitored by concerned guide.
5. Student is required to work in the Computer Lab. on the project sanctioned.
6. The project report must be submitted in accordance with the prescribed format. Project report would be submitted to the Department before the prescribed date.
7. Students have to make presentations of project work during evaluation. The student shall demonstrate working of the software.

Proforma for the Project Report

1. Title of the Project
2. Objectives
3. System Analysis and Design
4. Input to the Project
5. Output generated
6. Details of Hardware Platform used and Software Tools used
7. Implementation Issues (Clearly defining the area of Application).
8. Miscellaneous
9. Future scope and further enhancement of the Project
10. Bibliography

IT (Arts and Science) – EIGHTH SEMESTER

Course: Major
Course Credits: (1-P-T)
(3-1-0)
Total marks: 100

Course Title: Android Programming
Course Code: UMJIT802
Mid Semester assessment: 15 Marks of 1.5 hours duration
End Semester assessment: 60 Marks of 3.0 hours duration
Practical: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

Course objectives & learning outcomes:

1. Creating robust mobile applications and learn how to integrate them with other services.
2. Creating intuitive, reliable mobile apps using the android services and components.
3. Create a seamless user interface that works with different mobile screens.

UNIT-I

Android Overview, Android Versions, Environmental Setup, JDK, SDK, Architecture, Features, Libraries, Emulator, Creating First Android Application.

15 Hrs

UNIT-II

Introduction to Activities, Activity Lifecycle, Introduction to Intents, Linking Activities using Intents, Calling inbuilt Applications Using Intents, Introduction to Fragments, Adding fragments dynamically, Lifecycle of Fragments, Interaction between fragments.

15 Hrs

UNIT-III

UI Controls, Views and Viewgroups, Textview, Edittext, Autocomplete Textview, Buttons, Image Button, Toggle Button, Radio Button and Radio group, Check Box, Action Bar, Progress Bar, Time Picker, Data Picker, List, UI Layout (Absolute Layout, Table Layout, Frame Layout, Scroll Layout, Relative Layout), Notifications.

15 Hrs

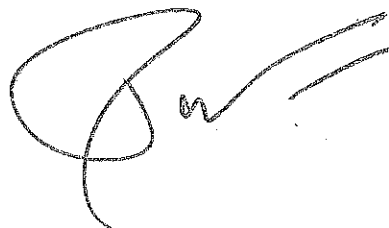
UNIT-IV

Basic Graphics, Input Handling, Image View, Image Switcher, Playing Audio, Playing Video, Introduction to SQLite, SQLiteOpenHelper, SQLite Database, Creating, Opening and Closing Database, Working with Cursors, Insert, Delete, Update, Building and execute Queries.

15 Hrs

Suggested readings/ references:

1. Greg Nudelman "Android Design Patterns: Interaction Design Solution for Developers", Wiley.
2. Dave Smith and Jeff Friesen, "Android Recipes: A Problem Solution Approach", A Press.
3. Bill Philips and Brain Hardy "Android Programming: Big Nerd Ranch Guide".
4. Erik Hellman "Android Programming Pushing the Limits", Wiley.
5. Ian F Darwing "Android Cookbook: Problem and Solution for Android Developers", O Reilly.



IT (Arts and Science) – EIGHTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Android Programming
 Course Code: UMJITT802
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

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Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – EIGHTH SEMESTER

Course: Minor
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Android Programming
 Course Code: UMITT803
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

Course objectives & learning outcomes:

1. Creating robust mobile applications and learn how to integrate them with other services.
2. Creating intuitive, reliable mobile apps using the android services and components.
3. Create a seamless user interface that works with different mobile screens.

UNIT-I

Android Overview, Android Versions, Environmental Setup, JDK, SDK, Architecture, Features, Libraries, Emulator, Creating First Android Application.

15 Hrs

UNIT-II

Introduction to Activities, Activity Lifecycle, Introduction to Intents, Linking Activities using Intents, Calling inbuilt Applications Using Intents, Introduction to Fragments, Adding fragments dynamically, Lifecycle of Fragments, Interaction between fragments.

15 Hrs

UNIT-III

UI Controls, Views and Viewgroups, Textview, Edittext, Autocomplete Textview, Buttons, Image Button, Toggle Button, Radio Button and Radio group, Check Box, Action Bar, Progress Bar, Time Picker, Data Picker, List, UI Layout (Absolute Layout, Table Layout, Frame Layout, Scroll Layout, Relative Layout), Notifications.

