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

M. Des. Industrial Design

Regulations and Syllabus

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

CHOICE BASED CREDIT SYSTEM

COLLABORATIVE PROGRAMMES
Master of Design – Industrial Design
REGULATION AND SYLLABUS

Name of the Programme	: **M. Des. (Master of Design)**
Pattern	: Semester System
Mode	: Collaborative Programmes
Medium	: English
Duration	: Two Years
Eligibility	: Candidate for admission to **M. Des.** shall be required to have successfully passed an undergraduate program of minimum 3-year duration in any specialization, after 10+2 system, from any university or institute recognized by law in India. OR Full-time Diploma of minimum 4-year duration in Design / Fine Arts / Applied Arts / Architecture, after 10+2 system, from any university or institute recognized by law in India, subject to availability of equivalency certificate from the Alagappa University. Eligibility of candidates applying from abroad shall be evaluated for equivalence on a case-to-case basis.

Standard of Passing and Award of Division:

a) The total marks for theory courses shall have a contribution of 25% from Continuous Internal Assessment and 75% from External Assessment.
b) The total marks for practical/project courses shall have a contribution of 75% from Continuous Internal Assessment and 25% from External Assessment.
c) The overall passing minimum for each subject. shall be 50% in aggregate of Continuous Internal Assessment and External Assessment.
d) The minimum marks for passing in each External Assessment of theory/practical course shall be 50% of the marks prescribed for the course.
e) The minimum marks for passing in each Internal Assessment of theory/practical course shall be 50% of the marks prescribed for the course.
f) A candidate who secures 50% or more marks but less than 60% of the aggregate marks shall be awarded **SECOND CLASS.**
g) A candidate who secures 60% or more of the aggregate marks shall be awarded **FIRST CLASS.**
h) A candidate who secures 80% and above marks will be awarded **FIRST CLASS WITH DISTINCTION** (Provided the student pass all the courses in the first attempt)
i) The external assessment of the practical/project shall be done by a minimum of two examiners comprising of an Internal Examiner and External Examiner.

CONTINUOUS INTERNAL ASSESSMENT

The respective course faculty will continuously assess the performance of students in each course.

For theory papers, the Continuous Internal Assessment marks shall be awarded by the concerned course faculty based on the performance of the students in case studies, presentations, quizzes, practical, tests and other assignments.

For Practical/Project based courses, the Continuous Internal Assessment shall be conducted through evaluation of design assignments administered by the course faculty. The factors of assessment is given below:

FACTORS	OBJECTIVES	MARKS
UNDERSTANDING OF THE SUBJECT	KNOWLEDGE	15
LEVEL OF EXPLORATION/IDEATION	SKILL	15
THOROUGHNESS IN WORK	KNOWLEDGE	15
FUTURISTIC THINKING	ATTITUDE	15
COMPREHENSIVE PESENTATION	SKILL	15
	Total	**75**

PRACTICAL/PROJECT COURSES EXTERNAL ASSESSMENT PATTERN:

The learning efforts of the students through assignment execution shall be evaluated by external jury based on the following factors.

FACTORS	OBJECTIVES	MARKS
UNDERSTANDING OF THE SUBJECT	KNOWLEDGE	5
LEVEL OF EXPLORATION/IDEATION	SKILL	5
THOROUGHNESS IN WORK	KNOWLEDGE	5
FUTURISTIC THINKING	ATTITUDE	5
COMPREHENSIVE PESENTATION	SKILL	5

ATTENDANCE:

<table>
<tr><td colspan="4">ATTENDANCE GUIDELINES</td></tr>
<tr><td>0 - 59 %</td><td>60 - 69 %</td><td>70 - 74 %</td><td>75 - 100 %</td></tr>
<tr><td>NOT ELIGIBLE TO APPEAR FOR EXAMINATION</td><td>CONDONATION FEE + MEDICAL CERTIFICATES</td><td>CONDONATION FEE</td><td rowspan="2">ING THE ATTENDANCE REQUIREMENTS</td></tr>
<tr><td>SEMESTER DROP</td><td colspan="2">IF NOT DEPOSITED / SUBMITTED THEN SUBJECT ARREAR</td></tr>
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UNIVERSITY EXAMINATIONS:

The University theory examinations will be held at the end of each Semester that has a theory paper for a duration of three hours for each subject.

EVALUATION OF ANSWER PAPERS:

Answer papers of the University Examinations shall be subjected to evaluation by a Board of Examiners constituted by Alagappa University.

INTERNSHIP :

The course being professional, the students are required to undergo industrial exposure at the end of the 2nd semester of the program for a period of minimum one and half month or 45 days.

Assessment for internship shall be done by a team of one internal examiner and one external examiner.

DEGREE PROJECT :

The degree project can be executed either in an industrial studio or as an in-house project in the institute. The internal assessment shall be done in the form of two internal reviews and one pre-jury. Attending all the three assessments is mandatory.

The external assessment for degree project shall be done by a minimum of one internal examiner and one external examiner.

The student shall be allowed to appear for the final degree project if and only if he/she has cleared all the previous courses.

AWARD OF DEGREE:

Students who successfully complete the Program by meeting all the academic requirements within the stipulated period of three years from the year of admission shall be awarded the degree of M. Des (Master of Design).

PROGRAMME CONTENT AND SCHEME OF EXAMINATIONS

The course of study shall comprise the following subjects according to the syllabus prescribed from time to time.

M. Des. Industrial Design

Semester	Part	Course Code	Sub. Code	Title of the Paper	Theory| Practical	Credits	Hours/W	Marks		Total
								Int.	Ext.	
I	III	CC	82111	Art Design and Culture	P	4	4	75	25	100
		CC	82112	Ergonomics	P	4	4	75	25	100
		CC	82113	Foundation Drawing	P	4	6	75	25	100
		CC	82114	Elements of Design	P	4	6	75	25	100
		CC	82115	Design Process	P	4	4	75	25	100
		DSE	82116	Material Studio and Processes	P	4	6	75	25	100
				Library			2			
			Total			**24**	**32**	**450**	**150**	**600**
II	III	CC	82121	Aesthetics in Design	P	3	3	75	25	100
		CC	82122	Research Methodology	P	3	3	75	25	100
		CC	82123	Digital Design Tools	P	4	4	75	25	100
		CC	82124	Elements of Graphic Design	P	4	4	75	25	100
		CC	82125	Packaging Design and Printing	P	4	6	75	25	100
		CC	82126	Project I : Product design	P	4	6	75	25	100
		DSE	82127	Interaction Design	P	4	4	75	25	100
				Library			2			
			Total			**26**	**32**	**525**	**175**	**700**
	Industrial internship of 45 days (between II and III semester break)									
III	III	CC	82131	Internship	I	2	2	75	25	100
		CC	82132	Elements of Form	P	4	4	75	25	100
		CC	82133	Human Computer Interaction	P	2	4	75	25	100
		CC	82134	Design Management and Professional Practice	P	2	3	75	25	100
		CC	82135	Product Visualization and Presentation	P	4	4	75	25	100
		CC	82136	Project II – Technically Complex Product Design	P	4	4	75	25	100
		CC	82137	Project III – New Media Design	P	4	4	75	25	100
		DSE	82138	Design For Future	P	4	5	75	25	100
			Total			**26**	**30**	**600**	**200**	**800**
IV	III	CC	82141	Degree Project	PR	10	24	75	25	100
		CC	82142	Design Research Report writing	PR	4	6	75	25	100
			Total			**14**	**30**	**150**	**50**	**200**
Grand Total						**90**	**124**	**1725**	**575**	**2300**

SEMESTER I

Course Code	82111	Art Design and Culture	P	Credits -4 Hours -4
Objectives	1. To familiarize the students with Art, Design History and Movements. 2. Learn to understand elements of local culture and its influence in daily life. 3. Learn to conduct ethnographic research. 4. To familiarize with human role in development of culture through research. 5. To educate in research data collection and synthesis.			
Unit I	Different type of Art & Design movements - Indian Art History-History of design – Bauhaus. Introduction to Ethnography – Society – Community- Groups – culture – subculture People and consumers – type of consumers and cultures			
Unit II	Dominant cultural issues: Religion, caste, gender. Language. Alternative approaches – Cultural collaborations - Sensitive issues. Vernacular design Elements – Their contribution to Indian Design. Study of material and cultural edifices, Iconography			
Unit III	Stages of ethnographic research - Selection of local area to study – Review of literature – Sample selection - observations and data collections			
Unit IV	Research and analysis – Cultural impact in design - Design impact in culture. Design Culture: Importance of human behavior in designing public spaces.			
Unit V	Field Visit: The ethnographical aspect of the place – Visual documentations – Photographs – Sketches – Visual notes. Compilation and presentation of the data.			

