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. Des. Industrial Design

Regulations and Syllabus

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

CHOICE BASED CREDIT SYSTEM

COLLABORATIVE PROGRAMMES

BACHELOR OF DESIGN – INDUSTRIAL DESIGN

Name of the Programme : **B. Des. (Bachelor of Design)**
Pattern : Semester System
Mode : Collaborative Programs
Medium : English
Duration : Four Years
Eligibility : Candidate for admission to **B. Des.** shall be required to have passed Higher Secondary (10+ 2) or its equivalent in any stream from any recognized Institution. Eligibility of candidates applying from abroad shall be evaluated for equivalence on case-to-case basis.

Programme Educational Objectives (PEOs)

Programme Educational Objectives	On the successful completion of B.Des the graduate student is expected to the below after graduation
PEO1	Students shall be imbibed with a comprehensive quality knowledge in the field of design.
PEO2	The design knowledge imparted shall be a conduit between conventional and contemporary practices.
PEO3	As a design practitioner, students shall be trained to have a multidisciplinary approach to problem solving.
PEO4	The students shall be groomed to be socially empathetic individuals in all walks of life.
PEO5	As designers, students shall be able to appreciate and be sensitive to the interdependence between regional and global influences.

Programme outcomes (POs)

Programme Outcomes	On the successful completion of B. Des Industrial design
PO1	Students acquire fundamental knowledge and skills on the elements of design and their interrelationships.
PO2	Will learn the design process and its impact in designing optimum solutions.
PO3	Will gain knowledge about the characteristics of materials and their handling in designing and presenting products.
PO4	Acquire skills in using digital tools and applying the right ergonomic factors in designing a product.
PO5	Practice considerations for sustainability and social change in design.
PO6	Execute designing advanced products and interactions to enrich their product design and development skills.
PO7	Explore new product design and development for the contemporary world.
PO8	Students acquire skills in design of systems and product presentation techniques.

PO9	Students will explore professional industrial design practices by executing an industrial design project by applying their learning
PO10	Students become experts in product design skills and practices that prepare them for professional as well as research career.

Programme Specific Outcomes (PSOs)

Programme Specific Outcomes	After the successful completion of the Industrial Design Program
PSO1	Students will know all the functional constituents of industrial product design based on the different classes of products.
PSO2	Students create product concepts which is a pragmatic meld of traditional and modern processes.
PSO3	Students will consider social, economic, psychological, environmental, sustainable and scientific factors when they design a product.
PSO4	Students will conduct themselves as socially empathetic individuals in their daily life.
PSO5	Students will be able to ascertain the mutual influence between their design and global designs.

PROGRAMME CONTENT AND SCHEME OF EXAMINATIONS

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

B. Des. Industrial Design

Semester	Part		Course Code	Title of the Paper	Theory/ Practical	Credits	Hours/W	Marks		Total
								Int.	Ext.	
I	I	T/OL	81911T	Tamil / Other Languages - I	T	3	3	25	75	100
	II	E	81912	General English-I	T	3	3	25	75	100
	III	CC	81913	Creativity and Mind Mapping	P	2	3	75	25	100
		CC	81914	Foundation Drawing	P	4	5	75	25	100
		CC	81915	Elements of Design I	P	4	5	75	25	100
		CC	81916	Colour theory	P	2	4	75	25	100
		Allied	81917	Introduction to Materials	P	4	5	75	25	100
	IV	SEC-I	81918	Value Education	T	2	2	25	75	100
				Library						
				Total		**24**	**30**	**450**	**350**	**800**
II	I	T/OL	81921T	Tamil / Other Languages - II	T	3	3	25	75	100
	II	E	81922	General English-II	T	3	3	25	75	100
	III	CC	81923	Introduction to Photography	P	2	4	75	25	100
		CC	81924	Product Sketching and Drawing	P	4	6	75	25	100
		CC	81925	Design Process	P	4	6	75	25	100
		Allied	81926	Elements of Design II	P	4	6	75	25	100
	IV	SEC-II	81927	Environmental Studies	T	2	2	25	75	100
				Library						
				Total		**22**	**30**	**375**	**325**	**700**
III	I	T/OL	81931T	Tamil / Other Languages - III	T	3	3	25	75	100
	II	E	81932	General English-III	T	3	3	25	75	100
	III	CC	81933	Art Design and Culture	P	2	3	75	25	100
		CC	81934	Elements of Form	P	3	4	75	25	100
		CC	81935	Elements of Graphic Design	P	3	4	75	25	100
		CC	81936	Technical Drawing	P	3	4	75	25	100
		Allied	81937	Material Studio and Processes I	P	4	5	75	25	100
	IV	SEC-III	81938	Entrepreneurship	P	2	2	25	75	100
		NME-I	81939A	1) Adipadai Tamil I	P	2	2	25	75	100
			81939B	2) Advance Tamil I	T			25	75	
			81939C	3) IT Skills for Employment/	T			25	75	
				4) MOOC'S	T					
				Total		**25**	**30**	**525**	**500**	**900**
IV	I	T/OL	81941T	Tamil / Other Languages – IV	T	3	3	25	75	100
	II	E	81942	General English-IV	T	3	3	25	75	100
	III	CC	81943	Aesthetics in Design	P	2	3	75	25	100
		CC	81944	Research Methodology	P	2	3	75	25	100
		CC	81945	Digital Design Tools	P	3	3	75	25	100
		CC	81946	Applied Ergonomics	P	4	4	75	25	100
		Allied	81947	Material Studio and Processes II	P	4	5	75	25	100
		DSE	81948	Project I – Product Design	P	4	4	75	25	100
	IV	NME-II	81949A	1) Adipadai Tamil II	P	2	2	25	75	100
			81949B	2) Advance Tamil II	T			25	75	
			81949C	3) Small Business Management/	T			25	75	
				4) MOOC'S	T					

			Total			**27**	**30**	**550**	**450**	**900**
V	III	CC	81951	Sustainable design	P	4	6	75	25	100
		CC	81952	Human Computer Interaction	P	2	2	75	25	100
		CC	81953	Design for Social Change	P	4	6	75	25	100
		Allied	81954	Product Visualization and Presentation	P	4	6	75	25	100
		Allied	81955	AI for Design	P	2	2	75	25	100
		DSE	81956	Project II – System Design	P	4	6	75	25	100
	IV	OE	81957A 81957B 81957C	Open Elective 1) Theatre for Design 2) Craft Study-I 3) Clay Modelling	P	2	2	75	25	100
			Total			**22**	**30**	**525**	**175**	**700**
VI	III	CC	81961	Value Analysis	P	4	4	75	25	100
		CC	81962	Advanced Studies in Form	P	4	6	75	25	100
		CC	81963	Toy and Game Design	P	4	6	75	25	100
		Allied	81964	Packaging Design and Printing	P	4	6	75	25	100
		Allied	81965	Portfolio Skills	P	2	2	75	25	100
		DSE	81966	Project III - Technically Complex Product Design	P	4	4	75	25	100
	IV	OE	81967A 81967B 81967C	Open Elective 1) Puppetry 2) Craft Study-II 3) Story Telling	P	2	2	75	25	100
			Total			**24**	**30**	**525**	**175**	**700**
VII	III		Industrial internship of 45 days (between VI and VII semester break)							
		CC	81971	Internship	I	2	2	75	25	100
		CC	81972	New Media Design	P	4	6	75	25	100
		CC	81973	New Product Development	P	4	6	75	25	100
		CC	81974	Project IV – Interaction Design	P	4	6	75	25	100
		CC	81975	Visual Merchandising	P	4	6	75	25	100
		Allied	81976	Design Management and Professional Practice	P	2	2	75	25	100
		DSE	81977	Design For Future	P	2	2	75	25	100
			Total			**22**	**30**	**525**	**175**	**700**
VIII	III	CC	81981	Degree Project	PR	10	24	75	25	100
		DSE	81982	Design Research Report Writing	PR	4	6	75	25	100
			Total			**14**	**30**	**150**	**50**	**200**
Grand Total						**180**	**240**	**3625**	**2200**	**5600**

Note:
For Theory: 1 Credit = 1 Hour

For Practical: 1 Credit = 2 Hours

SEMESTER I

CC	81913	Creativity and Mind Mapping	P	Credits -2	Hours - 3
Objectives	1. To gain insights on personal creative abilities. 2. To recognize importance of collective creative design endeavours. 3. To understand basic ideation related techniques. 4. To get introduced to basic design constructs and creative thinking tools. 5. To explore creativity through projects.				
Unit I	Understanding Creativity – Realising personal creative capabilities and uniqueness through interdisciplinary activities – Definition of Abstract-Definition of Concrete – Creativity using language- Story writing – Story boarding- Acting- Enacting through theatre. Creating art through unconventional medium.				
Unit II	What is Design? – Design Thinking- Boosting Visual Representations using metaphors. Figures of speech - Emphasis on Empathy - Emphasis on Teamwork - Individual contribution to collective cause-Understanding non-verbal communication.				
Unit III	Mind mapping - Brain storming techniques – Applications of Mind Mapping – Creating Mind map Models - Real life problems – Grassroot design – Context Mapping – Data Collection – Analysis – Grouping information.				
Unit IV	Introduction toCreative Techniques in Design, SCAMPER Creative Technique, Six thinking hats by Edward De Bono Technique for Creative Thinking, 6-8-5 Technique				
Unit V	Team-based design projects – Individual/Team Presentations – Use of Visual Medium – Feedback Analysis – Critical Analysis – Listening and Reading Comprehension – Report Writing.				