15 Hrs

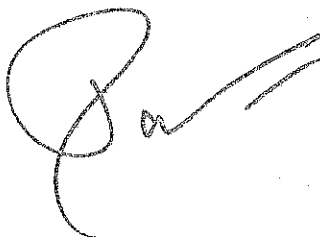
UNIT-IV

Basic Graphics, Input Handling, Image View, Image Switcher, Playing Audio, Playing Video, Introduction to SQLite, SQLiteOpenHelper, SQLite Database, Creating, Opening and Closing Database, Working with Cursors, Insert, Delete, Update, Building and execute Queries.

15 Hrs

Suggested readings/ references:

1. Greg Nudelman "Android Design Patterns: Interaction Design Solution for Developers", Wiley.
2. Dave Smith and Jeff Friesen, "Android Recipes: A Problem Solution Approach".
3. Bill Philips and Brain Hardy " Android Programming: Big Nerd Ranch Guide.
4. Erik Hellman "Android Programming Pushing the Limits".
5. Ian F Darwing "Android Cookbook: Problem and Solution for Android Developers", O Reilly.



IT (Arts and Science) – EIGHTH SEMESTER

Course: Minor
 Course Credits: (L-P-T)
 (3-1-0)
 Total marks: 100

Course Title: Android Programming
 Course Code: UMIHTT803
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Practical: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

NOTE FOR PAPER SETTERS FOR EXAMINATIONS -

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Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc., 10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – EIGHTH SEMESTER

Course: Major
Course Credits: (1-P-T)
(3-0-1)
Total marks: 100

Course Title: Cyber security
Course Code: UMJITT804
Mid Semester assessment: 15 Marks of 1.5 hours duration
End Semester assessment: 60 Marks of 3.0 hours duration
Tutorial: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

Course objectives & learning outcomes:

1. To learn the foundation of cyber security and threats.
2. To equip students with the technical knowledge and skills needed for protection against cyber threats.
3. To familiarize students about different cyber-crimes and cyber laws.
4. To familiarize students about the use of social media networks.
5. To learn about the digital payments and frauds associated with it.

UNIT-I

Cyberspace, Architecture of cyberspace, Internet, World Wide Web, Advent of internet, Internet infrastructure for data transfer and governance, Internets society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security. Classification of cyber crimes, Common cyber crimes-cyber crime targeting computers and mobiles, cyber crime against women and children, financial frauds, social engineering attacks, malware and ransomware, attack, zero day and zero click attacks.

15 Hours

UNIT-II

Cybercriminals modus-operandi, Reporting of cyber crimes, Remedial and mitigation measures, Legal Perspective of cyber crime, Cyber Laws, IT Act 2000 and its amendments, Cyber crime and offences, Organizations dealing with Cyber crime and Cyber security in India.

15 Hours

UNIT-III

Introduction to Social networks, Types of Social Media, Social Media platforms, Social Media monitoring, Hashtag, viral content, Social Media Marketing, Social Media Privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate contents, Best practices for the use of Social media.

15 Hours

UNIT-IV

Definition of E-Commerce, Main Components of e-commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security best practices.

Introduction to digital payments, Components of Digital Payments and Stake holders, Mode of digital Payments, Digital payments related common frauds and preventive measures, RBI guidelines on digital payments and customer protection in authorized banking transactions.

15 Hours

Suggested readings/ references:

1. R. C Mishra, "Cyber Crime Impact in the New Millennium", Author Press Edition.
2. Sumit Belapure and Nina Godbole, "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley India Pvt Ltd.
3. Henry A. Oliver, "Security in the Digital Age: Social Media Security Threats and Vulnerabilities", Pearson.
4. Elias M. Awad, "Electronic Commerce", Prentice Hall of India Pvt Ltd.
5. Kumar K "Cyber Laws: Intellectual Property & E-Commerce Security", Dominant Publishers



IT (Arts and Science) – EIGHTH SEMESTER

Course: Major
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Cyber security
 Course Code: UMJITT804
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

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Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – EIGHTH SEMESTER

Course: Minor
 Course Credits: (1-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Cyber Security
 Course Code: UMIITT805
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

Course objectives & learning outcomes:

1. To learn the foundation of cyber security and threats.
2. To equip students with the technical knowledge and skills needed for protection against cyber threats.
3. To familiarize students about different cyber-crimes and cyber laws.
4. To familiarize students about the use of social media networks.
5. To learn about the digital payments and frauds associated with it.

