ALAGAPPA UNIVERSITY

(Accredited with A+ Grade by NAAC (CGPA: 3.64) in the Third Cycle, Graded as Category-I University and granted autonomy by MHRD-UGC)

DIRECTORATE OF COLLABORATIVE PROGRAMMES

B.Sc., UI Design and Development

Regulations and Syllabus

[For those who join the Course in July 2023 and after]

CHOICE BASED CREDIT SYSTEM

REGULATIONS AND SYLLABUS

[For the candidates admitted from the academic year 2023 -2024 onwards]

Name of the Subject Discipline : **UI DESIGN AND DEVELOPMENT**

Programme of Level: **Undergraduate programme - B.Sc., UI Design and Development**

1. **Choice-Based Credit System**

   A Choice-Based Credit System is a flexible system of learning. This system allows students to gain knowledge at their tempo. Students shall decide on electives from a wide range of elective courses offered by the Departments/institutions in consultation with the committee. Students undergo additional courses and acquire more than the required number of credits. They can also adopt an interdisciplinary and interdisciplinary approach to learning, and make the best use of the expertise of available faculty.

2. **Programme:**

   "Programme" means a course of study leading to the award of a degree in a discipline. **B.Sc., UI Design and Development** is an undergraduate programme and duration is **Three years**, the duration that is spread over **six semesters**.

3. **Courses**

   'Course' is a component (a paper) of a programme. Each course offered by the Department is identified by a unique course code. A course contains lectures / tutorials / laboratory work / seminars / project work / practical training /report writing / Viva- voice, etc, or a combination of these, to meet effective teaching and learning needs.

4. **Credits**

   The term "Credit" refers to the weightage given to a course, usually about the instructional hours assigned to it. Normally in each of the courses credits will be assigned based on the number of lectures / tutorials / laboratory and other forms of learning required to complete the course contents in a 15-week schedule. One credit is equal to one hour of lecture per week. For laboratory / field work one credit is equal to two hours.

5. **Semesters**

   An academic year is divided into two Semesters. In each semester, courses are offered in a minimum of 15 teaching weeks and the remaining 3-5 weeks are to be utilized for conduct of examination and evaluation purposes. Each week has 30 working hours spread over 5 days a week.

6. **Departmental/institutional committee**

   The Departmental/Institutional Committee consists of the faculty of the Department/institution. The committee shall be responsible for admission to all the programmes offered by the

Department including the conduct of entrance tests, verification of records, admission, and evaluation. The committee determines the deliberation of courses and specifies the allocation of credits semester-wise and course- wise. For each course, it will also identify the number of credits for lectures, tutorials, practicals, seminars, etc. The courses (Core / Discipline Specific Elective / Non-Major Elective) are designed by teachers and approved by the Committees. Courses approved by the committees shall be approved by the Board of Studies. A teacher offering a course will also be responsible for maintaining attendance and performance sheets (CIA -I, CIA-II, assignments, and seminar) of all the students registered for the course. The department coordinators for Non-major elective (NME) and MOOCs (SLC) courses are responsible to submit the performance sheet to the Head of the department. The Head of the Department consolidates all such performance sheets of courses about the programmes offered by the department. Then forward the same to be Controller of Examinations.

7. Programme Educational Objectives (PEO) :

The Program Educational Objectives (PEO's) describes the professional accomplishments and achievements of the graduates about three - five years after having completed the under-graduate program in UI Design and Development.

PEO1	**Lead or Senior Designer Roles:** With three to five years of experience, designers may be promoted to lead or senior designer roles. In these positions, they often lead design teams, mentor junior designers, and have a significant influence on the overall design direction of projects. Team lead in development.
PEO2	**UI/UX Manager or Director:** After gaining more experience and demonstrating leadership skills, some designers / developers move into management roles. They may become UI/UX managers, TL Managers or directors, overseeing design teams and guiding the strategic direction of design within a company.
PEO3	**Further Education:** Some designers choose to pursue further education, such as a master's degree in design or development, to deepen their knowledge and skills. This can open up opportunities for more specialized roles or teaching positions.
PEO4	**Entrepreneurship**: A few designers decide to start their design agencies or product startups. This path can be challenging but can also offer significant creative and financial rewards for those with an entrepreneurial spirit.
PEO5	**Freelance or Independent Designer:** After gaining some experience, some designers choose to work as freelancers or independent contractors. This allows them to have more control over their projects, clients, and work schedule. It can also be financially rewarding, but it comes with the responsibility of managing one's own business.

8. Programme Outcomes (PO)

Program Outcomes (PO's), are Graduates Attributes acquired by the graduate upon graduation. These relate to the skills, knowledge, and behavior that students acquire through the programme, based on initial capabilities, competence, skills, etc.

PO1	**Design Knowledge:** Should have a solid foundation in design principles, psychology, and human-computer interaction (HCI) to create effective and user-friendly interfaces. Additionally, they should be familiar with various design tools and materials..
PO2	**Problem Analysis & Solutions :** Analyze design problems by researching users and assessing issues like usability and accessibility. They solve these problems by prioritizing user needs, improving design elements, and iteratively refining their interfaces while considering ethics and collaboration with developers. The goal is to create user-centered, efficient, and ethical user experiences.
PO3	**Conduct Investigations of complex problems:** Investigate complex design problems by researching user behaviors, identifying pain points, and analyzing competitors. They use methods like user interviews, surveys, and usability testing to gather insights. These investigations inform user-centered design solutions, iteratively refining interfaces for better user experiences..
PO4	**Modern Tool Usage:** Should learn design tools like Figma and Adobe XD for creating interfaces and collaborate using platforms like Slack and Trello. They also need to understand coding basics like HTML,CSS, Javascript, Angular js, Node JS, Bootstrap, PHP and mysql and prioritize user research and ethical design practices..
PO5	**Designer - Society and sustainability :** Should consider the impact of their designs on society and sustainability. This involves creating user experiences that promote ethical practices, accessibility, and environmental responsibility.
PO6	**Ethics:** Prioritize ethics in their design work by considering user privacy, inclusivity, and avoiding manipulative practices to create user experiences that are fair, respectful, and responsible..
PO7	**Individual and team Work:** Excel in both individual and team work. Individually, they need to demonstrate strong design skills, problem-solving, and self-motivation. In team settings, they should collaborate effectively, communicate ideas, and respect diverse perspectives to deliver successful user-centered projects.
PO8	**Communication:** Effective communication is vital for UI/UX students. They must articulate design concepts clearly, actively listen to user feedback, collaborate with team members, and advocate for user-centered solutions, ensuring that their designs meet user needs and project goals.

PO9	**Project Management and Finance:** Develop project management skills to organize their design work, meet deadlines, and collaborate with teams effectively. Understanding basic finance concepts helps them assess the cost-effectiveness of design decisions and contribute to project budgeting and resource allocation.
PO10	**Lifelong Learning:** Should continuously update their skills, stay updated on design trends and emerging technologies, and seek new knowledge to remain competitive in the ever-evolving field of UI/UX design.

9. Programme Specific Outcomes (PSO)

Programme Specific Outcomes (PSO's) are what the graduates should be able to do upon graduation. At the end of the B.Sc., UI Design and Development program, the Graduates

PSO1	**UI/UX Designer:** As a UI/UX designer, students will focus on creating visually appealing and user-friendly interfaces for websites, web applications, and mobile apps. Graduates will conduct user research, design wireframes and prototypes, and work to improve user experiences.
PSO2	**Front-End Developer:** Front-end developers focus on implementing the visual aspects of user interfaces. They use HTML, CSS, and JavaScript to translate UI/UX designs into functional web applications. Proficiency in front-end development is valuable for UI/UX students..
PSO3	**Interaction Designer:** Interaction designers specialize in creating interactive and engaging user experiences. They design the behaviors and interactions that users have with digital products, emphasizing usability and user engagement.
PSO4	**Usability Analyst:** Usability analysts evaluate the usability of digital products by conducting heuristic evaluations, usability testing, and user surveys. They provide recommendations to improve the user experience.
PSO5	**Freelance Designer/Developer:** Graduates can choose to work as freelancers, offering UI/UX design and development services to clients or companies on a project-by-project basis..

10. Eligibility for admission

A candidate who has passed Higher Secondary Examination (HSC) /Dip in UI Design and Development or Equivalent, or an examination accepted as equivalent as the main subject of study from any University/college shall be permitted to appear and qualify for the course.

11. Minimum Duration of Programme.

The programme is for three years. Each year shall consist of two semesters viz. Odd and Even semesters. Odd semesters shall be from June / July to October / November and even semesters shall be from November / December to April / May. Each semester there shall be 90 working days consisting of 4 teaching hours per working day (5 days/week).

12. Medium of instruction

The medium of instruction is English

13. Teaching Methods

The classroom teaching would be through conventional lectures, the use of OHP, PowerPoint presentation, and novel innovative teaching ideas like television, smart board, and computer-aided instructions. Periodic field visit enables the student to gather practical experience and up-to-date industrial scenarios. Student seminars would be arranged to improve their communicative skills. In the laboratory, safety measures instruction would be given for the safe handling instruments. The lab experiments shall be conducted with special efforts to teach scientific knowledge to students. The students shall be trained to handle advanced instrumental facilities and shall be allowed to do experiments independently. The periodic test will be conducted for students to assess their knowledge. Slow learners would be identified and will be given special attention by remedial coaching. Major and electives would be held in the Department and for Non-major electives students have to undertake other subjects offered by other departments.

14. Components

A UG programme consists of several courses. The term "course" is applied to indicate a logical part of the subject matter of the programme and is invariably equivalent to the subject matter of a "paper" in the conventional sense. The following are the various categories of the courses suggested for the PG programmes:

Core courses (CC)

"Core Papers" means "the core courses" related to the programme concerned including practicals and project work offered under the programme and shall cover core competency, critical thinking, analytical reasoning, and research skill.

Generic Elective (Allied)

Within the faculty, the students shall undergo two discipline-specific allied courses (one in the first year and another in the second year of his/her study except for computer application).

Discipline-Specific Electives (DSE)

DSE means the courses offered under the programme related to the major but are to be selected by the students, shall cover additional academic knowledge, critical thinking, and analytical reasoning.

Non-Major Electives (NME) - Exposure beyond the

discipline Self-Learning Courses from MOOCs platforms

- MOOCs shall be voluntary for the students.
- Students have to undergo a total of 2 Self Learning Courses (MOOCs) one in II semester and another in III semester.
- The actual credits earned through MOOCs shall be transferred to the credit plan of programmes as extra credits. Otherwise, 2 credits/course be given if the Self Learning Course (MOOC) is without credit.
- While selecting the MOOCs, preference shall be given to the course related to employability skills

Dissertation (Maximum Marks: 200)

The candidate shall undergo Dissertation Work during the fourth semester. The candidate should prepare a scheme of work for the dissertation and should get approval from the guide. The candidate, after completing the dissertation, shall be allowed to submit it to the departments at the end of the final semester.

No. of copies of the dissertation/internship report

The candidate should prepare three copies of the dissertation/report and submit the same for the evaluation of examiners. After evaluation, one copy will be retained in the department library, one copy will be retained by the guide and the student shall hold one copy.

15. Attendance

Students must have earned 75% of attendance in each course for appearing on the examination. Students who have earned 74% to 70% of attendance need to apply for condonation in the prescribed form with the prescribed fee. Students who have earned 69% to 60% of attendance need to apply for condonation in the prescribed form with the prescribed fee along with the Medical Certificate. Students who have below 60% of attendance are not eligible to appear for the End Semester Examination (ESE). They shall re-do the semester(s) after completion of the programme.

16. Examination

The examinations shall be conducted separately for theory and practicals to assess (remembering, understanding, applying, analyzing, evaluating, and creating) the knowledge required during the study. There shall be two systems of examinations viz., internal and external examinations. The internal examinations shall be conducted as Continuous Internal Assessment tests I and II (CIA Test I & II)

Internal Assessment:

The internal assessment shall comprise a maximum of 25 marks for each course

Theory - 25 marks

Sr. No.	Content	Marks
1	Average marks of two CIA test	15
2	Seminar/group discussion/quiz, etc.,	5
3	Assignment/field trip report/case study reports	5
	Total	**25**

Practical - 25 marks

Sr. No.	Content	Marks
1	Average marks of two CIA tests (Practical) Experiments –Major, Minor, and Spotter	15
2	Observation notebook	10
	Total	**25**

Internship - 25 Marks (assess by Guide/ In-charge/HOD/supervisor)

Sr. No.	Content	Marks
1	Presentation	15
2	Progress report	10
	Total	**25**

Dissertation – 50 Marks (Guide/HOD)

Sr. No.	Content	Marks
1	Two presentations (mid-term)	30
2	Progress report	20
	Total	**50**

External Examination

- There shall be examinations at the end of each semester, for odd semesters in October / November; for even semesters in April / May.
- A candidate who does not pass the examination in any course(s) may be permitted to appear in such failed course(s) in the subsequent examinations to be held in October / November or April / May. However, candidates who have arrears in practical shall be permitted to take their arrear Practical examination only along with regular practical examination in the respective semester.

- A candidate should get registered for the first-semester examination. If registration is not possible owing to a shortage of attendance beyond the condonation limit / regulation prescribed OR belated joining OR on medical grounds, the candidates are permitted to move to the next semester. Such candidates shall re-do the missed semester after completion of the programme.
- For the Dissertation Work, the maximum marks will be 100 marks for thesis evaluation and the Viva-Voce 50 marks.
- For the internship, the maximum mark will be 50 marks for project report evaluation and for the Viva-Voce it is 25 marks
- Viva-Voce: Each candidate shall be required to appear for the Viva-Voce Examination (in defense of the Dissertation Work/internship)

17. Passing minimum

- A candidate shall be declared to have passed each course if he/she secures not less than 40% marks in the End Semester Examinations and 40% marks in the Internal Assessment and not less than 40% for UG and PG 50% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- The candidates not obtained 40% for UG and PG 50% in the Internal Assessment are permitted to improve their Internal Assessment marks in the subsequent semesters (2 chances will be given) by writing the CIA tests and by submitting assignments.
- Candidates, who have secured the pass marks in the End - Semester Examination and the CIA but failed to secure the aggregate minimum pass mark (E.S.E + C I.A), are permitted to improve their Internal Assessment mark in the following semester and/or in University examinations.
- A candidate shall be declared to have passed the Project Work if he /she gets not less than 40% in each of the Project Report and Viva-Voce and not less than 40 % UG and in PG 50% in the aggregate of both the marks for Project Report and Viva-Voce.
- A candidate who gets less than 40% for UG and PG 50% in the Project Report must resubmit the Project Report. Such candidates need to take again the Viva-Voce on the resubmitted Project

MODEL SYLLABUS UNDER CBCS PATTERN w.e.f.2023-24)										
B.sc UI Design and Development										
Sem.	**Part**	**Courses**	**Course Code**	**Title of the Paper**	**T/P**	**Cr.**	**Hrs./ Week**	**Max. Marks**		
								Int.	**Ext.**	**Total**
I	I	82711T/H/F/ M/TU/A/S/	T/OL	Tamil /Other Languages -I	L	3	4	25	75	100
	II	82712	E	General English-I	L	3	4	25	75	100
	III	82713	Core 1	Programming and Scripting	T	4	4	25	75	100
		82714	Core 2	Programming and Scripting - Practical	P	4	6	25	75	100
		82715	Allied 1	Communication and Media Design	T	3	3	25	75	100
		82716	Allied 2	Visualization for Interactive Media-Practical	P	3	6	25	75	100
	IV	82717	SEC –I	Value Education	T	2	2	25	75	100
				Library			1			
				Total		**22**	**30**	**175**	**525**	**700**
II	I	21T/H/F/M/ TU/A/S	T/OL	Tamil/Other Languages-II	L	3	4	25	75	100
	II	82722	E	General English - II	L	3	4	25	75	100
	III	82723	Core 3	UI Development I	T	4	4	25	75	100
		82724	Core 4	UI Development I - Practical	P	4	6	25	75	100
		82725	Allied 3	UX Design - I	T	3	3	25	75	100
		82726	Allied 4	Design for Interactive media- Practical	P	3	6	25	75	100
	IV	82727	SEC –II	Environmental Studies	T	2	2	25	75	100
				Library			1			
		82728A/ 82728B		Internship/ Mini Project	I/ PR	2		25	75	100
				Total		**24**	**30**	**200**	**600**	**800**
III	I	82731T/H/F/ M/TU/A/S	T/OL	Tamil/Other Languages-III	L	3	4	25	75	100
	II	82732	E	General English – III	L	3	4	25	75	100
	III	82733	Core 5	UI Visual Design	T	3	3	25	75	100
		82734	Core 6	UI Development II	T	3	3	25	75	100
		82735	Core 7	UI Development II - Practical	P	3	5	25	75	100
		82736	Allied 5	UX Design II	T	3	3	25	75	100
		82737	Allied 6	UI Visual Design - Practical	P	2	4	25	75	100
	IV	82738	SEC-III	Entrepreneurship	T	2	2	25	75	100
		82739A 82739B 82739C	NME- I	1.Adipadai Tamil	P	2	2	25	75	100
				2.Advance Tamil	T					
				3.IT Skills for Employment	T					
				4. MOOC'S	T					
				Total		**24**	**30**	**225**	**675**	**900**