Reference and Text books

- *Hisako Ichiki (2005); Takao Umehara, Extra ordinary: An amusing way for unleashing your creativity, Rockport Publishers*
- *Joyce Wycoff (1991), Mind Mapping: your Personal guide to Exploring Creativity and Problem-Solving, Berkley Books, New York*
- *Ed Catmull (2014), Creativity, INC: Overcoming the unseen forces that Stand in the way of True Inspiration, Bantam Press*
- *Edward De Bono (2016), Six Thinking Hats (RIE): The multi-million bestselling guide to running better meetings and making faster decisions, Penguin Publishers*

Web Resources

https://www.psychologytoday.com/us/basics/creativity
https://www.sciencedirect.com/journal/journal-of-creativity
https://www.tandfonline.com/journals/hcrj20
https://onlinelibrary.wiley.com/journal/21626057
https://www.adelaide.edu.au/writingcentre/sites/default/files/docs/learningguide-mindmapping.pdf
https://libguides.umn.edu/c.php?g=921727&p=8499064

Course Outcomes		Knowledge Level
CO1	Understand and identify personal creative boundaries.	K2
CO2	Recognize the importance of collective efforts through individual creative contributions.	K2
CO3	Apply ideation techniques to analyse and synthesize information.	K3
CO4	Utilize creative thinking tools in design efforts.	K5
CO5	Evaluate creative skills and tools through project execution.	K5

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	-	-	-	-	1	2	1	2
CO2	3	2	-	-	-	2	1	3	3	2
CO3	3	3	1	-	-	1	1	1	1	2
CO4	3	1	-	2	1	1	1	1	2	2
CO5	3	1	-	2	1	1	2	2	3	3
W. AV	**3**	**1.6**	**0.2**	**0.8**	**0.4**	**1**	**1.2**	**1.8**	**2**	**2.2**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	1	1
CO2	2	3	3	3	1
CO3	2	2	3	3	3
CO4	2	2	3	3	2
CO5	2	2	3	3	2
W. AV	**2.2**	**2.4**	**2.8**	**2.6**	**1.8**

Course Designed By	BOS Date	Approved By
Dr. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

CC	81914	Foundation Drawing	P	Credits - 4	Hours -5
Objectives	1. To understand and appreciate drawing as a medium of communication. 2. To gain insights into personal drawing capabilities through basic exercises. 3. To understand the various perspectives in drawing. 4. To familiarize with the techniques to create authentic drawings of objects in natural settings. 5. 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 perspectives, (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	2
CO2	3	3	-	-	-	2	1	2	2	2
CO3	3	3	1	-	-	2	1	2	2	2
CO4	3	3	1	-	2	1	1	2	2	2
CO5	3	2	-	3	1	1	1	1	2	2
W. AV	**3**	**2.8**	**0.4**	**0.6**	**0.6**	**1.6**	**1**	**1.8**	**2**	**2**

Mapping Course Outcome VS Programme Specific Outcomes

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

Course Designed By	BOS Date	Approved By
Dr. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

CC	81915	Elements of Design – I	P	Credits - 4	Hours -5
Objectives	1. To educate about the elements of Design. 2. To educate about the Principles of Design. 3. To emphasize on the cognitive theories governing design. 4. To develop a practical understanding of order and space in design. 5. 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

- *William Lidwell, Kritina Holden & Jill Butler (2010), Universal Principles of Design, 2nd Edition, Rockport Publishers*
- *Agoston (1987), G. A., Color Theory and Its Application in Art and Design, Springer, Berlin, Heidelberg*
- *Hisako Ichiki & Takao Umehara (2005), Extra Ordinary: An amusing way for unleashing your creativity, Rockport Publishers*
- *Joyce Wycoff (1991), Mind Mapping: your Personal guide to Exploring Creativity and Problem-Solving, Berkley Books, New York*
- *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. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

CC	81916	Colour Theory	P	Credits -2	Hours -4
Objectives	1. To educate on the basics of colour theory. 2. To familiarize on the basics of values of colour. 3. To understand the emotional aspects of colour. 4. To recognize the sensitivity to the importance of colour in daily life. 5. To develop designs by employing colour theories.				
Unit I	Introduction to Colour and its Uses - Primary & Secondary Colours - Understanding Hue, Value, Tint, and shade - Meaning and understanding of colour intensity by making a chart.				
Unit II	Greyscale, Tonal values - 2D Achromatic Composition- High, Middle, and Low contrast - Space Division, Emphasis, Balance. Colour schemes - Analogous, Complimentary, Monochrome, Achromatic, Adjacent, Warm and Cool Colours.				
Unit III	Physical and emotional reaction of colours. - Colour Balance - Colour Interpretation–Expression, Mood, Seasons. Introduction to Josef Alber's Interaction of Colour. Introduction to the Bezold Effect.				
Unit IV	Visual compositions derived from themes -Colour harmony - Colour symbolism in various cultures and ethnicities with marked differences. Colour as signifiers in multiple contexts: Colour and emotions, Colours and seasons, Colour and Food, Colour and Spaces.				
Unit V	Colour in popular media and films - Colours and genres – Colour in publication design – Colour coding in signage and wayfinding, colour in web/app designing for digital media. Colour as a dominant aspect of fashion. - Gender classification of colour. – Colour sophistication and colour trends in fashion. Colour signifiers in products and their psychological influences, colour coding in industrial processes. (factory/workplace, machine, equipment, uniforms, tools etc.)				

Reference and Textbooks

- *Patti Mollica (2013), Colour Theory, Walter Foster Publishing*
- *Jose Maria Parramon (1993), The Book of Color: The History of Color, Color Theory, and Contrast; The Color of Forms and Shadows; Color Ranges and Mixes; And the Practice of Pai, Watson-Guptill Publications*
- *Faber Birren (2013),Colour Psychology and Colour Therapy: Faber Birren, Lushena Books*
- *John Gage (1995),Colour and Culture, Thames & Hudson*
- *Kassia St Clair (2017),The Secret Lives of Colour, Penguin Books*

Web Resources

https://web.mit.edu/22.51/www/Extras/color_theory/color.html
https://online.maryville.edu/liberal-arts-degrees/the-art-of-color/

Course Outcomes		Knowledge Level
CO1	Utilize the basics of colour theory in design creations	K3
CO2	Employ/evaluate values of colour in designs	K3
CO3	Apply/ Assess emotional aspects of colour in designs	K3
CO4	Identify the effects of colour in daily life.	K1
CO5	Create designs with colour 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	3	3	2	1	1	1	1	2	3	3
CO2	3	3	2	1	1	1	1	2	3	3
CO3	3	3	2	1	1	1	1	2	3	3
CO4	3	3	2	1	1	1	1	2	3	3
CO5	3	3	2	1	1	1	1	2	3	3
W. AV	**3**	**3**	**2**	**1**	**1**	**1**	**1**	**2**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

Course Designed By	BOS Date	Approved By
Dr. M. Aravind Shanmuga Sundaram Mr. Ariharasunthan. R	07.08.2023	BOS

Allied	81917	Introduction to Materials	P	Credits -4	Hours -5
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. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

