SGT UNIVERSITY
SHREE GURU GOBIND SINGH TRICENTENARY UNIVERSITY
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FACULTY OF DESIGN

Four Year Undergraduate Programme

Bachelor of Design (Honours/ Honours with Research)
Product Design

Academic Year 2024-25 onwards

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1. Nature and extent of the program

The Faculty of Design offers the Bachelor of Design (B. Des.) Product Design program, acknowledging the critical role that innovative and user-centric product design plays in improving everyday life and driving industry advancements. This program is thoughtfully structured to prepare students for the fast-paced and continually evolving field of product design, equipping them with the skills and knowledge necessary to create functional, aesthetically pleasing, and marketable products.

Our program offers a holistic and multidisciplinary education that combines design principles, technical skills, and a deep understanding of user needs and market trends. Students will learn to integrate creativity with practicality, considering factors such as ergonomics, sustainability, and manufacturing processes. The curriculum covers a wide range of topics, including design thinking, materials and manufacturing technologies, computer-aided design (CAD), and the history and theory of product design, ensuring a comprehensive understanding of the field.

Our B. Des. Product Design program features a comprehensive design education that balances theoretical knowledge with practical application, allowing students to develop a deep understanding of design principles through diverse projects spanning various product categories. Integrating elements of industrial design, engineering, and business, the interdisciplinary approach prepares students for diverse career paths and encourages innovative problem-solving. Students benefit from state-of-the-art facilities, including design studios, prototyping labs, and digital fabrication tools, fostering hands-on learning and creativity. Emphasizing real-world experience, the program offers opportunities for internships, industry projects, and professional collaboration to build valuable networks and gain industry insights. With a strong focus on sustainable and ethical design, students are encouraged to consider the environmental and social impact of their work, using sustainable materials to create responsible products. Our commitment to an inclusive and supportive learning environment ensures that students from diverse backgrounds feel welcome and valued, enriching the learning experience and leading to more innovative and representative design solutions.

The B. Des. Product Design program is dedicated to cultivating the next generation of product designers who are equipped with a strong foundation in design, technical skills, and ethical practices. Our graduates are prepared to lead and innovate in the field of product design, creating products that enhance functionality, aesthetics, and sustainability in a rapidly changing world.

2. PROGRAMME EDUCATIONAL OBJECTIVES (PEO's)

PEO No.	Education Objective
PEO1	**Creative Design Proficiency:** Graduates will demonstrate proficiency in creative design processes, including conceptualization, ideation, and the development of innovative product concepts that integrate aesthetic, cultural, and market influences.
PEO2	**Technical Competence:** Graduates will possess technical skills in product design, including materials selection, prototyping, manufacturing techniques, and CAD tools, enabling them to translate design concepts into tangible, high-quality, and functional products.
PEO3	**Industry Relevance:** Graduates will be equipped with an understanding of the global product design industry, including trends, markets, consumer behavior, and sustainable practices, enabling them to adapt to evolving industry demands and contribute effectively to the product design sector.
PEO4	**Communication and Collaboration:** Graduates will demonstrate effective communication skills and the ability to collaborate with diverse stakeholders, including clients, manufacturers, engineers, and other professionals, in order to convey design concepts, negotiate requirements, and execute projects successfully.
PEO5	**Professionalism and Ethical Practice:** Graduates will exhibit professionalism, integrity, and ethical responsibility in their conduct as product designers, recognizing the social, cultural, and environmental implications of their work and striving to create products that promote inclusivity, diversity, and sustainability.

3. GRADUATE ATTRIBUTES:

S. No.	Attributes	Description
1	Professional / Disciplinary Knowledge	Graduates will possess a comprehensive understanding of product design principles, theories, and techniques, demonstrating proficiency in areas such as materials selection, prototyping, manufacturing processes, and product lifecycle management.
2	Technical / Laboratory / Practical Skills	Graduates will be adept in utilizing various tools, equipment, and technologies relevant to product design, including CAD software, prototyping equipment, manufacturing techniques, and product testing methodologies.
3	Communication Skills	Graduates will effectively convey ideas, concepts, and product design proposals through written, verbal, and visual means, facilitating clear communication with clients, collaborators, and stakeholders within the product design industry.
4	Cooperation/Teamwork	Graduates will demonstrate the ability to collaborate effectively in multidisciplinary teams, fostering a cooperative and inclusive environment to achieve collective product design goals and objectives.
5	Professional Ethics	Graduates will uphold ethical standards and integrity in all aspects of their professional practice as product designers, including respect for intellectual property rights, sustainable design practices, and cultural sensitivity in product representation.
6	Research / Innovation-related Skills	Graduates will possess research capabilities to explore emerging trends, materials, and technologies in product design, fostering innovation and creativity in their design processes and outcomes.
7	Critical Thinking and Problem Solving	Graduates will analyze complex design challenges critically, employing strategic problem-solving skills to develop innovative and practical solutions within the constraints of industry demands.
8	Reflective Thinking	Graduates will engage in reflective practice, evaluating their product design processes, decisions, and outcomes to identify areas for improvement, personal growth, and professional development.
9	Information/Digital Literacy	Graduates will demonstrate proficiency in accessing, evaluating, and utilizing information from diverse sources, including digital platforms, databases, and scholarly resources relevant to product design.
10	Multi-cultural Competence	Graduates will exhibit cultural sensitivity and awareness, respecting diverse perspectives, traditions, and identities in their product design practice and interactions with global audiences and markets.
11	Leadership Readiness/Qualities	Graduates will demonstrate leadership potential and qualities, inspiring and motivating others through effective communication, vision-setting, and decision-making within product design projects and professional contexts.
12	Lifelong Learning	Graduates will recognize the importance of continuous learning and professional development, actively seeking opportunities to enhance their skills, knowledge, and expertise throughout their careers in the dynamic field of product design.

4. QUALIFICATION DESCRIPTORS:

Knowledge and Understanding: Students will demonstrate a comprehensive understanding of design principles, product history, materials, manufacturing processes, and business concepts related to product design.

Design Skills: Students will develop proficient design skills, including sketching, 3D modeling, prototyping, and digital design software proficiency, to create innovative and aesthetically pleasing product designs.

Technical Competence: Students will acquire technical competence in product design processes, such as CAD modeling, rapid prototyping, material selection, and product assembly, to translate design concepts into tangible products with precision and quality.

Creativity and Innovation: Students will exhibit creativity and innovation in conceptualizing and developing product designs that integrate aesthetic, cultural, and market influences, demonstrating originality and flair in their design work.

Critical Thinking and Problem-Solving: Students will demonstrate critical thinking skills and the ability to analyze design problems, identify solutions, and make informed decisions in the context of product design.

Communication and Presentation: Students will effectively communicate their design ideas through verbal, written, and visual means, and present their work professionally to diverse audiences.

Collaboration and Teamwork: Students will collaborate effectively with team members, clients, manufacturers, engineers, and other stakeholders, demonstrating interpersonal skills, flexibility, and the ability to work collaboratively towards shared goals.

Ethical and Professional Practice: Students will uphold ethical standards and professional integrity in all aspects of their work as product designers, demonstrating awareness of social, cultural, and environmental implications and striving to create products that promote inclusivity, diversity, and sustainability.

Industry Awareness and Adaptability: Students will develop an understanding of the global product design industry, including trends, markets, consumer behavior, and sustainable practices, and demonstrate adaptability to evolving industry demands and emerging technologies.

Portfolio Development and Self-Promotion: Students will compile a professional portfolio showcasing their design projects, skills, and creative abilities, and effectively promote themselves and their work to potential employers, clients, and collaborators.

Qualification for the admisison: 10+2 with 50% marks

Lateral entry: Candidate who have passed minimum 3 years Diploma after 10th and 1 or more years after 10+2 with 50% marks or equivalent in any branch of Fine Art/Paintng/Applied Art/Sculpture/Product Design/Communication Design/Craft/Mass Media/Photography/Advertsing/ Graphics/Animations Design/ Interior Design etc or other relevant or allied design subjects.

5. PROGRAMME OUTCOMES

PO No.	Attribute	Competency
PO1	Knowledge Acquisition	Obtain comprehensive and specialized knowledge in the field of product design and allied areas, encompassing a global perspective. Demonstrate the ability to discern, evaluate, analyze, synthesize, and integrate existing and new knowledge in the field of product design and related disciplines to enhance overall understanding.
PO2	Application of Design Fundamentals	Utilize knowledge of design elements, principles, and concepts to generate innovative designs across diverse domains. Employ techniques such as prototyping, material selection, and ergonomics to create functional and aesthetically pleasing products.
PO3	Design Thinking	Employ lateral and creative thinking to conceive and solve design problems, assessing a broad range of viable and optimal solutions. Consider public health, safety, cultural, societal, and environmental factors when developing design solutions.
PO4	Product Business Management	Display comprehension of design and management principles, effectively applying them in personal work and as a member and leader of a team. Competently manage projects in specific disciplines and interdisciplinary environments, considering economic and financial factors.
PO5	Sustainable Product Development	Embrace professional and intellectual integrity, adhere to ethical behavior, and follow a professional code of conduct in product design and scholarly pursuits. Recognize the influence of research outcomes on professional practices and contribute to sustainable development in society.
PO6	Visual Communication	Effectively convey ideas visually through sketches, digital illustrations, CAD models, and presentation boards, facilitating clear communication with clients, collaborators, and stakeholders within the design industry.
PO7	Collaborative and Multidisciplinary Work	Showcase collaborative and multidisciplinary skills through innovative design projects, blending diverse perspectives from engineering, marketing, and technology. This prepares graduates for dynamic careers in the industry.
PO8	Lifelong Learning	Exhibit a commitment to lifelong learning, continuously evolving skills and knowledge to thrive in an ever-changing industry, staying innovative and creative throughout their careers.
PO9	Research Skills	Demonstrate adept research skills, informing the design process with deep insights into historical, cultural, and market trends, resulting in conceptually rich and relevant products.
PO10	Product Design Career	Pursue a career in product design and develop expertise in various roles such as product designer, industrial designer, user experience designer, design manager, or design consultant.
PO11	Industry or Entrepreneurship Career	Pursue a professional career in the product design industry as a technical designer, brand manager, product developer, production manager, or establish and manage one's own design firm or brand.