Reference and Text books

- *Keith Negus & Michael Pickering (2004), Creativity, Communication and Cultural Value, Sage Publications*
- *Nigel Rapport & Joanna Overing (2014), Key Concepts in Social and Cultural Anthropology, Routledge, London*
- *Jasleen Dhamija (2005), Handicrafts of India Our Living Cultural Tradition, National Book Trust*
- *Tim Ingold, (2007), Lines: A brief History, Routledge Publication*
- *Marcus Banks & David Zeitlyn, (2015), Visual Methods in Social research, 2nd Edition, SAGE Publications*
- *Sara Pink, (2015), Doing Sensory Ethnography, 2nd Edition, SAGE Publications*

	Course Outcomes	Knowledge Level
CO1	Understand art, design history and movements	K2
CO2	Discuss elements of culture in a society	K4
CO3	Acquire knowledge to conduct ethnographic research	K2
CO4	Critically evaluate the cultural impact in design	K5
CO5	Acquire knowledge to analyse and synthesize field research data	K2

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	2	1	1	3	3	3	3	3	3
CO2	1	2	1	1	3	3	3	3	3	3
CO3	1	2	1	1	3	3	3	3	3	3
CO4	1	2	1	1	3	3	3	3	3	3
CO5	1	2	1	1	3	3	3	3	3	3
W. AV	**1**	**2**	**1**	**1**	**3**	**3**	**3**	**3**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	3	3	3
CO2	2	2	3	3	3
CO3	2	2	3	3	3
CO4	2	2	3	3	3
CO5	2	2	3	3	3
W. AV	**2**	**2**	**3**	**3**	**3**

Course Designed By	BOS Date	Approved By
Dr Aravind.S Mr.Ariharasunthan. R	07.08.2023	BOS

Course Code	82112	Ergonomics	P	Credits -4 Hours -4
Objectives	1. To educate the basics of ergonomic considerations in product design 2. To familiarize with human physiology and its various postural configuration 3. To educate the basics of cognitive ergonomics 4. To develop a sensitivity to the importance of ergonomics in daily life by analyzing a product. 5. To develop designs by employing ergonomic theory			
Unit I	Introduction to ergonomics – Human physiology - Areas of application – workstation – daily life Anthropometric data measuring sitting and standing postures - posture analysis – planes of references – adduction – abduction – extension – flexion – types of body – endomorph – ectomorph – mesomorph – child – adult- elderly ergonomic considerations.			
Unit II	Elements of cognitive ergonomics – sensation – perception and cognition – memory – emotion – attention –Human Processor model – Motor plan – perceptual bias – cognitive load - affordance – proprioception.			
Unit III	Norman's stages of action – response mechanism –episodic memory – experience activity mapping- stimulus response – action – reward – repetitive strain injuries – fatigue.			
Unit IV	Human Machine Interfaces – Product designs- domestic and industrial spaces. percentiles-Ergonomic/Human factors tools in design			
Unit V	Identification of a point of improvement in a product. Ergonomic factors to be improved. Development and testing of the envisaged product - Presentation of the product developed.			

Reference and Text books

- *D. Alexander, Applied Ergonomics, CRC press,2020*
- *Nikolaos Gkikas, Automotive Ergonomics: Driver-Vehicle Interaction, CRC press, 2012*
- Neville Stanton et al., Handbook of Human Factors and Ergonomics Methods, CRC Press, 2005
- J long A Whitefield, Cognitive Ergonomics and Human Computer Interaction , Cambridge University Press, 2011

Web resources

https://www.humanfactors.com/

https://ehs.oregonstate.edu/sites/ehs.oregonstate.edu/files/pdf/ergo/ergonomicsanddesignreferenceguidewhitepaper.pdf

Course Outcomes		Knowledge Level
CO1	Utilize the basics of ergonomic considerations in design creations	**K3**
CO2	Utilize the basics of cognitive ergonomics in designed interactions	**K3**
CO3	Identify the effects of ergonomics in daily life	**K1**
CO4	Critically analyze any design through the lens of ergonomics	**K5**
CO5	Create designs with ergonomics as an important factor of consideration	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	3	3	2	3	2	2	1	3
CO2	2	2	3	3	2	3	2	2	1	3
CO3	2	2	3	3	2	3	2	2	1	3
CO4	2	2	3	3	2	3	2	2	1	3
CO5	2	2	3	3	2	3	2	2	1	3
W. AV	**2**	**2**	**3**	**3**	**2**	**3**	**2**	**2**	**1**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**2**	**3**	**2**	**3**
CO2	**3**	**2**	**3**	**2**	**3**
CO3	**3**	**2**	**3**	**2**	**3**
CO4	**3**	**2**	**3**	**2**	**3**
CO5	**3**	**2**	**3**	**2**	**3**
W. AV	**3**	**2**	**3**	**2**	**3**

Course Designed By	BOS Date	Approved By
Dr Aravind.S Mr.Ariharasunthan. R	07.08.2023	BOS

Course Code	82113	Foundation Drawing	P	Credits – 4 Hours -6
Objectives	To understand and appreciate drawing as a medium of communication. To gain insights into personal drawing capabilities through basic exercises. To understand the various perspectives in drawing. To familiarize with the techniques to create authentic drawings of objects in natural settings. To gain a critical appreciation for the expressive power of drawing to communicate significant content and form.			
Unit I	Elements of Art – Line. Exercise with different types of lines, i.e., Horizontal lines, Vertical Lines, Diagonal lines, understanding its applications and design orientations. Realization of personal style.			
Unit II	Perspective drawing study - 1 point, 2 points, and 3 points perspective, (Arial View- Bird Eye View, Worm Eye View, Foreshortening). Understanding the design drawing with perspective applications.			
Unit III	Understanding Light and Shadow, Gray Scale - basic geometrical forms- Cuboid, Cone, Sphere, and others. Rendering natural and man-made objects using traditional and novel mediums.			
Unit IV	Nature drawing study - Drawing organic forms from life and/or images. Understanding the light and shadow, textures, materials, rendering styles and techniques. Indoor / Outdoor Study.			
Unit V	Study of human body, develop a Male and female proportion understanding, study the basic anatomy, understand the humans in motions and poses Sketching.			

Reference and Text books

- *Scott Robertson & Thomas Bertlin (2013), How to Draw: Drawing And Sketching Objects and Environments From Your Imagination, , Design Studio Press*
- *Koos Eissen & Rosilin Steur (2009), Sketching: Drawing Techniques for Product Designers, BIS Publishers*
- *Steven B. Reddy (2018), Everyday Sketching and Drawing: Five Steps to a Unique and Personal Sketchbook Habit, Monacelli Press*
- *Andrew Loomis (2011), "Drawing the Head and Hands", Titan Publisher*
- *Alan Pipes (1990), Drawing for 3-dimensional design: Concepts, Illustration, Presentation, Thames & Hudson Publication.*

Web Resources

https://artmuseum.princeton.edu/learn/art-making/online-drawing-classes

Course Outcomes		Knowledge Level
CO1	Understand and realize personal drawings styles and skills.	**K2**
CO2	Create authentic perspective drawings of objects.	**K6**
CO3	Create drawing compositions with vivid emphasis on the basic visual constituents of an object.	**K6**
CO4	Demonstrate skills to draw in natural settings.	**K2**
CO5	Show skills in drawing human figures.	**K2**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	-	-	-	2	1	2	2	3
CO2	3	3	-	-	-	2	1	2	2	3
3CO3	3	3	1	-	-	2	1	2	2	3
CO4	3	3	1	-	2	1	1	2	2	3
CO5	3	2	-	3	1	1	1	1	2	3
W. AV	**3**	**2.8**	**0.4**	**0.6**	**0.6**	**1.6**	**1**	**1.8**	**2**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	1	3	3
CO2	3	3	1	1	3
CO3	3	3	3	1	3
CO4	3	3	1	1	3
CO5	1	2	3	2	3
W. AV	**2.4**	**2.8**	**1.8**	**1.6**	**3**

Course Designed By	BOS Date	Approved By
Dr Aravind.S Mr.Ariharasunthan. R	07.08.2023	BOS