SEC-I	81918	Value Education	P	Credits -2	Hours- 2
Objectives	➢ To impart humanism values among the student under various religious thoughts ➢ To make them awareness of ethics and civil rights ➢ To familiarities the students with basic features of extracurricular activities such NSS and NCC and relevance of Abdul Kalam and Mother Teresa efforts to teach values ➢ To impart skills by preparing project works such as writing poems and stories				
Unit I	Definition – Need for Value Education – How Important Human Values are – Humanism and Humanistic Movement in the World and in India – Literature on the Teaching of Values Under Various Religions Like Hinduism, Buddhism, Christianity, Jainism, Islam, Etc. Agencies for Teaching Value Education in India – National Resource Centre for Value Education – NCERT– IITS and IGNOU.				
Unit II	**Vedic Period – Influence** of Buddhism and Jainism – Hindu Dynasties – Islam Invasion – Moghul Invasion – British Rule – Culture Clash – Bhakti Cult – Social Reformers – Gandhi – Swami Vivekananda – Tagore – Their Role in Value Education.				
Unit III	**Value Crisis – After Independence:** Independence – Democracy – Equality – Fundamental Duties – Fall of Standards in All Fields – Social, Economic, Political, Religious and Environmental – Corruption in Society.Politics Without Principle – Commerce Without Ethics – Education Without Character – Science Without Humanism – Wealth Without Work – Pleasure Without Conscience – Prayer Without Sacrifice – Steps Taken by The Governments – Central and State – To Remove Disparities on the Basis of Class, Creed, Gender.				
Unit IV	**Value Education on College Campus:** Transition from School to College – Problems – Control – Free Atmosphere – Freedom Mistaken for License – Need for Value Education – Ways of Inculcating It – Teaching of Etiquettes – Extra-Curricular Activities – N.S.S., N.C.C., Club Activities – Relevance of Dr.A.P.J. Abdual Kalam's Efforts to Teach Values – Mother Teresa.				
Unit V	**Project Work** 1. Collecting Details about Value Education from Newspapers, Journals and Magazines. 2. Writing Poems, Skits, Stories Centering on Value-Erosion in Society. 3. Presenting Personal Experience in Teaching Values. 4. Suggesting Solutions to Value – Based Problems on the Campus.				

Reference and Text books

Chakrabarti, M. (1997). *Value education: changing perspectives*. Kanishka Publishers.

Eknath Ranade (1991). *Swami Vivekananda's Rousing Call to Hindu Nation*.Centenary Publication

Karabi Kakoti, *Value Education – Need of the Hour*.

Radhakrishnan, S. (1968). *Religion and culture*.Orient Paperbacks, New Delhi

Saraswathi, T. S. (Ed.). (1999). *Culture, socialization and human development: Theory, research and applications in India.* SAGE Publications Pvt. Limited.

Satchidananda, M. K. (1991). *Ethics, education, Indian unity and culture.* Ajanta Publications, Delhi.

Venkataiah, N. (Ed.). (1998). *Value education*. APH Publishing, New Delhi.

Out Comes

After studied, the student will be able to

- Knowledge about Humanism and Humanistic Movement in the World and in India
- Understand the Social Reformers and Their Role in Value Education
- Explore the theories of Fundamental Duties, Ethics, Extra-Curricular Activities –N.S.S., N.C.C

Know the concept of Value Education on College Campus, Project Work regarding Writing Poems, Skits, Stories Centering on Value-Erosion in Society

SEMESTER II

CC	81923	Introduction to Photography	P	Credits-2	Hours -4
Objectives	1. To introduce the history and fundamentals of photography 2. To introduce the functions of camera and its handling. 3. To educate the elements and principles of photography 4. To familiarize with various types of photography 5. To explore the photography through a project.				
Unit I	Introduction to Photography: Definition - History of photography, Black and White Photography, Colour Photography, Different genres of photography digital cameras – Types – Image editors – File formats.				
Unit II	Types of cameras - Usage of lens, lights, filters, flash, and other useful accessories - Camera handling - usage of aperture, Shutter speed, ISO standards, Equipment maintenance				
Unit III	Composition – frame, shot, angle, rule of third, light and shadow observations- lighting – nature light – studio light usages - exposures- depth of field and focusing.				
Unit IV	Types of Photography – Project Documentation - Introduction to portrait - Landscapes – Street photography – Product photography – concept photography.				
Unit V	Explore a selected genre through project - photograph curation and presentation. Photo exhibition of the course outcomes.				

Reference and Text books

- *David Prakel, (2010), Fundamentals of Creative Photography, AVA Publishing*
- *Michael Freeman, (2005), Digital photography Expert Colour, Ilex Press Ltd*
- *Michael Freeman, (2006), The complete guide to Light and Lighting in Digital Photography, Ilex Press Ltd.*

Web Resources

http://edit.educ.ttu.edu/site/jcheon/manual/digital_photography.pdf
https://www.cs.cmu.edu/afs/cs/academic/class/15462-f09/www/lec/lec4.pdf
https://www.nfi.edu/when-was-the-camera-invented/

Course Outcomes		Knowledge Level
CO1	Understand the history and fundamentals of photography	**K2**
CO2	Utilize the learnt functions /handling of camera.	**K3**
CO3	Demonstrate the knowledge of elements and principles of photography	**K3**
CO4	Utilize the knowledge to practice the various genres of photography	**K3**
CO5	Explore a selected genre through a project.	**K6**

Mapping Course Outcome VS Programme Outcomes

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

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	2	2
CO2	3	2	2	1	1
CO3	3	3	3	3	2
CO4	3	3	3	3	1
CO5	3	2	2	2	2
W. AV	**3**	**2.6**	**2.4**	**2.2**	**1.6**

Course Designed By	BOS Date	Approved By
Dr. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

CC	81924	Product Sketching and Drawing	P	Credits -4	Hours-6
Objectives	1. Educate about the various types of sketches involved in product development. 2. Learn to express product evolution through sketches. 3. Learn product rendering to authentically express the details of a product. 4. Develop capabilities to present a product through sketches. 5. Demonstrate skills to render an ideated product.				
Unit I	Types of Sketches: Ideation Sketches - Process Sketches - Explanatory Sketches and Persuasive or Presentation Sketches - Scale and proportion – viewing angles.				
Unit II	Retrospective sketching of a product - Process, Ideation and Explanatory Sketches - Analytical object drawing – product user flow sketches – parts to whole sketches – product ecosystem sketches.				
Unit III	Traditional medium rendering techniques: Water colour, poster colour, markers, pen and ink. Digital techniques - Elements of shadow, depth and texture in product rendering.				
Unit IV	Presentation Sketches – Detailed drawing of a product. Rendering using manual and digital methods. Emphasis on choice of visual angle, source of light and product feature to assert, material emphasis through textural rendering.				
Unit V	Final Project – Presentation of detailed sketches and final rendered drawing of an ideated product- Feedback Analysis – Critical Analysis – role of sketches in product planning and prototype improvement.				

Reference and Text books

- *James Craig, (1990), Production for the Graphic Designers, Watson-Guptill*
- *Francis D K Ching with steven P. Juroszek, (2019) Design Drawing, 3rd Edition, John Wiley Publication*
- *Koos Eissen&RosilinSteur (2009), Sketching: Drawing Techniques for Product Designers, BIS Publishers*
- *Erik Olofsson & Klara Sjölén, (2005), Design Sketching*
- *RoselienSteur&KoosEissen, (2011), Sketching: The Basics (2nd printing) [Hardcover], BIS Publishers*

Web Resources

http://www.delftdesigndrawing.com/uploads/2/0/4/9/20493508/reader_final5_lqq.pdf

Course Outcomes		Knowledge Level
CO1	Demonstrate skills to communicate product evolution through sketches.	K2
CO2	Outline product formulation stages in detail through sketches.	K4
CO3	Explore best fit sketching mediums for the product being developed.	K5
CO4	Develop skills to render and present a product authentically and appropriately.	K3
CO5	Relate the importance of sketches with product planning and prototyping.	K2

Mapping Course Outcome VS Programme Outcomes

CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	1	1	2	2	3	3	3
CO2	3	3	3	1	1	2	2	3	3	3
CO3	3	3	3	-	1	1	1	2	3	3
CO4	3	2	1	1	-	1	2	3	3	3
CO5	3	3	3	2	2	2	2	3	3	3
W. AV	**3**	**2.8**	**2.6**	**1**	**1**	**1.6**	**2.2**	**2.8**	**3**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	1	2
CO2	3	3	3	1	2
CO3	3	3	2	1	2
CO4	3	3	2	1	2
CO5	3	3	3	3	3
W. AV	**3**	**3**	**2.6**	**1.4**	**2.2**

Course Designed By	BOS Date	Approved By
Dr. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

CC	81925	Design Process	P	Credits - 4	Hours-6
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. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