IV	I	82741T/H/F/ TU/A/S	T/OL	Tamil /Other Languages -IV	L	3	4	25	75	100
	II	82742	E	General English – IV	L	3	4	25	75	100
	III	82743	Core 8	Web Application Development	T	4	4	25	75	100
		82744	Core 9	Human Centered Design	T	4	4	25	75	100
		82745	Core 10	Web Application Development - Practical	P	3	5	25	75	100
		82746	Allied 7	Mobile Application Development	T	3	3	25	75	100
		82747	Allied 8	Mobile Application Development-Practical	P	2	4	25	75	100
	IV	82748A 82748B 82748C	NME- II	1.Adipadai Tamil	P	2	2	25	75	100
				2.Advance Tamil	T					
				3. Small Business Management	T					
				4. MOOC'S	T					
		82749		Internship	I	2		25	75	100
				Total		**26**	**30**	**225**	**675**	**900**
V	III	82751	Core 11	Emerging Technologies	T	4	4	25	75	100
		82752	Core 12	Software Quality Assurance	T	4	4	25	75	100
		82753A 82753B 82753C	DSE 1	1.Human Computer Interaction 2. AR and VR in UX Design 3. Brand Designing	T	4	4	25	75	100
		82754A 82754B 82754C	DSE 2	1. Information Architecture 2. Digital Marketing 3. Design Issues	T	4	4	25	75	100
		82755A 82755B 82755C	DSE 3	1. Prototyping-Practical 2. Software Testing-Practical 3. Usability Evaluation-Practical	P	4	8	25	75	100
		82756	Core 13	Portfolio & Presentation -Practical	P	2	4	25	75	100
				Career Development / Employability Skills			2			
				Total		**22**	**30**	**150**	**450**	**600**
VI	III	82761	Core 14	Web Development Using React	T	4	4	25	75	100
		82762	Core 15	Advanced Framework- Tailwind	T	4	4	25	75	100
		82763	Core 16	Web Development Using React	P	4	6	25	75	100
		82764A 82764B 82764C	DSE 4	1. Word press-Practical 2. SEO Strategy-Practical 3. Motion Design and Animation-Practical	P	4	4	25	75	100
		82765A 82765B	Core 17	Project/ Dissertation	PR/ D	6	12	25	75	100
				Total		**22**	**30**	**125**	**375**	**500**
				Grand Total		**140**	**180**	**1100**	**3300**	**4400**

DSE – Student Choice and it may be conducted by parallel sections.

** NME –Students have to select courses offered by other (Faculty) departments.

*** SLC – Voluntary basis T – Theory P – Practical

I-Semester					
Core	82713	**Programming and Scripting**	**T**	**Credits: 4**	**Hours: 4**

Objective	1. To teach essential programming concepts including problem-solving, coding basics, functions, OOP, and exception handling for a solid foundation in programming. 2. To provide an introductory understanding of web technology, covering the history of the World Wide Web, web standards, HTML basics, tags, attributes, and essential elements like headings, formatting, links, images, and forms. 3. To teach advanced web development, including tables, frames, forms, semantic tags, entities, emojis, and multimedia integration with HTML media elements. 4. To impart fundamental web styling skills, including using Style Sheets, layout design, interaction effects, icons, and flexible design with flex box and grids. 5. To enable learners to master web layout design, incorporating image galleries, advanced styling features, responsive design principles, and CSS techniques.
Unit I	Introduction to Programming - Logical Thinking & Problem Solving - Algorithms & Pseudo code - Programming Basics - Programming Hello World - Data types - Variables - Constants - Operators - Conditional Statements – Looping - Functions - Understanding Functions - Pass values to functions – Inline function - Recursive functions - Arrays - Pointers - Union & Enum - Structure - OOPs concept - Exception Handling - Templates.
Unit II	Introduction to Web Technology - World Wide Web - History & Evolution - Web Standards - Web Applications - Web Development - Markup Languages - Hyper Text Markup Language - Basics - Tags - Attributes - Head Tag & its elements - Body Tag & its elements - Heading Tags - Formatting Tag - Font Tag - Links - Lists - Paragraph Tag - Image - Div - Span - Rulers - Color Codes -Form Design .
Unit III	Tables - Frames - Forms - Form Attributes - Elements - Input Attribute - Input Form Attribute - Semantic Tags Article - Session - Aside - Header - Footer - Nav - Entities - Symbols - Emojis - Html Media Tags - Audio Tag - Video Tag.
Unit IV	Style Sheets - Cascading Style Sheets - Types of Style Sheet - Syntax - Selectors - Properties - Background - Font - Text - Image - Border and Outline - Margin & Padding - Position - Alignment - Float - Navigation Design - Hover and Active - Icons - Overflow - Opacity - Layout design - Introduction to Flexible design - Intro to Flex box – Flex box Properties - Grid system - Grid Container - Grid Item - Icons - Overflow - Opacity - Layout design - Introduction to Flexible design - Intro to Flex box – Flex box properties - Grid system - Grid Container - Grid Item.
Unit V	Website Layout - Image Gallery - Advanced Properties - Background Color - Gradient - Shadows - Text Effect – Web font - Transform - Transition - Animation - Masking - Pagination - CSS Variables - Introduction to Responsive Design - Viewport - Media Query.

Reference and Text Books:

- Stroustrup, B. (2008). Programming: Principles and Practices using C++. Addison-Wesley Professional.
- Learning Web Design A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics By Jennifer Robbins
- Powell, T. A. (2017). The Complete Reference HTML & CSS (5th ed.). McGraw Hill Education.
- Robson, E., & Freeman, E. (2012). Head First HTML and CSS (2nd ed.). O'Reilly.

Course Outcome

CO1	Empower learners with foundational programming skills, enabling them to tackle problems, code effectively, understand OOP concepts, and handle exceptions proficiently.	**K1**
CO2	Acquired a solid foundation in web technology, enabling them to create structured web content, work with HTML tags and attributes, and understand the evolution of the World Wide Web.	**K3&K6**
CO3	skills to effectively employ advanced web development techniques including tables, frames, forms, semantic tags, entities, emojis, and multimedia elements.	**K4**
CO4	Equip learners to skillfully style web elements, create layouts, add interaction effects, include icons, and apply flexible design using Style Sheets, flex box, and grids.	**K5**
CO5	Empower learners to expertly design website layouts, including image galleries, advanced styling, responsive design principles, and dynamic CSS techniques.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	M(2)	S(3)	L(1)	S(3)	M(2)	L(1)	L(1)	M(2)	L(1)	L(1)
CO2	S(3)	M(2)	L(1)	M(2)	L(1)	L(1)	M(2)	L(1)	L(1)	S(3)
CO3	M(2)	S(3)	S(3)	S(3)	L(1)	M(2)	M(2)	M(2)	M(2)	M(2)
CO4	M(2)	M(2)	L(1)	M(2)	M(2)	L(1)	L(1)	M(2)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	L(1)	L(1)	L(1)	L(1)	M(2)
CO2	L(1)	M(2)	L(1)	M(2)	S(3)
CO3	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	L(1)	M(2)	L(1)	L(1)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

I-Semester					
Core	**Course Code:** 82714	**Programming and Scripting - Practical**	**P**	**Credits: 4**	**Hours: 6**

Objective	1. Apply practical implementation skills by translating provided mock-ups into functional designs. 2. Develop CSS proficiency by creating interactive elements such as search bars and navigation arrows. 3. Strengthen programming skills by designing a program to identify Pronic numbers. 4. Enhance web design capabilities through the creation of a user-friendly registration form. 5. Demonstrate expertise in CSS animations by creating engaging transition effects within a web page.	
1. Implement the proposed mock-up given by the tutor. 2. Implement the Search, Left and Right arrows using CSS 3. Create a program to find if the given number is Pronic or not 4. Design a Web form for user registration. 5. Create a Web page and demonstrate transition animation using CSS.		
Outcome	1. Exhibit proficiency in translating mock-ups into functional designs, showcasing practical implementation skills. 2. Display advanced CSS knowledge by successfully implementing interactive components like search bars and navigation arrows. 3. Demonstrate strong programming skills by creating a program to accurately identify Pronic numbers. 4. Showcase enhanced web design abilities through the creation of an intuitive and user-friendly registration form. 5. Highlight expertise in CSS animation by effectively implementing transition effects, elevating the visual appeal of web pages.	**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	M(2)	M(2)	L(1)
CO2	M(2)	L(1)	M(2)	S(3)	M(2)	M(2)	L(1)	M(2)	S(3)	M(2)
CO3	L(1)	S(3)	S(3)	M(2)	L(1)	L(1)	L(1)	L(1)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	L(1)	M(2)	M(2)	M(2)	M(2)
CO5	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

I-Semester					
Allied	**Course Code:** 82715	**Communication and Media Design**	**T**	**Credits: 3**	**Hours: 3**
Unit - I					
Objective	1. Discover the essentials of communication, including types, models, and psychology, along with interactive multimedia's history, components, and role – all in one engaging course. 2. Gain a thorough grasp of Interactive and New Media, covering Human-Computer Interaction, User Interface, Ethics, Cultural differences, and Knowledge Representation. 3. Explore User Experience Design comprehensively, encompassing principles, future trends, UX vs. UI, Design Thinking, and related areas, for a well-rounded understanding. 4. To Diverse idea generation techniques, content improvement, ergonomics, and the role of semiotics in multimedia, fostering a holistic understanding of creative content creation. 5. Broad understanding of Project Management, encompassing objectives, UXD process, software development, Agile, version control, Ubiquitous Computing, and future trends.				
Unit I	**Introduction to Communication** - Types of Communication, Communication Models, Psychological Principles involved in Communication, Case study of Skinner Box, User Centric Design. What is interactive Multimedia : Multimedia-Interaction- A Brief History of Computers & Multimedia- A Brief History of Computers and Interaction - What is IMM? Communicative Interaction ? Objects and Agents- Channels of Communication - Artificial Language - Natural Communication - meta Languages - Components of Interactive Multimedia Systems .				
Unit II	**Interactive and New Media** - Human Computer Interaction Fundamentals, User Interface, Behavioral Studies - Ethics of New Media - Copywriter, Patent, Cultural Acceptances & Differences - Software Rating Board – Intellectual Property - Copyrights and Moral Rights - Contracts – Ethics - Freedom of Speech - Freedom of Expression and Codes of Practice - Knowledge Representation Techniques .				
Unit III	**User Experience design** - Importance - User-Centered Design, UX vs UI, Future of UX, UX Design Thinking, Data Driven Design, Elements of UX, Fundamental of User Experience(UX), Customer Experience (CX), Customer Digital Touch Points, User Interface Design (UI), Interaction Design (IxD), Human computer interaction (HCI), Design Process, Experimental Animation, Design Management, Research Methodology, History, Theory & Philosophy, Science and Liberal Arts.				
Unit IV	**Idea Generation and content creation** - Pilot study, Mind map, 6 Thinking Hats, Improving Existing Products / Services, Ergonomics - Semiotics - Multimedia Content - What is Semiotics- The Idea of Assign- More Complex Signs Semiotics and Media.				
Unit V	**Project Management** - Project Objectives - UXD Process - Software Development Life Cycle - Software Development Methods - Introduction to Agile - Introduction to Software Version Control System - Ubiquitous Computing - Future Trends: Conceptual - Cultural - Technological Topics				

Reference and Text Books:

- Rollings, A., & Morris, D. (2003). Game Architecture and Design - A New Edition (1st edition). New Riders
- Fromme, J., & Unger, A. (2012). Computer Games and New Media Cultures: A Handbook of Digital Game Studies. Springer Science & Business Media.
- Chandler, H. M. (2013). The Game Production Handbook (3rd edition). Jones & Bartlett Publishers.
- Fromme, J., & Unger, A. (2012). Computer Games and New Media Cultures: A Handbook of Digital Games Studies. Springer Science & Business Media.
- Kovacevic, R. M., Pflug, G. C., & Vespucci, M. T. (2013). Handbook of Risk Management in Energy Production and Trading. Springer

Online Resources

- User-Centred Graphic Design Mass Communication And Social Change By Jorge Frascara, Bernd Meurer, Jan van Toorn, Dietmar Winkler (https://www.amazon.in/User-Centred-Graphic-Design-Communication-Social/dp/0748406727)
- Design for Communication: Conceptual Graphic Design Basics - Elizabeth Resnick (https://www.amazon.in/Design-Communication-Conceptual-Graphic-Basics/dp/0471418293)

Course Outcome VS Programme Outcomes

Outcome 1	Solid understanding of various communication types, models, and psychological principles, as well as insights into the history, components, and significance of interactive multimedia.	**K1**
Outcome 2	comprehensive understanding of Interactive and New Media, including Human-Computer Interaction, Ethics, Cultural awareness, and Knowledge Representation.	**K3&K6**
Outcome 3	Comprehensive understanding of User Experience Design, covering principles, future trends, UX vs. UI, Design Thinking, and related areas.	**K4**
Outcome 4	Empower learners to proficiently generate ideas, enhance content, consider ergonomics, and leverage semiotics for compelling multimedia creation.	**K5**
Outcome 5	Adeptly navigate Project Management, integrating objectives, UXD, software development, Agile, version control, Ubiquitous Computing, and future trends for proficient project execution.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	M(2)	M(2)	L(1)	L(1)	M(2)	L(1)	S(3)	M(2)	L(1)
CO2	M(2)	M(2)	M(2)	L(1)	M(2)	M(2)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	S(3)
CO4	S(3)	S(3)	M(2)	M(2)	L(1)	L(1)	M(2)	S(3)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)	M(2)
W.AV	**2.6**	**2.6**	**2.2**	**1.6**	**1.6**	**2**	**1.8**	**2.8**	**2.4**	**2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	M(2)	L(1)
CO2	M(2)	L(1)	S(3)	M(2)	L(1)
CO3	S(3)	L(1)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	M(2)	M(2)	M(2)	S(3)
W.AV	**2.8**	**1.4**	**2.2**	**2.2**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

I-Semester					
Allied	**Course Code:** 82716	**Visualization for Interactive Media - Practical**	**P**	**Credits: 3**	**Hours: 6**
Objective	1. Enhance creative design skills through tasks involving image manipulation and composition. 2. Develop proficiency in using design software tools to create visually appealing and innovative content. 3. Gain practical experience in various design aspects, such as photo enhancement, poster creation, logo redesign, and character design. 4. Foster critical thinking and problem-solving abilities by creatively merging elements from different sources. 5. Cultivate imagination and artistic expression by engaging in tasks that encourage the creation of unique and imaginative visual concepts.				
1. Create a face using images of fruits and vegetables. 2. Use a close up photo of you and enhance one half of your face. 3. Create a poster for the Movie / Game title specified by the tutor. 4. Redesign a popular logo. 5. Download photographs of two animals and create a new animal using features from the downloaded animals. 6. Create a Manga character using your photographs for reference.					
Outcome	1. Acquire proficiency in image manipulation and composition techniques. 2. Develop a solid understanding of design software tools and their applications. 3. Enhance practical skills in diverse design tasks, including photo enhancement, poster creation, logo redesign, and character design. 4. Cultivate creativity and innovation by combining elements from different sources to create new visuals. 5. Gain confidence in expressing artistic ideas through practical design projects, fostering a well-rounded skill set in visual communication.				**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	L(1)	M(2)	M(2)	L(1)	L(1)	M(2)	M(2)	M(2)	L(1)
CO2	M(2)	M(2)	L(1)	S(3)	S(3)	M(3)	M(2)	M(2)	S(3)	S(3)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)
CO4	S(3)	S(3)	M(2)	S(3)	S(3)	L(1)	S(3)	M(2)	S(3)	M(2)
CO5	M(2)	M(2)	S(3)	S(3)	M(2)	L(1)	M(2)	M(2)	S(3)	M(2)
W.AV	**2.6**	**2.2**	**2**	**2.8**	**2.2**	**1.6**	**2.4**	**2**	**2.8**	**2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	L(1)	L(1)
CO2	M(2)	M(2)	S(3)	M(2)	S(3)
CO3	M(2)	L(1)	S(3)	S(3)	S(3)
CO4	S(3)	L(1)	M(2)	S(3)	M(2)
CO5	M(2)	L(1)	M(2)	M(2)	S(3)
W.AV	**2.4**	**1.2**	**2.4**	**2.2**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