6. PROGRAMME'S SPECIFIC OUTCOMES (PSOs):

PSO No.	Competency
PSO1	**Product Design Research** Graduates will proficiently conduct in-depth research, leveraging historical, cultural, and market insights to inform their design process, resulting in conceptually rich and contextually informed product designs.
PSO2	**Entrepreneurship in Design** Graduates will develop the entrepreneurial skills necessary to establish and manage their own design businesses, including strategic planning, financial management, branding, and marketing, fostering innovation and sustainability in the industry.
PSO3	**Design Management Skills** Graduates will demonstrate proficiency in design management, including product development, supply chain management, retail operations, and team leadership, enabling them to excel in various roles within design firms and organizations.
PSO4	**Trend Forecasting in Design** Graduates will possess the ability to anticipate and interpret emerging design trends, utilizing data analysis, consumer behavior insights, and creative intuition to forecast future directions in the industry, driving strategic decision-making and product development.

7. COURSE STRUCTURE

SEMESTER – I

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120101	DSC-1	History of Art and Design	4	0	0	4	60	40	100
15120102	DSC-2	Fundamentals of Design	0	0	8	4	60	40	100
15120103	DSC-3	Colors Theories in Design	0	0	8	4	60	40	100
15120104	SEC-1	Introduction to Design Process	0	0	4	2	30	20	50
	GE- 1	GE- 1	4	0	0	4	60	40	100
	AECC-1	AECC-1	2	0	0	2	30	20	50
	VAC-1	VAC-1	2	0	0	2	30	20	50
		Total				**22**			

Note – L: Lecture Hour/week, T: Tutorial Hour/week, P: Practical Hour/week, CL: Hour/week, C: Credits, IAE: Internal Assessment Examination, ESE: End Semester Examination.

SEMESTER – II

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120201	**DSC -4**	Product Development Process	4	0	0	4	60	40	100
15120202	**DSC-5**	Fundamentals of Drawing	0	0	8	4	60	40	100
15120203	**DSC-6**	Design Research	0	0	8	4	60	40	100
15120204	**SEC-2**	Material Exploration	0	0	4	2	30	20	50
	GE- 2	GE- 2	4	0	0	4	60	40	100
	AECC- 2	AECC- 2	2	0	0	2	30	20	50
	VAC- 2	VAC- 2	2	0	0	2	30	20	50
		Total				**22**			

UG CERTIFICATE in Design - (Total Credit: 44)

Semester	Skill Enhancement Courses	Ability Enhancement compulsory Courses	Value Added Courses
I	Introduction to Design Process	Environment Science/ MIL	Value Added Course (VAC-1)
II	Material Exploration	Environment Science/ MIL	Value Added Course (VAC-2)

General Elective can be choosen from university umbrella courses offered by other departments / minor degree tracks

Students who wish to exit after the first two semesters will undergo a 4-credit workbased learning/internship during the summer term in order to get a UG Certificate.

SEMESTER – III

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120301	**DSC-7**	Form Realization in Product Design	0	0	8	4	60	40	100
15120302	**DSC-8**	Product Design and Rendering Technique I	0	0	8	4	60	40	100
15120303	**DSC-9**	Model Making Techniques	0	0	8	4	60	40	100
15120304	**IACP/ SEC-3**	Internship I	0	0	4	2	25	25	50
15120305	**DSE-1**	Product Ergonomics or	0	0	8	4	60	40	100
15120306	**DSE-1**	Design Research Methodology OR	0	0	8				
	GE 3	GE 3	4	0	0				
	AECC-3	AECC-3	2	0	0	2	30	20	50
	VAC- 3	VAC- 3	2	0	0	2	30	20	50
		Total				**22**			

SEMESTER – IV

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120401	**DSC-10**	Product Manufacturing Processes	0	0	8	4	60	40	100
15120402	**DSC-11**	Product Design and Rendering Technique II	0	0	8	4	60	40	100
15120403	**DSC-12**	Digital Product Design Project I	0	0	8	4	60	40	100
15120404	**IACP/ SEC-4**	Internship II	0	0	4	2	25	25	50
15120405	**DSE-2**	Visual Communication or	0	0	8	4	60	40	100
15120406	**DSE-2**	Product Videography & Photography OR	0	0	8				
	GE 4	GE 4	4	0	0				
	AECC-4	AECC-4	2	0	0	2	30	20	50
	VAC- 4	VAC- 4	2	0	0	2	30	20	50
		Total				**22**			

UG DIPLOMA in Product Design- (Total Credit: 88)

Semester	Discipline Specific Electives	IACP/ Skill Enhancement Courses	Ability Enhancement Compulsory Courses	Value Added Courses
III	**DSE1:** Product Ergonomics / Design Research Methodology	Internship I	Environment Science/ MIL	Value Added Course (VAC-3)
IV	**DSE2:** Visual Communication/ Product Videography & Photography	Internship II	Environment Science/ MIL	Value Added Course (VAC-4)

SEMESTER – V

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120501	**DSC-13**	Product Design Empathy	0	0	8	4	60	40	100
15120502	**DSC-14**	Digital Product Design II	0	0	8	4	60	40	100
15120503	**DSC-15**	Product Semantics	0	0	8	4	60	40	100
15120504	**IACP/ SEC-5**	Internship III	0	0	4	2	25	25	50
15120505	**DSE-3**	Design For Special Needs	0	0	8	4	60	40	100
15120506	**DSE-3**	Techno-Aesthetic Detailing	0	0	8				
	GE- 5	GE- 5	4	0	0	4	60	40	100
		Total				**22**			

SEMESTER – VI

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120601	**DSC-16**	Trend Forecasting in Product Design	0	0	8	4	60	40	100
15120602	**DSC-17**	AI in Product Design	0	0	8	4	60	40	100
15120603	**DSC-18**	Industrial Product Design	0	0	8	4	60	40	100
15120604	**IACP/ SEC-6**	Internship IV	0	0	4	2	25	25	50
15120605	**DSE-4**	Packaging Design	0	0	8	4	60	40	100
15120606	**DSE-4**	Product Styling	0	0	8				
	GE-6	GE-6	4	0	0	4	60	40	100
		Total				**22**			

Bachelor of Design (Honours) Product Design (Total Credits: 132)

Semester	Discipline Specific Electives	IACP/ Skill Enhancement Courses
V	**DSE3:** Design For Special Needs/ Techno-Aesthetic Detailing	Internship III
VI	**DSE4:** Packaging Design/ Product Styling	Internship IV

SEMESTER –VII

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120701	**DSC-19**	Product Portfolio	0	0	8	4	60	40	100
15120702	**DSE 5**	Human Centric Design	0	0	8	4	60	40	100
15120703	**DSE 5**	Intellectual Property Rights **AND**	0	0	8				
15120704	**DSE 6**	Design Ethics	4	0	0	4	60	40	100
15120705	**DSE 6**	Design Management **AND**	4	0	0				
15120706	**DSE 7**	Design Ethnography or	0	0	8	4	60	40	100
15120707	**DSE 7**	Lifestyle Product Design **OR**	0	0	8				
	GE-7	GE-7	4	0	0				
15120708	**RP 1**	Dissertation I	0	0	12	6	50	50	100
		Total				**22**			

SEMESTER –VIII

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120801	**DSC-20**	Product Design Project	0	0	8	4	60	40	100
15120802	**DSE 8**	Product Costing	0	0	8	4	60	40	100
15120803	**DSE 8**	Product Management **AND**	0	0	8				
15120804	**DSE 9**	Computer Aided Manufacturing	0	0	8	4	60	40	100
15120805	**DSE 9**	Product Finishing **AND**	0	0	8				
15120806	**DSE 10**	Applied Ergonomics	0	0	8	4	60	40	100
15120807	**DSE 10**	Advanced Materials	0	0	8				
15120808	**RP 2**	Dissertation II	0	0	12	6	50	50	100
		Total				**22**			

Degree in Bachelor of Design (Honours with Research) Product Design (Total Credit = 176)

Semester	Discipline Specific Electives	Dissertation / Research Project
VII	**DSE 5:** Human Centric Design / Intellectual Property Rights **AND** **DSE 6:** Design Ethics / Design Management **AND** **DSE 7 or GE 7:** Design Ethnography/ Lifestyle Product Design **or GE7**	Dissertation -I
VIII	**DSE 8:** Product Costing/ Product Management **AND** **DSE 9:** Computer Aided Manufacturing/ Product Finishing **AND** **DSE 10:** Applied Ergonomics/ Advanced Materials	Dissertation - II

8. SEMESTER-WISE COURSE DETAILS

SEMESTER – I

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120101	DSC-1	History of Art and Design	4	0	0	4	60	40	100
15120102	DSC-2	Fundamentals of Design	0	0	8	4	60	40	100
15120103	DSC-3	Colors Theories in Design	0	0	8	4	60	40	100
15120104	SEC-1	Introduction to Design Process	0	0	4	2	30	20	50
	GE- 1	GE- 1	4	0	0	4	60	40	100
	AECC-1	AECC-1	2	0	0	2	30	20	50
	VAC-1	VAC-1	2	0	0	2	30	20	50
		Total				**22**			

Note – L: Lecture Hour/week, T: Tutorial Hour/week, P: Practical Hour/week, CL: Hour/week, C: Credits, IAE: Internal Assessment Examination, ESE: End Semester Examination.