Course Code	82114	Elements of Design	P	Credits – 4 Hours -6
Objectives	To educate about the elements of Design. To educate about the Principles of Design. To emphasize on the cognitive theories governing design. To develop a practical understanding of order and space in design. To learn the foundations of aesthetics in design.			
Unit I	Elements of design: Point – Lines – Straight, curvy, bold and expressive lines; Shapes – Geometric, Organic and Abstract shapes; Form – Contours; Space – Negative-Positive space; Value – high value, low value; Colors – hue and shades; and Texture - patterns.			
Unit II	Principles of design: Emphasis - Balance and Alignment - Repetition – Unity - Proportion- Movement - White Space. Figure-Ground Relationship- 2D monochrome/colour model creations to understand space.			
Unit III	Gestalt theory; Principles- Applications of principles in design; Law of closure, Law of common region, Figure-Ground, Law of proximity, Symmetry, and order. Basic introduction to the human senses – visual, aural, and haptic- physiology			
Unit IV	Order and Space: Fibonacci curve - Platonic solids - Archimedean solids – Polyhedral Fractals – Constructing solids with paper - Wire. Fusion of symmetric and asymmetric objects.			
Unit V	Aesthetics: Hierarchy, Balance, Scale, Repetition, Contrast, Proximity, Pattern. Golden Ratio, Von Restorff Effect – Cognitive understanding. Aesthetics and Usability.			

Reference and Textbooks

1. *William Lidwell, Kritina Holden & Jill Butler (2010), Universal Principles of Design, 2nd Edition, Rockport Publishers*
2. *Agoston (1987), G. A., Color Theory and Its Application in Art and Design, Springer, Berlin, Heidelberg*
3. *Hisako Ichiki & Takao Umehara (2005), Extra Ordinary: An amusing way for unleashing your creativity, Rockport Publishers*
4. *Joyce Wycoff (1991), Mind Mapping: your Personal guide to Exploring Creativity and Problem-Solving, Berkley Books, New York*
5. *Ed Catmull (2014), Creativity, INC: Overcoming the unseen forces that Stand in the way of True Inspiration, Bantam Press*

Web Resources

https://www.extension.iastate.edu/4hfiles/statefair/eehandbook/eehjpdesign4h634.pdf
https://guides.lib.berkeley.edu/c.php?g=920740&p=6634741
https://www.wichita.edu/services/mrc/OIR/Creative/1Design/design-elements.php

Course Outcomes		Knowledge Level
CO1	Demonstrate thorough knowledge in elements of design.	**K3**
CO2	Demonstrate thorough knowledge in principles of design	**K3**
CO3	Adept in utilizing Gestalt theory for design applications.	**K3**
CO4	Create designs using order and space effectively.	**K6**
CO5	Analyze designs for their aesthetic content.	**K4**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	2	1	1	2	1	3	3
CO2	3	2	2	2	1	1	2	1	3	3
CO3	3	2	2	2	1	1	2	1	3	3
CO4	3	2	2	2	1	1	2	1	3	3
CO5	3	2	2	2	1	1	2	1	3	3
W. AV	**3**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	2	1	2
CO2	3	1	2	1	2
CO3	3	1	2	1	2
CO4	3	1	2	1	2
CO5	3	1	2	1	2
W. AV	**3**	**1**	**2**	**1**	**2**

Course Designed By	BOS Date	Approved By
Dr Aravind.S Mr.Ariharasunthan. R	07.08.2023	BOS

Course Code	82115	Design Process	P	Credits – 4 Hours -4
Objectives	1. Educate on the details of design process 2. Familiarise with various data presentation and abstraction techniques 3. Develop an understanding of various brain storming techniques 4. Familiarize with methods to present a concept. 5. Employ design process techniques to conduct a mini project.			
Unit I	Introduction to design process, design premise, design brief, constraints, and criteria for designing. User Studies- Maps – ecosystem map- affinity map- empathy map. Design space, solution space, prototyping, iterative design , divergence and convergence in design process. User in design.			
Unit II	Working board: Preliminary concepts using storyboard, material board, form board, Mood boards. User flow, Context mapping, Primary research, Secondary research data, Data analysis and synthesis, basic statistics, sample space.			
Unit III	Brain storming, mind mapping, research, market study, forecast, inspiration and doodling – field visit and case study, prototypes – rough- medium- high fidelity prototypes. User testing – KPI. Sustainability.			
Unit IV	Concept of presentation, surface development, exploratory drawings, illustration, specification sheet, cost sheet and technical packages. Product rendering.			
Unit V	Development of a product through detailed practice of design, Creating mock-up, Design drawing , Presentation, Transition from brief to detailed design brief			

Reference and Text books

- *Bryan Lawson, (2005), How Designers Think: The Design Process Demystified, Om Books*
- *Richard Morris, (2009), Fundamentals of Product Design, Academic Press*
- *Tim Parsons, (2009), Thinking: Objects Contemporary Approaches to Product Design, Academic Press.*

Web Resources

https://arl.human.cornell.edu/PAGES_Delft/Delft_Design_Guide.pdf
https://web.stanford.edu/~mshanks/MichaelShanks/files/509554.pdf

Course Outcomes		Knowledge Level
CO1	Demonstrate knowledge of design process	**K2**
CO2	Effectively collect, group, analyse data and synthesize information	**K3**
CO3	Concretization of information as prototypes	**K4**
CO4	Development and presentation of the final concept	**K6**
CO5	Effectively employ design process to execute a project.	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	-	-	2	1	1	2	3	3
CO2	3	3	-	-	1	-	1	2	3	3
CO3	3	3	-	-	-	1	1	2	3	3
CO4	3	3	-	-	-	-	-	3	3	3
CO5	3	3	-	-	1	1	2	2	3	3
W. AV	**3**	**3**	**-**	**-**	**0.8**	**0.6**	**1**	**2.2**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	3	2
CO2	3	2	2	3	2
CO3	3	2	2	3	2
CO4	3	2	2	3	2
CO5	3	2	2	3	2
W. AV	**3**	**2**	**2**	**3**	**2**

Course Designed By	BOS Date	Approved By
Dr Aravind.S Mr.Ariharasunthan. R	07.08.2023	BOS

DSE	82116	Material Studio and Processes	P	Credits -4 Hours -6
Objectives	1. To educate the characteristics of materials such as clay, plaster of paris, wood and metal. 2. To understand the methods of preparations and relevant tools of operation based on the material. 3. To develop basic forms/structures out of various materials using appropriate tools and machines. 4. To recognize the right choice of material based on the job. 5. To apply material know-how to develop a basic form.			
Unit I	Introduction to materials – Materials suitable for prototyping – Material study based on products and industry- Traditional materials – hybrid materials – composites – applications. Methods of handling each material. Material Operations			
Unit II	Workshop Practices – Safety Equipments - tool handling – Machine handling- Measuring Instruments – Sketches and Documentation – Workshop Etiquettes – Workspace Management			
Unit III	Metal– working with Aluminium, Steel – Sheet Metal – Wire- Welding – Bending Operations - Creating a simple form – Surface Treatments in Metal - Buffing Painting - Polishing			
Unit IV	Wood: - types of wood – Hard, Soft, Man made wood – Grains, Tone, Density – Joints – Types of joints – Wooden block, cutting in various angles, interlocking method – Surface Treatment in wood – Polishing and Painting.			
Unit V	Traditional/Common Plastic Materials - Plaster of paris - carving, making basic forms. Clay- Types of Clay - Kneading – Curing – Natural Composites - Pottery – carving – toys and sculptures- Display.			