II-Semester					
Core	**Course Code** 82723	**UI Development I**	**T**	**Credits: 4**	**Hours: 4**
Unit -I					
Objective	1. To introduce learners to scripting, covering client-side and server-side scripting, fundamental scripting language concepts, program structure, data handling, functions, user-defined data types, and basic aspects of OOP and exception handling.. 2. To impart proficiency in advanced JavaScript concepts, covering the Document Object Model, array manipulation, form handling, event-driven programming, and interactions with HTML events, enabling effective web development 3. To provide learners with practical skills in using jQuery and JavaScript frameworks for creating interactive web elements, including animations, dynamic effects, image sliders, and client-side applications. 4. To equip learners with responsive design skills, encompassing principles, mobile-first approach, CSS3 media queries, viewport settings, grid systems, and handling responsive images and videos, for creating adaptable web layouts. 5. To provide learners with practical skills in utilizing responsive design frameworks, specifically CSS and JS frameworks like Bootstrap, encompassing grid systems, layouts, form integration, table usage, and image handling for efficient web development.				
Unit I	Introduction to Scripting - Client Side scripting - Server Side Scripting - Introduction to scripting languages - Basics - Structure of a Program - Data types - Variables - Constants - Pointers- Operators - Unary - Binary - Ternary - Statements: Assignment - Conditional - Control - Arrays & Strings - Functions: Functions - Pass by Value - Pass by Reference - Call by Value - Call by Reference- Overloading - Overriding - Recursive - Derived data types - Array - User Defined Data types: Union- Enum - Structures - Object oriented programming - Exceptional Handling.				
Unit II	Advanced Java Script - Document Object Model - Introduction - Arrays - One Dimensional Array- Two Dimensional Array - Callback Functions - Form Handling - Get/Post Method - Form Validation- Accessing form Data - Password Validation - Number Validation - HTML Events – Predefined Events- Event Driven Programming - Events - Actions - Listeners - Keyboard and Mouse Event				
Unit III	JQuery - Frameworks - Javascript Frameworks - Introduction to JQuery - Jquery Functions - Show- Hide - Fadein - Fadeout - Smooth Scrolling using JQuery - Building an Image Slider – Developing Client Side Quiz Application - File Handling Import and Export Data - XML Parsing – JSON Parsing- Animation using Javascript and Jquery - Dynamic Effects using Scripts.				
Unit IV	Responsive Design - Introduction - Responsive Design Principles - Mobile First Design- Media Queries in CSS3 - Target Device Analysis - Viewport - Grids - Grid View - Media Rules – Break Points- Responsive Images and Videos				
Unit V	Responsive Design Frameworks - CSS Frameworks & JS Frameworks -Bootstrap - Introduction- Basics – Grid System - Layouts- Fixed, Fluid - Tables in Bootstrap - Forms in Bootstrap - Bootsrapelements - Image Handling in bootstrap				

Reference and Text Books:

1. McFarland, D. S. (2011). JavaScript & jQuery: The Missing Manual (2nd ed.). Pogue Press.
2. Crockford, D. (2008). JavaScript: The Good Parts. O'Reilly Media.
3. Lindley, C. (2009). jQuery Cookbook. O'Reilly Media.
4. Rahman, S. F. (2014). Jump Start Bootstrap. SitePoint.
5. Forbes, A. (2015). The Joy of Bootstrap. Createspace Independent Publishing.

Online Resources

- JavaScript: The Good Parts by D Crockford
- Jump Start Bootstrap by Rahman Syed

Course Outcome VS Programme Outcomes

Outcome 1	Solid understanding of various communication types, models, and psychological principles, as well as insights into the history, components, and significance of interactive multimedia.	**K1**
Outcome 2	comprehensive understanding of Interactive and New Media, including Human-Computer Interaction, Ethics, Cultural awareness, and Knowledge Representation.	**K3&K6**
Outcome 3	Comprehensive understanding of User Experience Design, covering principles, future trends, UX vs. UI, Design Thinking, and related areas.	**K4**
Outcome 4	Empower learners to proficiently generate ideas, enhance content, consider ergonomics, and leverage semiotics for compelling multimedia creation.	**K5**
Outcome 5	Adeptly navigate Project Management, integrating objectives, UXD, software development, Agile, version control, Ubiquitous Computing, and future trends for proficient project execution.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	M(2)	L(1)	M(2)	L(1)	L(1)	M(2)	M(2)	M(2)	L(1)
CO2	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)
CO3	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	L(1)
CO5	M(2)	S(3)	S(3)	S(3)	L(1)	M(2)	M(2)	M(2)	S(3)	M(2)
W.AV	**2.2**	**2.4**	**2.2**	**2.6**	**1.6**	**1.8**	**2.4**	**2**	**2.4**	**1.6**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	M(2)	S(3)	M(2)	S(3)
CO3	L(1)	S(3)	L(1)	S(3)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	M(2)	S(3)	M(2)	S(3)	S(3)
W.AV	**2**	**2.6**	**1.8**	**2.6**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

II-Semester					
Core	**Course Code** 82724	**UI Development I - Practical**	**P**	**Credits: 4**	**Hours: 6**
Objective	1. Master JavaScript skills by creating an interactive image slider. 2. Showcase web development proficiency through the creation of a site with smooth scrolling. 3. Demonstrate dynamic web page design capabilities by incorporating JavaScript-based validation. 4. Utilize HTML5 and CSS expertise to build a visually engaging website with parallax effects. 5. Exhibit CSS animation skills by crafting a web page featuring loading animations for enhanced user experience.				
1. Implement a Image Slider using JS 2. Develop a web site with smooth scrolling. 3. Design a dynamic web page with validation using JavaScript. 4. Create a website with parallax using html5 and css 5. Create a web page with CSS Loading Animation.					
Outcome	1. Effectively implement image sliders using JavaScript, showcasing proficiency in interactive web features. 2. Create web pages with smooth scrolling, demonstrating skills in web development and user-friendly navigation. 3. Design dynamic web pages with JavaScript-based validation, showcasing expertise in form handling and user input. 4. Develop visually captivating websites with parallax effects, displaying advanced knowledge of HTML5 and CSS styling techniques. 5. Showcase proficiency in CSS animations by crafting web pages with loading animations, enhancing the overall user experience and engagement.				**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	M(2)	S(3)	M(2)	L(1)	M(2)	M(2)	M(2)	M(2)	L(1)
CO2	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	L(1)	S(3)	M(2)
CO3	M(2)	S(3)	S(3)	S(3)	M(2)	L(1)	S(3)	M(2)	S(3)	M(2)
CO4	M(2)	M(2)	S(3)	S(3)	M(2)	L(1)	M(2)	M(2)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)
W.AV	**2.2**	**2.4**	**2.8**	**2.8**	**1.8**	**1.6**	**2.4**	**1.8**	**2.8**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	S(3)	M(2)	M(2)	M(2)
CO2	M(2)	S(3)	M(2)	M(2)	S(3)
CO3	M(2)	S(3)	L(1)	S(3)	S(3)
CO4	L(1)	S(3)	M(2)	S(3)	S(3)
CO5	M(2)	M(2)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.8**	**2.4**	**2.8**

S–Strong (3), M-Medium (2), L-Low (1)

II-Semester					
Allied	**Course Code:** 82725	**UX Design I**	**T**	**Credits: 3**	**Hours: 3**
Objective	1. To teach learners essential UX design principles encompassing visual and interaction concepts, responsive design, and psychological effects for crafting effective user experiences. 2. To introduce learners to user research methods, covering techniques like interviews, surveys, empathy maps, and focus groups, to foster effective user-centered research practices. 3. To educate learners on data gathering techniques, including ethnography, research questions, user observation, anthropology disciplines, and persona creation, for effective user-centered design. 4. To lead learners through the UX design ecosystem, covering project parameters, brand presence, stakeholder engagement, business goals, user analysis, usability criteria, and proposal creation for effective contributions to UX design processes. 5. To educate learners about content strategy, covering personas, empathy maps, key UX design aspects, flexible content creation and delivery across devices and apps, and personalization for effective planning and implementation..				
Unit I	UX Design Principles - Golden rules of UX Design - Visual design - Unity and variety - Focal point -Economy of elements - Balance and proportion Interaction - Association and affordance - Economy of motion - Responsive Design - Psychology - The effects of good UX design - Flow And Interaction, Guiding principles				
Unit II	User Research methods - User interview - Contextual enquiry - Heuristic Review- Survey – Empathy Map - Focus group - Research basics - User group definitions - Research techniques - Research Analysis - Quantitative and Qualitative research				
Unit III	Data Gathering - Introduction - Ethnography -Research Questions- Hypothesis - Problem Statement- User Observation Methods - Ethnographic Observations - Knowledge Production - Anthropology-Social Anthropology - Cultural Anthropology - Linguistic anthropology - User Profile - Persona-User analysis - Creating Personas				
Unit IV	The UXD Ecosystem -Identify the project parameters - Brand presence - Marketing campaign- Content source - Project Discovery - Stakeholders meetings/interviews - Business/product goals-Competitor's Analysis - Market segment analysis - Persona/User profile - User group analysis-Usability criteria & CSF [Critical success factor] - Creating the proposal - Title page - Executive				
Unit V	Content Strategy - Personas - Advanced personas - The empathy map - When, where, who, what, why and how of UX Design - Content strategy longevity - Flexible Content Strategies - Approaching Content strategies - Flex content creation -, CMS's, delivering across devices - Delivering across apps- Flexible architecture - Personalizing content				

Reference and Text Books:

1. Silberschatz, A. (2012). Operating System Concepts (9th ed.). Wiley.
2. Miller, J. D. (2017). Big Data Visualization. Packt Publishing Limited.
3. Grus, J. (2015). Data Science from Scratch. O'Reilly Media.
4. Beegel, J. (2014). Infographics for Dummies (1st ed.). For Dummies.
5. Heller, S., & Landers, R. (2014). Infographic Designers' Sketchbooks. Adams Media.

Online Resources

Google UX Design Professional Certificate **(https://www.coursera.org/professional-certificates/google-ux-design)**

Course Outcome VS Programme Outcomes

Outcome 1	Ability to apply fundamental UX design principles, enhancing user experiences through visual design, interaction concepts, responsive design, and psychological insights.	**K1**
Outcome 2	Students will be equipped with a diverse toolkit of user research methods, enabling them to conduct effective research through techniques such as interviews, surveys, empathy maps, and focus groups.	**K3&K6**
Outcome 3	Enables learners to proficiently gather and analyze data using ethnography, research questions, user observation, and anthropology concepts, facilitating user-centered design through effective persona creation.	**K4**
Outcome 4	Equip students to effectively navigate the UX design ecosystem, covering project aspects, stakeholder engagement, business goals, user analysis, usability criteria, and proposal creation.	**K5**
Outcome 5	Students will possess the skills to implement effective content strategies, utilizing personas, empathy maps, flexible content creation, and personalized delivery across devices and applications.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.6**	**2.6**	**2.6**	**2.6**	**2.2**	**2.6**	**2.4**	**2.6**	**2.6**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	M(2)	S(3)
CO2	S(3)	L(1)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	M(2)	S(3)	S(3)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	M(2)	S(3)	S(3)	S(3)
W.AV	**2.8**	**2**	**2.4**	**2.6**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">II-Semester</th></tr>
<tr><td>Allied</td><td>Course Code:
82726</td><td>Design for Interactive Media - Practical</td><td>P</td><td>Credits: 3</td><td>Hours: 6</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td>Objective</td><td colspan="5">1. Develop an understanding of color schemes, color perception, and color psychology to effectively use colors in design.
2. Apply typography principles to create visually appealing and readable text layouts.
3. Showcase layout and interface design skills by crafting functional and aesthetically pleasing designs.
4. Express creativity and social awareness by creating design work addressing a relevant social issue.
5. Demonstrate proficiency in digital advertising by designing compelling web banners for product promotion.</td></tr>
<tr><td colspan="6">1. Create a Color schemes, Colour perception and Colour psychology
2. Create a typography in a layout
3. Design a layout/package/ Interface
4. Create a piece of work on social issue
5. Create a Web Banner for a digital product advertisement.</td></tr>
<tr><td>Outcome</td><td colspan="4">1. Create harmonious color schemes and understand the psychological impact of colors in design.
2. Apply typography principles effectively to enhance visual communication within layouts.
3. Design functional and visually appealing layouts, interfaces, and packages.
4. Express creativity and social awareness by crafting impactful design work addressing pertinent social issues.
5. Demonstrate proficiency in digital advertising through the creation of engaging and visually compelling web banners for product promotion.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	M(2)	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	L(1)
CO2	S(3)	M(2)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	S(3)
CO3	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)
CO4	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	S(3)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)
W.AV	**2.6**	**2.4**	**2.4**	**2.6**	**2.4**	**1.8**	**2.2**	**2.2**	**2.8**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	M(2)	M(2)
CO2	M(2)	M(2)	S(3)	M(2)	S(3)
CO3	S(3)	L(1)	S(3)	S(3)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	S(3)
CO5	S(3)	L(1)	M(2)	S(3)	S(3)
W.AV	**2.8**	**1.4**	**2.4**	**2.6**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

III-Semester					
Core	**Course Code:** 82733	**UI Visual Design**	**T**	**Credits: 3**	**Hours: 3**
Objective	1. Design Skills: Build skills in graphic design, covering elements like masks, lighting, and button styles for user interfaces. 2. Visual Identity: Learn to create memorable logos and icons to establish a strong visual brand identity. 3. Layout Proficiency: Master layout design principles using grids, focusing on responsiveness for various screens. 4. Mobile Priority: Embrace a mobile-first design approach, considering smaller screens as a priority. 5. User-Centric Design: Develop designs that prioritize user experience and follow global design standards.				
Unit I	Raster graphics - Masks in UI Design - Lights and Shadows - Emphasis and Blending - UI Theme- Color Scheme- Typography- Web Safe Fonts - Font Themes- Soft Buttons- 3D Buttons- RealisticButtons- Web Template Design - Components of a Web Page - Header - Navigation - Menus - Form Elements				
Unit II	Logo Design Principles - Icon Design Principles - Layout Design - Poster Design Principles- Magazine Design Principles - Web Layout Design - Grid Layout Design - Responsive Grids for Web- Perspective Views - Rasterization - Design Etiquette				
Unit III	Vector Graphics - UI Illustrations - Mobile GUI Design - Mobile GUI Guidelines - Android UI Design- IOS UI Design - Animations - Basics of Animations - Animated Icons - UI Animations in Raster - UI Animation in Vector.				
Unit IV	Web design Standards - Mobile first approach (design guideline), Responsive design, Global standards for Color, fonts, Style Guide & Assets - Mobile device platforms, screen sizes, Designing for Native Applications, Hybrid Applications, Designing for Android and iOS, Design Guidelines(Android and iOS), Mobile Design Patterns (Navigation, Forms, Tables, Search, Sort &Filter, etc.)				
Unit V	Mockup Design - Web Mockups - Mobile Mockups - Responsive Web Design - One page Design- Single Page Design - Metro UI Design - Mascot Design - Exporting for Web, Mobile, Print - DesignOptimization				

Reference and Text Books:

- Connie Malamed, "Visual Design Solutions", John Wiley & Sons, 2015.
- Lesa Snider, "Photoshop CS6: The Missing Manual", O'Reilly Media Publisher, 2ndEdition, 2012.
- Moore R, "UI design with Adobe Illustrator", Berkely, California: Adobe Press, 2013.
- Paul Naas, "Autodesk Maya 2013 Essentials", 1st Edition. John Wiley & Sons, 2012.
- Scott Kelby, "The Adobe Photoshop Book for Digital Photographers", Peachpit PressPublications, 1st Edition, 2013.