Allied	81926	Elements of Design II	P	Credits- 4	Hours -6
Objectives	1. Educate the various attributes of colour. 2. Educate space and form through 3D compositions. 3. Understand the importance of forms in nature and their relevance to design. 4. Understanding of minimalism and aesthetics in design. 5. Explore form synthesis.				
Unit I	Attributes of Colours; 2D Achromatic and Chromatic Schemes; Compositions, Values, Colour Saturation, Colour temperature, Gray Scale. Colour on various surfaces, Effects on Textures. Effects of colours on Forms. Creating a colour palate for a 3D Object.				
Unit II	3D Composition: 3D composition using various materials and forms – Balance – Emphasis - Shape language – Form language – Space understanding. Study of organic and geometric forms. Hybrid forms. Tessellation: Techniques and application – Tiling – Symmetry- Translation, Reflection, Rotation, Glide reflection. Rectangle, triangle, and other shapes. Metamorphosis and form Transformation. Fractals				
Unit III	Effect of form in human behaviour. Visual and Physical affordance. Form and emotion. Form and Space, Emphasis and Movement. Rhythm. Symmetry-Form and Time Forms in nature- Bio Mimicry. Nature inspired forms. Form and material relationship.				
Unit IV	Minimalism, Fluency and Aesthetics. Form identity and communication. Brand Identity- Minimalism-Maximum Utility. Noise Limitation. Product form manipulation and translation. Context based form synthesis and design.				
Unit V	Execute the synthesis of a Form and present it by charting its each evolutionary stage. Development of form based on a theme.				

Reference and Text books

- *Wucius Wong, (1993), Principles of form and design,John Wiley & Sons, Inc.*
- *Wucius Wong, (1972), Principles of Two-Dimensional Design, John Wiley & Sons, Inc.*
- *Pipes & Alan, (1990), Drawing for 3-dimensional design: Concepts, Illustration, Presentation, Thames & Hudson, New York, NY, U.S.A.*
- *Weinschenk Susan, (2011), 100 Things Every Designer Need to Know about People, 1st edition, New Riders*

Web Resources

https://guides.lib.berkeley.edu/design
https://www.wichita.edu/services/mrc/OIR/Creative/1Design/design-elements.php

Course Outcomes		Knowledge Level
CO1	Demonstrate capabilities to employ appropriate color schemes in product creation.	**K2**
CO2	Demonstrate capabilities to synthesize 3D forms	**K2**
CO3	Interpret the essence of natural forms through 3D form synthesis	**K4**
CO4	Design products that are aesthetically pleasing.	**K6**
CO5	Design a form based on a theme	**K6**

Mapping Course Outcome VS Programme 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**

Course Designed By	BOS Date	Approved By
Dr. M. Aravind Shanmuga Sundaram Mr.Ariharasunthan. R	07.08.2023	BOS

SEMESTER III

CC	81933	Art Design and Culture	P	Credits- 2	Hours -3
Objectives	• To familiarise art and design movements and their impact in our daily life. • To educate about the cultural elements and their influence in contemporary societies. • To impart the constructs of semiotics and their ubiquitousness. • To develop skills to appreciate and employ ethnographic research practices. • To demonstrate learnings of this course by gathering and synthesis of information to curate cultural edifices of a society.				
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	Cultural Elements : artifacts, stories, rituals, symbols, beliefs, values, social organization and language. Cultural collaborations - Regional design Elements and practices –Indian Design. Study of material and cultural edifices.				
Unit III	Introduction to Semiotics Signs and interpretation theory and its uses in design - Social semiotics – Cultural semiotics – Semiotics in language, industry, education, science, tradition, anthropology - Semiotics in design – Basic semiotics theory (Signifier, Signified, Connotation, Denotation, Index, Icon, Symbol) – Design case studies in semiotics – Iconography				
Unit IV	Stages of ethnographic research - Selection of area to study – Review of literature – Sample selection - observations and data collections- 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 Textbooks

- *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*

Web Resources

Course Outcomes		Knowledge Level
CO1	Evaluate contemporary artifacts for their aesthetic and functional elements through the lens of "Design in culture".	**K5**
CO2	Describe the elements of culture and relate them to daily life.	**K1**
CO3	Examine the symbols around and interpret the semiotics behind them	**K4**
CO4	Formulate and conduct ethnographic research to study a society	**K6**
CO5	Determine the cultural symbols of a society by detailed curation.	**K5**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	-	1	3	3	2	1	1
CO2	3	2	2	1	3	2	2	2	1	2
CO3	3	2	2	1	3	2	2	2	1	2
CO4	3	3	1	-	1	1	1	1	1	3
CO5	3	1	1	1	1	2	2	2	3	3
W. AV	**3**	**2**	**1.6**	**0.6**	**1.8**	**2**	**2**	**1.8**	**1.4**	**2.2**

Mapping Course Outcome VS Programme Specific Outcomes

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

CC	81934	Elements of Form	P	Credits -3	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 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	81935	Elements of Graphic Design	P	Credits -3	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 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	81936	Technical Drawing	P	Credits -3	Hours -4
Objectives	• Educate students about the various types of technical drawings • Impart the nuances and importance of machine drawing • Enhance the understanding of technical drawings by introducing sectional views. • Emphasise the importance of exploded views in explaining the internals of a product. • Train the students to draw production ready drawings which is the culmination of a design act.				
Unit I	Line quality - Line weight - Importance of Proportions - Surfacing and detailing - Orthographic drawing - Isometric drawing - Perspective drawing - Details on isometric drawing and product design sketching styles				
Unit II	Code of practice for Machine Drawing – Conventions Abbreviation and Symbols – Drawing -threaded joints, riveted joints, welded joints, key, cotter joints, shaft coupling.				
Unit III	Sectional views – Types of sectional views - Selection of Fits and Tolerances – Method of placing limit dimensions. - Screw jack - Lathe tailstock - Lathe tool post - Tool head of a shaper - Engine piston and connecting rod				
Unit IV	Exploded views – take a product apart and make a linear or a multidimensional assembly drawing				
Unit V	Ideate a product and create the technical production ready drawing for the same.				
Reference and Text books • *Henry R Harms &Dennis Kroon, (1992), Production System Technology, Teacher's Annotated Edition, Glencoe-Mc Graw Hill, NY* • *James Craig, (1990), Production for the Graphic Designers, Watson-Guptill* • *Francis D K Ching with steven P. Juroszek, (2019) Design Drawing, 3rd Edition, John Wiley Publication* • *Koos Eissen&RosilinSteur (2009), Sketching: Drawing Techniques for Product Designers, BIS Publishers* • *Erik Olofsson & Klara Sjölén, (2005), Design Sketching* • *RoselienSteur&KoosEissen, (2011), Sketching: The Basics (2nd printing) [Hardcover]*, *BIS Publishers* • *N.D.Bhatt, Engineering Drawing*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Illustrate capabilities to present a product in different views	**K2**
CO2	Develop/understand a machine drawing for a designed project.	**K3**
CO3	Examine a product internals through sectional views	**K4**
CO4	Elaborate the parts of a product using exploded view.	**K6**
CO5	Create production ready drawing of a product	**K6**

Mapping Course Outcome VS Programme Outcomes

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

Mapping Course Outcome VS Programme Specific Outcomes

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

Allied	81937	Material Studio and Processes I	P	Credits -4	Hours -5
Objectives	• Impart training in workshop practice and enable students to understand wood working • Educate the students about the operations on materials to create a form • Introduce students to the practice and process of working with metal • Impart capabilities in students about joinery in metals • Enable students to furnish their learnings by creating a model in the workshop				
Unit I	Workshop practice of woodworking and wood carving - Types and properties of wood - understanding wood as a material – grains and aesthetic created - understanding the construction and the structure of a product made entirely of wood - Da Vinci's bridge.				
Unit II	Model making - removing the material - shaping/forming the material – construction - exploring possibilities around materials - combinations of materials - model making processes - using different carving and moulding techniques to make simple products. Joineries - creating volume – increasing length - changing angle - combining joineries and aesthetics – doors handle that gives character to the door.				
Unit III	Introduction to metal – properties – manufacturing processes - types of metals and alloys – industrial applications. Metal – finishing metal (filling dents) - Make a metal tray – box – metal wire modelling – explore prototyping possibilities with metals.				
Unit IV	Basic metal fabrication exercises – welding – types of welding - MIG - TIG – ARC – Butt joint – Tee joint – Corner joint – Lap joint – Edge joint Industrial visit to understand the various metal manufacturing and fabrication process.				
Unit V	Model making assignments using Wood and Metal and its learnings.				
Reference and Text books • *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* • *Colin Chapman, (2002), Resistant materials: wood, metal, plastic, 2nd Ed., Collins* • *Chris Lefteri, (2006), Plastics Handbook, Rotovision,* • *M Joseph Gordon Jr, (2002) Industrial Design of Plastics Products, Wiley Publishing Inc.* *Data Book on Plastics, Central Institute of Plastics Engineering & Technology, 2nd Ed. 2000*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Illustrate capabilities to work with wood to make models	**K2**
CO2	Develop capabilities to work with materials to create models	**K3**
CO3	Illustrate capabilities to work with metal to make models	**K2**
CO4	Express capabilities to create models by joining metals	**K2**
CO5	Construct a model in the workshop using wood or metal	**K6**