UNIT-I

Cyberspace, Architecture of cyberspace, Internet, World Wide Web, Advent of internet, Internet infrastructure for data transfer and governance, Internets society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security. Classification of cyber crimes, Common cyber crimes-cyber crime targeting computers and mobiles, cyber crime against women and children, financial frauds, social engineering attacks, malware and ransomware, attack, zero day and zero click attacks.

15 Hours

UNIT-II

Cybercriminals modus-operandi, Reporting of cyber crimes, Remedial and mitigation measures, Legal Perspective of cyber crime, Cyber Laws, IT Act 2000 and its amendments, Cyber crime and offences, Organizations dealing with Cyber crime and Cyber security in India.

15 Hours

UNIT-III

Introduction to Social networks, Types of Social Media, Social Media platforms, Social Media monitoring, Hashtag, viral content, Social Media Marketing, Social Media Privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate contents, Best practices for the use of Social media.

15 Hours

UNIT-IV


Definition of E-Commerce, Main Components of e-commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security best practices.

Introduction to digital payments, Components of Digital Payments and Stake holders, Mode of digital Payments, Digital payments related common frauds and preventive measures, RBI guidelines on digital payments and customer protection in authorized banking transactions.

15 Hours

Suggested readings/ references:

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4. Elias M. Awad, "Electronic Commerce", Prentice Hall of India Pvt Ltd.
5. Kumar K "Cyber Laws: Intellectual Property & E-Commerce Security", Dominant Publishers



IT (Arts and Science) – EIGHTH SEMESTER

Course: Minor
 Course Credits: (L-P-T)
 (3-0-1)
 Total marks: 100

Course Title: Cyber Security
 Course Code: UMIIT805
 Mid Semester assessment: 15 Marks of 1.5 hours duration
 End Semester assessment: 60 Marks of 3.0 hours duration
 Tutorial: 25 Marks

For examinations to be held in May 2026, 2027 and 2028

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Note: -The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Practical/ tutorial Evaluation

Daily evaluation of practical's/tutorials/Viva voce/Records etc.

10 marks

Final Examination

15 Marks

Pattern for external practical examination

Practical file	5 Marks
Written examination	5 Marks
Viva-Voce	5 Marks
Total	15 Marks

Pattern for external tutorial examination

Assignment file	10 Marks
Viva-Voce	5 Marks
Total	15 Marks

IT (Arts and Science) – EIGHTH SEMESTER

Course: Skill Enhancement Course
Course Credits : (L-P-T)
(0-12-0)
Total marks: 300

Course Title: Research Project/ Dissertation
Course Code: USEITP806
Dissertation: 200 Marks
Viva/Presentation: 100 Marks

For examinations to be held in May 2026, 2027 and 2028

Research Project/Dissertation is a unique course involving application of knowledge in solving/analyzing/ exploring a real-life situation/complex problem/data analysis. It is intended to provide research competencies at the undergraduate level. It enables the acquisition of special/advanced knowledge through support study/a project work. The following mechanism shall be adopted for completion of the dissertation:

1. Admission to Honours with Research Programme (4th year, 7th Semester) shall be on the basis of the cumulative score (75% marks and above in the first five semesters) and subject to availability of permanent faculty with doctoral degree and infrastructure and number of seats in the College.
2. Research Project work (12 credits) shall be started at the beginning of 7th Semester.
3. There shall be a Project Synopsis in the programme based on the major area/subject. The permanent faculty with Ph.D. and research experience (as per UGC guidelines) shall be the research project supervisor after being recognized by the Departmental Research Committee (DRC) of the Nodal Department. The progress of the dissertation work should continuously be monitored by concerned Supervisor and the research outcomes may be published in Reputed/Refereed/Peer reviewed/indexed Journals.
4. The college offering FYUGP with Research should have its own College Research Committee (CRC) for each discipline with at least one member from any University of the region.
5. The project report/ dissertation shall be evaluated by the external expert from other University/ Colleges to be nominated by the Principal out of the panel supplied by the CRC.
6. Project proposal to be scrutinized by the College Research Committee for the concerned subject.
7. In the 8th Semester, Evaluation of Dissertation shall be offline and Viva-Voce shall be either offline or online as per the convenience of the examiner. The Dissertation evaluation shall be carried out by an external expert.

Research Project = 12 credits (300 marks)
Dissertation = 08 credits (200 marks)
Viva/ Presentation = 04 credits (100 marks)

Note: A separate guideline shall be issued with regard to the payment of remuneration to the external expert for evaluation of the Research project.