Online Resources

- **hackdesign.org (https://hackdesign.org/lessons#welcome)**
- **Graphic Design by Instructor: David Underwood (https://www.coursera.org/learn/presentation-design)**

Course Outcome

CO1	Design Basics: Learn how to use masks, lights, and shadows to create visual effects in UI design. Understand the importance of color schemes, typography, and fonts in creating appealing designs.	**K1**
CO2	Create various button styles like soft, 3D, and realistic buttons for user interfaces. Design web templates with headers, navigation menus, and form elements for web pages.	**K3&K6**
CO3	Logo and Icon Principles: Grasp the principles of designing memorable logos and clear, scalable icons.	**K4**
CO4	Learn layout design for posters, magazines, and websites using grids and hierarchy. Understand the concept of responsive design and how to apply it to various screen sizes.	**K5**
CO5	Apply a mobile-first approach to design for different screen sizes. Familiarize yourself with global design standards, mobile platforms (Android and iOS), and design patterns for UI elements.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.6**	**2.6**	**2.6**	**2.6**	**2.2**	**2.6**	**2.4**	**2.6**	**2.6**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	M(2)	S(3)
CO2	S(3)	L(1)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	M(2)	S(3)	S(3)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	M(2)	S(3)	S(3)	S(3)
W.AV	**2.8**	**2**	**2.4**	**2.6**	**2.6**

S–Strong (3), M-Medium (2), L-Low (1)

III-Semester					
Core	**Course Code:** 82734	**UI Development II**	**T**	**Credits: 3**	**Hours: 3**
Objective	1. Equip learners with essential skills in web development, covering both front-end and back-end technologies. 2. Focus on Bootstrap and Angular JS for creating responsive and interactive user interfaces. 3. Teach Node.js for server-side development, emphasizing HTTP server setup, file handling, and database interaction. 4. Introduce Express.js as a framework for building web applications, including routing and middleware. 5. Provide a foundational understanding of Mongo DB for data storage and retrieval. API, data aggregation, and indexing capabilities.				
Unit I	Advanced Bootstrap - Navbars using Bootstrap - Labels and Badges - Jumbotron - Pagination in Bootstrap - Bootstrap Plugins - Alert Plugins - Dropdown plugins - Tooltips Plugin - Modals Plugins- Carousel Plugins				
Unit II	Node JS - Introduction - Understanding the framework - Setting up the Environment - Node Package Manager – Angular JS & Node JS - HTTP Protocol - Building HTTP server - File Handling with Node Js- Buffers - Streams - Events - Modules - Express Web Framework - Database Handling with Node JS				
Unit III	AngularJS - AngularJS Architecture - Directives - Data Bindings - Expressions - Iteration - Filters- Form binding - Form validation - Modules - Services - Templates - Routings - Views - Controllers- AngularJS for Client Side Development				
Unit IV	Express JS - Introduction - Environment - Routing - HTTP methods - URL Building - Middleware - Templating - Static Files - Form data - Database - Cookies - Session - Authentication - Restful API's - Scaffolding - Error handling- Debugging - Resources.				
Unit V	MongoDB - Introduction - Environment - MongoDB API Query - create Database - create collection - Insert - Find - Update - Delete - Query operators - Update operators - Aggregation - indexing / search - validation - Data API - Drivers – Mongo DB Node JS Driver - MongoDB Charts.				

Reference and Text Books:

- Adam Freeman, “Pro Angular 6”, Apress, 3rd Edition, 2018.
- Lambert M, “Web development with Node and Express”, Complete Bootstrap Packt Publishing, 2017.
- Stephen Radford, “Learning Web Development with Bootstrap and AngularJS” Packt Publishing Limited, 2015.
- Azat Mardan, “Express js Deep API Reference”, Apress, 2014.
- Shannon Bradshaw, Eoin Braxie, Kristina chodorow, “MongoDB: The Definitive Guide”, O'Reilly Media - 3rd edition, 2019 .

Online Resources

- getbootstrap.com (https://getbootstrap.com/docs/5.0/getting-started/introduction/)
- Node Js (https://nodejs.org/en/docs)
- Angular.IO (https://angular.io/docs)
- expressjs.com (https://expressjs.com/)
- mongodb.com (https://www.mongodb.com/docs/manual/)

Course Outcome

CO1	Learn how to use Bootstrap to easily create attractive and responsive websites, including navigation bars, labels, badges, and interactive elements like modals and carousels	**K1**
CO2	Learn Node.js to build web applications, including setting up the environment, handling HTTP, files, and databases, and using the Express framework for efficient development.	**K3&K6**
CO3	Master AngularJS for creating interactive web applications by learning its architecture, directives, data bindings, form handling, routing, and controllers for client-side development	**K4**
CO4	Master Express.js to create web applications by learning its key features, including routing, middleware, templating, form handling, authentication, and error management for effective development.	**K5**
CO5	Learn MongoDB for data storage and manipulation, including database setup, data handling, querying, indexing, validation, and visualization with Node.js integration.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.6**	**2.6**	**2.6**	**2.6**	**2.2**	**2.6**	**2.4**	**2.6**	**2.6**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	M(2)	S(3)
CO2	S(3)	L(1)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	M(2)	S(3)	S(3)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	M(2)	S(3)	S(3)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

III-Semester					
Core	**Course Code:** 82735	**UI Development II - Practical**	**P**	**Credits: 3**	**Hours: 5**
Objective	1. Responsive Branding Page with optimized images for effective branding. 2. Responsive Layout incorporating sidebars and navbars for seamless navigation. 3. AngularJS Form Validation with validation, ensuring data accuracy. 4. Quote Viewer Web Page quotes from a database, enhancing data-driven web development skills. 5. Tabbed Interface to organize and present information effectively on web pages.				
1. Create a branding web page that has responsive images in it. 2. Create a Responsive Webpage that contains sidebars and navbars in it. 3. Create a Form with AngularJs Validation. 4. Develop a quote viewer web page with all the quotes loaded in a database. 5. Develop a tabbed interface in it.					
Outcome	1. Responsive Web Design: Learn to make web pages that work well on all screen sizes. 2. Form Validation: Master AngularJS for accurate and user-friendly forms. 3. Data-Powered Quotes: Create web pages that display quotes from a database. 4. Smooth Navigation: Build pages with easy-to-use sidebars and navbars. 5. Tabbed Content: Organize information neatly with tabbed interfaces.				**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	M(2)	S(3)
CO2	S(3)	L(1)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	M(2)	S(3)	S(3)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	M(2)	S(3)	S(3)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

III-Semester					
Allied	**Course Code:** 82736	**UX Design II**	**T**	**Credits: 3**	**Hours: 3**
Objective	1. Design Principles: Learn the basics of visual design, including contrast, alignment, and more. 2. Prototyping and Communication: Understand how to create and enhance prototypes, improving communication with users. 3. User Journey Mapping: Master the skill of mapping user journeys for better user experiences. 4. Wire framing and Usability Testing: Develop wireframes, and learn how to conduct usability tests and create effective reports. 5. Mobile User Experience: Explore mobile technology, usability, and design principles for creating user-friendly mobile interfaces.				
Unit I	Visual design - Contrast - Repetition - Alignment - Proximity - Paper prototype – Proto typing not paper drawing - Adding interactivity to paper prototyping - Communication errors - Be visible- Be Precise - Give constructive help - Speak the user's language - Trust Building - Storyboarding Essentials, Prioritization, Maintaining good tension, Conflict management, Documentation				
Unit II	Card sorting for Information Architects - Exploratory card sorting - Tree test - Trigger word elicitation - Web board - Function familiarity test - Task model - when to create - what you're communicating - How to create task models in power point - User Journeys - the anatomy of a user journey - Validate user journey.				
Unit III	Wire framing - Low fidelity wireframes, Hi fidelity wireframes, Annotating essentials, Wire framing Essentials - Design principles for wire frames - Structure and style - Visual heat -when to use color-Feel - Stepping back to help focus – Wire framing tools - Mobile Wire framing – Representing Inputs- Representing Gestures - Representing Motion - Representing Multiple Devices – Representing Responsive Design.				
Unit IV	Usability Test reports - What makes a good test report? - When to create a test report - Anatomy Of the perfect test report - What makes a good funnel diagram- When to create a funnel diagram- What are you communicating? - Anatomy of a funnel diagram				
Unit V	Mobile UX - Technology - Users - User Experience - Mobile Usability - Layout Adoption – Customers Determine Your User Mobile Experience - Rethink Hyper linking - Understanding The Device- Prototype in Mobile - Desktop Prototyping.				

Reference and Text Books:

- Dave Crane, Bear Bibeault, Tom Locke, "Prototype & Scriptaculous inAction, Dreamtech, 2007.
- John Henry Krahenbuhl, "Axure Prototyping Blueprints", Packt Publishing, 2015.
- Matthew J.Hamm, "Wireframing Essentials", Packt Publishing, 2014.
- Scott Faranello, Balsamiq, "Wireframes Quick Start Guide", Packt publishing, 2012.
- Pablo Perea, Pau Giner, "UX Design for Mobile", Paperback, 2017.

Online Resources

- Udemy- User Experience (https://www.udemy.com/courses/design/user-experience/)
- Coursera (https://www.coursera.org/specializations/ui-ux-design)
- smashingmagazine.com (https://www.smashingmagazine.com/)

Course Outcome

CO1	Learn visual design, paper prototyping, and user-centered design principles, including communication, trust-building, and documentation for effective design and development.	**K1**
CO2	The learning outcome for the content is to equip learners with expertise in information architecture techniques such as card sorting, task modeling, user journey mapping, and validation.	**K3&K6**
CO3	Learn information architecture techniques like card sorting, task modeling, and user journey mapping for effective design and validation.	**K4**
CO4	To develop the skills to create effective usability test reports and funnel diagrams.	**K5**
CO5	Understand and apply mobile UX principles, adapting layouts, and considering user behavior and technology.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	L(1)	M(2)	M(2)	S(3)
CO2	S(3)	L(1)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	M(2)	S(3)	S(3)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)
CO5	S(3)	M(2)	S(3)	S(3)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">III-Semester</th></tr>
<tr><td>Allied</td><td>Course Code:
82737</td><td>UI Visual Design - Practical</td><td>P</td><td>Credits: 2</td><td>Hours: 4</td></tr>
<tr><td>Objective</td><td colspan="5">1. Icon Design Proficiency: Develop the skills to design a cohesive and visually appealing set of icons for a movie ticketing application, enhancing user experience.
2. Illustration Creation Mastery: Gain expertise in creating custom illustrations for diverse product categories in e-commerce, enhancing product presentation and user engagement.
3. Web Design and Mock-up Skills: Learn how to design an effective and attractive homepage for an event website, including creating a mock-up to visualize the layout.
4. Dashboard Design Expertise: Acquire the ability to design a user-friendly and informative dashboard for an online tutoring tool, focusing on usability and data presentation.
5. Payment Portal Development: Master the creation of a secure and user-friendly payment portal for an e-commerce application, ensuring seamless transactions and customer satisfaction.</td></tr>
<tr><td colspan="6">1. Design Icon Set for a movie ticketing Application.
2. Create Illustrations for different Categories of products in shopping.
3. Create a Home page for an event web site and design the mock-up for it.
4. Design a dashboard for a online tutoring tool
5. Create a payment portal for an e-commerce application.</td></tr>
<tr><td>Outcome</td><td colspan="4">1. Icon and Illustration Design: Develop proficiency in creating icons and illustrations to enhance the visual appeal of digital applications and product categories.
2. Web Design and Mock-ups: Learn to design engaging and functional web pages, including the creation of mock-ups for effective planning.
3. Dashboard Design: Master the art of designing user-friendly dashboards for data presentation and navigation within educational tools.
4. Payment Portal Development: Acquire the skills to build secure and user-centric payment portals for seamless transactions in e-commerce.
5. Enhanced User Experience: Overall, gain the expertise to elevate user experiences by applying design principles and creating effective digital interfaces and solutions.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	L(1)	M(2)	M(2)	M(2)	L(1)
CO2	M(2)	L(1)	M(2)	S(3)	M(2)	M(2)	L(1)	M(2)	S(3)	M(2)
CO3	L(1)	S(3)	S(3)	M(2)	L(1)	L(1)	L(1)	L(1)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	L(1)	M(2)	M(2)	M(2)	M(2)
CO5	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

IV-Semester					
Core	**Course Code:** 82743	**Web Application Development**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. The objective is to teach server-side development with PHP, covering syntax, arrays, functions, HTML form handling, file uploads, and data management. 2. Object-Oriented Programming (OOP) in PHP, including classes, inheritance, functions, state management, web frameworks, expressions, patterns, and image manipulation. 3. To provide a comprehensive understanding of Database Management Systems (DBMS), covering architecture, modeling, SQL operations, and MySQL usage. 4. To teach database functions, stored procedures, query optimization, normalization, transactions, and PHP database connectivity, including import and export operations. 5. Introduce web services, types of web services, and AJAX, including asynchronous methods, database interaction, unique identity handling, and AJAX script management.				
Unit I	Server Side Development -Introduction to PHP - Setting up the Environment - Understanding The Syntax - Arrays, Conditional and Control Statements - Functions and Methods - Arrays , Types Of Array - Strings - PHP Global Variables - HTML Form Handling with PHP - File Uploads –Form Data Handling -File Handling				
Unit II	OOPS with PHP - Classes and Namespaces - Inheritance and Polymorphism - PHP Functions - PHPEmail Function - State Management - URL Rewriting - Cookies - Sessions - MVC - Web Frameworks- Expressions in Php - Patterns in Php - Image Manipulation				
Unit III	DBMS - Database Architecture - Data Modelling - DDL - DML - Database Operations, Constraints- MySQL DB - DDL using MySQL - DML using MySQL - Views - Joins and Order - Limits and Distinct - Group by , Union - Procedures				
Unit IV	Database Functions - Stored Procedures - Managing Multiple Queries - Optimizing the database- Normalization - Transactions - Database Connectivity with PHP - Different Methods – Importing and Exporting Database				
Unit V	Web Services - Introduction - Types of Web Services - Connecting web services – AJAX - Concept of Asynchronous Method - Ajax using JavaScript, XML, Json - Database Interaction with AJAX- Unique Identity through AJAX - Update Panel design by AJAX- Ajax Script manager				

Reference and Text Books:

- Lynn Beighley, Michael Morrison, "Head First PHP & MySQL", O'Reilly Media, 2008. · M.T. Savaliya, "Developing Web Applications", 2nd Edition, Wiley, 2013.
- Nixon, R. "Learning PHP, MySQL, JavaScript, and CSS: A step-by-step guide to creating dynamic websites", O'Reilly Media, Inc. 2012.
- Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre, "Programming PHP", O'Reilly Media, 2nd Edition, 2009.
- Welling, L., & Thomson, L. "PHP and MySQL Web development", Sams Publishing,2003.

Online Resources

- Php.net - Tutorial(https://www.php.net/manual/en/getting-started.php)
- MySql - Tutorial (https://dev.mysql.com/doc/)

Course Outcome

CO1	Gain proficiency in server-side development using PHP, including syntax, array manipulation, functions, HTML form handling, file uploads, and data management.	**K1**
CO2	Proficiently apply OOP principles in PHP, create web applications, manage states, utilize web frameworks, and manipulate images effectively.	**K3&K6**
CO3	Acquire the knowledge and skills to design and manage databases, perform SQL operations using MySQL, and work with complex queries and procedures.	**K4**
CO4	Proficiency in using database functions, optimizing queries, ensuring data integrity through normalization, handling transactions, and connecting databases with PHP, including data import and export	**K5**
CO5	Understand various web service types, master AJAX for asynchronous web communication, and effectively interact with databases using AJAX, updating panels and managing scripts.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

IV-Semester					
Core	**Course Code:** 82744	**Human Centered Design**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. To explore emotional design, including attraction, emotions in design practice, three design levels, and designing product personalities through case studies. 2. To impart understanding of interaction design, including computation, operations, aesthetics, communication, and its applications through case studies. 3. To explore tangible user interfaces (TUIs), their history, frameworks, embodiment, types, and playful interfaces through case studies. 4. To teach user experience design for ubiquitous computing, including cultural theory, designing for children, contextual technology, and immersive experiences with real-world case studies. 5. Introduce human factor engineering, covering physical, visual, and mental comfort, workload management, and real-world case studies.				
Unit I	Emotional Design - Designing attraction - Multiple Faces of Emotions and Design - Design Practice - Three Levels of Design - Visceral design - Behavioral design - Reflective design – Designing Personality for Products - Case Studies				
Unit II	Understanding Interaction Design - Computation - Operations - Interaction Design in Engineering Centric world - Managing Complexities - Designing Interactions - Shaping Aesthetics to inform experience - Interaction Design as Business Lubricant - Interaction Design and Communication- Interactions as a Language - Case Studies.				
Unit III	Tangible User Interfaces - History - Overview - Frameworks & Taxonomies - Embodiment & Metaphor - Containers, Tools & Tokens - Tangible User Interface types - Interactive surfaces- Constructive Assembly - Tokens & Constraints - Playful user interfaces - Case Studies				
Unit IV	User Experience Design for Ubiquitous Computing - Cultural Theory and Design - Designing Products for Kids - Context Technology - Contextual Application Development – Immersive Experience Design - Case Studies.				
Unit V	Human Factor Engineering - Introduction - Physical Comfort - Physical work Comfort – Stress & Fatigue - Hot and Cold Work spaces - Visual Comfort - Display and Control Design - Mental comfort -Metal Workload - Case Studies				

Reference and Text Books:

- Beyer H and Holtzblatt K, "Contextual design", San Francisco, Calif. [u.a.]: MorganKaufmann, 2009.
- Kolko J, "Thoughts on Interaction Design", Morgan Kaufmann. Burlington, 2011.
- Kuniavsky Mike, "User experience design for ubiquitous computing", ACMInteractions, 2008.
- Norman, Donald, "Emotional Design", 2004.
- Saffer D, "Designing for interaction", Berkeley, Calif: New Riders., 2007.