Mapping Course Outcome VS Programme 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**

SEMESTER IV

CC	81943	Aesthetics in Design	P	Credits -2	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	81944	Research Methodology	P	Credits- 2	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 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	81945	Digital Design Tools	P	Credits -3	Hours -3
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 graphicdigital 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 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	81946	Applied Ergonomics	P	Credits- 4	Hours - 4
Objectives	• To educate about the types and elements of ergonomics in play in daily life. • To explore the ergonomics and physiological factors in play during tool usage. • To understand the ergonomic factors and principles in play when designing for humans with various capacities. • To introduce ergonomic factors pertaining to the workspace under study. • To design and develop a product addressing an identified ergonomic factor to be improved.				
Unit I	Introduction to ergonomics, history, types of ergonomics. Basic Physiology, Nervous system, Motor system, anthropometry, percentiles. Applicability of ergonomic principles in daily life – physical ergonomics.				
Unit II	Percentiles. Types of body. Ergonomic stressors. Causes of Fatigue, Types of grips/holds. Gait analysis. Proprioception. Visual Ergonomics, Auditory ergonomics. Human Machine Interfaces – Product designs- domestic and industrial spaces. Ergonomic/Human factors tools in design.				
Unit III	.Cognitive Ergonomics. Perception, Cognition, Cognitive load. Norman's seven stages of action. Ergonomic considerations for children, adults and the elderly. Ergonomic considerations for special people. Ergonomic factors in rehabilitation device design.				
Unit IV	Ergonomic considerations in space design. Work spaces like shop floor, work benches, hospitals, schools etc., Ergonomic considerations in the kitchen and other domestic spaces. Agricultural tool design.				
Unit V	Identification of a point of improvement in a product. Ergonomic factors to be improved- ergonomic stressors. Development and ergonomic testing of the envisaged product Presentation of the product developed.				
Reference and Textbooks • *Engr MD Nursyazwi Mohammad, GreannaFrivaJainal, Ergonomics In Design: Ergonomics Book For Beginners,* CreateSpace,2013 • *Marcelo M. Soares (Editor), Francisco Rebelo, Ergonomics in Design, CRC press, 2019* • *Valerie J. Rice , Ergonomics in Health Care and Rehabilitation, Butterworth-Heinemann, 1998* • *Valerie J. Berg Lueder, Rani, Ergonomics for Children Paperback, CRC press,2019*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Describe the ergonomic principles that govern any product usage in our daily life	**K1**
CO2	Illustrate capabilities to evaluate a product or a task based on its ergonomic considerations.	**K2**
CO3	Examine an audience and identify the ergonomic factors that are applicable	**K4**
CO4	Choose relevant ergonomic factors to be considered to the space and product being designed	**K6**
CO5	Estimate the changes/improvements in a product based on ergonomic factors	**K6**

Mapping Course Outcome VS Programme 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**

Allied	81947	Material Studio and Processes II	P	Credits -4	Hours - 5
Objectives	• Educate students about the different types of plastics and their manufacturing process • Introduce students to the various forming operations on plastics • Enhance understanding of applications using plastics • Recognize the environmental impact of using plastics • Design a product using plastics				
Unit I	Understanding the different types of plastics – properties – manufacturing process – types of plastic fabrication process				
Unit II	Different applications – properties and usages of thermoplastics and thermosetting plastics – methods of manufacturing – vacuum forming – injection moulding – recycling process – understanding plastics and its pollutions.				
Unit III	Process of selection and application of plastics for engineering and consumer products – design limitation and specific advantages of plastic moulding processes- Making of FRP and using them to make products.				
Unit IV	Environmental impact of disposable plastic products – recycling method of different types of synthetic polymer – biodegradation – UV degradation - Industrial visit to understand the various manufacturing process. Sustainability considerations in plastic use.				
Unit V	Pick a product made of metal and design it in plastics – understanding what plastic is used and what manufacturing process will be used - Assignment submission and final display.				
Reference and Text books • *Resistant materials: wood, metal, plastic, Colin Chapman, Collins, 2nd Ed. 2002* • *Plastics Handbook, Chris Lefteri, Rotovision, 2006* • *Industrial Design of Plastics Products, M Joseph Gordon, Jr, Wiley Publishing, Inc.* • *Data Book on Plastics, Central Institute of Plastics Engineering & Technology, 2nd Ed. 2000*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express knowhow about the different types of plastics and their manufacturing process	**K2**
CO2	Illustrate knowledge in forming operations on plastics	**K2**
CO3	Identify applications that are best fit for plastics as a material.	**K3**
CO4	Evaluate the environmental impact of using plastics	**K5**
CO5	Develop a product using plastics	**K6**

Mapping Course Outcome VS Programme 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	81948	Project -1 Product Design	P	Credits -4	Hours -4
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	Illustratematerial 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 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**

SEMESTER V

CC	81951	Sustainable design	P	Credits- 4	Hours -6
Objectives	• To educate about the relevance of human evolution and design of tools. • To familiarise with the elements of sustainable design practices. • To emphasize about the types of sustainable design. • To familiarise with the material considerations in sustainable design. • To comprehend sustainable design in contemporary times through a project.				
Unit I	The evolution of Design as a discipline and its relationship to the environment. The important tools that shaped humankind. The discoveries and inventions that have influenced the world. The relationship of design to technology, art and craft and our daily life.				
Unit II	Introduction to Sustainable design – Definition – applications sustainable materials and practices.				
Unit III	Design for recycle - design for up-cycle - design for re-use.				
Unit IV	Sustainable materials and practices- choice of materials				
Unit V	Presentation in the form of a seminar/ poster that depicts the sustainable practices in contemporary world.				

Reference and Textbooks

- *David Raizman; History of Modern Design, Prentice Hall, 2004 - Cross, N; Design Thinking:*
- *John Heskett, Industrial Design, Thames, and Hudson,1987*
- *Victor Papanek, Design for the real world: Human Ecology and Social change, Academy Chicago Publishers, 1971*
- *http://designhistorytimeline.com/ - Journal of Design History, Oxford Journals*
- *Charles Darwin, The Origin of Species, Fingerprint publications,2013*
- *Richard Levins,Biology as Ideology: The Doctrine of DNA,HarperPerinnial, 1993*
- *JC Wandemberg. (2015), Sustainable by design*
- *Fuad-Luke Alastair. (2010), ecoDesign: The Sourcebook: Third Fully Revised Edition, Chronicle Books*
- *McLennan Jason. (2004), The Philosophy of Sustainable Design, Ecotone Publishing Company LLC*

Web Resources

Course Outcomes		Knowledge Level
CO1	Relate products in daily use to their evolutionary roots	**K2**
CO2	Expresses knowledge about sustainable design practices in daily life	**K2**
CO3	Assess the applicability of the type of sustainable design practices for a given problem	**K5**
CO4	Choose the appropriate material for the designed sustainable solution	**K6**
CO5	Develop a product with sustainable design considerations	**K6**

Mapping Course Outcome VS Programme 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	81952	Human Computer Interaction	P	Credits -2	Hours -2
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 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	81953	Design for Social Change	P	Credits -4	Hours -6
Objectives	• Educate students about the constructs of a society • Recognize the importance of relationship between design and society • Emphasise the importance of product design interventions in a society by conceptualizing a product. • Enhance the knowhow of design interventions in a society by designing visual designs. • Learn to observe and catalogue the transformations that design interventions set forth.				
Unit I	To do a reconnaissance survey of a village that has rich culture and heritage. To prepare a detailed report on the village to understand the culture, heritage, visual aesthetics, functional aesthetics, elements of design and other related elements by residing in the village for a desired period of time. Social models, Class- Caste hierarchies. What is a society ?.				
Unit II	Sketching, model making, digital presentation to study the character of the village and to understand the history of design evolution. Observations and identifying the problem in this society. Study and Research of the root cause of the problem.				
Unit III	Identifying and exploring the possible design solution. Conceptualize a product and develop a product.				
Unit IV	Create Posters, animation, hoarding, panels, an awareness campaign – Usages of social media platforms. Presentation of products developed as a designed solution.				
Unit V	Do design interventions in the society under study by introducing the products that were designed. Do user testing, observe and catalogue the results.				
Reference and Text books • *Andrew Shea, Design for social change, Princeton Architectural Press, 2012.* • *Nynke Tromp & Paul Hekkert, Design for Society: Products and services for a better world, Blumsbury Publication.* • *Sasha Costanza-Chock, Design Justice: Community-Led Practices to Build the Worlds We Need (Information Policy), The MIT Press.*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Outline the constructs of a society	**K2**
CO2	Relate with relationship between design and society	**K2**
CO3	Determine the effect of product design interventions in a society by conceptualizing a product.	**K5**
CO4	Create visual designs for a solution as a design solution.	**K6**
CO5	Illustrate capabilities to observe and catalogue the changes that design interventions set forth.	**K2**