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120101
Course Title	History of Art and Design
Academic Year	I
Semester	I
Number of Credits	4
Course Prerequisite	NA
Course Synopsis	The "History of Art and Design" course offers an exploration of art and design evolution from ancient times to today. Students will study key historical periods, movements, influential figures, and significant works, understanding the cultural, social, and political contexts that shaped various styles and practices. Through lectures and critical discussions, students will recognize diverse media and techniques, from traditional to modern digital works. By the course's end, students will recall major milestones, understand influential contexts, apply historical knowledge to contemporary analysis, critically evaluate various influences, and create works inspired by historical principles. This course cultivates a comprehensive perspective on art and design history, equipping students with the knowledge to appreciate and contribute meaningfully to the field.

Course Outcomes:
At the end of the course students will be able to:

CO1	Remember: Recall key historical periods, movements, and influential figures in art and design.
CO2	Understand: Comprehend the principles, philosophies, and contexts behind various art movements and design styles.
CO3	Apply: Utilize historical knowledge to analyze and compare contemporary and historical design elements.
CO4	Analyze: Critically evaluate the influence of cultural, social, and political factors on the evolution of art and design.
CO5	Create: Develop original design concepts inspired by historical art and design principles.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO1 0**	**PO1 1**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
CO1	3	3	2	3	3	3	3	-	2	-	3	-	-	-	-
CO2	2	2	3	3	2	3	3	-	3	-	2	-	-	-	-
CO3	3	3	3	3	3	3	3	-	2	-	3	-	-	-	-
CO4	3	3	3	3	3	-	3	-	3	-	2	-	-	-	-
CO5	3	3	2	3	3	-	3	-	3	-	3	-	-	-	-
Average	2.6	2.8	2.6	3	2.8	3	3		2.6		2.6				

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:

L (Hours/Week)	T (Hours/Week)	P (Hours/Week)	Total Hour/Week
4	0	0	4

Unit	Content	Competencies
1	**Ancient and Classical Art** • Overview of Prehistoric Art: Cave paintings, petroglyphs, and early sculptures. • Ancient Civilizations: Art and design in Mesopotamia, Egypt, Indus Valley, and China. • Classical Antiquity: Greek and Roman art, architecture, and their enduring influence.	• Remember: Identify key artworks and features of prehistoric, Mesopotamian, Egyptian, Indus Valley, and Chinese art.. (C1) • Understand: Explain the cultural significance and evolution of art in ancient civilizations.. (C2) • Apply: Compare stylistic elements from Greek and Roman art in contemporary design. (C3)
2	**Unit 2: Medieval and Renaissance Art** • Early Christian and Byzantine Art: Iconography, mosaics, and architectural innovations. • Medieval Art: Romanesque and Gothic styles in Europe. • Renaissance Art: Key artists, techniques, and the revival of classical ideals in Italy and Northern Europe.	• Understand: Explain the significance of iconography, architectural innovations, and the revival of classical ideals. (C2) • Apply: Compare techniques and styles from medieval and Renaissance art in contemporary works. (C3) • Create: Develop original works inspired by medieval and Renaissance art principles.. (C6)
3	**Unit 3: Baroque to Romanticism** • Baroque Art: Dramatic expressions, grandeur, and the works of Caravaggio, Bernini, and Rubens. • Rococo: Lightness, elegance, and decorative arts in the 18th century. • Neoclassicism and Romanticism: Reaction to the Rococo, focus on classical revival and emotional expression.	• Remember: Identify key features of Baroque, Rococo, Neoclassicism, and Romanticism art styles. (C1) • Understand: Explain the cultural and emotional significance of these art movement(C2) • Apply: Compare techniques and themes from Baroque, Rococo, Neoclassicism, and Romanticism in current art.(C3)
4	**Unit 4: Modern Art Movements** • 19th Century: Realism, Impressionism, and Post-Impressionism.	• Understand: Creation of low-fidelity prototypes. (C2) • Apply: Iterative prototyping and rapid experimentation. (C3) • Analyze: Testing and gathering

	• Early 20th Century: Cubism, Fauvism, Expressionism, and the impact of World Wars on art. • Mid to Late 20th Century: Abstract Expressionism, Pop Art, Minimalism, and Conceptual Art.	feedback on prototypes. (C4)
5	**Unit 5: Contemporary Art and Design** • Late 20th to 21st Century: Digital art, new media, and the global art scene. • Postmodernism: Deconstruction, appropriation, and diverse cultural influences. • Current Trends: Sustainability in design, the influence of technology, and interdisciplinary practices in contemporary art and design.	• Remember: Identify key characteristics of Realism, Impressionism, Post-Impressionism, Cubism, Fauvism, Expressionism, Abstract Expressionism, Pop Art, Minimalism, and Conceptual Art. (C1) • Understand: Explain the social and historical contexts that influenced these modern art movements. (C2) • Apply: Compare techniques and themes from modern art movements in contemporary works. (C3) • Analyze: Evaluate the impact of 19th and 20th-century art movements on contemporary art. (C4)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	30
Practical	
Seminar/Journal Club	
Small group discussion (SGD)	
Self-directed learning (SDL) / Tutorial	5
Problem Based Learning (PBL)	10
Case/Project Based Learning (CBL)	10
Revision	5
Others If any:	
Total Number of Contact Hours	60

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60 %)	**Summative (40%)**
Periodic Assessment (10 Marks)	University End Term Examination (40 Marks)
Professional Competency Assessment (10 Marks)	
Comprehensive Student Assessment (10 Marks)	
Discipline-Specific Activities Assessment (30 Marks)	
Since the total marks of the external examination is 40, the examination will be conducted for 50 Marks and then bring down to 40	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Periodic Assessment	√	√	√	√	-
Professional Competency Assessment	√	√	√	√	√
Comprehensive Student Assessment	√	√	√	√	-
Discipline-Specific Activities Assessment	√	√	√	√	√

University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback
References:	(List of reference books)

Text Books:

- E.H. Gombrich, "The Story of Art", Phaidon Publishers, UK, 1995.
- H. Harvard Arnason and Peter Kalb, "History of Modern Art", Prentice Hall Publishers, New Jersey, USA, 2003.
- Giorgio Vasari, George Bull "The Lives of the Artists (Oxford World's Classics)", Penguin Classics, UK, 1987.
- Yve-Alain Bois, "Art Since 1900", Thames & Hudson Ltd, UK, 2016.
- Pratima Sheh "Dictionary of Indian Art and Artists by Pratima Sheh", Grantha Corporation, India, 2007.

Reference Books:

- B. N. Goswamy, "The Spirit Of Indian Painting: Close Encounters With 101 Great Works 1100-1900", Thames and Hudson, USA, 1995.
- Rakhee Balaran, Partha Mitter, "20th Century Indian Art", Thames and Hudson, USA,2022.

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120102
Course Title	Fundamentals of Design
Academic Year	I
Semester	I
Number of Credits	4
Course Prerequisite	NA
Course Synopsis	The "Fundamentals of Design" course introduces foundational principles essential for effective visual communication and creative expression. Students explore the elements of design such as line, shape, color, texture, space, and typography, alongside principles like balance, contrast, emphasis, movement, unity, and proportion. Through practical exercises and theoretical insights, students learn to apply these principles across various design disciplines, including graphic design, fashion design, and interior design. The course emphasizes critical thinking in design decision-making and encourages experimentation with different techniques and mediums to develop a cohesive visual language.

Course Outcomes:
At the end of the course students will be able to:

CO1	Remember: Recall key elements and principles of design, including their definitions and applications in different design contexts.
CO2	Understand: Understand the significance of design principles in enhancing visual communication and aesthetic appeal.
CO3	Apply: Apply principles of design effectively to create harmonious compositions and solve design challenges.
CO4	Analyse: Analyse existing designs and artworks to evaluate the use of design elements and principles in achieving visual impact.
CO5	Create: Create original design solutions that demonstrate proficiency in integrating design elements and principles to convey intended messages or aesthetics.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
CO1	2	2	2	-	2	3	3	-	2	-	-	2	2	-	-
CO2	2	2	3	-	3	3	3	-	3	-	-	3	3	-	-
CO3	3	3	3	-	3	2	3	-	2	-	-	3	3	-	-
CO4	3	3	3	-	3	-	3	-	3	-	-	3	3	-	-
CO5	3	3	2	-	3	-	3	-	3	-	-	3	3	-	-
Average	2.6	2.6	2.6		2.8	2.6	3		2.6			2.8	2.8		

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:

L (Hours/Week)	T (Hours/Week)	P (Hours/Week)	Total Hour/Week
0	0	8	8

Unit	Content	Competencies
1	**Introduction to Elements and Principles of Design** Definition and scope of design. How design is different from art, a brief on all forms of design, the introduction of design elements and principles. Importance and relevance of design in various industries like Fashion, Interiors, Animation, Product and Communication. **Principles of Composition** Layout and Composition: grids, rule of thirds, focal points. Visual Hierarchy: organization, grouping. Typography in Design: readability, hierarchy, alignment. Cropping, framing, negative space	• Understand: Explain the difference between design and art. (C2) • Apply: Use design principles in various industries like fashion and interiors. (C3) • Analyze: Evaluate composition techniques such as grids and the rule of thirds. (C4) • Create: Develop designs utilizing visual hierarchy and typography principles. (C5)
2	**Design Element – Lines** Types of lines and their visual effects. Creating emphasis and direction through lines. Line quality and expressive potential. Application of lines in various design contexts. **Design Element – Shapes, Forms and Shape** Basic geometric shapes and their visual properties. Organic shapes and natural forms. Creating depth and dimension through form. Application of shapes and forms in design compositions. Composition of positive and negative space. **Design Element - Colour and Texture** Color theory and the color wheel and properties of color. Properties of color: hue, value, saturation. Visual texture vs. tactile texture. Creating texture through various techniques. Incorporating texture in design compositions. Balancing texture with other elements.	• Understand: Explain how lines, shapes/forms, color, and texture influence visual design. (C2) • Apply: Use lines to create emphasis and direction; apply shapes/forms and color theory in design compositions. (C3) • Analyse: Evaluate the expressive potential of lines, the visual properties of shapes/forms, and the balance of texture in designs. (C4)
3	**Design Element – Typography** Typeface selection, hierarchy, legibility and classification. Typographic hierarchy and readability (legibility). Alignment, spacing, and kerning. Expressive typography and typographic artistry. **Design Element - Values and Sciography** Definition and importance of values and shading in design. Creating textures and patterns through shading. Composition using values and sciography. Core shadow, cast shadow, and reflected light.	• Understand: Explain the importance of legibility, alignment, and values in design. (C2) • Apply: Utilize typography for hierarchy and readability; apply shading techniques to create textures. (C3) • Analyse: Evaluate the use of values in compositions; analyze shadows and light effects. (C4) • Create: Develop designs with expressive typography and effective use of shading and values for visual impact. (C5)
4	**Design Element - Space, Scale and proportion** Definition and importance of space in design. Utilizing Positive	• Remember: Recall definitions of space, positive/negative space, scale, proportion,

	and negative space by composition and its visual impact and emphasis. Role of space in creating visual hierarchy. Applying principles of space in design compositions. Understanding relationships between sizes and dimensions. The relationship between proportion, scale, and human perception. Golden ratio and other mathematical ratios in design. Enlargement and reduction methods. Grid-based scaling and proportional measurements. Achieving visual harmony through proportion.	and the Golden Ratio. (C1) • Understand: Explain the importance of space in design, visual impact of space composition, and principles of proportion. (C2) • Apply: Utilize positive and negative space effectively; apply principles of scale and proportion in design compositions. (C3) • Analyse: Analyse the role of space in visual hierarchy and the relationship between sizes and dimensions. (C4)
5	**Principles of Design** Overview of design principles and their role in visual communication. Historical and cultural context of design principles. Importance of understanding the principles in design decision-making. Balance, Contrast,Unity and Harmony, Emphasis and Focal Point, Movement. **Balance and Contrast** Symmetrical balance and asymmetrical balance. Radial balance. Creating visual equilibrium through balance. Achieving balance through color, shape, and form. Value contrast and its impact on visual hierarchy. Color contrast and its role in creating emphasis. Contrast in size, shape, and texture. Creating visual interest and impact through contrast. **Movement, Unity and Harmony** The illusion of motion(Designing) through/ with Movement, repetition and pattern. Proximity and grouping of elements. Repetition, Rhythm and patterns. Establishing harmony through color and style. Balancing unity with variety. **Emphasis and Focal Point Proportion and Scale** Creating hierarchy and Establishing focal points through Visual. Contrast and color to establish focal points. Understanding relationships between sizes and dimensions. The relationship between proportion, scale, and the human perception. Golden ratio and other mathematical ratios in design. Enlargement and reduction method. Grid-based scaling and proportional measurements. Achieving visual harmony through proportion. **Integration and Application, Aesthetic qualities of Design Element** Ideation and Concept Development. Sketching and Thumbnailing. Applying multiple principles in design compositions. Balancing principles with elements of design. Exploring the relationship between principles and design concepts.	• Understand: Explain the historical, cultural, and aesthetic contexts of design principles in visual communication. (C2) • Apply: Utilize principles such as balance, contrast, and emphasis to create visually impactful designs. (C3) • Analyse: Analyse how balance, contrast, movement, unity, and emphasis contribute to visual hierarchy and interest in design. (C4) • Create: Develop aesthetically pleasing designs integrating multiple principles to achieve harmony and visual appeal. (C5)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	
Practical	90
Seminar/Journal Club	
Small group discussion (SGD)	5
Self-directed learning (SDL) / Tutorial	5
Problem Based Learning (PBL)	10
Case/Project Based Learning (CBL)	5
Revision	5
Others If any:	
Total Number of Contact Hours	120

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60%)	**Summative (40%)**
Practical / Lab Proficiency (20 Marks)	University End Term Examination (40 Marks)
Viva-Voce / Quiz / Lab Test/ Internal Jury (10 Marks)	
Documentation & Reporting (10 Marks)	
Discipline Specific Practical / Lab Activities (20 Marks)	
Since the total marks of the external examination is 40, the examination will be conducted for 50 Marks and then bring down to 40	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Practical / Lab Proficiency	√	√	√	√	-
Viva-Voce / Quiz / Lab Test/ Internal Jury	√	√	√	√	√
Documentation & Reporting	√	√	√	√	-
Discipline Specific Practical / Lab Activities	√	√	√	√	√
University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback
References:	(List of reference books)
Text Books:	
• An Illustrated Field Guide to the Elements & Principles of Art & Design, Joshua Field, lulu.com (Edition First Edition), 2018. • Illustrated Elements of Art & Principles of Design, Gerald F Brommer,Crystal Productions, 2010. • Designing with Color Chris Dorosz, J.R. Watson, Fairchild Book, 2010	
Reference Books:	
• Design Elements, Color Fundamentals, Aaris Sherin, Rockport Publishers, 2012. • Beyond Design, Sandra J. Keiser& Myrna B.Garner, Deborah Vandermar, Fairchild Books, 2017. • Color and Design Marilyn DeLong, Barbara Martinson, Berg Publishers, 2013.	

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120103
Course Title	Colors Theories in Design
Academic Year	I
Semester	I
Number of Credits	4
Course Prerequisite	NA
Course Synopsis	The "Colors Theories in Design" course explores the principles and applications of color in various design disciplines. Students delve into color theory, including the color wheel, color harmony, and the psychological effects of color. Through practical exercises and theoretical discussions, students learn to manipulate color to evoke emotions, convey messages, and create visual hierarchy in design. The course covers the use of color in graphic design, interior design, fashion design, and digital media, emphasizing both traditional and contemporary approaches to color usage.

Course Outcomes:
At the end of the course students will be able to:

CO1	Remember: Recall key principles of color theory, including the color wheel, primary, secondary, and tertiary colors.
CO2	Understand: Understand the psychological and cultural impacts of different colors and color combinations in design.
CO3	Apply: Apply principles of color theory effectively to create visually appealing and harmonious designs.
CO4	Analyse: Analyse existing designs to evaluate the use of color in conveying mood, tone, and meaning.
CO5	Create: Create original designs that demonstrate mastery in using color to achieve specific design objectives and enhance visual communication.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO1 0**	**PO1 1**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
CO1	2	2	2	-	2	-	3	-	2	-	-	2	2	-	-
CO2	2	2	3	-	3	-	3	-	3	-	-	3	3	-	-
CO3	3	3	3	-	3	-	3	-	2	-	-	3	3	-	-
CO4	3	3	3	-	3	-	3	-	3	-	-	3	3	-	-
CO5	3	3	2	-	3	-	3	-	3	-	-	3	3	-	-
Average	2.6	2.6	2.6		2.8		3		2.6			2.8	2.8		

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:

L (Hours/Week)	T (Hours/Week)	P (Hours/Week)	Total Hour/Week
0	0	8	8

Unit	Content	Competencies
1	**Unit 1: Foundations of Color Theory** • **Introduction to Color:** Basic concepts, properties of color (hue, value, saturation). • **Color Systems:** RGB, CMYK, and their applications in digital and print design. • **Color Wheel:** Primary, secondary, tertiary colors; understanding color relationships. • **Color Harmony:** Complementary, analogous, triadic, and other color schemes. • **Psychological Effects of Color:** Cultural meanings, emotions evoked by different colors.	• Remember: Recall basic color concepts, properties (hue, value, saturation), and color systems (RGB, CMYK). (C1) • Understand: Understand the application of RGB and CMYK in digital and print design. (C2) • Apply: Apply knowledge of primary, secondary, tertiary colors, and color relationships in design. (C3) • Analyse: Analyse color harmonies such as complementary, analogous, and triadic schemes. (C4)
2	**Unit 2: Application of Color in Visual Communication** • **Color in Graphic Design:** Use of color in branding, advertising, and user interface design. • **Color in Web Design:** Accessibility considerations, trends in color usage. • **Color in Print Design:** Color theory in publication design, packaging, and typography. • **Case Studies:** Analysis of successful design projects emphasizing effective color usage. • **Practical Exercises:** Creating color palettes, mood boards, and mock designs based on color theory principles.	• Understand: Understand accessibility considerations and current trends in color usage. (C2) • Apply: Apply color theory effectively in branding, advertising, UI design, and publication design. (C3) • Analyse: Analyse successful design projects to understand effective color usage. (C4) • Create: Create color palettes, mood boards, and mock designs demonstrating mastery of color theory principles in various design applications. (C5)
3	**Unit 3: Color in Environmental and Design** • **Color Psychology in Design:** Creating moods and atmospheres with color. • **Color in Spatial Design:** Use of color to define spaces, enhance functionality. • **Sustainable Design:** Eco-friendly color choices, trends in sustainable color design. • **Case Studies:** Analysis of interior design projects focusing on color as a central element.	• Understand: Understand the role of color in defining spaces and enhancing functionality in spatial design. (C2) • Apply: Apply eco-friendly color choices and sustainable color design trends in design projects. (C3) • Analyse: Analyse different design projects to evaluate the impact and effectiveness of color as a central element. (C4)