Reference and Textbooks

- *Chris Lefteri (2005), Wood: Materials for Inspirational Design, Rotovision Publication*
- *Mike Ashby & Kara Johnson (2014), Materials and Design: Art and science of material selection in product design, 3rd Edition, Butterworth – Heinemann*
- *Inna Alesina and Ellen Lupton (2010), Exploring Materials: Creative Design for Everyday Objects, Princeton Architectural Press*
- *Chris Lefteri, Metals (2004): Material for Inspirational Design, Rotovision Publication*

Web Resources

http://www.ijdesign.org/index.php/IJDesign/article/view/129/78
https://www.sciencedirect.com/journal/materials-and-design

Course Outcomes		Knowledge Level
CO1	Understand the various types of material based on its characteristics and applications.	**K2**
CO2	Demonstrate good workshop and material handling practices	**K2**
CO3	Demonstrate material specific processes in prototype making.	**K2**
CO4	Create basic models using various types of materials like clay, metal and wood.	**K6**
CO5	Demonstrate product finishing skills appropriate to the material used.	**K2**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	1	2	2	2	1	2	3
CO2	3	3	3	1	2	1	1	-	2	3
CO3	3	3	3	1	2	1	1	-	2	3
CO4	3	3	3	1	2	1	1	-	2	3
CO5	3	3	3	1	2	1	1	-	2	3
W. AV	**3**	**3**	**3**	**1**	**2**	**1.2**	**1.2**	**0.2**	**2**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	3	2
CO2	3	3	1	3	2
CO3	3	3	1	1	2
CO4	3	3	1	1	2
CO5	3	3	1	1	2
W. AV	3	3	1.2	1.8	2

Course Designed By	BOS Date	Approved By
Dr Aravind.S Mr.Ariharasunthan. R	07.08.2023	BOS

SEMESTER II

CC	82121	Aesthetics in Design	P	Credits -3	Hours -3
Objectives	1. To familiarize with the history of design and the evolution of aesthetic sensibilities. 2. To understand the role of aesthetics in present design and development. 3. To develop an appreciation for the contributions of culture in aesthetics. 4. To educate about the elements of Vernacular and Indian aesthetics. To learn the role of aesthetics in product design through practice.				
Unit I	Design history. The historical social and cultural developments that punctuated the birth and development of design as a discipline.Understanding the term 'aesthetics', different designs in the world, Scandinavian, Modern, Minimal, Bauhaus, and Bohemian. Evolution of aesthetics across the world, history of various designs, Implementation and innovations in various aesthetics and its history. - World aesthetics in Art, architecture, Music, Fashion, Dance, Religion & Folk.				
Unit II	Product Aesthetics-product identity-Useability-Aesthetics of flow-Emotional aspects of product aesthetics.				
Unit III	Cultural aspects of aesthetics, Global culture - social customs, family life, Housing, Clothing, food, Class structure, Value system, and study of design festivals.				
Unit IV	Indian Aesthetics - Different types of Indian paintings, Handicrafts across India, Sculpture styles varying across India, Indian languages and scripts, Traditional dance forms – Tamil Aesthetics				
Unit V	Aesthetics in design – Sketch, ideation of inspired design, case studies.				
Reference and Text books • *S.G.Kulkarni, Art, Aesthetics and Philosophy: Reflections on Coomaraswamy, D.K Printworld (P)Ltd* • *Priyadarshi Patnaik (2013), Rasa in Aesthetics: An Application of Rasa Theory to Modern western Literature, DK Printworld (p) Ltd.,* • *Shyamala Gupta (1991), Art, Beauty and Creativity: Indian and Western Aesthetics, DK Printworld (p) Ltd.*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Relate and classify the aesthetic components of a product based on its design evolution.	**K2**
CO2	Assess and appreciate the effect of aesthetics in a product.	**K5**
CO3	Interpret the cultural ingredients in the aesthetic elements of a product.	**K5**
CO4	Develop an appreciation for the role of regional aesthetics in product design.	**K6**
CO5	Construct a product to demonstrate to emphasize the role of aesthetics in product design.	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	-	1	3	3	1	2	3
CO2	3	2	1	1	1	3	3	1	2	3
CO3	3	1	1	-	1	3	3	1	2	3
CO4	3	1	1	-	1	3	3	1	2	3
CO5	3	2	1	2	1	3	3	2	2	3
W. AV	**3**	**1.6**	**1**	**0.6**	**1**	**3**	**3**	**1.2**	**2**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	3
CO2	2	3	3	2	3
CO3	2	3	3	2	3
CO4	2	3	2	2	3
CO5	3	3	2	2	2
W. AV	**2.2**	**3**	**2.6**	**2.2**	**2.8**

CC	82122	**Research Methodology**	**P**	**Credits- 3**	**Hours -3**
Objectives	• To familiarize with the types of research. • To educate the nuances of research in design. • To develop capabilities to formulate a research problem. • To understand the process of data collection, analysis and synthesis for research. • To design and develop a product to exercise learnings in design research				
Unit I	Introduction to Research: Types of Research - Quantitative and Qualitative Research Methodology- Conducting the Literature Review				
Unit II	Introduction to design research – difference between scientific research and design research – types of design research – research in design vs research by design – design premise and detailed design brief				
Unit III	Selecting a research area - Writing an Abstract - Formulating research aim - Objectives and research questions - Developing Hypothesis - Questionnaire design –Psychophysical scales - Various methods of Data Collection - Collecting Primary data and Secondary data				
Unit IV	Direct observation and activity analysis – Prototyping as a research tool - Photography as a data collection method - Data Analysis and Findings - Research Conclusion.				
Unit V	Develop a simple product of choice and draw insights into design research by comparing and adding existing understanding on research by design - Documentation –Project Writing.				
Reference and Textbooks • *Qualitative Research & Evaluation Methods, Michael Quinn Patton, Sage Publications, 3rd edition , 2002* • *Case Study Research :what, why and how?, Peter Swanborn, Sage Publications, 2010* • *Research Design: Qualitative, Quantitative and Mixed Methods Approaches, John Creswell W, Sage Publications, 3rd edition , 2009* • *Wimmer & Dominic (2014) Mass media research, An introduction. Thomson publishing company.*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express a know-how of the types of research methods.	**K2**
CO2	Determine and justify the choice of design research method	**K5**
CO3	Construct a design research problem	**K6**
CO4	Show capabilities to analyze and synthesize research data	**K2**
CO5	Interpret design research knowledge through project execution	**K5**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	-	-	1	1	2	2	2	3
CO2	3	3	1	-	1	1	2	2	2	3
CO3	3	2	2	-	1	1	2	2	2	3
CO4	3	2	2	-	1	1	2	2	2	3
CO5	3	3	1	1	1	2	3	3	3	3
W. AV	**3**	**2.6**	**1.2**	**0.2**	**1**	**1.2**	**2.2**	**2.2**	**2.2**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

CC	82123	Digital Design Tools	P	Credits -4	Hours -4
Objectives	• Introduce students to basic 2D graphic digital design tools, their use, possibilities and limitations • Introduce students to basic 3D graphic digital design tools, their use, possibilities and limitations • Introduce students to basic AI graphic digital design tools, their use, possibilities and limitations • Emphasise the commonalities and differences between conventional and AI design tools • Develop a comprehensive understanding of the use of digital design tools in product design through a project.				
Unit I	Introduction to basic 2D graphic digital design tools – tools and techniques – digital representation techniques – optimize workflow – rendering techniques and applications.				
Unit II	Introduction to basic 3D graphic digital design tools – tools and techniques - skills for three - dimensional modelling – Understanding NURBS (Non-Uniform Rational Basis Spline) - 2D line drawings - 3D construction drawings - add materials on to the 3D model - Customize materials with textures, colours and labels. Rendering (with sunlight and materiality) - Parts Assemblies				
Unit III	AI tools to generate graphic designs. Explore the various tools available. Generate both 2D and 3Dcompositions using AI tools. Evaluate the tools for their usage and effectiveness.				
Unit IV	Project I: Use traditional digital design tools in the ideation, concept design, development and presentation. Use AI digital design tools in the ideation, concept design, development and presentation. Understand the gaps between conventional design tools and AI tools. Context pitfalls using AI tools by studying the output.				
Unit V	Project II: Design a Product create visuals for the same. Create instruction manuals/ flyers/ propaganda visuals for the same product using conventional Design tools				
Reference and Text books • *K Balasundaram; S V Parthasarathy, Technical Drawing: With an Introduction to Autocad* • *Mark von Wodtke,Design with Digital Tools: Using New Media Creatively, Mc-Graw Hill,2000* • *ALBERT TETTEH ADJEI, Digital Artistry: Mastering Digital Tools and Techniques for Visual and Graphic Design: Mastering Visual Design with Efficient Tools, Techniques, and Creative Skills,2023* • *Barrett Williams, Digital Art and Illustrations: Master the Tools and Techniques for Creating Eye-catching Digital Artworks,2023*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Create designs using 2D digital design tools	**K6**
CO2	Create designs using 3D digital design tools	**K6**
CO3	Generate designs using AI design tools	**K4**
CO4	Develop an appreciation for the effectiveness of conventional vs AI digital design tools based on their applicability	**K6**
CO5	Express an understanding of the nuances of the digital design tools by executing a project.	**K2**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	-	-	1	1	2	2	2	3
CO2	3	3	1	-	1	1	2	2	2	3
CO3	3	2	2	-	1	1	2	2	2	3
CO4	3	2	2	-	1	1	2	2	2	3
CO5	3	3	1	1	1	2	3	3	3	3
W. AV	**3**	**2.6**	**1.2**	**0.2**	**1**	**1.2**	**2.2**	**2.2**	**2.2**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