Online Resources

- **Human-Centered Service Design (https://www.ideou.com/collections/featured-design-thinking/products/human-centered-service-design)**
- **Human-Centered Design: an Introduction (https://www.coursera.org/learn/human-computer-interaction)**

Course Outcome

CO1	Understand emotional design principles, apply them across design levels, and create products with appealing personalities through real-world case studies.	**K1**
CO2	Grasp interaction design concepts, manage complexities, and apply design principles in engineering, business, and communication contexts, with insights from case studies.	**K3&K6**
CO3	Understand TUI concepts, frameworks, and playful design, apply them to interactive surfaces, and gain insights from real-world case studies.	**K4**
CO4	UX design for ubiquitous computing, cultural considerations, child-friendly design, contextual app development, and immersive experiences, with insights from practical case studies.	**K5**
CO5	Understand human factor engineering principles, assess and enhance physical and mental comfort in workspaces, and gain insights from practical case studies.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

IV-Semester					
Core	**Course Code:** 82745	**Web Application Development - Practical**	**P**	**Credits: 3**	**Hours: 5**
Objective	1. Develop user authentication pages for signup and sign in. 2. Create a dynamic product page fetching data from a database for display. 3. Build an event registration system storing user input in a database and an admin panel for viewing. 4. Establish a table for employee data storage, implement sorting and filtering options, and display the data on a webpage. 5. Design a webpage for cookie storage and management.				
1. Implement Sign up and Sign in Page. 2. Implement a Product page that pushes product info from the database and displays it on the webpage. 3. Create an Event Registration Page that stores User input in the database and presents it in the admin panel. 4. Create a Table and insert employee data in it. Display the data in Web Page and provide sorting and filtering options. 5. Design a web page that stores and handles cookies.					
Outcome	1. Mastery of user authentication implementation. 2. Proficiency in database integration for dynamic product pages. 3. Ability to create a user-friendly event registration system with an admin panel. 4. Skill in managing employee data, offering sorting and filtering functionality, and data display. 5. Competence in designing web pages for effective cookie storage and handling.				**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

IV-Semester					
Allied	**Course Code:** 82746	**Mobile Application Development**	**T**	**Credits: 3**	**Hours: 3**

Objective	1. To teach basic programming in Java, including fundamental functions, object-oriented programming, tool setup, and program compilation. 2. Provide a comprehensive introduction to Java programming, including data types, variables, arrays, control statements, object-oriented concepts, applets, and threads. 3. Introduce open source software, license issues, compare it with traditional methodologies, and provide an overview of mobile application development targeting Android. 4. To teach user interfaces, activity life cycle, layout design, widgets, menus, dialogs, data storage, and inter-process communication in Android. 5. Android app development topics, including multiple activities, threads, services, UI layout, widgets, events, multimedia, and hardware interfaces.
Unit I	Basic Programming in JAVA: Basic functions in JAVA - OOPS Programming in JAVA - Abstraction Java - Creating First Java Program - Introduction to Development tools - Installing and setting up Java Development Kit - Introduction to tools in JDK - Compiling and Building the Java Program Command Line - Introduction to Eclipse IDE - Setting up Java in Eclipse IDE - Compiling and Building in Eclipse
Unit II	Introduction to Primitive Data types - Working with Variables - Introduction to Arrays - Type Casting In Java - Working with Operators - Working with Control Statements - Using Selection Statements- Using Iteration Statements - Defining Jump – Break - Continue and Return - Understanding Objects in Java – Constructors - Introduction to Garbage Collection - Understanding 'this' and finalize() - Applets- Threads - Inheritance – Interface
Unit III	Introduction: Overview of open source - License Issues - MPL – GPL – LGPL etc., - Contrasting and comparing open source vs. traditional development methodologies - Mobile Application Development Overview - Mobile Devices Profiles - Mobile Software - Options for development. Targeting Android : The Big Picture - Introducing Android - Stacking up Android - Booting Android Development - An Android application - Development Environment - The Android SDK - Building Android application in Eclipse - The Android Emulator – Debugging
Unit IV	User interfaces - Activity Life Cycle - Creating the Activity - An Overview of User interfaces Using XML Layouts - Selection Widgets - Date and Time Tabs - Using Menus - Using Fonts - The Web View And the Web Kit Browser - Dialog Boxes: Alert Dialog & Toast - Using resources - Intents and services- Working with Intent classes - Listening in with broadcast receivers - Building a Service – Performing Inter Process Communication - Storing and retrieving data – SQ Lite Database-Using preferences- Using the File System - Persisting data to a database - Working with Content Provider classes

Unit V	Multiple Activities – Threads - Messages Between Threads - Handlers -Services - App Widgets –Alerts- User Interface Layout - Resource Directories and General Attributes - Text Manipulation-Other Widgets - User Interface Events-Event Handlers and Event Listeners - Advanced User Interface Libraries - Implementing Game Play Components - Sprite Drawing – Movements - Animation- Score Updation - Life Updation - Setting Timer - Multimedia Techniques - Images - Audio - Video- Hardware Interface- Mouse and Key events

Reference and Text Books:

- Belen Cruz Zapata, "Android Studio Application Development", Packt publishing, 2013.
- Erik Hellman, "Android Programming: Pushing the Limits", Wiley, 2014
- Jeff Mcwherter, Scott Gowell, "Professional Mobile Application Development", WROX, 2012.
- Pradeep Kothari, "Android Application Development - Black Book", Kogent LearningSolutions Inc, 2014.
- Shroff, "Head First Android Development", 2015.

Online

- Kotlin for JAVA Developers (https://www.coursera.org/learn/kotlin-for-java-developers)
- Android Development (https://www.coursera.org/learn/android-app)

Course Outcome

CO1	Acquire foundational Java programming skills, set up development tools, compile programs using command line and Eclipse IDE, and build their first Java application.	**K1**
CO2	Proficiency in Java programming, including data manipulation, control structures, object-oriented principles, and multi-threading, to build Java applications.	**K3&K6**
CO3	Insight into open source principles, licensing, mobile application development basics, Android development environment setup, and debugging techniques.	**K4**
CO4	Grasp Android UI development, activity management, resource utilization, data storage, and inter-app communication, using SQ Lite, preferences, and content providers.	**K5**
CO5	Expertise in Android app development, including UI design, thread management, multimedia integration, and hardware interface interactions for creating interactive applications.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

IV-Semester					
Allied	**Course Code:** 82747	**Mobile Application Development - Practical**	**P**	**Credits: 2**	**Hours: 4**
Objective	1. Create a camera-based application for capturing and managing photos. 2. Develop a media player application for playing audio and video files. 3. Build a contact application for managing and storing contact information. 4. Implement sensor interactions, including tilting and other gestures, within the application. 5. Create a database system to store and retrieve messages. Develop a list view to display all messages stored in the database.				
1. Develop a camera based application. 2. Develop a Media Player. 3. Develop a contact application. 4. Demonstrate tilting and other interactions based on sensors. 5. Create a database and store messages in it. Create a List view and display all the messages stored in the database.					
Outcome	1. Proficiency in developing camera functionalities for mobile applications. 2. Skill in building a media player with audio and video playback features. Competence in creating contact management applications. 3. Understanding and implementation of sensor-based interactions in mobile apps. 4. Ability to design and manage databases for message storage and retrieval. 5. Capability to display data in list views within mobile applications.				**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
Core	**Course Code:** 82751	**Emerging Technologies**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. Introduce Artificial Intelligence (AI) concepts, including AI problems, techniques, problem formulation, control strategies, and search strategies. 2. To teach search algorithms, knowledge representation, logic, inference, production and frame-based systems, and machine learning concepts. 3. Provide an introduction to Virtual Reality (VR), covering goals, definitions, hardware, perception, geometric modeling, and transformation techniques. 4. Introduce Augmented Reality (AR), its classification based on tracking methods, and key techniques like image acquisition, feature extraction, and matching. 5. Introduce the Internet of Things (IoT), covering sensing, actuation, networking, communication protocols, data handling, analytics, and applications.				
Unit I	Intro. to Artificial Intelligence - AI Problems - AI Techniques - Problem Formulation - Control Strategies - Search Strategies - Characteristics of problems - Problem solving methods – problem graphs Matching - Indexing - Heuristic functions - Hill Climbing - DFS - BFS				
Unit II	Search Algorithms - Knowledge Representation - Predicate Logic, Predicate Calculus – Knowledge Inference -Production based system - Frame based system - Inference - Backward Chaining- Forward Chaining - Fuzzy Reasoning - Certainty factors - Bayesian Theory - Learning – Machine Learning - Adaptive Learning - Knowledge Acquisition.				
Unit III	Introduction - Goals and VR Definitions - Birds-eye view - Birds-eye view Software - Bird's-eye view Hardware - Birds-eye view Sensation and Perception - Geometric modeling - Transformation- Matrices and rotation - Pitch Yaw and Roll - Axis-Angle Representations - Quaternions – Converting and Multiplying Rotations - Homogeneous Transformations - Viewing Transforms - Eye Transforms- Canonical View Transform - Viewport Transformation				
Unit IV	Introduction to AR - Classification based on Sensor, Vision and Hybrid Tracking - Image Acquisition- Feature extraction - Feature Matching - Geometric Verification - Associated Information Retrieval - Feature Extraction Techniques - SIFT - SURF				
Unit V	Introduction to IoT - Sensing - Actuation - Networking - Communication Protocols – Sensor Networks - Machine-to-Machine Communication - BCI - Neuro Gaming - Data Handling and Analytics - Sensor Cloud - Smart Grid				

Reference and Text Books:

- Doug A. Bowman, Ernst Kruijff, Joseph J. LaViola, and Ivan Poupyrev, "3DUser Interfaces", Addison-Wesley, 2005.
- George Mather, "Foundations of Sensation and Perception: Psychology Press", 2nd edition, 2009.
- K. S. Hale and K. M. Stanney, "Handbook on Virtual Environments", 2nd edition, CRCPress, 2015.
- Peter Shirley, Michael Ashikhmin, and Steve Marschner, "Fundamentals of ComputerGraphics", A K Peters/CRC Press; 3 edition, 2009.
- Pethuru Raj and Anupama C Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press.

Online Resources

- AR (Augmented Reality) & Video Streaming Services Emerging Technologies
- Introduction to Machine Learning (https://www.coursera.org/learn/machine-learning-duke)
- Unity (https://learn.unity.com/)

Course Outcome

CO1	Acquire foundational knowledge of AI, problem-solving techniques, and search strategies, enabling them to address a variety of AI challenges.	**K1**
CO2	Knowledge of search algorithms, logic, inference techniques, and machine learning, enabling them to develop AI systems and make data-driven decisions.	**K3&K6**
CO3	Understand VR concepts, geometric modeling, and transformations, enabling them to create immersive virtual environments and manipulate 3D graphics.	**K4**
CO4	Comprehend AR concepts, tracking methods, and feature extraction techniques such as SIFT and SURF, enabling them to develop AR applications.	**K5**
CO5	IoT fundamentals, including sensing, data communication, analytics, and real-world applications like smart grids and neuro gaming.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
Course Code	**Course Code:** 82752	**Software Quality Assurance**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. Introduce quality concepts in software development, including modeling, criteria, and improving both product and process quality. 2. To teach the selection of quality goals, measurement principles, metrics, Quality Function Deployment, and the Goal/Question/Measure paradigm. 3. To cover elements of quality including control, assurance, reliability, and standards like ISO9000, and tools for quality management. 4. Software testing rules, phases, techniques, including combinatorial testing, test automation, and defect triggers. 5. To prepare for usability testing, create test plans, use testing tools, conduct usability tests, and analyze results for design improvement.				
Unit I	Concepts of Quality – Hierarchical Modeling – Quality Models – Quality Criteria And Its Interrelation – Fundamentals Of Software Quality Improvement – Concepts Of Quality Improvement – Concepts Of Process Maturity–Improving Process Maturity.				
Unit II	Selecting Quality Goals And Measures – Principles Of Measurement – Measures And Metrics–Quality Function Deployment – Goal/Question/Measure Paradigm – Quality Characteristics Tree–Quality Prompts.				
Unit III	Elements of a Quality – Quality Control, Assurance – Reliability, Maintainability, Verifiability, Testability, Safety And Supportability – Historical Perspective Elements Of QMS – Human Factors–Time Management – QMS For Software–Quality Assurance – ISO9000 Series–A Generic Quality Management Standard – Tools For Quality.				
Unit IV	Rules of Software Testing - Why Testing? - Test Phases - Test Process - Testing Techniques- Combinatorial Testing - Test Flow Diagrams – Clean room Testing - Test Trees - Play Testing- Ad- Hoc Testing - Effective Testing - Defect Triggers - Test Automation - Capture / Playback Testing.				
Unit V	Preparation for Usability test (Screeners, Scenario) -How to create a Test Plan-Testing Tools - Usability Testing - Remote Usability Testing - Usability Metrics - How to capture data & Prepare Test Report - Visual Design Mockups Exploration - Choosing a Design Testing Approach - Qualitative And Quantitative Research - In-person and Remote Research - Moderated and automated techniques - Usability testing - Research - Logistics - Facilitation - Analyzing results - Crafting recommendations.				

Reference and Text Books:

- Gryna F, Chua R, De Feo J, and Juran J, ”Juran's quality planning and analysis”, McGraw-Hill., 2007.
- Nance R and Arthur J, ”Managing software quality”, Springer, 2002.
- O'Regan, G, ”Introduction to Software Quality”, Springer. 2014.
- Roger S. Pressman, “Software Engineering - A Practitioner’s Approach”, Fifth Edition, McGraw Hill, 2001.
- Tian, J, ”Software quality engineering”, Wiley. 2015.

Online

Introduction to Software Testing (https://www.coursera.org/learn/introduction-software-testing)
Google Project Management (https://www.coursera.org/professional-certificates/google-project-management)

Course Outcome

CO1	Grasp the fundamentals of software quality, quality improvement, and process maturity, enabling them to enhance software development practices.	**K1**
CO2	Gain the ability to select quality goals and metrics, apply measurement principles, and use techniques like Quality Function Deployment for improved software quality.	**K3&K6**
CO3	Understand elements of quality, quality management standards, and tools, enabling them to ensure reliable and maintainable software products.	**K4**
CO4	software testing principles, phases, techniques, and automation, enabling them to conduct effective and systematic testing of software products.	**K5**
CO5	Acquire skills in usability testing preparation, planning, execution, and result analysis, enhancing design decision-making through qualitative and quantitative research methods.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
DSE 1	**Course Code:** 82753A	**Human Computer Interaction**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. To introduce the interaction between humans and computers, covering I/O channels, memory, processing, networks, and interaction models. 2. To teach interactive design fundamentals, including the process, scenarios, navigation, screen design, usability engineering, prototyping, and evaluation techniques. 3. To explore cognitive models, social and organizational considerations, communication models, hypertext, multimedia, and the World Wide Web. 4. To introduce the mobile ecosystem, including platforms, application frameworks, types of mobile apps, and mobile design principles. 5. To teach web interface design techniques, including drag-and-drop, direct selection, overlays, inlays, virtual pages, and process flow, through case studies.				
Unit I	The Human: I/O channels – Memory – Reasoning and problem solving; The computer: Devices–Memory – processing and networks; Interaction: Models – frameworks – Ergonomics – styles–elements – interactivity- Paradigms.				
Unit II	Interactive Design basics – Process – Scenarios – Navigation – Screen design – Iteration and prototyping. HCI in software process – Software life cycle – Usability Engineering – Prototyping in practice – Design Rationale. Design rules – Principles, Standards, Guidelines – Evaluation Techniques – Universal Design.				
Unit III	Cognitive models - Social - Organizational issues and stakeholder requirements – Communication And collaboration models – Hypertext - Multimedia and World Wide Web.				
Unit IV	Mobile Ecosystem: Platforms, Application frameworks- Types of Mobile Applications: Widgets, Applications, Games- Mobile Information Architecture, Mobile 2.0, Mobile Design: Elements of Mobile Design, Tools.				
Unit V	Designing Web Interfaces – Drag & Drop, Direct Selection, Contextual Tools, Overlays, Inlays and Virtual Pages, Process Flow. Case Studies.				