	• **Studio Projects:** Designing interior spaces/ communication/ animation/ product design and environments based on color theories.	
4	**Unit 4: Color Application in Design** • **Color Trends in Design:** Forecasting and applying seasonal color palettes. • **Color in Textile Design:** Patterns, textures, and color interactions in fabrics. • **Cultural Influences on Fashion Color:** Global perspectives on color symbolism. • **Case Studies:** Examination of fashion collections and textile designs emphasizing color theory. Or communication/ product / interior/ animation case study. • **Design Workshops:** Creating different designs using color theory principles.	• Understand: Understand the application of seasonal palettes, textile interactions, and global color symbolism. (C2) • Apply: Apply color theory principles in fashion, textile, product, interior, or animation design. (C3) • Analyse: Analyse case studies of design projects emphasizing effective color theory application. (C4) • Create: Create designs in workshops that demonstrate proficiency in using color theory principles across different design disciplines. (C5)
5	**Unit 5: Advancements of Color Theories in Design** • **Color in Digital Media:** Color correction, color management, and digital art techniques. • **Experimental Color Techniques:** Exploring unconventional uses of color in design. • **Contemporary Issues in Color Design:** Ethics, diversity, and inclusivity in color choices. • **Final Project:** Independent research or design project demonstrating mastery of color theories. • **Portfolio Development:** Compiling and presenting design work showcasing understanding and application of color theories.	• Understand: Understand experimental color techniques and contemporary issues in color design. (C2) • Apply: Apply color management principles and unconventional color uses in design projects. (C3) • Analyse: Analyse ethical and diversity considerations in color choices. (C4) • Create: Create a final project demonstrating mastery of color theories and develop a portfolio showcasing design work with sophisticated color applications. (C5)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	
Practical	90
Seminar/Journal Club	
Small group discussion (SGD)	5
Self-directed learning (SDL) / Tutorial	5
Problem Based Learning (PBL)	10
Case/Project Based Learning (CBL)	5
Revision	5
Others If any:	
Total Number of Contact Hours	120

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60%)	**Summative (40%)**
Practical / Lab Proficiency (20 Marks)	University End Term Examination (40 Marks)
Viva-Voce / Quiz / Lab Test/ Internal Jury (10 Marks)	
Documentation & Reporting (10 Marks)	
Discipline Specific Practical / Lab Activities (20 Marks)	
Since the total marks of the external examination is 40, the examination will be conducted for 50 Marks and then bring down to 40	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Practical / Lab Proficiency	√	√	√	√	-
Viva-Voce / Quiz / Lab Test/ Internal Jury	√	√	√	√	√
Documentation & Reporting	√	√	√	√	-
Discipline Specific Practical / Lab Activities	√	√	√	√	√

University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback
References:	(List of reference books)
Text Books:	
• Color and Meaning: Art, Science, and Symbolism, John Gage, Univ of California Pr, 2000. • Color Theory, Patti Mollica; Walter Foster Publishing, 2013. • The Secret Language of Color, Arielle and Joann Eckstut, Black Dog & Leventhal, 2013.	
Reference Books:	
• Interaction of Color by Josef Albers, Nicholas Fox Weber, Yale University Press, 2013. • Color Psychology And Color Therapy, Faber Birren, Ingram Short Title, 2013.	

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120104
Course Title	Introduction to Design Process
Academic Year	I
Semester	I
Number of Credits	2
Course Prerequisite	NA
Course Synopsis	Design Process offers a structured exploration of the creative journey from concept to realization, providing students with a comprehensive understanding of the principles and stages involved in effective design. Through a blend of theoretical concepts and practical exercises, students learn to navigate each phase of the design process, including research, ideation, conceptualization, prototyping, iteration, and refinement. Emphasizing creativity, critical thinking, and problem-solving skills, this course equips students with the tools and methodologies to generate innovative design solutions across various disciplines, from product and graphic design to fashion and interior design. Through hands-on projects, critiques, and case studies, students gain practical experience in applying design principles and techniques, fostering a holistic approach to design thinking and practice.

Course Outcomes:

At the end of the course students will be able to:

CO1	Remember: Grasp design thinking's role in problem-solving.
CO2	Understand: Comprehend user research for empathetic design.
CO3	Apply: Utilize ideation for diverse design solutions.
CO4	Analyse: Refine designs through user feedback analysis.
CO5	Create: Communicate design concepts effectively.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
CO1	-	3	2	3	3	-	3	-	2	-	3	-	-	-	-
CO2	-	2	3	3	2	-	3	-	3	-	2	-	-	-	-
CO3	-	3	3	3	3	-	3	-	2	-	3	-	-	-	-
CO4	-	3	3	3	3	-	3	-	3	-	2	-	-	-	-
CO5	-	3	2	3	3	-	3	-	3	-	3	-	-	-	-
Average		2.8	2.6	3	2.8		3		2.6		2.6				

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:			
L (Hours/Week)	**T (Hours/Week)**	**P (Hours/Week)**	**Total Hour/Week**
0	0	4	4

Unit	**Content**	**Competencies**
1	**Introduction to Design Thinking and Design Process** ● Understanding the principles and foundations of design thinking. ● Exploring the design process and its stages. ● Overview of the importance of user-centered design. ● Introduction to design research methods.	• Remember: Principles of design thinking. (C1) • Understand: Foundations of the design process. (C2) • Apply: Implementing user-centered design principles. (C3)
2	**Empathize and Define** ● Conducting user research: interviews, observations, and surveys. ● Analyzing research findings and identifying user needs. ● Creating user personas and empathy maps. ● Defining design challenges and problem statements.	• Understand: Analysis of research findings and user needs. (C2) • Apply: Developing user personas and empathy maps. (C3) • Create: Crafting actionable insights for design solutions. (C6)
3	**Ideate** ● Techniques for generating creative ideas: brainstorming, mind mapping, and sketching. ● Using design thinking tools like the How Might We technique. ● Collaborative ideation sessions and group dynamics. ● Prioritizing ideas and selecting the most promising concepts.	• Remember: Techniques for creative idea generation. (C1) • Understand: Utilization of design thinking tools like "How Might We". (C2) • Apply: Conducting collaborative ideation sessions. (C3)
4	**Prototype** ● Introduction to prototyping tools and techniques. ● Building low-fidelity prototypes: paper prototypes, wireframes, and storyboards. ● Iterative prototyping and rapid experimentation. ● Testing and gathering feedback on prototypes.	• Understand: Creation of low-fidelity prototypes. (C2) • Apply: Iterative prototyping and rapid experimentation. (C3) • Analyze: Testing and gathering feedback on prototypes. (C4)
5	**Test and Refine & Presentation and Reflection** ● Conducting user testing sessions. ● Analyzing user feedback and observations. ● Iterating and refining designs based on test results. ● Incorporating user feedback into the design process. ● Creating compelling design presentations. ● Effective communication of design ideas and solutions. ● Reflecting on the design process and identifying areas for improvement. ● Reviewing the overall design journey and project outcomes.	• Remember: Conducting user testing sessions. (C1) • Understand: Analysis of user feedback and observations. (C2) • Apply: Iterating and refining designs based on test results. (C3) • Analyze: Incorporating user feedback into the design process. (C4)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	
Practical	45
Seminar/Journal Club	
Small group discussion (SGD)	
Self-directed learning (SDL) / Tutorial	5
Problem Based Learning (PBL)	5
Case/Project Based Learning (CBL)	5
Revision	
Others If any:	
Total Number of Contact Hours	60

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60%)	**Summative (40%)**
Practical / Lab Proficiency (10 Marks)	University End Term Examination (20 Marks)
Viva-Voce / Quiz / Lab Test/ Internal Jury (5 Marks)	
Documentation & Reporting (5 Marks)	
Discipline Specific Practical / Lab Activities (10 Marks)	
Since the total marks of the external examination is 20, the examination will be conducted for 50 Marks and then bring down to 20	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Practical / Lab Proficiency	√	√	√	√	-
Viva-Voce / Quiz / Lab Test/ Internal Jury	√	√	√	√	√
Documentation & Reporting	√	√	√	√	-
Discipline Specific Practical / Lab Activities	√	√	√	√	√
University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback
References:	(List of reference books)

Text Books:

- Design Thinking: Creating Learning Journeys That Get Results- Sharon Boller and Laura Fletcher, Published by ATD Press publication, (195049618X ISBN)
- The Design Process - Karl Aspelund, Published by Fairchild Books publication (1609018389 ISBN)

Reference Books:

- Design Thinking: Understanding How Designers Think and Work - Nigel Cross, Published by Bloomsbury Publishing India Private Limited. (1847886361 ISBN)
- Sywam course on design Thinking - A Primer- Prof. Ashwin Mahalingam, Prof. Bala Ramadurai, Published by IIT Madras.