CC	82124	Elements of Graphic Design	P	Credits -4	Hours -4
Objectives	• Introduce the students to the nuances of branding • Familiarize the students with the basic governing parameters in graphic design • Enable a basic understanding of graphic design by executing basic design applications. • Train students to create a graphic identity of an identified brand/product by creating collaterals. • Comprehend the effect of graphic design practice by creating a brand and the graphics for it.				
Unit I	Introduction to branding - definition, history, and developments - various branding strategies - branding for existing or hypothetical company – research and identifying attributes – target audience – market study.				
Unit II	Design Basics: Measurements- Absolute and Relative. Standard sizes. Paper sizes - Book and Poster sizes- Screen sizes etc.				
Unit III	Create a visual identity – logo – Graphic design and Typographical exploration. Design based on Vector Graphics: Logo and corporate identity design - Symbols or icons for various environments such as schools, factories, and hospitals, Graphics in products, bottle/can sleeves.				
Unit IV	Design Based on Raster Graphics: Poster design, Advertisement design, Typographic design - Book cover- Understanding Spine, Flaps etc. Stationary Design: VC, Envelope - Letterheads, visiting cards - Brochure: Layout, Folds. Applying to collaterals – Tabletop – T-shirt – Cap -3D explorations.				
Unit V	Developing a Brand manual and Display/mock-ups.				

Reference and Text books

- *Timothy Samara (2002), Making and Breaking the Grid: A Graphic design layout workshop, Rockport Publishers.*
- *Chen Ci Liang, Greatest Hits of Corporate Layouts, Page One Publishing*
- *Big III Business Layout: The Best Globe Brand Design, Shenzhen Hightone book co. Ltd.*
- *Robert Klaten (2009), Los Logos, Gestalten Publisher.*
  Gestalten & Javier Errea, Newspaper Design: Editorial Design from the World's Best Newsroom, Gestalten Publication.

Web Resources

Course Outcomes		Knowledge Level
CO1	Students are able to relate to the nuances of branding in real world scenarios	**K1**
CO2	Express an understanding of basic governing parameters in graphic design during practice	**K2**
CO3	Generate creative graphic design contents	**K4**
CO4	Justify the effect of graphic design in product design	**K5**
CO5	Explain effect of graphic design practice in brand/product creation and propagation	**K5**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	2	2
CO2	3	3	3	3	3	3	3	2	2	2
CO3	3	3	3	3	3	3	3	2	2	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	3	3	3	3	3	3	3	3	3
W. AV	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2.2**	**2.2**	**2.2**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	2	2	2
CO2	2	2	2	2	2
CO3	2	2	2	2	2
CO4	2	2	2	2	2
CO5	2	2	2	2	2
W. AV	2	2	2	2	2

CC	82125	**Packaging Design and Printing**	**P**	**Credits- 4**	**Hours -6**
Objectives	• Introduce students to the fundamentals of packaging, it's need and function. • Educate students about the types of packaging and their methods • Develop an understanding of the material and graphic considerations in packages • Recognise the importance of the role of aesthetics in package design • Develop a thorough understanding of Packaging by practicing a design				
Unit I	Introduction about Packaging and its use - Need for packaging - Functions of packaging - Types and selection of package - Packaging hazards - Interaction of package and contents - Shelf life-estimation - Packaging materials.				
Unit II	Different types of packaging- Primary, secondary and tertiary, its applications - Package design, Package specification, types of design - Luxe, bold, charming, casual, nostalgic, Crisp, Structural graphics., Packaging Methods and procedures, types of loads, unit loads, stacking load, elements and principles of design.				
Unit III	Materials used for packaging, Selection criteria, Package colour-selection criteria- applications - Package specification - graphic structure - fundamentals of graphic layout and design – mandatory information – codes and symbols – ergonomically relevant considerations – special printing / production technologies – understanding various types of material used for packaging like paper, board, plastic, polymers-based material. wood. jute, fabric, metal, glass, clay, cement etc.				
Unit IV	Fundamentals of graphic lay out design. Aesthetic considerations in Packaging. Product graphics. Cultural aspects. Future of Packaging. Sustainability aspects in packaging.				
Unit V	Design packaging for a product-keyline drawing, structure and graphics. Present a mock up.				
Reference and Textbooks • *Stacey King, Packaging Makeovers: Graphic redesign for market change, Rockport Publishers.* • *Howard Milton, Packaging Design, Design Council.* • *Marianne R. Klimchuk & Sandra A. Krasovec, Packaging Design: Successful Product Branding from Concept to Shelf, 2nd Edition, John Wiley & Sons Inc.* • *Packaging Makeovers: Graphic redesign for market change, Stacey King, Rockport Publishers* • *Packaging Design, Howard Milton, Design Council*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Describe the need for packaging	**K1**
CO2	Identify the types of packaging	**K3**
CO3	Choose the best fit material and graphics as per the packaging need.	**K5**
CO4	Justify the role of aesthetics in package design	**K5**
CO5	Design a package for a product	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	2	2	2	2	2	1	1
CO2	2	2	2	2	2	2	2	2	1	1
CO3	2	2	2	2	2	2	2	2	1	1
CO4	2	2	2	2	2	2	2	2	1	1
CO5	3	3	3	3	3	3	3	3	3	3
W. AV	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**1.4**	**1.4**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
W. AV	3	3	3	3	3

CC	82126	Project -1 Product Design	P	Credits -4	Hours -6
Objectives	• Educate students about the basics of product design • Enable students to factor material considerations in product design • Familiarize students about the technical working principles in daily life products. • Introduce students to the importance of form evolution in product design • Enhance the understanding of product design by practicing development of a product				
Unit I	Introduction to Simple Product Design - Understanding material – Material considerations in product design. Selection of simple product – understanding the purpose. Design process – research and documentation - problem identification - setting parameters - Conceptualization - giving form importance.				
Unit II	User study- product conceptualization - selection of product to design- explore conventional / unconventional or hybrid materials for form making.				
Unit III	Understanding the principles behind how things work. Understand the principle of rotary machines like lathe, drilling machine and electrical and electronic appliances like Vacuum cleaner, bread toaster, Iron box etc				
Unit IV	Conceptualization- giving importance to form. Debate "form follows function". Function and technical components influence in form. Material and manufacturing influences in form and product creation.				
Unit V	Design a simple product after design research. User test and present the product.				
Reference and Text books • *Karl Ulrich and Steven Eppinger -Product Design and Development, McGraw-Hill,2019* • *Kritina Holden -Universal Principles of Design, Rockport Publishers, 2003* • *Mike Ashby – Materials and Design, Butterworth-Heinemann,2002*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express knowledge about the nuances in product design	**K2**
CO2	Illustrate material selection capabilities in product design.	**K2**
CO3	Distinguish the technical working principles in daily life products.	**K4**
CO4	Express capabilities to generate forms with intent	**K2**
CO5	Develop a product with emphasis on form	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	1	2	2	2	3	3
CO2	3	3	2	3	-	1	2	1	2	2
CO3	3	2	1	3	-	2	2	1	3	3
CO4	3	2	1	3	1	2	3	2	3	3
CO5	3	3	2	3	2	3	3	2	3	3
W. AV	**3**	**2.6**	**1.8**	**3**	**0.8**	**2**	**2.4**	**1.6**	**2.8**	**2.8**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	2	2
CO2	3	3	3	2	2
CO3	3	3	3	2	2
CO4	3	3	3	2	2
CO5	3	3	3	3	2
W. AV	**3**	**2.8**	**3**	**2.2**	**2**

DSE	82127	Interaction Design	P	Credits- 4	Hours -4
Objectives	1.To familiarise students with the foundations of interaction design 2.To educate students about different facets of interaction design 3.To emphasize about user centricity in interaction design 4.To recognise the role of cognitive design in interaction 5. To align practice with learning through an interaction design project				
Unit I	Basic concepts in Interaction Design - Interaction Models – issues in man-machine interface - ergonomic considerations - dialog				
Unit II	Paradigms for interaction – time sharing - Video display units - Programming toolkits - Sensor based context aware interaction - Multi-modal displays etc.				
Unit III	Interaction Design Process: User focus – Scenarios - Navigation Design - Screen Design and Layout - Iteration and Prototyping.				
Unit IV	Rules and Heuristics Principles – Cognitive design – sensation -perception – multisensory design				
Unit V	Design project: design of an interactive product for a selected requirement - Deliverables will include research and insights - feature map - site map - page layouts – storyboard - visual design and style guide.				