Mapping Course Outcome VS Programme 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**

Allied	81954	Product Visualization and Presentation	P	Credits -4	Hours -6
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 charactersfor 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 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**

Allied	81955	AI for Design	P	Credits-2	Hours -2
Objectives	• Enhance understanding of design process by doing a low fidelity project • Introduce students to the history and evolution of AI • Familiarize students about the different types of AI • Emphasise the effect of AI by executing a design project using AI tools • Enhance the understanding of AI tools in design by comparing the results with conventional design process methods.				
Unit I	Project I : conduct a design project. Design and develop a product with conventional design process.				
Unit II	History of AI. Hot does AI work ?. AI applications-self driving cars, personalised services and products, Intelligent and responsive spaces. Context sensitive devices.				
Unit III	Types of AI – Narrow AI, General AI, Learning Engines - Supervised, Unsupervised, Reinforced and Transfer. Cognitive Computing. AI tools and their applications.				
Unit IV	Project II. Use AI tools in the Design process for the same brief as Project I. Use AI tools in user survey, data analysis, idea generation, product development.				
Unit V	Catalogue the differences between Project I and Project II in design process, Idea generation and evaluation and product development. Develop insights about application of AI in design				
Reference and Textbooks • *Oliver Theobald, AI for Absolute Beginners: A Clear Guide to Tomorrow, Kindle edition, 2023* • *Nick Bostrom,Superintelligence: Paths, Dangers, Strategies, Oxford University Press,2016* • *Max Tegmark, Life 3.0, Vintage, 2018* • *Stuart Russell, Human Compatible: Artificial Intelligence and the Problem of Control, Penguin Books, 2020* • *Helen Armstrong , Keetra Dean Dixon,Big Data, Big Design: Why Designers Should Care about Artificial Intelligence, Princeton Architectural Press,2021* • *David Jacobson, Human Factors and UX in the Age of AI: User Experience Design in the Age of Artificial Intelligence* Paperback, 2023					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Recall conventional Design process through practice	**K1**
CO2	Outline the history and evolution of AI	**K2**
CO3	Illustrate knowledge of the different types and flavors of AI tools	**K2**
CO4	Solve a design problem using AI tools in design process	**K6**
CO5	Identify the avenues for AI tools in design.	**K3**

Mapping Course Outcome VS Programme 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

DSE	81956	Project II – System Design	P	Credits- 4	Hours -6
Objectives	1.To enable the students to realise the relevance between design and systems view. 2.To address design problems through systems design. 3.To emphasize the interactions between subsystems and systems. 4.To understand systems in daily life through design analysis. 5. To create a system design intervention in an identified system to develop systems thinking.				
Unit I	System Thinking - Design Thinking and System Thinking from Design perspective - The Fifth Discipline approach - Scenario Maps and Metaphors				
Unit II	Types of systems. Leads from other systems like Biological, Social, Cultural, Economic etc. system interactions. Intra and Inter system interactions. Design intervention from within and outside the system. Problem Solving - Design of system level solutions				
Unit III	Complex Systems Understanding – strategizing - conceptualizing and designing for complex systems- system -subsystem interaction				
Unit IV	System Design - Designing complex artefacts - Design solutions that are suitable for systems in daily life :transportation – education – publishing - retailing				
Unit V	Project – with system level design solution - Research - Systems model - System design - Detail design – Giga Map – Final documentation				
Reference and Textbooks • *Ulrich Fleischmann, (2013), Burkhardt Leitner System designer, Av Edition Gmbh* • *Bryan Lawson, (2005), How designers think: the design process demystified, 4th edition, Architectural Press* • *Richard Morris, (2009), Fundamentals of Product Design, Academic Press*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express the importance of synthesizing design through system analysis	**K2**
CO2	Explain design problems through the lens of system design	**K5**
CO3	Determine design problems as an interaction between its subsystems	**K5**
CO4	Identify the systems in play in our daily life	**K3**
CO5	Create a design intervention with systems considerations	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

Open Elective					
OE	**81957A**	**Theatre for Design**	**P**	**Credits- 2**	**Hours -2**
Objectives	• Educate about the history of world drama • Familiarize with the various regional traditions of drama • Introduce set Design • Educate about the use of drama techniques in user research in Design • Learn Drama by practice				
Unit I	History of world drama and theatre. National and regional history of drama. Commedia dell'arte, Greek Theatre Tradition, Medieval and Modern Theatre principles. South Asian Theatre, Ancient Tamil performing arts tradition.				
Unit II	Study Therukoothu, Yakshaghana, Koodiyattam theatre. Social, cultural and political influences in Drama				
Unit III	Design : Motifs, techniques, boundaries (what can be done and what cannot be) Materials and process involved in set and prop preparation. Context based design.				
Unit IV	Use of drama in Design process. Role play in User research. Useability testing. Voice training, Mind Training.				
Unit V	Project : Develop a Theatrical presentation for a given topic				
Reference and Textbooks • *Howard Risatti, A Theory of Craft: Function and Aesthetic Expression, The university of North Carolina Press,2013* • *Laura Price,Geographies of Making, Craft and Creativity, Routledge,2018* • *Gustav Freytag, Technique of the Drama: An Exposition of Dramatic Composition and Art, University Press of the Pacific, December 2004* • *Brenda Laurel and Peter Lunenfeld, Design Research: Methods and Perspectives,The MIT Press, October 2003*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express the importance of understanding the history of drama	**K2**
CO2	Explain the various regional drama/ theatre genres	**K5**
CO3	Determine design elements of drama.	**K5**
CO4	Identify the methods and practices to tailor a user study using techniques from theatre	**K3**
CO5	Create a skit	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

Open Elective					
OE	**81957B**	**Craft Study - I**	**P**	**Credits- 2**	**Hours -2**
Objectives	• Educate about the history of the craft under study • Introduce the materials and their properties appropriate for the craft being studied • Educate by learning the foundation techniques of the craft. • Familiarize with methods to tailor the craft to user needs. • Educate comprehensively about the craft under study through a project This course " Craft Study I" shall be an avenue to explore indigenous and regional craft practices				
Unit I	Historic and cultural aspects of the craft				
Unit II	Materials and process involved in material preparation				
Unit III	Design : Motifs, techniques, boundaries (what can be done and what cannot be)				
Unit IV	User preferences from the craft's person's perspective.				
Unit V	Project : Develop an artefact and present it.				
Reference and Textbooks • *Howard Risatti, A Theory of Craft: Function and Aesthetic Expression, The university of North Carolina Press,2013* • *Laura Price,Geographies of Making, Craft and Creativity, Routledge,2018*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express the importance of understanding traditional craft practices	**K2**
CO2	Explain the choice of materials for the craft under study	**K5**
CO3	Determine design elements in the craft under study	**K5**
CO4	Identify the methods and practices to tailor a craft practice matching a user's need.	**K3**
CO5	Create a design using the craft under study	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