SEMESTER – II

Course Code	Course Type	Course Title	Teaching Hours / Week			Credit	Marks Distribution		
			L	T	P		IAE	ESE	Total
15120201	**DSC -4**	Product Development Process	4	0	0	4	60	40	100
15120202	**DSC-5**	Fundamentals of Drawing	0	0	8	4	60	40	100
15120203	**DSC-6**	Design Research	0	0	8	4	60	40	100
15120204	**SEC-2**	Material Exploration	0	0	4	2	30	20	50
	GE- 2	GE- 2	4	0	0	4	60	40	100
	AECC- 2	AECC- 2	2	0	0	2	30	20	50
	VAC- 2	VAC- 2	2	0	0	2	30	20	50
		Total				**22**			

UG CERTIFICATE in Design - (Total Credit: 44)

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120201
Course Title	Product Development Process
Academic Year	I
Semester	II
Number of Credits	4
Course Prerequisite	NA
Course Synopsis	The "Product Development Process" course explores the systematic approach to designing and launching new products. It covers the entire lifecycle from idea generation to market introduction, focusing on research, design, prototyping, testing, and production. Students learn about consumer insights, market trends, feasibility analysis, and manufacturing considerations essential for successful product development across various industries.

Course Outcomes:
At the end of the course students will be able to:

CO1	Remember: Recall key stages in the product development lifecycle, including ideation, design, prototyping, testing, and launch.
CO2	Understand: Understand the importance of market research, consumer insights, and feasibility analysis in product development.
CO3	Apply: Apply product development methodologies and tools to create innovative and market-ready products.
CO4	Analyse: Analyse market trends, competitive products, and consumer behavior to inform product design decisions.
CO5	Create: Create comprehensive product development plans, prototypes, and strategies that address market needs and achieve business objectives.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO1 0**	**PO1 1**	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**
CO1	-	3	2	3	3	-	3	-	2	-	3	-	-	-	-
CO2	-	2	3	3	2	-	3	-	3	-	2	-	-	-	-
CO3	-	3	3	3	3	-	3	-	2	-	3	-	-	-	-
CO4	-	3	3	3	3	-	3	-	3	-	2	-	-	-	-
CO5	-	3	2	3	3	-	3	-	3	-	3	-	-	-	-
Average		2.8	2.6	3	2.8		3		2.6		2.6				

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:

L (Hours/Week)	T (Hours/Week)	P (Hours/Week)	Total Hour/Week
4	0	0	4

Unit	Content	Competencies
1	**Unit 1: Introduction to Product Development** • **Overview of Product Development:** Definition, importance, and process overview. • **Market Research:** Understanding consumer needs, market trends, and competitive analysis. • **Idea Generation and Concept Development:** Techniques for brainstorming and concept creation. • **Feasibility Analysis:** Evaluating technical, economic, and legal feasibility of product ideas. • **Case Studies:** Analysis of successful product launches and failures.	• Remember: Recall stages of product development: ideation, research, concept development. (C1) • Understand: Understand the importance of market research and feasibility analysis. (C2) • Apply: Apply techniques for generating and refining product ideas. (C3) • Analyse: Analyse case studies to identify factors contributing to product success or failure. (C4)
2	**Unit 2: Design and Prototyping** • **Product Design:** Principles of industrial design, ergonomic considerations, and aesthetics. • **Prototyping Methods:** Rapid prototyping, 3D printing, and physical prototyping techniques. • **Design for Manufacturing (DFM):** Optimizing product designs for efficient manufacturing processes. • **Material Selection:** Factors influencing material choice and their impact on product performance. • **Case Studies:** Examination of prototypes and design iterations in real-world projects.	• Understand: Understand prototyping methods like 3D printing and rapid prototyping. (C2) • Apply: Apply design principles to create functional and aesthetically pleasing product prototypes. (C3) • Analyse: Analyse prototype iterations to improve design and functionality. (C4)
3	**Unit 3: Testing and Validation** • **Product Testing:** Types of tests (e.g., usability, durability, performance) and testing methodologies. • **User Feedback and Iteration:** Gathering user feedback to refine product design and features. • **Regulatory Compliance:** Understanding standards and regulations for product safety and certification. • **Quality Assurance (QA):** Implementing QA processes to ensure product reliability and consistency. • **Case Studies:** Analysis of testing outcomes and their influence on product improvements.	• Understand: Understand the role of user feedback in product refinement. (C2) • Apply: Apply testing methodologies to ensure product reliability and usability. (C3) • Analyse: Analyse testing results to identify areas for product improvement. (C4)

4	**Unit 4: Production Planning and Logistics** • **Production Processes:** Overview of manufacturing methods (e.g., mass production, custom manufacturing). • **Supply Chain Management:** Logistics, sourcing, and procurement strategies. • **Cost Analysis and Budgeting:** Estimating production costs and budget allocation. • **Sustainability in Production:** Eco-friendly practices and considerations in product manufacturing. • **Case Studies:** Evaluation of production challenges and solutions in different industries.	• Understand: Understand supply chain management and logistics in product manufacturing. (C2) • Apply: Apply cost analysis techniques to estimate production budgets. (C3) • Analyse: Analyse sustainability practices in product production. (C4) • Create: Create production plans and schedules for efficient manufacturing. (C5)
5	**Unit 5: Product Launching and Marketing Strategies** • **Go-to-Market Strategy:** Developing marketing plans, distribution channels, and sales strategies. • **Launch Planning:** Timing, promotional campaigns, and public relations for product launches. • **Market Analysis:** Monitoring market reception, competition, and sales performance. • **Post-Launch Evaluation:** Assessing product success and gathering user feedback post-launch. • **Final Project:** Designing and presenting a comprehensive product development plan for a new product.	• Understand: Understand the importance of timing and promotional strategies in product launches. (C2) • Apply: Apply market analysis techniques to assess product reception and competition. (C3) • Analyse: Analyse post-launch data to evaluate product performance. (C4) • Create: Create comprehensive launch plans and marketing campaigns for new products. (C5)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	40
Practical	
Seminar/Journal Club	
Small group discussion (SGD)	
Self-directed learning (SDL) / Tutorial	5
Problem Based Learning (PBL)	5
Case/Project Based Learning (CBL)	5
Revision	5
Others If any:	
Total Number of Contact Hours	60

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60 %)	**Summative (40%)**
Periodic Assessment (10 Marks)	University End Term Examination (40 Marks)
Professional Competency Assessment (10 Marks)	
Comprehensive Student Assessment (10 Marks)	
Discipline-Specific Activities Assessment (30 Marks)	
Since the total marks of the external examination is 40, the examination will be conducted for 50 Marks and then bring down to 40	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Periodic Assessment	√	√	√	√	-
Professional Competency Assessment	√	√	√	√	√
Comprehensive Student Assessment	√	√	√	√	-
Discipline-Specific Activities Assessment	√	√	√	√	√
University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback

References:	(List of reference books)

Text Books:

- Karl T. Ulrich and Steven D. Eppinger, "Product Design and Development", McGraw-Hill Education, USA, 2015.
- Don Koberg and Jim Bagnall, "The Universal Traveler: A Soft-Systems Guide to Creativity, Problem-Solving, and the Process of Reaching Goals", William Kaufmann Inc, USA, 1991.
- Allan T. Shulman, "The Innovator's Toolkit: 50+ Techniques for Predictable and Sustainable Organic Growth", John Wiley & Sons, USA, 2009.
- Steven C. Wheelwright and Kim B. Clark, "Revolutionizing Product Development: Quantum Leaps in Speed, Efficiency, and Quality", Free Press, USA, 1992.

Reference Books:

- Donald G. Reinertsen, "Managing the Design Factory: A Product Developer's Toolkit", Free Press, USA, 1997.
- Scott D. Anthony, "The Little Black Book of Innovation: How It Works, How to Do It", Harvard Business Review Press, USA, 2012.
- Geoffrey A. Moore, "Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers", HarperBusiness, USA, 1991.
- Roland W. Schmitt, "High Technology Entrepreneurship", Cambridge University Press, UK, 1994.

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120202
Course Title	Fundamentals of Drawing
Academic Year	I
Semester	II
Number of Credits	4
Course Prerequisite	NA
Course Synopsis	The course "Fundamentals of Drawing" serves as a foundational exploration of essential techniques and principles in visual art and design. Through a series of practical exercises and theoretical studies, students delve into the basic elements of drawing, including line, shape, form, space, value, and texture. Emphasis is placed on developing observational skills, understanding perspective, and mastering various rendering techniques using both traditional and contemporary drawing tools. Students explore the expressive potential of drawing across different subject matters, from still life and landscape to human anatomy and abstract compositions. The course integrates hands-on studio work with theoretical discussions on the historical and cultural contexts of drawing, providing students with a comprehensive understanding of its role in visual communication and artistic expression. By the end of the course, students are expected to demonstrate proficiency in fundamental drawing skills, the ability to analyze and critique artworks, and the application of theoretical principles in their creative practice. They will have developed a portfolio showcasing their progression in technical proficiency, creativity, and conceptual thinking through diverse drawing assignments. Ultimately, "Fundamentals of Drawing" prepares students for further specialization in design disciplines where drawing serves as a crucial tool for ideation, visualization, and communication of ideas.