Reference and Textbooks

- *Theo Mandel (1997), The Elements of User Interface Design, John Wiley & Sons*
- *Alan Cooper, Robert Reimann & David Cronin, (2016), About face: The Essentials of Interface Design, Wiley, p 720.*
- *Louis Rosenfield (2015), Information Architecture for the Web and Beyond, Schroff*

Web Resources

Course Outcomes		Knowledge Level
CO1	Show familiarity with interaction design concepts	**K2**
CO2	Relate interaction design scenarios with theory	**K2**
CO3	Demonstrate the importance of user studies in interaction design	**K3**
CO4	Prioritize user cognitive factors in deigning interactions	**K5**
CO5	Construct am interaction design application to exercise theory	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	2	2	3	3	2	2	3
CO2	3	2	1	1	1	3	3	2	2	2
CO3	3	3	-	2	2	3	3	2	3	2
CO4	3	2	-	3	1	3	3	2	3	2
CO5	3	3	-	2	1	3	3	2	3	3
W. AV	**3**	**2.4**	**0.2**	**2**	**1.4**	**3**	**3**	**2**	**2.6**	**2.4**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	2	2
CO2	3	3	2	2	3
CO3	2	3	3	3	3
CO4	2	3	3	3	3
CO5	3	3	3	3	3
W. AV	**2.6**	**2.8**	**2.6**	**2.6**	**2.8**

SEMESTER III

CC	82131	Internship	I	Credits- 2	Hours -2
Objectives	To get exposed to industrial practices in Design				
	• This internship is aimed at a short exposure to the practices in a design studio. • The students are expected to get exposed to design practices in a studio. • The improve their soft skills, like time management, project planning and execution. Use of new tools. • Improve presentation skills.				
Reference and Textbooks • *Brian Sullivan, The Design Studio Method: Creative Problem Solving, Routledge,2015*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Define the role of a designer in a studio	**K2**
CO2	Determine the appropriate plan and resources for a design project	**K5**
CO3	Express improvements or innovations to design process based on pragmatic needs of the job in hand	**K5**
CO4	Create a project report	**K3**
CO5	Practice Presentation techniques	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3
W. AV	3	3	3	3	3	3	3	3	3	3

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
W. AV	3	3	3	3	3

CC	82132	Elements of Form	P	Credits -4	Hours -4
Objectives	• Introduce students to the elements of form • Enhance the understanding of forms through cognitive dimensions • Impart capabilities to observe forms and the operations possible on them • Enable students to imagine form manipulations to generate new forms • Develop capabilities to generate forms to convey an intent				
Unit I	Elements of form: Transformation of the point, the line, the plane and the volume. Simple geometric forms - complex forms - nature and form - human figure - space and form.				
Unit II	Cognitive aspects of form – Form as a medium of communication- Aesthetics- beauty vs identity. Form composition dominant, subdominant and subordinate elements. Visual centre, Visual balance. Form and emotion				
Unit III	Appreciate and articulate the language of form - sensitization towards manipulation of forms in 2D and 3D – Translation, Transformation and Scaling. Linear and curvilinear, radial manipulations. Form integration and transition. Basic techniques of form - understanding the nature and structure of form - Experiment with different aspect of forms				
Unit IV	Creation of hybrid forms. Nature inspired forms. Form abstractions of emotions. Debate form follows function.				
Unit V	Choose a product and improve its form to convey an inspiration (from nature or emotion etc) The intent of the form shall be user tested.				
Reference and Text books • *Marita Sturken& Lisa Cartwright, (2000), Practices of looking: An Introduction to visual culture, Oxford University Press* • *David Bramston, (2009), Basics Product Design 02: material Thoughts, Illustrated edition, Academic Press* • *Gilliam Rose, (2016), Visual methodologies: an introduction to the interpretation of visual materials, 4th Edition, SAGE Publications*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Illustrate capabilities to decipher form language	**K2**
CO2	Identify the cognitive factors that govern a given form	**K3**
CO3	Categorize the contents of a form	**K4**
CO4	Create hybrid forms	**K6**
CO5	Develop forms to convey an intent	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	2	-	1	2	2	3	3
CO2	3	3	1	2	-	1	2	2	3	3
CO3	3	3	1	2	3	1	2	2	3	3
CO4	3	3	1	2	3	1	2	2	3	3
CO5	3	3	2	2	1	2	2	2	3	3
W. AV	**3**	**3**	**1.2**	**2**	**1.4**	**1.2**	**2**	**2**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	1	2
CO2	3	3	1	1	2
CO3	3	3	2	3	3
CO4	3	2	3	2	3
CO5	3	3	2	2	3
W. AV	**3**	**2.8**	**1.8**	**1.8**	**2.6**

CC	82133	Human Computer Interaction	P	Credits -2	Hours -4
Objectives	• Introduce students to the foundations of HCI • Enhance the understanding of HCI by exploring its many dimensions • Educate students about the nuances of multimodal interactions • Gain expertise in HCI by creating interaction prototypes • Train students in HCI through practice by designing a basic project.				
Unit I	The foundations of HCI. The mapping of Human Model, Computer Model and the Designed Task model. Knowledge of the physical, cultural and technological envelopes/constraints. Interdisciplinary integration/ mapping of Computer science, Psychology, Behavioural Science, Ergonomics Linguistics, Neuroscience and Cognitive Engineering				
Unit II	Dimensions of HCI: Words, Visual representations, Physical objects and space, Time behaviour - Difference between HCI and UX. Research avenues in HCI.				
Unit III	Introduction to Gesture based interaction, Haptic interaction, Eye tracker and Brain Computer Interface. Application of HCI in Design				
Unit IV	Create Interactive prototype with Transitions and states - Time delay transitions - Popup menu or modal - Animated mobile side navigation for burger menu. Advanced prototyping - How to make a number ticker scroll using masks - Import and export assets.				
Unit V	A Project that tries to exercise the research avenues of HCI.				
Reference and Text books • *Brian Wood (2020), Adobe XD Classroom in a Book, 1st Edition, Adobe Press,* • *Adobe XD | Advanced Techniques.* • *Andrew Sears,Julie A. Jacko, Human-Computer Interaction Fundamentals, Routledge* • *Ben Shneiderman,Catherine Plaisant, Maxine Cohen, Designing the User Interface: Strategies for Effective Human-Computer Interaction, Pearson*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Define the foundations of HCI	**K1**
CO2	List the many dimensions of HCI	**K1**
CO3	Examine the multimodal interaction avenues based on the application	**K4**
CO4	Develop HCI as the application requires	**K6**
CO5	Formulate a HCI prototype.	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	2	3	2	2	2	3	3
CO2	3	2	3	2	3	2	1	2	3	3
CO3	3	2	3	2	3	1	2	2	3	3
CO4	3	2	3	2	3	2	1	2	3	3
CO5	3	2	3	2	3	2	2	2	3	3
W. AV	**3**	**2**	**3**	**2**	**3**	**1.8**	**1.6**	**2**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
W. AV	**3**	**3**	**3**	**3**	**3**

CC	82134	Design Management and Professional Practice	P	Credits- 2	Hours -3
Objectives	1.To educate students about the nuances of Management in design. 2.To emphasize the importance of interpersonal communication and synergy in teams. 3.To develop an understanding of basic management tools and techniques. 4.To create an awareness about the importance of intellectual property rights governing design creations 5. To apply the learning through project/case studies.				
Unit I	Introduction to design management, skills, knowledge and learning style evaluation, personal goal setting and professional development planning – leadership skill				
Unit II	Collaboration of businesses and technical teams, Motivated individuals - Face-to-face conversation - Functional products - Technical excellence – Simplicity - Self-organized teams - Regulation, reflection, and adjustment.				
Unit III	Strategy - strategy to sell idea/convince client. Predictive analytics and operative techniques – SWOT analysis - Project management Tools. Proposal - Quotations, Estimates, and Budgeting for a studio setup or a project.				
Unit IV	Introduction to intellectual property rights: Definition - Administration offices and services - Copyright societies - IPR in India and Abroad - Laws related with copyrights and intellectual property rights: The Copyright Act-1957, Designs Act-2000 - The way from WTO to WIPO –TRIPS. Process of Patenting and Development - Research and innovation – Patents – Designs - Trade Mark and Copyright - Geographical Indications. Ethics in Product design:Informed consent. - Voluntary participation. - Do no harm - Confidentiality – Anonymity – Sensitization towards Gender – Religion – Race.				
Unit V	Present a Project / case study.				