Open Elective					
OE	**81957C**	**Clay Modelling**	**P**	**Credits- 2**	**Hours -2**
Objectives	• Educate about the history of clay • Introduce the preparation methods of clay • Introduce the various techniques and methods involved in clay modelling • Educate about clay modelling through personal explorations • Educate clay modelling by doing a major team project				
Unit I	Clay as a material. History of clay. Clay's role in cultures. Types of clay. Curation of clay. Clay and societies. Clay and tradition. Terracotta. Clay as building material.				
Unit II	Use of clay. Curation and mixing of additives. Natural fibre reinforcement. Clay throwing. Clay throwing. Potter's wheel. Burning. Conventional and Modern Kilns.				
Unit III	Techniques in clay. Additive and Elimination. Slabs. Carving. Clay Reliefs. Sculpting using clay.				
Unit IV	Project I : Basic projects in clay. Individual exploration				
Unit V	Project II : Team Project. Develop an artefact using clay as a team				
Reference and Textbooks • *Howard Risatti, A Theory of Craft: Function and Aesthetic Expression, The university of North Carolina Press,2013* • *Laura Price,Geographies of Making, Craft and Creativity, Routledge,2018* • *Mary Louisa Hermione Unwin, A Manual of Clay-Modelling,November 2022* • *Alice North and Halsey North, Listening to Clay: Conversations with Contemporary Japanese Ceramic Artists, Monacelli press, May 2022*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express the importance of understanding traditional clay modelling practices	**K2**
CO2	Explain the methods of preparing clay	**K5**
CO3	Determine the appropriate clay modeling technique	**K5**
CO4	Identify the methods and practices to tailor a clay model	**K3**
CO5	Create a complex design using the clay as a material	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

SEMESTER VI

CC	81961	Value Analysis	P	Credits -4	Hours -4
Objectives	• Introduce the concept of value analysis to students. • Educate students about the Design parameters that influence value of a product. • Enhance understanding of value through feature vs cost analysis • Impart thorough understanding of Value analysis by analysing a product. • Train students to convey the value of a designed product through practice and presentation				
Unit I	Introduction value analysis. Design as a factor of value. Aesthetic value vs functional value. Value analysis systematic work plan:preparation, information gathering, analysis, innovation and creativity, implementation and evaluation and monitoring.				
Unit II	Cost vs Value Chart, Costs, function, alternative components, and design aspects such as ease of manufacture and assembly. Material selection, Portability				
Unit III	Functional analysis – Function Tree-Function vs Cost ratio.				
Unit IV	Value Analysis of an existing product - Analysis of a new concept or additional feature to an existing product.				
Unit V	Design and develop a product with considerations for value during design process .Presentation of the study in the form of a poster or a presentation				
Reference and Text books • *Lawrence MilesTechniques of Value Analysis and Engineering, Lawrence D.Miles foundation, 2015* • *George Anderson,Design Thinking for Tech: Solving Problems and Realizing Value in 24 Hours,Pearson education*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Illustrate know-how of value analysis of a product	**K2**
CO2	Identify the phases in design process where value could be enhanced	**K3**
CO3	Evaluate the value of a product by feature vs cost analysis	**K6**
CO4	Estimate the value of a product by doing Value analysis.	**K6**
CO5	Discuss the value of a product	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

CC	81962	Advanced Studies in Form	P	Credits -4	Hours -6
Objectives	• Educate students about advanced operations on form. • Introduce students to complex form geometries. • Understand 3D form manipulations. • Enable students to envisage new forms by analysing natural forms. • Enhance knowledge of forms by developing a prototype with an intent				
Unit I	Regular and semiregular geometric grids - symmetry operations – order - structure relationships - Tessellation - Regular and Semi-regular tessellation - modular tessellations - Symmetry				
Unit II	Introduction to the geometry of platonic solids and study of their inter-relationships- Derivation of Archimedean solids through truncation of regular solids - Boolean Solids				
Unit III	Construction of solids using paper - Introduction to the language of 3-Dimensional form - Studies in form and space - form manipulation - form transition - radii manipulation. Inter-relationship of 2D & 3D forms - Studies in light and shadow on 3-dimensional form and its photo documentation - Expressive form - combinatory forms and topology of 3-D forms				
Unit IV	Analysis of natural forms - understand the inter-relationship between form, movement (time and space) and structure.Creation of a three-dimensional abstract form -sketches to understand form and structure – visual mood boards to influence design process – ideate through physical models. Abstraction of the natural form with models at each stage of the process Transformation of derived form into a product				
Unit V	Transformation of derived form into a prototype.				
Reference and Text books • *Practices of looking: An Introduction to visual culture, Marita Sturken; Lisa Cartwright, 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	Express capabilities to perform advanced operations on form.	**K2**
CO2	Illustrate knowledge about complex form geometries.	**K2**
CO3	Construct 3D form manipulations.	**K6**
CO4	Generate new forms by analyzing natural forms.	**K6**
CO5	Develop a form with an intent	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

CC	81963	Toy and Game Design	P	Credits- 4	Hours -6
Objectives	• Introduce students to play theories • Impart an understanding of the relationship between cognition and play • Emphasise about the details of toy design and development • Familiarize students with the constituents of Game design • Learn to design and develop a toy or a a game to practice the theories learnt in the course				
Unit I	What is play ? Types of play. Play theories. - Play Pyramid. Child and adult play. Play and learning. Play therapy, play for diagnosis and rehabilitation. Culture, society and play. Dyadic play, Play spaces. Play rhythms.				
Unit II	Cognitive development theories. Jean piaget's development milestones. Transitional object – Winnicot. Play and learning. Vygotsky's Zone of proximal development. Flow theory.				
Unit III	What is a toy?. Types of toys. Toys for children. Basics of toy design, Aesthetics, and form. Ergonomics in Toy design. Therapeutic toys. Toys for the elderly. Toy as a tool.				
Unit IV	Elements of Game design. Themes and aesthetics in Games. Story telling for games. Goal oriented behaviour. Reward systems. Pleasure vs addiction. Game aesthetics. Social and cultural influences in games. Hybrid games.				
Unit V	Design a game or a toy for a target group/user. Design a toy/game for a target group/user. User survey, ideation. Material Selection. Development. User testing. Iterative design. Presentation.				
Reference and Textbooks • *D.W.Winnicot, Playing and Reality,Routledge,1971* • *Johan Huizinga, Homo LeudensA Study of the Play-Element in Culture, Angelico Press, 2016* • *Jean Piaget, Play, Dreams and Imitation in Childhood, Hassell Street Press,2021* • *Chris van, Toy Design, Thames and Hudson,2009* • *Gísli Thorsteinsson (Author), Dr Tom Page, The Value of Good Toy Design for Children,Lambert,2012* • *Jesse Schell, The Art of Game design, CRC Press,2019* • *Colleen Macklin, John Sharp, Games, Design and Play: A detailed approach to iterative game design, Addison-Wesley,2016*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Define play, its types and constructs	**K1**
CO2	Relate to the cognitive aspects during play with a toy	**K1**
CO3	Express a thorough understanding of toy design and developmen2	**K5**
CO4	Explain the details of game design and its strategy	**K5/K2**
CO5	Develop a toy or a game for a given audience/user	**K6**

Mapping Course Outcome VS Programme Outcomes

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

Allied	81964	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, secondaryand 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 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										

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

Allied	81965	Portfolio Skills	P	Credits- 2	Hours -2
Objectives	• To familiarise students to the constructs of a portfolio. • To educate the students to appropriately curate the contents of a portfolio. • To emphasize the importance of multimedia portfolio presentations. • To impart training to make an effective portfolio. • To highlight the importance of making effective portfolio presentations.				
Unit I	Introduction to Portfolio Making – Different styles – Websites and Portals				
Unit II	Collection and preparation of the resources- Layout & compositions				
Unit III	Presentation of the Design Process - Show-Reel of the Animation work				
Unit IV	Portfolio development exercises				
Unit V	Mock presentations and submissions				
Reference and Textbooks • *Debbie Rose Myers & Graphic Designer, (2009), Guide to Portfolio Design, John Wiley & Sons, Inc.* • *Sara Eisenman, (2006), Building Design Portfolios (Innovative Concepts for Presenting Your Work), Rockport Publishers* • *Craig Welsh, (2013), Design: Portfolio: Self-promotion at its best, Rockport Publisher.*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Define the contents of a designer's portfolio	**K1**
CO2	Determine the appropriate contents of a portfolio	**K5**
CO3	Express portfolio through multimedium means	**K2**
CO4	Create a model portfolio	**K6**
CO5	Practice portfolio presentations	**K3**

Mapping Course Outcome VS Programme 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**

DSE	81966	Project III – 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 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**