Course Outcomes:

At the end of the course students will be able to:

CO1	Remember: Recall fundamental drawing techniques such as line quality, shading, and perspective.
CO2	Understand: Understand the principles of composition, proportion, and spatial relationships in drawing.
CO3	Apply: Apply drawing techniques to create accurate representations of still life, landscapes, and human figures.
CO4	Analyse: Analyse and critique drawings to identify strengths, weaknesses, and areas for improvement.
CO5	Create: Create original artworks that demonstrate mastery of drawing techniques and express personal creativity.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PSO 1	PSO 2	PSO 3	PSO 4
CO1	2	2	2	-	2	-	3	-	2	-	-	2	2	-	-
CO2	2	2	3	-	3	-	3	-	3	-	-	3	3	-	-
CO3	3	3	3	-	3	-	3	-	2	-	-	3	3	-	-
CO4	3	3	3	-	3	-	3	-	3	-	-	3	3	-	-
CO5	3	3	2	-	3	-	3	-	3	-	-	3	3	-	-
Average	2.6	2.6	2.6		2.8		3		2.6			2.8	2.8		

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:

L (Hours/Week)	T (Hours/Week)	P (Hours/Week)	Total Hour/Week
0	0	8	8

Unit	Content	Competencies
1	**Unit 1: Introduction to Drawing** • Basic drawing materials and tools: pencils, erasers, charcoal, and ink. • Understanding line: contour drawing, gesture drawing, and expressive line techniques. • Introduction to shape and form: exploring geometric and organic shapes. • Still life drawing: composition, light and shadow, and spatial relationships. • Exercises in mark-making and texture: hatching, cross-hatching, stippling.	• Remember: Recall basic drawing materials and their uses. (C1) • Understand: Understand different types of lines and their expressive qualities. (C2) • Apply: Apply contour drawing techniques to represent forms. (C3) • Analyse: Analyse the use of light and shadow in still life compositions. (C4)
2	**Unit 2: Perspective Drawing** • Principles of linear perspective: one-point, two-point, and three-point perspective. • Applying perspective in architectural and environmental drawing. • Exercises in creating depth and spatial illusion through perspective. • Understanding vanishing points, horizon lines, and foreshortening. • Perspective drawing of objects, interiors, and outdoor scenes.	• Understand: Understand how to apply perspective to create depth in drawings. (C2) • Apply: Apply perspective drawing techniques to architectural subjects. (C3) • Analyse: Analyse vanishing points and horizon lines in perspective drawings. (C4)

3	**Unit 3: Figure Drawing and Anatomy** • Human anatomy basics: proportions of the human body, skeletal structure, and major muscle groups. • Life drawing sessions: gesture drawing, capturing movement and proportions. • Understanding the human figure in different poses and perspectives. • Exploration of drapery and clothing on the figure. • Analyzing anatomical landmarks and their relevance in drawing.	• Understand: Understand the major muscle groups and their role in figure drawing. (C2) • Apply: Apply gesture drawing techniques to capture movement in figures. (C3) • Analyse: Analyse the relationship between anatomy and drapery in figure drawing. (C4) • Create: Create lifelike representations of the human figure in different poses. (C5)
4	**Unit 4: Composition and Design Principles** • Principles of composition: balance, symmetry, asymmetry, and focal points. • Exploring positive and negative space in compositions. • Exercises in creating dynamic compositions through visual hierarchy. • Integrating elements of design: line, shape, value, and texture. • Case studies of master artists and their compositional techniques.	• Understand: Understand the use of positive and negative space in compositions. (C2) • Apply: Apply principles of symmetry and asymmetry in composition. (C3) • Analyse: Analyse master artists' use of focal points in their compositions. (C4) • Create: Create dynamic and visually engaging compositions. (C5)
5	**Unit 5: Experimental Drawing Techniques** • Mixed media approaches: combining drawing with collage, digital tools, and unconventional materials, rendering techniques. • Abstract drawing: exploring non-representational forms and concepts. • Experimental mark-making: using alternative tools and methods. • Conceptual drawing: expressing ideas, emotions, and narratives through drawing. • Final project: creating a portfolio showcasing mastery of diverse drawing techniques and personal style.	• Understand: Understand abstract drawing concepts and their significance. (C2) • Apply: Apply experimental mark-making techniques to create textures. (C3) • Analyse: Analyse the expressive potential of unconventional drawing materials. (C4) • Create: Create conceptual drawings that convey ideas and narratives. (C5)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	
Practical	90
Seminar/Journal Club	
Small group discussion (SGD)	5
Self-directed learning (SDL) / Tutorial	10
Problem Based Learning (PBL)	5
Case/Project Based Learning (CBL)	5
Revision	5
Others If any:	
Total Number of Contact Hours	120

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60%)	**Summative (40%)**
Practical / Lab Proficiency (20 Marks)	University End Term Examination (40 Marks)
Viva-Voce / Quiz / Lab Test/ Internal Jury (10 Marks)	
Documentation & Reporting (10 Marks)	
Discipline Specific Practical / Lab Activities (20 Marks)	
Since the total marks of the external examination is 40, the examination will be conducted for 50 Marks and then bring down to 40	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Practical / Lab Proficiency	√	√	√	√	-
Viva-Voce / Quiz / Lab Test/ Internal Jury	√	√	√	√	√
Documentation & Reporting	√	√	√	√	-
Discipline Specific Practical / Lab Activities	√	√	√	√	√
University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback
References:	(List of reference books)
Text Books:	
• Keys to Drawing, Bert Dodson, North Light Books, 1990. • The Complete Book of Drawing, Barrington Barber, Arcturus Publishing, 2012. • How to Draw What You See, Rudy De Reyna, Watson-Guptill Publications Inc.,U.S., 1996.	
Reference Books:	
• The New Drawing on the Right Side of the Brain, Betty Edwards, HarperCollins, 2001 • Figure Drawing, Andrew Loomis, Titan Books, 2011 • The Natural Way to Draw - A Working Plan for Art Study, Kimon Nicolaides, Souvenir Press, 2008	

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120203
Course Title	Design Research
Academic Year	I
Semester	II
Number of Credits	4
Course Prerequisite	NA
Course Synopsis	This course explores the methodologies and principles of conducting design research, emphasizing the role of research in informing and guiding design processes. Students will learn to critically analyze design problems, conduct primary and secondary research, and apply research findings to develop innovative design solutions. The course covers various research methods applicable to different design disciplines, including qualitative and quantitative approaches, user-centered design, ethnography, and trend analysis. Additionally, students will engage in case studies, practical projects, and workshops to enhance their research skills and understand the ethical implications of design research.

Course Outcomes:
At the end of the course students will be able to:

CO1	Remember: Recall key research methodologies and their application in design contexts.
CO2	Understand: Understand the significance of research in identifying design opportunities and constraints.
CO3	Apply: Apply research techniques to gather and analyze data relevant to design projects.
CO4	Analyse: Analyse research findings to generate insights that inform design decisions.
CO5	Create: Create innovative design solutions based on synthesized research outcomes.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
CO1	2	2	2	-	2	-	3	-	2	-	-	2	2	-	-
CO2	2	2	3	-	3	-	3	-	3	-	-	3	3	-	-
CO3	3	3	3	-	3	-	3	-	2	-	-	3	3	-	-
CO4	3	3	3	-	3	-	3	-	3	-	-	3	3	-	-
CO5	3	3	2	-	3	-	3	-	3	-	-	3	3	-	-
Average	2.6	2.6	2.6		2.8		3		2.6			2.8	2.8		

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:

L (Hours/Week)	T (Hours/Week)	P (Hours/Week)	Total Hour/Week

0	0	8	8
Unit	**Content**		**Competencies**
1	**Unit 1: Introduction to Design Research** • Overview of design research methodologies • Importance of research in design practice • Types of research: qualitative vs quantitative • Ethical considerations in design research		• Remember: Recall key design research methodologies. (C1) • Understand: Understand the importance of research in design. (C2) • Apply: Apply ethical considerations in conducting design research. (C3) • Analyse: Analyse differences between qualitative and quantitative research. (C4)
2	**Unit 2: Research Methods in Design** • Primary research methods: interviews, surveys, observations • Secondary research methods: literature reviews, case studies • User-centered design research techniques • Data collection and analysis techniques		• Understand: Understand how to conduct interviews and surveys. (C2) • Apply: Apply observational research techniques. (C3) • Analyse: Analyse data collected from research methods. (C4) • Create: Create a research plan for a design project. (C5)
3	**Unit 3: Applying Research in Design** • Using research to define design problems • Prototyping and iterative design based on research insights • Design thinking and research-driven innovation • Case studies of successful design research applications		• Understand: Understand the iterative nature of design based on research insights. (C2) • Apply: Apply design thinking principles to research findings. (C3) • Analyse: Analyse case studies of research-driven design innovations. (C4) • Create: Create prototypes based on research insights. (C5)
4	**Unit 4: Advanced Research Techniques** • Ethnographic research in design • Trend analysis and forecasting • Experimental research methods in design • Digital tools and platforms for research in design		• Understand: Understand the role of digital tools in design research. (C2) • Apply: Apply experimental research methods in design contexts. (C3) • Analyse: Analyse trends and patterns identified through research. (C4) • Create: Create a digital research report using advanced techniques. (C5)
5	**Unit 5: Research Synthesis and Communication** • Synthesizing research findings into actionable insights • Communicating research outcomes effectively • Visualization techniques in design research • Presenting research findings to stakeholders		• Understand: Understand effective ways to communicate research outcomes. (C2) • Apply: Apply visualization techniques to present research findings. (C3) • Analyse: Analyse the implications of research findings on design decisions. (C4) • Create: Create a compelling presentation of research insights. (C5)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	
Practical	90
Seminar/Journal Club	
Small group discussion (SGD)	5
Self-directed learning (SDL) / Tutorial	10
Problem Based Learning (PBL)	5
Case/Project Based Learning (CBL)	5
Revision	5
Others If any:	
Total Number of Contact Hours	120