Reference and Text Books:

- Alan Dix, Janet Finlay, Gregory A bowd, Russell Beale, “Human Computer Interaction”, 3rd Edition, Pearson Education, 2004.
- Bill Scott and Theresa Neil, “Designing Web Interfaces”, 1st Edition, O’Reilly MediaInc, 2009.
- Brian Fling, “Mobile Design and Development”, 1st Edition , O’Reilly Media Inc, 2009.
- Dix, Human-Computer Interaction”, 3rd Edition, Paperback, 2004.
- Kent L. Norman, Cyber psychology: “An Introduction to Human-Computer Interaction”, Cambridge University Press, 2nd Edition, 2017.

Online

- **Interaction Design Specialization (https://www.coursera.org/specializations/interaction-design)**
- **META : Principles of UX/UI Design (https://www.coursera.org/learn/principles-of-ux-ui-design)**

Course Outcome

CO1	Understand the fundamentals of human-computer interaction, including models, ergonomics, and interaction paradigms, to design effective user interfaces.	**K1**
CO2	Proficiency in interactive design, applying principles, standards, and evaluation techniques to create user-friendly and universally accessible interfaces.	**K3&K6**
CO3	Understand cognitive and collaborative aspects of interface design, including multimedia and web-related considerations for effective user experiences.	**K4**
CO4	Knowledge of mobile platforms, app types, information architecture, and design elements, using relevant tools for mobile application development.	**K5**
CO5	Master web interface design methods, enabling them to create user-friendly and interactive web experiences, with insights from practical case studies.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
DSE 1	**Course Code:** 82753B	**AR and VR in UX Design**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. You will learn the origins of AR, what makes it unique, and its colossal impact on human-computer interaction. 2. You will dive into user research practices tailored to AR and its unique characteristics. 3. You will dig into how to prototype for AR and create low-fi but testable prototypes. 4. You will learn the heuristics and guidelines to test your designs and ensure they are practical and user-friendly.				
Unit I	Introduction to AR and VR -Understanding Augmented Reality (AR) - Virtual Reality (VR) - History and Evolution of AR and VR - Key Concepts and Terminology - Applications of AR - Application of VR in User Experience (UX) Design				
Unit II	AR and VR Interaction Design - Principles of Interaction Design for AR and VR - User-Centered Design - Navigation - Interaction Techniques - Creating Immersive Experiences - Hands-on Design Exercises				
Unit III	Prototyping and Development - Tools and Software for AR and VR Prototyping - Building Interactive prototypes - Testing - Iterating Prototypes - Different AR and VR Hardware - Practical Prototyping Projects				
Unit IV	UX Challenges and Solutions - Common UX Challenges in AR and VR - Motion Sickness - Comfort - Accessibility - Inclusivity - Solutions - Best Practices - Case Studies - Group Discussions				
Unit V	Future Trends and Final Projects - Emerging Trends - Ethical Considerations: AR - VR Design - Final Project: Designing an AR - VR Experience - Presenting - Critiquing Final Projects - Course Wrap-Up - Resources				

Reference and Text Books:

- Prabhakar, B., Billinghurst, M., & Papagiannis, H. (2021). *Designing for Mixed Reality: Blending Data and the Physical World*. Addison-Wesley
- Fuchs, P., Moreau, G., & Hugues, O. (2018). *Virtual Reality and Augmented Reality: Myths and Realities*. Wiley-ISTE; 1st edition.
- Coleman, B., & Goodwin, D. (2017). *Designing UX: Prototyping*. SitePoint; 1st edition.
- Pangilinan, E., Lukas, S., & Mohan, V. 2019). *Creating Augmented and Virtual Realities: Theory and Practice for Next-Generation Spatial Computing*. O'Reilly.
- Fictum, C., & Dow, T. (2016). *VR UX: Learn VR UX, Storytelling & Design*. Createspace Independent Pub.

Online

- **Virtual Reality Specialization (https://www.coursera.org/specializations/virtual-reality)**
- **VR and 360 Video Production (https://www.coursera.org/learn/360-vr-video-production)**

Course Outcome

CO1	Understand the fundamentals of AR, its application across various industries, and its impact on human-computer interactions.	**K1**
CO2	Discover user research methods specific to AR, including user needs analysis, place research, and user testing in AR environments.	**K3&K6**
CO3	Explore principles and techniques to design intuitive and immersive interaction in AR, including spatial mapping, gesture-based input, and object manipulation.	**K4**
CO4	Examine the ethical implications and societal impact of AR and understand how to design with empathy, inclusivity, and privacy in mind.	**K5**
CO5	Stay ahead of the curve and explore emerging trends and technologies in AR, such as spatial computing, wearable AR, and multimodal interactions.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W. AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
DSE 1	**Course Code:** 82753C	**Brand Designing**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. Understanding the fundamental principles of branding, including the role of brand identity, brand positioning, and brand image in the marketplace. 2. Learn how to develop a comprehensive brand strategy that aligns with the overall business goals. This involves market research, target audience analysis, and competitive positioning. 3. Explore the visual aspects of brand design, including the creation of logos, color schemes, typography, and other design elements that contribute to a cohesive and memorable brand identity. 4. Learn how to manage and maintain a brand over time. This involves understanding the dynamics of brand equity, brand extensions, and how to adapt a brand to changing market conditions. 5. Understand how brand design intersects with other disciplines such as marketing, advertising, and business strategy. Encourage collaboration between designers and professionals from different fields.				
Unit I	Introduction to Branding - Understanding the Concept - Importance of Brand Identity - Branding vs. Marketing - Historical Evolution - Role of Branding in Business				
Unit II	Brand Identity Development - Building a Strong Brand Identity - Elements of Brand Identity: Logo - Color - Typography - etc - Crafting a Brand Message - Creating a Unique Brand Personality - Practical Branding Exercises				
Unit III	Visual Branding - Visual Elements - Logo Design Principles - Choosing Colors - Typography - Designing Brand Collateral: Business Cards - Letterheads - etc - Hands-on Visual Branding Projects				
Unit IV	Branding in Digital Age - Online Branding Strategies - Social Media - Branding - Website Design and Branding - Branding in E-commerce - Case Studies in Digital Branding				
Unit V	Branding Implementation and Management - Brand Guidelines - Consistency - Launching a New Brand - Branding Evaluation - Feedback - Branding for Different Industries - Final Brand Design Project				

Reference and Text Books:

- Designing Brand Identity: An Essential Guide for the Whole Branding Team by Alina Wheeler
- Brand Thinking and Other Noble Pursuits by Debbie Millman
- How to Launch a Brand by Fabian Geyrhalter
- Logo Design Love: A Guide to Creating Iconic Brand Identities by David Airey
- Brand A-Z: Understanding the Ever-Changing Landscape of Branding by Alex Murrel and Clay Stanton

Online

- **Brand Identity and Strategy (https://www.coursera.org/learn/brand-identity-strategy)**
- **Print and Digital Elements of Design: Branding and User Experience (https://www.coursera.org/learn/designing-print-digital-media)**

Course Outcome

CO1	Effective communication of design concepts through presentations and pitches, demonstrating the ability to articulate and defend design decisions.	**K1**
CO2	Critical thinking skills to evaluate design choices in the context of business objectives, market trends, and consumer behavior. Ability to solve branding challenges creatively.	**K3&K6**
CO3	Understanding of brand management principles, including strategies for maintaining and enhancing brand equity over time.	**K4**
CO4	Proficiency in communicating brand messages through various channels, considering the target audience, cultural nuances, and the overall brand narrative.	**K5**
CO5	Awareness of ethical considerations in brand design, including social and environmental responsibility, and the ability to make ethical decisions in the design process.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
DSE 2	**Course Code:** 82754A	**Information Architecture**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. To introduce information architecture, covering user experience design, organization, labeling, taxonomies, metadata, and content management systems. 2. To cover navigation systems, types of navigation, search systems, and methods like stakeholder interviews, content inventory, and heuristic analysis. 3. To focus on user-centered design, research methods, card sorting, usability testing, user requirements, and site organization techniques. 4. To teach web page design, including home, navigation, and destination pages, focusing on knowledge organization, metadata, and advanced search techniques. 5. To cover content design, search engine optimization (SEO), algorithms, web crawling, page rank, and information hierarchy.				
Unit I	Introduction to information architecture - user experience design, and user behavior - IA organization and labeling systems - taxonomies and metadata - content management systems				
Unit II	IA navigation systems and conventions - Types of navigations - global, local, and contextual navigation - IA search systems - context and content - stakeholder interviews - competitive analysis- business requirements - content inventory - heuristic analysis				
Unit III	Users - user-centered design - user research methods - card sorting - usability testing - user requirements - IA strategy - user modeling and groups - personas & scenarios - site organization-conceptual blueprints/site maps - Sitemaps and flow tasks - Tools of the trade, Pagestack, Decision Points, Conditions, Common errors, Misalignment Typographic considerations, Task flows, Swimlanes				
Unit IV	Web page design - home page - navigation page - destination page - Knowledge organization- databases - metadata - advanced search based on metadata - user tagging & rating - Knowledge Organization systems - taxonomies, thesauri, & controlled vocabulary strategies				
Unit V	Content Design for Web sites - Search engine Optimization - Search Engine Architecture – Search Operators - Search Engine Algorithms - On Page SEO - Off Page SEO - Web Mining - Web Crawling-Page Rank - Google Keywords - Information Hierarchy.				

Reference and Text Books:

- Debra Shepard, "The Information Architecture Handbook - Everything You Need to Know About Information Architecture", Emereo Publishing, 2016.
- Donna Spencer, Derek Featherstone, "A Practical Guide to Information Architecture, FiveSimple Steps", 2010.
- Louis Rosenfeld, Peter Morville, Jorge Arango, "Information Architecture for the WebandBeyond", O'Reilly Media, 4th Edition, 2015.
- Peter Morville & Louis Rosenfeld, "Information Architecture for the World Wide Web: Designing Large-Scale Web Sites", 3rd Edition , O'Reilly Media; 3rd edition, 2006.
- Wodtke, C. and Govella, A. "Information architecture. Noida: Dorling Kindersley India", 2011.

Online

- **UX Design: From Concept to Prototype (https://www.coursera.org/learn/ux-design-concept-wireframe)**
- **Introduction to UX Design Master Track Certificate Program**

Course Outcome

CO1	Understand information architecture principles, create effective organization and labeling systems, and manage content using taxonomies and metadata for improved user experiences.	**K1**
CO2	master navigation design, search systems, and analysis techniques to create effective information architecture solutions, aligning with business needs.	**K3&K6**
CO3	Proficient in user-centered design, research, and information architecture strategies, creating user-friendly solutions and avoiding common errors.	**K4**
CO4	Gain expertise in web page design and knowledge organization using databases, metadata, advanced search, user tagging, and controlled vocabulary strategies.	**K5**
CO5	Understand content design, SEO techniques, search engine algorithms, web crawling, and information hierarchy, optimizing web content for better visibility and user experience.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
DSE 2	**Course Code:** 82754B	**Digital Marketing**	**T**	**Credits: 4**	**Hours: 4**

Objective	1. Familiarize the digital landscape, including the evolution of the internet, digital technologies, and the impact of online communication on marketing. 2. How to develop effective digital marketing strategies aligned with business goals, target audience characteristics, and market trends. 3. Cover strategies for creating and managing impactful social media campaigns across various platforms, considering audience engagement, content creation, and analytics. 4. Emphasize the importance of content marketing, teaching students how to create valuable, relevant content to attract and retain a target audience. 5. Explore the principles of effective email marketing, including designing campaigns, creating compelling content, segmenting audiences, and analyzing performance metrics. 6. Cover mobile marketing strategies, including mobile advertising, app marketing, and responsive design considerations. 7. Develop proficiency in using analytics tools to track and interpret data, measure campaign performance, and make data-driven decisions.
Unit I	Introduction to Digital Marketing - Understanding the Digital Marketing Landscape - Evolution - Importance of Digital Marketing - Key Digital Marketing Channels - Role - Business Growth - Digital Marketing Trends - Innovations
Unit II	Website and Content Marketing - Website Development - Optimization - SEO - Search Engine Optimization Strategies - Content Creation - Marketing - Blogging - Content Distribution - Measuring Website Performance
Unit III	Social Media Marketing - Leveraging Social Media Platforms - Creating - Managing Social Media Campaigns - Engaging Audiences on Social Media - Social Media Advertising - Social Media Analytics - Reporting
Unit IV	Email Marketing and Online Advertising - Email Marketing Campaigns - Building - Segmenting Email Lists - Online Advertising: Pay-Per-Click - Display Ads - etc - Ad Campaign Planning - Management - Measuring Advertising ROI

Unit V	Data Analytics and Strategy - Data Analytics in Digital Marketing - Google Analytics - Other Analytics Tools - Marketing Automation - Creating a Digital Marketing Strategy - Case Studies - Real-World Applications

Reference and Text Books:

- Chaffey, D., & Ellis-Chadwick, F. (2012). *Digital Marketing: Strategy, Implementation, and Practice*. Pearson Education; 5th edition.
- Deiss, R., & Henneberry, R. (2020). *Digital Marketing for Dummies*. For Dummies; 2nd edition .
- Enge, E., Spencer, S., & Stricchiola, J. (2015). *The Art of SEO: Mastering Search Engine Optimization*. O'Reilly Media; 3rd edition.
- Berger, J. (2016). *Contagious: How to Build Word of Mouth in the Digital Age*. Simon & Schuster; Reprint edition .
- Cialdini, R. B. (2006). *Influence: The Psychology of Persuasion*. Harper Business; Revised edition.

Online Resources

- Google Digital Marketing & E-commerce (https://www.coursera.org/professional-certificates/google-digital-marketing-ecommerce)
- Google Ads for Beginners (https://www.coursera.org/projects/google-ads-beginner)

Course Outcome

CO1	Understanding of the core concepts, principles, and components of digital marketing, including online channels, strategies, and tools.	**K1**
CO2	Learn to create and distribute valuable and relevant content to attract and engage a target audience, contributing to brand awareness and lead generation.	**K3&K6**
CO3	Understand the principles of email marketing, including campaign planning, design, segmentation, and analytics.	**K4**
CO4	Explore various forms of digital advertising, including display ads, video ads, and native advertising, understanding their benefits and best practices.	**K5**
CO5	Understand the unique aspects of marketing to mobile audiences, including mobile advertising, app marketing, and responsive design.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
DSE 2	**Course Code:** 82754C	**Design Issues**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. **E**xploring ways to make design practices more environmentally sustainable, considering materials, production processes, and end-of-life considerations. 2. Investigating challenges in creating seamless and intuitive digital experiences, from website navigation to app interfaces. 3. Considering the unique needs and challenges of an aging population and how design can contribute to creating age-friendly products and environments. 4. Analyzing instances of cultural appropriation in design and discussing how to promote cultural sensitivity and respect in creative work. 5. Addressing challenges in adopting a human-centered design approach, including understanding user needs, conducting effective user research, and integrating feedback.				
Unit I	**Introduction to Design Issues** ● Understanding the Scope of Design Issues ● The Importance of Design in Various Fields ● Historical Evolution of Design Challenges ● Balancing Aesthetics and Functionality				
Unit II	**User-Centered Design** ● Principles of User-Centered Design ● Identifying User Needs and Expectations ● Usability Testing and User Feedback ● Designing for Accessibility and Inclusivity				
Unit III	**Sustainability and Ethical Design** ● Sustainable Design Practices ● Ethical Considerations in Design ● Environmental Impact of Design Choices ● Case Studies in Sustainable and Ethical Design				
Unit IV	**Technology and Innovation** ● Keeping Up with Technological Advances ● Designing for Emerging Technologies (AI, VR, IoT) ● Ethical Use of Technology in Design ● Design Challenges in the Digital Age				
Unit V	**Global Design and Cultural Sensitivity** ● Designing for a Global Audience ● Cultural Considerations in Design ● Addressing Cultural Sensitivity and Bias ● Cross-Cultural Design Challenges				

Reference and Text Books:

- Norman, D. A. (2013). *The Design of Everyday Things*.Basic Books; Revised edition.
- Norman, D. A. (2005). *Emotional Design: Why We Love (or Hate) Everyday Things*. Basic Books; 1st edition.
- Lidwell, W., Holden, K., & Butler, J. (2015). *Universal Principles of Design*. Rockport Publishers; Illustrated edition.
- Ambrose, G., & Harris, P. (2019). *Design Thinking for Visual Communication*. Bloomsbury Visual Arts; Reprint edition .
- Anderson, S. (2011). *Seductive Interaction Design: Creating Playful, Fun, and Effective User Experiences*. New Riders Pub; 1st edition.