Open Elective					
OE	**81967A**	**Puppetry**	**P**	**Credits- 2**	**Hours -2**
Objectives	• Educate about the history of clay • Introduce the preparation methods of clay • Introduce the various techniques and methods involved in clay modelling • Educate about clay modelling through personal explorations • Educate clay modelling by doing a major team project				
Unit I	History of puppets. Puppets and human civilizations. International, National and regional puppetry. Social, cultural and political impacts and interactions with puppetry				
Unit II	Types of puppets : Shadow Puppets (Thol pavai koothu) ,Glove Puppets, Rod and stick Puppets, Finger Puppets, Ventriloquist Puppets, Marionettes,				
Unit III	Design of puppets. Techniques, Set design. Story telling through puppets. Voice and light training.				
Unit IV	Development of puppet characters using a traditional technique.				
Unit V	Project : Team Project. Develop puppet play				
Reference and Textbooks • *Howard Risatti, A Theory of Craft: Function and Aesthetic Expression, The university of North Carolina Press,2013* • *Laura Price,Geographies of Making, Craft and Creativity, Routledge,2018* • *Liam Jarvis, Sue Buckmaster,Theatre-Rites: Animating Puppets, Objects and Sites, July 2021* • *Arthur B. Allen ,Puppetry for Beginners (Puppets & Puppetry Series),Read Books, April 2006*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express the importance of understanding traditional puppetry practices	**K2**
CO2	Explain the various types of puppets	**K5**
CO3	Determine the appropriate puppet and set design	**K5**
CO4	Identify the methods and practices to develop a puppet character	**K3**
CO5	Create a puppet skit	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

Open Elective					
OE	**81967B**	**Craft Study - II**	**P**	**Credits- 2**	**Hours -2**
Objectives	• Educate about the history of the craft under study • Introduce the materials and their properties appropriate for the craft being studied • Educate by learning the foundation techniques of the craft. • Familiarize with methods to tailor the craft to user needs. • Educate comprehensively about the craft under study through a project This course " Craft Study II" shall be an avenue to explore indigenous and regional craft practices				
Unit I	Historic and cultural aspects of the craft				
Unit II	Materials and process involved in material preparation				
Unit III	Design : Motifs, techniques, boundaries (what can be done and what cannot be)				
Unit IV	User preferences from the craft's person's perspective.				
Unit V	Project : Develop an artefact and present it.				
Reference and Textbooks • *Howard Risatti, A Theory of Craft: Function and Aesthetic Expression, The university of North Carolina Press,2013* • *Laura Price,Geographies of Making, Craft and Creativity, Routledge,2018*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express the importance of understanding traditional craft practices	**K2**
CO2	Explain the choice of materials for the craft under study	**K5**
CO3	Determine design elements in the craft under study	**K5**
CO4	Identify the methods and practices to tailor a craft practice matching a user's need.	**K3**
CO5	Create a design using the craft under study	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

Open Elective					
OE	**81967C**	**Storytelling**	**P**	**Credits- 2**	**Hours -2**
Objectives	• Educate about the history of Storytelling. • Introduce the elements of a story. • Educate about story telling design for targeted audience. • Introduce the various techniques and methods involved in storytelling and product design. • Educate story telling by doing a major team project				
Unit I	Storytelling as an art. History of story telling traditions. Fiction and nonfiction genres. Regional story telling traditions.				
Unit II	Narratives, character building and emphasis, plot design.				
Unit III	User based story telling. Story telling for children, adults, and elderly. Voice training, pausing, and timing in storytelling. Set design. Multi modal (visual, aural and other sensual) narratives				
Unit IV	Use of storytelling techniques in product design. Design process, product abstraction and presentation techniques				
Unit V	Project II: Team Project. Develop story and present it				
Reference and Textbooks • *Howard Risatti, A Theory of Craft: Function and Aesthetic Expression, The university of North Carolina Press,2013* • *Laura Price,Geographies of Making, Craft and Creativity, Routledge,2018* • *Will Storr, The Science of Storytelling: Why Stories Make Us Human, and How to Tell Them Better,William Collins, March 2020* • *Ellen Lupton, Design is Storytelling, Cooper-Hewitt Museum, November 2017*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Express the importance of history of story telling	**K2**
CO2	Explain the elements of story telling	**K5**
CO3	Determine the appropriate story telling technique for the identified audience	**K5**
CO4	Identify the methods and practices of story telling and use them in Design	**K3**
CO5	Create a story.	**K6**

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	-	1	2	2	3	2	3
CO2	3	3	-	-	2	2	2	3	3	3
CO3	3	2	-	-	1	3	2	3	2	3
CO4	3	2	2	-	2	2	2	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3
W. AV	**3**	**2.6**	**1**	**0.4**	**1.6**	**2.2**	**2.2**	**3**	**2.4**	**3**

Mapping Course Outcome VS Programme Specific Outcomes

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

SEMETSER VII

CC	81971	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 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	81972	New Media Design	P	Credits- 4	Hours -6
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 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**

CC	81973	New Product Development	P	Credits -4	Hours -6
Objectives	• Educate students about new product design and strategy. • Introduce the essence of business plan and its formulation. • Enable students to employ DFMA analysis on concepts being designed. • Impart training to students to conduct user testing (alpha and beta stages) • Enhance the understanding of Product development by showcasing the process to an audience				
Unit I	User study and the formation of the design brief. Need vs Want, Maslow's theory. Product bench marking. New product strategy, market research and analysis. QFD analysis				
Unit II	Business plan, budgeting, basic balance sheet. Business plan writing. Lighting pitch.				
Unit III	Concept development, Development of protype and analysis of design using DFMA tools.				
Unit IV	A/B testing, analysis of test results and iterative product improvement.				
Unit V	Presentation of the product developed along with showcasing of the process.				
Reference and Text books • *Kevin Otto and Kristin Wood, Product Design: Techniques in Reverse Engineering and New Product Development, Pearson, 2001* • *Karl Ulrich and Steven D. Eppinger, Product Design and Development, McGraw Hill, 2020* • *Joseph P. Ficalora, Louis Cohen, Quality Function Deployment and Six Sigma: A QFD Handbook, Pearson, 2009*					
Web Resources					

Course Outcomes		Knowledge Level
CO1	Outline a new product design and strategy.	**K2**
CO2	Develop a business plan for a product/service	**K3**
CO3	Examine a designed concept using DFMA analysis tools.	**K5**
CO4	Evaluate a designed product for its function by doing Alpha/beta testing.	**K5**
CO5	Elaborate on the Product development process to an audience through a presentation	**K6**

Mapping Course Outcome VS Programme 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**

CC	81974	Project IV- Interaction Design	P	Credits- 4	Hours -6
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 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**

CC	81975	Visual Merchandising	P	Credits- 4	Hours -6
Objectives	1. To introduce the evolution of visual merchandising 2. To familiarise with branding and its elements 3. To impart the nuances of visual identity 4. To learn the facets of visual merchandising by designing collaterals 5. To gain a complete understanding of branding through a collective project				
Unit I	Introduction to branding - Definition, History, and developments - Steps involve - Various branding strategies.				
Unit II	Branding for existing or hypothetical company – Research and identifying attributes – Target audience – Market study.				
Unit III	Create a visual identity – logo – Graphic design and Typographical exploration.				
Unit IV	Applying to collaterals – VC – Letterhead – Envelope – Tabletop – T-shirt – Cap - 3D explorations.				
Unit V	Developing a Brand manual and Display/mock-ups - Display Fixtures - Signage and Graphics program. Window Displays that are dramatic, powerful, and engaging, efficient lighting program, Colour and Materials selections.				

Reference and Textbooks

- *Melissa Davis, more than a Name: An Introduction to Branding, Academic Press.*
- *Jeff Fisher (2007), Identity Crisis: 50 redesigns that transformed stale identities into successful brands, How Books.*
- *Kevin Budelman, Yang Kim & Curt Wozniak, Brand Identity Essentials:100 Principles foe Designing Logos and Building Brands, Rockport Publishers.*
- *Huckerby, P(2015).“Easy Visual Merchandising: An Outstanding Visual Guide For 21st Century Retail”.*
- *Schielke, T; Leudesdorff, M (2015). "Impact of lighting design on brand image for fashion retail stores". Lighting Research and Technology. 46 (6): 672–692. doi:10.1177/1477153514541831.*

Web Resources

Course Outcomes		Knowledge Level
CO1	Generate appropriate visual merchandising strategies as applicable	**K4**
CO2	Critically assess a branding practice	**K5**
CO3	Interpret the core characteristics of a product by creating an effective visual identity	**K5**
CO4	Compile relevant branding collaterals for a product under study	**K6**
CO5	Develop a comprehensive branding strategy for a product/service	**K6**

Mapping Course Outcome VS Programme Outcomes

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

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	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	2	2
W. AV	**3**	**3**	**3**	**2**	**2**

Allied	81976	Design Management and Professional Practice	P	Credits- 2	Hours -2
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 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**

DSE	81977	Design For Future	P	Credits- 2	Hours -2
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 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 VIII

CC	81981	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 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**

DSE	81982	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 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

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	**C+**	Third Class
4.0 and above but below 4.5	**C**	
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.