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60%)	**Summative (40%)**
Practical / Lab Proficiency (20 Marks)	University End Term Examination (40 Marks)
Viva-Voce / Quiz / Lab Test/ Internal Jury (10 Marks)	
Documentation & Reporting (10 Marks)	
Discipline Specific Practical / Lab Activities (20 Marks)	
Since the total marks of the external examination is 40, the examination will be conducted for 50 Marks and then bring down to 40	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Practical / Lab Proficiency	√	√	√	√	-
Viva-Voce / Quiz / Lab Test/ Internal Jury	√	√	√	√	√
Documentation & Reporting	√	√	√	√	-
Discipline Specific Practical / Lab Activities	√	√	√	√	√
University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback
References:	(List of reference books)

Text Books:

- Jorge Frascara, "Design Research: Methods and Perspectives", Fairchild Books, USA, 2004.
- Cees de Bont, "Research in Design Thinking", Springer, Netherlands, 2009.
- Gjoko Muratovski, "Research for Designers: A Guide to Methods and Practice", Sage Publications, UK, 2016.
- Paul Rodgers and Joyce Yee, "The Routledge Companion to Design Research", Routledge, UK, 2019.

Reference Books:

- Brenda Laurel, "Design Research: Methods and Perspectives", MIT Press, USA, 2003.
- Rachel Cooper, Mike Press, "The Design Agenda: A Guide to Successful Design Management", John Wiley & Sons, UK, 1995.
- Nigel Cross, "Design Thinking: Understanding How Designers Think and Work", Berg Publishers, USA, 2011.
- Bernard W. Taylor III, "Introduction to Management Science", Prentice Hall, USA, 2010.

Name of the Department	Faculty of Design
Name of the Program	B. Des. (Honours/ Honours with Research) Product Design
Course Code	15120204
Course Title	Material Exploration
Academic Year	I
Semester	II
Number of Credits	2
Course Prerequisite	NA
Course Synopsis	This course introduces students to the fundamental principles and practical applications of materials used in design. It focuses on understanding the properties, characteristics, and potential applications of various materials in different design contexts. Through hands-on experimentation and theoretical study, students explore how materials interact with light, texture, form, and function. Emphasis is placed on sustainable practices, innovative uses of materials, and the impact of material choices on design aesthetics and functionality.

Course Outcomes:
At the end of the course students will be able to:

CO1	Remember: Recall the properties and characteristics of commonly used materials in design, including metals, plastics, wood, textiles, and composites.
CO2	Understand: Understand the principles of material science and how they influence design decisions and outcomes.
CO3	Apply: Apply knowledge of material properties to select appropriate materials for specific design projects or applications.
CO4	Analyse: Analyse the environmental, economic, and social implications of different material choices in design.
CO5	Create: Create innovative design solutions that demonstrate an understanding of material capabilities and limitations, integrating sustainability principles into material selection and application.

Mapping of Course Outcomes (COs) to Program Outcomes (POs)& Program Specific Outcomes:

Mapping with Programme Outcomes

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PSO 1	PSO 2	PSO 3	PSO 4
CO1	-	3	2	3	3	-	3	-	2	-	3	-	-	-	-
CO2	-	2	3	3	2	-	3	-	3	-	2	-	-	-	-
CO3	-	3	3	3	3	-	3	-	2	-	3	-	-	-	-

CO4	-	3	3	3	3	-	3	-	3	-	2	-	-	-	-
CO5	-	3	2	3	3	-	3	-	3	-	3	-	-	-	-
Average		2.8	2.6	3	2.8		3		2.6		2.6				

1= Weak Correlation 2= Moderate Correlation 3= Strong Correlation

Course Content:

L (Hours/Week)	T (Hours/Week)	P (Hours/Week)	Total Hour/Week
0	0	4	4

Unit	Content	Competencies
1	**Unit 1: Introduction to Materials** • Overview of material science and its relevance to design • Classification of materials: metals, polymers, ceramics, composites, etc. • Properties of materials: mechanical, thermal, electrical, optical, and durability • Environmental impact and sustainability considerations in material selection	• Remember: Recall the classification and properties of different materials. (C2) • Understand: Understand the basic principles of material science and their relevance to design. (C2) • Apply: Apply knowledge of material properties to select appropriate materials for specific design contexts. (C3) • Analyse: Analyse the environmental impact of material choices in design. (C4)
2	**Unit 2: Metals and Alloys** • Properties and characteristics of metals used in design: steel, aluminum, copper, etc. • Manufacturing processes: casting, forging, machining, and surface treatments • Applications of metals in product design, furniture, architecture, and automotive industries • Case studies of iconic metal designs and innovations	• Understand: Understand metalworking processes and their impact on material properties. (C2) • Apply: Apply metal selection criteria to design scenarios. (C3) • Analyse: Analyse case studies of metal applications in design. (C4) • Create: Create simple metal prototypes using basic fabrication techniques. (C5)
3	**Unit 3: Polymers and Plastics** • Introduction to polymers: thermoplastics, thermosets, and elastomers • Polymer processing techniques: injection molding, extrusion, and blow molding • Design considerations for plastic materials: aesthetics, durability, and recyclability	• Understand: Understand manufacturing processes for plastics. (C2) • Apply: Apply knowledge of plastic properties in product design. (C3) • Analyse: Analyse environmental considerations in

	• Innovative uses of plastics in contemporary design and sustainability challenges	plastic usage. (C4) • Create: Create prototypes using various plastic molding techniques. (C5)
4	**Unit 4: Wood and Natural Materials** • Properties and characteristics of wood species used in design • Woodworking techniques: joinery, veneering, and finishing methods • Sustainable forestry practices and certifications • Incorporating natural materials like bamboo, cork, and stone in design applications	• Understand: Understand woodworking techniques and their applications. (C2) • Apply: Apply sustainable practices in woodworking. (C3) • Analyse: Analyse the lifecycle of wood products and sustainability issues. (C4)
5	**Unit 5: Textiles and Composites** • Types of textiles: natural fibers (cotton, wool, silk) and synthetic fibers (polyester, nylon) • Textile manufacturing processes: weaving, knitting, dyeing, and printing • Composite materials: carbon fiber, fiberglass, and their applications in aerospace and automotive industries • Integration of textiles and composites in fashion, interior design, and product development	• Understand: Understand textile manufacturing processes and composite materials. (C2) • Apply: Apply textile knowledge in fashion and interior design contexts. (C3) • Analyse: Analyse case studies of textile and composite applications. (C4) • Create: Create textile-based prototypes and composite structures. (C5)

Note: The course plan included as an annexure has the details of each unit with the number of hours and mode of delivery and pedagogical approach.

Learning Strategies and Contact Hours

Learning Strategies	**Contact Hours**
Lecture	
Practical	36
Seminar/Journal Club	
Small group discussion (SGD)	4
Self-directed learning (SDL) / Tutorial	4
Problem Based Learning (PBL)	4
Case/Project Based Learning (CBL)	10
Revision	2
Others If any:	
Total Number of Contact Hours	60

Assessment Methods: Criteria rubrics and marks details are provided in Scheme of Examination

Formative (60%)	**Summative (40%)**
Practical / Lab Proficiency (10 Marks)	University End Term Examination (20 Marks)
Viva-Voce / Quiz / Lab Test/ Internal Jury (5 Marks)	
Documentation & Reporting (5 Marks)	
Discipline Specific Practical / Lab Activities (10 Marks)	
Since the total marks of the external examination is 20, the examination will be conducted for 50 Marks and then bring down to 20	

Mapping of Assessment with COs

Nature of Assessment	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Practical / Lab Proficiency	√	√	√	√	-
Viva-Voce / Quiz / Lab Test/ Internal Jury	√	√	√	√	√
Documentation & Reporting	√	√	√	√	-
Discipline Specific Practical / Lab Activities	√	√	√	√	√
University End Term Examination	√	√	√	√	√

Feedback Process	1. Student's Feedback
References:	(List of reference books)

Text Books:

- George F. Schrader and Ahmad Soufiani, "Introduction to Glass Science and Technology", Royal Society of Chemistry, UK, 2014.
- Mike Ashby and David Cebon, "Materials: Engineering, Science, Processing and Design", Butterworth-Heinemann, UK, 2019.
- Charles A. Harper, "Handbook of Plastics, Elastomers, and Composites", McGraw-Hill Education, USA, 2001.
- Mike Ashby and Kara Johnson, "Materials and Design: The Art and Science of Material Selection in Product Design", Butterworth-Heinemann, UK, 2014.

Reference Books:

- Michael F. Ashby, "Materials Selection in Mechanical Design", Butterworth-Heinemann, UK, 2011.
- John D. Cutnell and Kenneth W. Johnson, "Materials Science and Engineering: An Introduction", Wiley, USA, 2015.
- Jurgen H. Haferkamp, "Plastics and Sustainability: Towards a Peaceful Coexistence between Bio-based and Fossil Fuel-based Plastics", Springer, Germany, 2012.
- Robert M. German, "Sintering Theory and Practice", John Wiley & Sons, USA, 1996.