Online Resources

- Print and Digital Elements of Design: Branding and User Experience (https://www.coursera.org/learn/designing-print-digital-media)
- Experimental Design Basics (https://www.coursera.org/learn/introduction-experimental-design-basics)

Course Outcome

CO1	Learn to identify and define design problems effectively, recognizing the underlying issues and challenges in various design contexts.	**K1**
CO2	Gain an understanding of ethical considerations in design and develop the ability to make ethically sound decisions in the design process.	**K3&K6**
CO3	Foster awareness of cultural diversity and sensitivity, understanding how cultural factors can influence design choices and impact user experiences.	**K4**
CO4	Acquire skills in conducting research related to design issues, including literature reviews, user studies, and trend analysis.	**K5**
CO5	Understand the principles of sustainable design and how design choices can contribute to or mitigate environmental impacts.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

V-Semester					
DSE 3	**Course Code:** 82755A	**Prototyping - Practical**	**P**	**Credits: 4**	**Hours: 8**
Objective	1. Prototype a payment module for an e-commerce app and perform a comprehensive analysis. 2. Design two workflows for posting and answering questions in a forum application. 3. Wireframe the homepage of a website, highlighting hot and cold spots for user interaction. 4. Create a paper prototype for a chat application, including a group chat interface. 5. Develop a user manager for a resource management app and create a prototype for it.				
1. Prototype a payment module for an e-commerce application and propose the analysis of it. 2. Design two work-flows for posting a question and answering the question in a forum application. 3. Wireframe the home page for a website and design the hot and cold spots in it. 4. Paper prototype a chat application including the group chat interface. 5. Create a user manager for a resource management application and prototype it.					
Outcome	1. Proficiency in prototyping and analyzing payment modules for e-commerce. 2. Competence in workflow design for forum applications. 3. Skill in wire framing web pages and identifying interaction hotspots. 4. Ability to paper prototype chat applications, including group chat interfaces. 5. Capability to design and prototype user management systems for resource management applications.				**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><td colspan="6">V-Semester</td></tr>
<tr><td>DSE 3</td><td>Course Code:
82755B</td><td>Software Testing - Practical</td><td>P</td><td>Credits: 4</td><td>Hours: 8</td></tr>
<tr><td>Objective</td><td colspan="5">1. Enable participants to identify, document, and report software bugs effectively. This involves understanding the bug life cycle and using bug tracking tools.
2. Practice creating comprehensive and effective test cases based on requirements, specifications, and use cases. Participants should understand how to design test cases that cover various scenarios.
3. Execute test cases on actual software applications to observe the behavior and verify that the software meets the specified requirements.
4. Emphasize the importance of test documentation, including test plans, test cases, and test reports. Participants should learn how to create and maintain comprehensive testing documentation.
5. Explore scalability testing, focusing on how software performs as the user load increases, and identifying potential bottlenecks.</td></tr>
<tr><td colspan="6">1. Cross-Browser Testing:
a. How do you make sure a website works well in different web browsers like Chrome, Firefox, Edge, and Safari?
2. User Registration and Login Testing:
a. How would you test a website's sign-up and login features to ensure they work securely and smoothly?
3. E-commerce Cart Testing:
a. Describe how you'd test an online store's shopping cart to confirm it lets users add, remove, and update items correctly.
4. Performance and Load Testing:
a. Explain how you'd test a website's speed and ability to handle many users. What tools and numbers would you check?
5. Security Testing for User Input:
a. Why is it crucial to test a web app's input fields for security? Can you give examples of common issues and how to test for them?</td></tr>
<tr><td>Outcome</td><td colspan="4">1. Demonstrate the ability to identify, document, and report software bugs effectively, including clear and detailed information on the issue and steps to reproduce it.
2. Create well-designed test cases based on requirements and execute them to verify that the software meets specified criteria. This includes coverage of positive and negative test scenarios.
3. Gain an understanding of security testing principles, identify vulnerabilities, and ensure the software's resilience against potential security threats.
4. Develop skills in creating and maintaining comprehensive test documentation, including test plans, test cases, and test reports, adhering to industry standards.
5. Demonstrate competence in exploratory testing, exploring the software freely to uncover defects not covered by predefined test cases.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">V-Semester</th></tr>
<tr><td>DSE 3</td><td>Course Code:
82755C</td><td>Usability Evaluation - Practical</td><td>P</td><td>Credits: 4</td><td>Hours: 8</td></tr>
<tr><td>Objective</td><td colspan="5">1. Gain a deep understanding of usability principles and their significance in the design and development of interactive systems.
2. Familiarize participants with various usability evaluation methods, including usability testing, heuristic evaluation, cognitive walkthroughs, and expert reviews.
3. Develop practical skills in planning, conducting, and analyzing usability tests with real users to identify usability issues and gather valuable feedback.
4. Understand and apply Nielsen's usability heuristics and other established usability principles for heuristic evaluation of interfaces.
5. Learn how to conduct cognitive walkthroughs, a method for systematically analyzing the usability of a system by simulating the user's thought processes.</td></tr>
<tr><td colspan="6">1. Navigation and Structure:
a. Is it easy for users to move around the website or app? How can we make it even simpler?
2. Form Usability:
a. Are online forms easy to use? What can we do to improve them?
3. Accessibility:
a. Can everyone, including those with disabilities, use the interface? How can we make it more inclusive?
4. Mobile-Friendliness:
a. Does the design work well on mobile devices? What needs improvement for smaller screens?
5. Feedback and Errors:
a. Does the UI give clear feedback and handle errors effectively? What changes can enhance user guidance and error handling?</td></tr>
<tr><td>Outcome</td><td colspan="4">1. Acquire knowledge of various usability testing methods, including moderated and unmoderated usability testing, remote testing, and in-person testing.
2. Develop the ability to plan usability tests, including defining test objectives, selecting appropriate participants, and designing test scenarios and tasks.
3. Develop skills in creating detailed usability test protocols that guide the testing process and ensure consistency across multiple sessions.
4. Master the art of observing participant behavior, taking comprehensive notes, and capturing key insights during usability test sessions.
5. Understand the iterative nature of usability testing and its role in informing design improvements, encouraging an ongoing cycle of testing and refinement.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">V-Semester</th></tr>
<tr><td>Core</td><td>Course Code:
82756</td><td>Portfolio & Presentation - Practical</td><td>P</td><td>Credits: 2</td><td>Hours: 4</td></tr>
<tr><td>Objective</td><td colspan="5">Showcase your practical skills and expertise in the subject. Include tangible examples of projects, tasks, or assignments that highlight your ability to apply theoretical knowledge to real-world situations.
Illustrate your problem-solving abilities by presenting challenges you've faced within the practical subject and how you overcame them. This can include innovative solutions, critical thinking, and adaptability.
Clearly demonstrate your understanding and mastery of key concepts in the practical subject. This might involve discussing relevant coursework, independent research, or any additional certifications or training you've pursued.
If applicable, showcase your creativity and innovative thinking within the practical subject. Highlight any unique approaches, creative solutions, or projects that demonstrate your ability to think outside the box.
Outline your progression and growth over time in the practical subject. This could involve a timeline of projects, skills acquired, and how you've evolved in your understanding and application of the subject matter.
Structure your portfolio in a logical and easy-to-follow manner. Use clear sections, headings, and labels to guide the viewer through your work. Include a table of contents if the portfolio is extensive.</td></tr>
<tr><td colspan="6">For self-representation, create a logo and a graphic signature.
Prepare a respectable corporate firm CV.
Establish a blog to display your growth as a person.
Use any authoring tool to create and author an interactive portfolio.
Demonstrate your skills and achievements effectively in your portfolio which should result in increased professional recognition and opportunities.</td></tr>
<tr><td>Outcome</td><td colspan="4">A well-prepared portfolio and presentation can lead to recognition and positive feedback from academic institutions. This could result in high grades, awards, or recommendations from professors and mentors.
A strong portfolio can open doors to professional opportunities. Employers often review portfolios to assess the practical skills and capabilities of potential candidates. This could lead to job offers, internships, or collaborations on real-world projects.
A compelling portfolio can contribute to career advancement. It can be used during performance reviews, job interviews, or promotions to demonstrate your expertise and accomplishments within the practical subject.
The process of creating a portfolio requires self-reflection. As you compile your achievements and experiences, you gain a deeper understanding of your strengths and areas for improvement. This self-awareness can guide your future endeavors and learning objectives.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester					
Core	**Course Code:** 82761	**Web Development using React**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. Gain a solid understanding of the fundamental concepts of React, including components, state, props, and the virtual DOM. 2. Learn how to design and build applications using a component-based architecture, a core paradigm in React development. 3. Explore and understand the broader React ecosystem, including tools like React Router for navigation and Redux for state management (or other state management libraries). 4. Understand and utilize React Hooks to manage state and side effects in functional components, promoting a more modular and readable code structure. 5. Develop skills in creating responsive web designs that adapt to different screen sizes and devices.				
Unit I	**Introduction to React** ● Overview of React.js and Its Benefits ● Setting Up the Development Environment ● JSX (JavaScript XML) Syntax ● Creating and Rendering React Components ● Understanding React State and Props				
Unit II	**Component-Based Development** ● Building Reusable React Components ● Component Lifecycle and Hooks ● Handling User Events and Interactions ● State Management with React Context ● Practical Exercises in Component Development				
Unit III	**Routing and Navigation** ● Implementing Client-Side Routing with React Router ● Creating Navigation Menus and Links ● Dynamic Routing and Route Parameters ● Building a Multi-Page React Application ● Hands-On Routing Projects				
Unit IV	**State Management and APIs** ● Managing Complex State with Redux ● Connecting React with Redux ● Making API Requests with Axios or Fetch ● Handling Asynchronous Operations ● Real-World Applications of State Management				
Unit V	**Advanced Topics and Deployment** ● Testing React Components ● Styling React Applications (CSS-in-JS, Styled Components) ● Performance Optimization Techniques ● Preparing for Production Deployment ● Deploying a React App to Hosting Platforms				

Reference and Text Books:

- Banks, A., & Porcello, E. (2020). *Learning React*. O'Reilly Media.
- Stefanov, S. (2021). *React Up and Running*.O'Reilly Media.
- Accomazzo, A., Lerner, A., Murray, N., Allsopp, C., & Guttman, D. (2017). *Fullstack React: The Complete Guide to ReactJS and Friends*.Fullstack.io.
- Roldán, C. S. (2023). *React Design Patterns and Best Practices*. Packt Publishing.
- Antonio, C. S., Wanyoike, M., & Bray, T. (2019). *Pro React*. Apress.

Online Resources

- React Native (https://www.coursera.org/learn/react-native-course)
- Introduction to the React Challenges (https://www.freecodecamp.org/learn/front-end-development-libraries/react/)
- Build a Website using React

Course Outcome

CO1	Develop the ability to design and build applications using a component-based architecture, promoting code reusability and maintainability.	**K1**
CO2	Gain proficiency in leveraging tools and libraries within the React ecosystem, such as React Router for navigation, Redux for state management (or alternatives), and other relevant packages.	**K3&K6**
CO3	Master the use of React Hooks to manage state and side effects in functional components, fostering a modern and concise coding style.	**K4**
CO4	Implement responsive design principles to ensure that React applications are visually appealing and functional across different devices and screen sizes.	**K5**
CO5	Understand the deployment process and host React applications on various platforms, demonstrating the ability to make a project publicly accessible.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester					
Core	**Course Code:** 82762	**Advanced Framework - Tailwind**	**T**	**Credits: 4**	**Hours: 4**
Objective	1. Grasp the concept of utility-first CSS, which involves building styles using small utility classes, offering a highly modular and flexible approach to styling. 2. Familiarize yourself with the syntax and conventions of Tailwind CSS, including the use of utility classes for styling elements. 3. Explore the customization options provided by Tailwind CSS, including the ability to configure the framework to match project-specific design requirements. 4. Learn how to create responsive designs effortlessly using Tailwind CSS, taking advantage of its responsive utility classes. 5. Understand how Tailwind CSS provides flexibility in styling individual components, allowing for rapid iteration and design changes. 6. Learn techniques for optimizing and purging unused styles when deploying a project to production, ensuring minimal CSS file size.				
Unit I	**Introduction to Tailwind CSS** ● Overview of Tailwind CSS and Its Philosophy ● Setting Up a Tailwind CSS Project ● Understanding Utility-First CSS ● Exploring the Tailwind CSS Documentation ● Building a Simple Responsive Layout				
Unit II	**Customization and Theming** ● Customizing Tailwind CSS Configurations ● Creating and Managing Custom Utility Classes ● Theming with Tailwind CSS ● Integrating Third-Party Plugins and Extensions ● Designing a Custom UI Kit with Tailwind CSS				
Unit III	**Responsive Design with Tailwind** ● Implementing Responsive Design Patterns ● Building Mobile-First Interfaces ● Advanced Grid Systems and Layouts ● Media Queries and Breakpoints ● Practical Exercises in Responsive Design				
Unit IV	**Optimizing Performance and Workflow** ● Optimizing CSS for Production ● Reducing Unused CSS with PurgeCSS ● Building Efficient and Lightweight UIs ● Workflow Enhancements with JIT (Just-in-Time) Mode ● Version Control and Collaboration in Tailwind Projects				

Unit V	**Real-World Applications and Best Practices** • Building Complex Web Applications with Tailwind • Integrating Tailwind CSS with JavaScript Frameworks (e.g., React, Vue) • Accessibility Considerations and Best Practices • Performance Optimization Strategies • Deployment and Maintenance of Tailwind CSS Projects

Reference and Text Books:

- Noel Rappin. (2021). Modern CSS with Tailwind: Flexible Styling without the Fuss.Pragmatic Bookshelf.
- Kartik Bhat. (2023). Ultimate Tailwind CSS Handbook. Orange Education Pvt Ltd.
- Roberto Rescigno . (2023). Tailwind CSS: a guide to using the popular utility-first CSS framework. Publisher.
- Ivaylo Gerchev. (2022).Tailwind CSS. SitePoint.
- BADAL TRIPATHY . (2023). Tailwind CSS. Publisher.

Online Resources

- Advanced Framework Tailwind (https://tailwindcss.com/)
- Tailwind CSS

Course Outcome

CO1	Gain a deep understanding of the utility-first CSS approach and its benefits in terms of rapid development and easy customization.	**K1**
CO2	Develop proficiency in creating responsive designs using Tailwind CSS, utilizing responsive utility classes for various screen sizes.	**K3&K6**
CO3	Understand and implement techniques for optimizing Tailwind CSS for production, including the removal of unused styles to minimize the CSS file size.	**K4**
CO4	Explore and apply additional features provided by Tailwind CSS, such as animations, transitions, and other utility classes to enhance the user interface.	**K5**
CO5	Apply acquired skills and knowledge in a real-world project, developing a responsive and visually appealing user interface using Tailwind CSS.	**K2&K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.6**	**1.6**	**2.6**	**1.6**	**1.4**	**1.6**	**1.8**	**1.9**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.4**	**2.2**	**1.4**	**1.6**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">VI-Semester</th></tr>
<tr><td>Core</td><td>Course Code:
82763</td><td>Web Development using React</td><td>P</td><td>Credits: 4</td><td>Hours: 6</td></tr>
<tr><td>Objective</td><td colspan="5">1. Gain practical experience in working with React fundamentals, including components, JSX syntax, state, and props.
2. Implement client-side routing using React Router for building single - page applications with smooth navigation.
3. Gain practical skills in handling user input and building controlled forms in React.
4. Develop practical skills in testing React components using popular testing libraries like Jest and React Testing Library.
5. Understand practical project structure and organization strategies for scalable and maintainable React applications.
6. Learn to implement practical user authentication and authorization features in React applications.</td></tr>
<tr><td colspan="6">1. Component Reusability:
a. How do you make sure React components can be used in different parts of the app? Can you give an example of this?
2. State Management:
a. How do you handle and share data between components in a big React app? What tools or methods do you use?
3. Performance Improvement:
a. How do you make a React app faster, especially when dealing with lots of data or complex features?
4. Routing and Navigation:
a. How do you create links and move between different pages in a React app? Explain how routing works.
5. Testing and Debugging:
a. How do you test React components and find and fix problems in your code? Do you use any special tools or libraries for this?</td></tr>
<tr><td>Outcome</td><td colspan="4">1. Understand the fundamentals of React, including components, JSX syntax, and the virtual DOM.
2. Learn how to set up a React development environment using tools like Create React App.
3. Understand the lifecycle methods of a React component and how to use them for tasks like data fetching and cleanup.
4. Learn how to handle user input through forms and manage events in React components.
5. Gain knowledge of testing React components using tools like Jest and React Testing Library.
6. Adopt best practices for structuring React applications and follow common design patterns.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester					
DSE 4	**Course Code:** 82764A	**Wordpress - Practical**	**P**	**Credits: 4**	**Hours: 4**
Objective	1. Successfully install Word Press on a local server or a web hosting environment. 2. Understand the basic configuration settings and options available in the Word Press dashboard. 3. Create and manage different types of content, including posts, pages, and custom post types. 4. Learn how to use the Word Press editor for content creation and formatting. 5. Understand the structure of Word Press themes and create a custom theme from scratch. 6. Customize existing themes and understand the use of child themes for safer modifications. 7. Learn how to customize the look and feel of a Word Press site using theme customization options. 8. Explore the use of custom CSS, widgets, and the Theme Customizer.				