Reference and Textbooks

- *David Hands (2009), Vision and Values in Design Management, Academic Press.*
- *Kathryn Best (2006), Design Management: Managing Design Strategy, Process and Implementation, Academic Press.*
- *Peter Gorb (1990), Design Management, Architecture design and technology press.*

Web Resources

Course Outcomes		Knowledge Level
CO1	Understand the importance of management in design	**K2**
CO2	Develop interpersonal communication skills	**K3**
CO3	Apply the appropriate management tools and techniques	**K3**
CO4	Illustrate knowledge about IPR	**K2**
CO5	Develop a case study on good management practices	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	1	1	1	1	1	1	3	3	3
CO2	1	1	1	1	1	1	1	3	3	3
CO3	1	1	1	1	1	1	1	3	3	3
CO4	1	1	1	1	1	1	1	3	3	3
CO5	1	1	1	1	1	1	1	3	3	3
W. AV	1	1	1	1	1	1	1	3	3	3

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	1	1	1
CO2	1	1	1	1	1
CO3	1	1	1	1	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1
W. AV	**1**	**1**	**1**	**1**	**1**

CC	82135	**Product Visualization and Presentation**	**P**	**Credits -4**	**Hours -4**
Objectives	• Introduce the students to the nuances of product visualization • Educate the students about the different and appropriate angles of view • Emphasize on the roles that surface textures and materials play a role in product visualization • Highlight the importance of context-based story telling in Product visualization. • Enhance product presentation techniques through effective visualization				
Unit I	What is product visualization? Need for Product Visualization. Product visualization in different contexts and settings. Realism and aesthetics in product visualization. Product visualization tailored to the user.				
Unit II	Appropriate angles of view. The side-view design and visualization of a product. Communication of 3D volume in 2D sketches and drawings. Use of light to enhance contours of a product.				
Unit III	Study of materials such as high-gloss surfaces, chrome and matte rubber. Representation of the same in product renders. Visualization of a 3D product digitally.				
Unit IV	Creation of a story line to present the product. Creation of Product brochures-flyers, posters etc. User Experience in Product visualization. Use of AR and VR to present products to users/customers.				
Unit V	Presentation of the created product in the form of posters or animation				
Reference and Text books • *T. Theoharis, Graphics and visualization, crc press, 2021* • *Gerardus Blokdyk,Product Visualization A Complete Guide,5StarCooks,2020* • *Phillip M Johnson,Visualization: Teaching the Art,Biblioscholar,2012*					
Web Resources					

Course Outcomes		**Knowledge Level**
CO1	Justify the importance of product visualization	**K5**
CO2	List the different and appropriate angles of view for effective product visualization	**K2**
CO3	Develop visual surface textures and materials characters for effective product visualization.	**K6**
CO4	Elaborate product visualization through context-based story telling in Product visualization.	**K6**
CO5	Create effective product presentation techniques through effective visualization	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	2	3	2	2	2	3	3
CO2	3	2	3	2	3	2	1	2	3	3
CO3	3	2	3	2	3	1	2	2	3	3
CO4	3	2	3	2	3	2	1	2	3	3
CO5	3	2	3	2	3	2	2	2	3	3
W. AV	**3**	**2**	**3**	**2**	**3**	**1.8**	**1.6**	**2**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
W. AV	**3**	**3**	**3**	**3**	**3**

CC	82136	Project II – Technically Complex Product Design	P	Credits -4	Hours -4
Objectives	• Educate students to analyse a product for its complexity • Impart knowledge about the technical components in a product • Enhance the student's understanding in technical functioning of a product by conceptualizing a product for a researched problem • Understand the technical elements involved in creating the function of a product • Learn the entire process of designing a product with considerations for the technical framework that make the product work				
Unit I	Advanced technical studies - different types of complexities in products. Identify the touchpoints in a product by creating and analysing the ecosystem maps, empathy map and user journey maps.				
Unit II	Design a product that has a certain level of technical complexity. Understand technical components and function of a product. Discuss "form follows function". Make a design element vs technical component map.				
Unit III	Conceptualize a product. Research – ideation . develop a product with one technical component like a rotor or a heating element etc.				
Unit IV	Applying technical considerations in developing the product. The choice of materials, components and the manufacturing considerations shall be considered.				
Unit V	Prototyping, User testing, Project Documentation and presentation shall be done.				
Reference and Text books • *James G Bralla, (1998), Design for Manufacturability Handbook, McGraw-Hill Education, p 1368* • *Geoffrey Boothroyd, Peter Dewhurst, Winston A. Knight, (2010), Product Design for Manufacture and Assembly, CRC Press, p 712.* • *Rob Thompson, (2007) Manufacturing Processes for Design Professionals, Thames and Hudson, p 528.* • *Robert A Malloy, (2010) Plastic Part Design for Injection Moulding: An Introduction, Hanser, p 549*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Identify the design complexity of a product through technical frameowrk	**K3**
CO2	List the technical components in a product	**K1**
CO3	Express knowledge in technical functioning of a product	**K2**
CO4	Outline the technical elements involved in creating the function of a product	**K2**
CO5	Compose a product while designing with the best fit technical components needed for the task	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	-	1	1	1	2	2	3	3
CO2	2	-	-	1	1	1	2	2	3	3
CO3	2	-	-	1	1	1	2	2	3	3
CO4	2	-	-	1	1	1	2	2	3	3
CO5	2	-	-	1	1	1	2	2	3	3
W. AV	**2**	**-**	**-**	**1**	**1**	**1**	**2**	**2**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	3	2	1
CO2	1	1	3	2	1
CO3	1	1	3	2	1
CO4	1	1	3	2	1
CO5	1	1	3	2	1
W. AV	**1**	**1**	**3**	**2**	**1**

CC	82137	Project III - New Media Design	P	Credits- 4	Hours -4
Objectives	1.To educate students about the evolution of new media. 2.To familiarise with contemporary new media practices through exercises. 3.To introduce to innovation trends in new media. 4.To learn to integrate new media constructs through a project. 5.To emphasise the essence of new media by building application specific prototype.				
Unit I	Introduction of the New Media Arts and its History- Case studies of New Media Artists- Research and Documentation				
Unit II	Exploration of the topic through basic Exercises and Discussions				
Unit III	Introduction to AR, VR, MR and XR				
Unit IV	Development of new media application prototype				
Unit V	New Media ArtsDisplay/Exhibition/ Presentation/Screening/Feedback				

Reference and Textbooks

- Richard L. Lewis & James Luciana, (2004), Digital Media: An Introduction, Prentice Hall.
- Christiane Paul, New Media (2009), New Media in the White Cube and Beyond - Curatorial Models for Digital Art, University of California Press
- Mark Tribe, (2006), New Media Art (Taschen Basic Art Series), Taschen GmbH
- Lisa Nakamura, (2007), Digitizing Race: Visual Cultures of the Internet, Univ of Minnesota Press.

Web Resources

Course Outcomes		Knowledge Level
CO1	Relate contemporary new media applications with their roots.	**K1**
CO2	Develop designs incorporating new media elements	**K3**
CO3	Identify novel improvements in contemporary new media applications	**K3**
CO4	Create an application using new media	**K6**
CO5	Construct a product using appropriate new media element	**K3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	1	1	2	2	3	2	2	3
CO2	2	2	-	-	1	2	3	2	3	3
CO3	2	1	-	-	1	2	3	2	3	3
CO4	2	2	-	-	1	2	3	2	3	3
CO5	2	2	1	-	1	2	3	2	3	3
W. AV	**2**	**1.8**	**0.4**	**0.2**	**1.2**	**2**	**3**	**2**	**2.8**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	2	2
CO2	3	2	-	1	3
CO3	3	2	-	1	3
CO4	3	2	-	1	3
CO5	3	2	1	2	3
W. AV	**3**	**2**	**0.6**	**1.4**	**2.8**

DSE	82138	Design For future	P	Credits- 4	Hours -5
Objectives	• Develop an understanding of the contemporary opinions and commentaries about the designed world. • Impart an understanding as well as the importance of design for the future. • Analyse the ramifications rationally in creating a designed future for the planet. • Identify design interventions and develop bonafide convictions and ideas about future • Comprehend the planet 25 years hence, through design.				
Unit I	Study of theories and commentaries about contemporary world through design. Evolution of objects, Consumerism, Media evolution, evolution of space, Evolution of systems in daily life.				
Unit II	Study of futuristic design thoughts. Speculative Design, "what if" of Design. Critic a Design. Dyamaxion and Ephemeralization, Fiction and Future. Design Fiction.				
Unit III	Taxonomy of future. Intellectual and Rationale grounding of future. Design for people. Design for planet.				
Unit IV	Generating one's own ideas/views of "what is design? ". Predicted future based on current trends. Desired future. Design interventions to a forecasted future.				
Unit V	Project. Study a product service or a system and hypothesise its future through design 25 years hence. Present it in the form of a presentation				

Reference and Textbooks

- *R Buckminster Fuller, Utopia or Oblivion: The Prospects for Humanity, Lars Muller Publishers,2008.*
- Jean Baudrillard,System of Objects: Reflections from Damaged Life,Verso, 2020
- *Henri Lefebvre, The Production of Space, Wiley-Blackwell,1991*
- *Henri Lefebvre, Critiqueof Everydaylife, Verso,2014*
- *Anthony Dunne& Fiona Raby , Speculate Everything: Design, Fiction, and Social Dreaming, The MIT press 2013*
- *Matt Malpass, Critical Design in Context: History, Theory, and Practice, Bloomsbury Visual Arts* 2019

Web Resources

Course Outcomes		Knowledge Level
CO1	Express knowledge about the attempts and efforts by designers to forecast a future through design.	**K2**
CO2	Relate the contemporary commentaries about a designed future based on identified parameters.	**K2**
CO3	Predict the future of the world through design	**K3**
CO4	Create design interventions that are aimed at a healthier planet in the future.	**K6**
CO5	Elaborate the influence of design in creating a sustainable and healthy world in 25 years	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	1	3	1	1	1	1	1
CO2	3	1	1	1	3	1	1	1	1	1
CO3	3	1	1	1	3	1	1	1	1	1
CO4	3	1	1	1	3	1	1	1	1	1
CO5	3	1	1	1	3	1	1	1	1	1
W. AV	3	1	1	1	3	1	1	1	1	1

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
W. AV	3	3	3	3	3

SEMESTER IV

CC	82141	**Degree Project**	**PR**	**Credits- 10**	**Hours -24**
Objectives	To learn to execute a complete design project in a professional design studio/industry				
	Project Phase 1 (Research and Design Brief). Project Phase 2 (Ideation and Conceptual Design/Preproduction). Project Phase 3 (Final Design solution/Prototype/Production). Project Phase 4 (Documentation). Project Phase 5 (Project Report Submission).				
Reference and Textbooks • *Bryan Lawson, How Designers Think: The Design Process Demystified, Om Books.* • *Tim Parsons, Thinking: Objects Contemporary Approaches to Product Design, Academic Press.* • *Adedeji B. Badiru, Christina F. Rusnock &Vhance V. Valencia, Project Management for Research: A Guide for Graduate Students, CRC Press.*					
Web Resources					

Course Outcomes		**Knowledge Level**
CO1	Express professional capabilities to embark on a design practice or research	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	3	3	3
W. AV	3	3	3	3	3	3	3	3	3	3

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
W. AV	**3**	**3**	**3**	**3**	**3**

CC	82142	**Design Research Report Writing**	**PR**	**Credits- 4**	**Hours -6**
Objectives	• Introduce students to Design Research • Develop capabilities to read and synthesise the jist of a research paper • Enhance the capabilities to write a research paper • Learn the methods to conduct design research and gather them in a research paper. • Educate students about Research presentation techniques.				
Unit I	What is Design Research? Research in Design. Research by Design. Contemporary commentaries in Design Research. Wicked problems. Sociology, ethnography and scientific research elements in Design. Their appropriateness and differences.				
Unit II	Design Research paper reading. Synthesising of information from text. Summarising a chapter, a book and a research paper. Case study.				
Unit III	Case study. Design Research paper writing. The constructs of a design research paper. Write summaries of research papers and texts.				
Unit IV	Project : Study a product and the research that has gone behind it. Write a research paper on it.				
Unit V	Presentation of research effort.				
Reference and Textbooks • *Wendy Laura Belcher, Writing Your Journal Article in Twelve Weeks, Chicago Guides to Writing, Editing, and Publishing,2019* • *Kate L. Turabian (Author), Wayne C. Booth, A Manual for Writers of Research Papers, Theses, and Dissertations, University of Chicago Press,2018*					
Web Resources					

Course Outcomes		**Knowledge Level**
CO1	List the different avenues of design research efforts	**K1**
CO2	Illustrate capabilities to read and summarize a research content.	**K2**
CO3	Generate a research paper for a given case study	**K4**
CO4	Explain a design research conduct through a research paper	**K5**
CO5	Formulate a presentation for a research paper/ study	**K6**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	3	3	3	3	3
CO2	2	2	2	2	2	2	2	2	2	2
CO3	3	3	3	3	3	3	3	3	2	2
CO4	3	3	3	3	3	3	3	3	2	2
CO5	1	1	1	1	1	1	1	3	3	3
W. AV	**2.4**	**2.4**	**2.4**	**2.2**	**2.4**	**2.4**	**2.4**	**2.8**	**2.4**	**2.4**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
W. AV	3	3	3	3	3

19.1 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 50% in the aggregate, taking Continuous Assessment and End Semester Examinations marks together.
- 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 and 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 the Project/Dissertation/Internship if he/she gets not less than 40% in the End Semester Examinations and 40% marks in the Internal Assessment and not less than 50% in the aggregate in each of the Project/Dissertation/Internship Report and Viva-Voce.
- A candidate who gets less than 50% in the Project/Dissertation/Internship Report must resubmit the thesis. Such candidates need to take again the Viva-Voce on the resubmitted Project report.

19.2 Grading

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 Paper/ Course)

RANGE OF MARKS	GRADE POINTS	LETTER GRADE	DESCRIPTION
90 - 100	**9.0 – 10.0**	**O**	**Outstanding**
80 - 89	**8.0 – 8.9**	**D+**	**Excellent**
75 - 79	**7.5 – 7.9**	**D**	**Distinction**
70 - 74	**7.0 – 7.4**	**A+**	**Very Good**
60 - 69	**6.0 – 6.9**	**A**	**Good**
50 - 59	**5.0 – 5.9**	**B**	**Average**
00 - 49	**0.0**	**U**	**Re-appear**
ABSENT	**0.0**	**AAA**	**ABSENT**

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 a 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 a 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 a 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 a 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 a GPA between 5.0 – 5.9 and marks from 50 - 59 shall be declared to have an Average (B).

g) Candidates earning a GPA between 0.0 and marks from 00 - 49 shall be declared to have Re-appear (U).

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

From the second semester onwards the total performance in a semester and continuous performance starting from the first semester are indicated respectively as 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

19.3 Classification of the 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
0.0 and above but below 5.0	**U**	Re-appear

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 a CGPA between 9.5 and 10.0 shall be given Letter Grade (O+), and those who earned a 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 a CGPA between 7.5 and 7.9 shall be given Letter Grade (D), those who earned a CGPA between 8.0 and 8.4 shall be given Letter Grade (D+), those who earned a 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 a CGPA between 6.0 and 6.4 shall be given Letter Grade (A), those who earned a CGPA between 6.5 and 6.9 shall be given Letter Grade (A+), those who earned a 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 a CGPA between 5.0 and 5.4 shall be given a Letter Grade (B), and those who earned a CGPA between 5.5 and 5.9 shall be given a Letter Grade (B+) and declared to have passed in Second Class.
i) Candidates who earned a CGPA between 0.0 and 4.9 shall be given Letter Grade (U) and declared to have Re-appear.
e) Absence from an examination shall not be taken as an attempt.

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 courses for the entire Programme

Sum of Grade Points X credits of 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 PG Programme are alone eligible for this classification.