1) Plugin Selection:

a) How do you choose the right add-ons to improve a Word Press website's features? Can you share an example of when you did this?

2) Theme Customization:

a) How do you change the look of a Word Press site to match a client's design preferences? What tools or methods do you use?

3) Security Measures:

a) What do you do to keep a Word Press site safe from hackers and malware? Explain your approach to site security.

4) SEO Optimization:

a) How do you make a Word Press site more visible in search engines? Do you use any plugins or techniques for better search engine rankings?

5) Performance Improvement:

a) When a Word Press site is slow, what actions do you take to make it faster? Can you give an example of how you've improved site speed?

Outcome	1. Ensure that the Word Press site is responsive, adapting to different screen sizes and devices. 2. Acquire the ability to train clients or end-users on how to use and maintain their Word Press websites. 3. Develop skills in identifying and resolving common issues, including plugin conflicts and theme-related problems. 4. Understand the purpose of plugins and learn how to install, activate, and configure them to extend the functionality of a Word Press site. 5. Customize the appearance of a Word Press site by modifying themes, using the Theme Customizer, and adding custom CSS.	**K6**

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">VI-Semester</th></tr>
<tr><td>DSE 4</td><td>Course Code:
82764B</td><td>SEO Strategy - Practical</td><td>P</td><td>Credits: 4</td><td>Hours: 4</td></tr>
<tr><td>Objective</td><td colspan="5">1. Identify relevant and high-performing keywords related to the website's content and target audience.
2. Optimize individual web pages to improve their relevance and visibility.
3. Develop high-quality, relevant, and engaging content that satisfies user intent.
4. Ensure that the website is technically sound and optimized for search engines.
5. Build a diverse and high-quality back link profile to improve the website's authority.
6. Optimize the website for local search if the business has a physical presence.
7. Stay up-to-date with industry changes and continuously improve the SEO strategy.
8. Improve the website's ability to convert visitors into customers or leads.</td></tr>
<tr><td colspan="6">1. Keyword Research:
a. How do you find the best words to improve a website's search engine ranking? What tools do you use?
2. On-Page Optimization:
a. What do you do on a webpage to make it rank higher in search results? Can you give examples?
3. Link Building Strategies:
a. How do you get other websites to link to your site to boost its credibility with search engines? Share some successful methods.
4. Content Strategy:
a. How do you create and adjust content to help it show up in search results? How do you balance user-friendly content with SEO?
5. SEO Performance Tracking:
a. How do you know if your SEO efforts are working? What tools and numbers do you use to see how keywords, rankings, and traffic are doing?</td></tr>
<tr><td>Outcome</td><td colspan="4">1. Ability to conduct comprehensive keyword research and analysis to identify relevant and high-performing keywords.
2. Proficiency in optimizing individual web pages for search engines.
3. Ability to create and optimize high-quality, relevant, and engaging content that satisfies user intent.
4. Proficiency in implementing technical SEO elements to ensure a technically sound website.
5. Proficiency in tracking and analyzing the performance of an SEO strategy.
6. Understanding of how to improve the website's ability to convert visitors into customers or leads.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

<table>
<tr><th colspan="6">VI-Semester</th></tr>
<tr><td>DSE 4</td><td>Course Code:
82764C</td><td>Motion Design and Animation - Practical</td><td>P</td><td>Credits: 4</td><td>Hours: 4</td></tr>
<tr><td>Objective</td><td colspan="5">1. Gain a solid understanding of fundamental animation principles.
2. Become proficient in using industry-standard animation software.
3. Master character animation techniques for bringing characters to life.
4. Learn to design and animate engaging motion graphics.
5. Gain proficiency in creating 3D animations.
6. Explore the creation of interactive animations.
7. Learn the process of rendering and exporting animations for various platforms.</td></tr>
<tr><td colspan="6">1. Planning Animations:
a. How do you prepare and organize your animation projects before starting? Explain your approach to getting ready.
2. Animation Tools:
a. What software and tools do you use for making animations? Share your favorite software and why you like it.
3. Timing and Transitions:
a. How do you decide when animations should happen and how they should transition? Give tips for creating smooth and engaging animations.
4. Interactive Animations:
a. How do you add interactive elements to animations, like clickable or hover effects? Share examples of interactive animations you've done.
5. Performance Optimization:
a. What do you do to ensure animations work well on different devices and screens while still looking great?</td></tr>
<tr><td>Outcome</td><td colspan="4">1. Create animations that showcase smooth transitions, realistic movements, and effective use of principles.
2. Successfully navigate and utilize features in software like Adobe After Effects, Blender, Autodesk Maya, or other relevant tools to create animations.
3. Create comprehensive storyboards that effectively communicate the flow, timing, and key elements of an animation project.
4. Produce character animations that convey personality, emotions, and natural interactions.
5. Develop 3D animations that showcase understanding of modeling, lighting, texturing, and camera movements.
6. Regularly experiment with new tools and techniques, and demonstrate awareness of current industry trends.</td><td>K6</td></tr>
</table>

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)
CO3	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)
CO5	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	S(3)	S(3)
W.AV	**2.2**	**2.4**	**2.4**	**2.6**	**1.8**	**1.4**	**1.6**	**1.8**	**2.4**	**1.8**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L(1)	S(3)	L(1)	M(2)	M(2)
CO2	M(2)	S(3)	L(1)	M(2)	M(2)
CO3	L(1)	M(2)	L(1)	M(2)	M(2)
CO4	S(3)	S(3)	L(1)	M(2)	M(2)
CO5	M(2)	S(3)	M(2)	M(2)	S(3)
W.AV	**1.8**	**2.8**	**1.2**	**2**	**2.2**

S–Strong (3), M-Medium (2), L-Low (1)

VI-Semester					
Core	**Course Code 82765A/ 82765B**	**Project/ Dissertation**	**PR/ D**	**Credits: 6**	**Hours:12**
Objective	1. Develop the ability to formulate a well-defined research problem and articulate clear research questions or objectives. 2. Demonstrate proficiency in conducting a comprehensive literature review to situate the dissertation within the broader academic context. 3. Acquire advanced research and analytical skills to design and implement a robust methodology for data collection and analysis. 4. Cultivate effective academic writing skills, including the synthesis and communication of complex ideas and findings in a coherent manner. 5. Demonstrate a critical understanding of ethical considerations in research and apply ethical principles throughout the dissertation process.				

Dissertation for Major Project

1. **Introduction and Background:** Clearly define the scope and purpose of the dissertation. - Provide a brief overview of the background literature and the research gap being addressed
2. **Research Objectives:** Clearly state the research questions or objectives that the dissertation aims to address. - Align the objectives with the broader goals of the M.Sc. Multimedia program.
3. **Literature Review:** Conduct a thorough review of relevant literature in the field of multimedia, highlighting key theories, frameworks, and previous research studies. - Identify gaps in the existing literature that the dissertation seeks to fill.
4. **Methodology:** Detail the research design, methods, and tools employed in the study. - Justify the chosen methodology and discuss its appropriateness for the research questions.
5. **Data Collection:** Describe the process of data collection, including the types of data gathered and the rationale for selecting - specific sources or participants
6. **Analysis and Findings:** Present and analyze the data collected, demonstrating how it addresses the research questions. - Discuss any unexpected findings and their implications for the overall study.
7. **Discussion:** Interpret the results in the context of the existing literature. - Discuss the significance of the findings and their contributions to the field of multimedia.
8. **Conclusion:** Summarize the key findings and their implications. - Provide recommendations for future research or practical applications based on the results.
9. **Limitations:** Acknowledge any limitations in the research design or data collection process. - Discuss how these limitations may have influenced the study's outcomes.
10. **References:** Compile a comprehensive list of all sources cited in the dissertation, adhering to the required citation style (e.g., APA, MLA).

Outcome

1. Demonstrate the ability to formulate and articulate a well-defined research problem within the scope of multimedia studies for the dissertation project.
2. Apply advanced research methodologies and analytical techniques to investigate and address research questions in the field of multimedia.
3. Develop proficiency in critically reviewing and synthesizing existing literature to establish a strong theoretical foundation for the dissertation.
4. Showcase effective written communication skills through the production of a comprehensive and scholarly dissertation document that adheres to academic standards.
5. Demonstrate ethical research practices and a critical awareness of ethical considerations, ensuring the integrity and validity of the dissertation work in the context of multimedia studies

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)
CO2	M(2)	M(2)	M(2)	M(2)	M(2)	L(1)	M(2)	M(2)	S(3)	S(3)
CO3	M(2)	S(3)	S(3)	S(3)	M(2)	S(3)	S(3)	M(2)	M(2)	M(2)
CO4	S(3)	M(2)	M(2)	L(1)	L(1)	M(2)	M(2)	S(3)	M(2)	M(2)
CO5	M(2)	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	S(3)	S(3)
W.AV	**2.4**	**2.6**	**2.4**	**2**	**2**	**2.2**	**2.2**	**2.2**	**2.4**	**2**

S–Strong (3), M-Medium (2), L-Low (1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	M(2)	M(2)	M(2)
CO2	M(2)	S(3)	S(3)	M(2)	S(3)
CO3	M(2)	M(2)	M(2)	M(2)	M(2)
CO4	S(3)	L(1)	S(3)	S(3)	M(2)
CO5	S(3)	M(2)	M(2)	M(2)	S(3)
W.AV	**2.4**	**2**	**2.4**	**2.2**	**2.4**

S–Strong (3), M-Medium (2), L-Low (1)

UG Programme

Passing minimum

- A candidate shall be declared to have passed in each course if he/she secures not less than 40% marks in the End Semester Examinations and 40% marks in the Internal Assessment and not less than 40% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- The passing minimum for CIA shall be 40% out of 25 marks (i.e.10 marks) in Theory/ Practical Examinations.
- The passing minimum for University Examinations shall be 40% out of 75 marks (i.e. 30 marks) for Theory /Practical papers.
- The candidates not obtain 40% in the Internal Assessment are permitted to improve their Internal Assessment marks in the subsequent semesters (2 chances will be given) by writing the CIA tests or by submitting assignments.
- Candidates, who have secured the pass marks in the End-Semester Examination and in the CIA but failed to secure the aggregate minimum pass mark (E.S.E + C I.A), are permitted to improve their Internal Assessment mark in the following semester and/or in University examinations.
- A candidate shall be declared to have passed in the Dissertation/Project report/Internship report if he/she gets not less than 40% marks in the Internal Assessment and End Semester Examinations and not less than 40% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- A candidate who gets less than 40% in the Dissertation / Internship/ Project Report must resubmit the thesis. Such candidates need to take again the Viva-Voce on the resubmitted report/thesis.

18.2 Grading of the Courses

The following table gives the marks, Grade points, Letter Grades, and classifications meant to indicate the overall academic performance of the candidate.

Conversion of Marks to Grade Points and Letter Grade (Performance in Course / Paper)

RANGE OF MARKS	GRADE POINTS	LETTER GRADE	SCRIPTION
- 100	**9.0 – 10.0**	**O**	**tstanding**
- 89	**8.0 – 8.9**	**D+**	**cellent**
- 79	**7.5 – 7.9**	**D**	**tinction**
- 74	**7.0 – 7.4**	**A+**	**ry Good**
- 69	**6.0 – 6.9**	**A**	**od**
- 59	**5.0 – 5.9**	**B**	**erage**
- 49	**4.0 – 4.9**	**C**	**isfactory**
- 39	**0.0**	**U**	**appear**
SENT	**0.0**	**AAA**	**SENT**

a) Successful candidates passing the examinations and earning a GPA between 9.0 and 10.0 and marks from 90 – 100 shall be declared to have Outstanding (O).

b) Successful candidates passing the examinations and earning GPA between 8.0 and 8.9 and marks from 80 - 89 shall be declared to have Excellent (D+).

c) Successful candidates passing the examinations and earning GPA between 7.5 – 7.9 and marks from 75 - 79 shall be declared to have Distinction (D).

d) Successful candidates passing the examinations and earning GPA between 7.0 – 7.4 and marks from 70 - 74 shall be declared to have Very Good (A+).

e) Successful candidates passing the examinations and earning GPA between 6.0 – 6.9 and marks from 60 - 69 shall be declared to have Good (A).

f) Successful candidates passing the examinations and earning GPA between 5.0 – 5.9 and marks from 50 - 59 shall be declared to have Average (B).

g) Successful candidates passing the examinations and earning GPA between 4.0 – 4.9 and marks from 40 - 49 shall be declared to have Satisfactory (C).

h) Candidates earning GPA between 0.0 and marks from 00 - 39 shall be declared to have Re-appear (U).

i) Absence from an examination shall not be taken as an attempt.

From the second semester onwards the total performance within a semester and continuous performance starting from the first semester are indicated respectively **by** Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA).

These two are calculated by the following formulate

GRADE POINT AVERAGE (GPA) = $\Sigma_i C_i G_i / \Sigma_i C_i$

GPA = Sum of the multiplication of grade points by the credits of the courses

Sum of the credits of the courses in a Semester

18.3 Classification of the final result

The final result of the candidate shall be based only on the CGPA earned by the candidate.

a) Successful candidates passing the examinations and earning CGPA between 9.5 and 10.0 shall be given Letter Grade (O+) and those who earned CGPA between 9.0 and 9.4 shall be given Letter Grade (O) and declared to have First Class –Exemplary*.

b) Successful candidates passing the examinations and earning CGPA between 7.5 and 7.9 shall be given Letter Grade (D), those who earned CGPA between 8.0 and 8.4 shall be given Letter Grade (D+) and those who earned CGPA between 8.5 and 8.9 shall be given Letter Grade (D++) and declared to have First Class with Distinction*.

c) Successful candidates passing the examinations and earning CGPA between 6.0 and 6.4 shall be given Letter Grade (A), those who earned CGPA between 6.5 and 6.9 shall be given Letter Grade (A+), and those who earned CGPA between 7.0 and 7.4 shall be given Letter Grade (A++) and declared to have First Class.

d) Successful candidates passing the examinations and earning CGPA between 5.0 and 5.4 shall be given Letter Grade (B) and those who earned CGPA between 5.5 and 5.9 shall be given Letter Grade (B+) and declared to have passed in the Second Class.

e) Successful candidates passing the examinations and earning CGPA between 4.0 and 4.4 shall be given Letter Grade (C) and those who earned CGPA between 4.5 and 4.9 shall be given Letter Grade (C+) and declared to have passed in the Third Class.

f) Absence from an examination shall not be taken as an attempt.

Final Result

CGPA	Grade	Classification of Final Result
9.5 – 10.0 9.0 and above but below 9.5	**O+** **O**	First Class – Exemplary*
8.5 and above but below 9.0 8.0 and above but below 8.5 7.5 and above but below 8.0	**D++** **D+** **D**	First Class with Distinction*
7.0 and above but below 7.5 6.5 and above but below 7.0 6.0 and above but below 6.5	**A++** **A+** **A**	First Class
5.5 and above but below 6.0 5.0 and above but below 5.5	**B+** **B**	Second Class
4.5 and above but below 5.0 4.0 and above but below 4.5	**C+** **C**	Third Class
0.0 and above but below 4.0	**U**	Re-appear

CUMULATIVE GRADE POINT AVERAGE (CGPA) = $\Sigma_n \Sigma_i C_{ni} G_{ni} / \Sigma_n \Sigma_i C_{ni}$

CGPA = Sum of the multiplication of grade points by the credits of the entire programme

Sum of the credits of the course for the entire Programme

Where '**Ci**' is the Credit earned for Course i in any semester; '**Gi**' is the Grade Point obtained by the student for Course i and 'n' refers to the semester in which such courses were credited.

CGPA (Cumulative Grade Point Average) = Average Grade Point of all the Courses passed starting from the first semester to the current semester.

Note: * The candidates who have passed in the first appearance and within the prescribed Semesters of the UG Programme (Major, Allied, and Elective courses alone) are eligible for this classification.