



**RAMAIAH
UNIVERSITY**
OF APPLIED SCIENCES

**M S Ramaiah University of Applied Sciences
Programme Structure and Course Details
of
B.Des. (Product Design) 2022-2023**

Programme Code: 006

**Faculty of Art and Design
Department of Product Design**

Registrar

M.S.Ramaiah University of Applied Sciences
Bangalore - 560 054

University's Vision, Mission and Objectives

M.S. Ramaiah University of Applied Sciences
Bangalore-560054



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**Faculty of Art and Design
Department of Product Design**

University's Vision, Mission and Objectives


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Bangalore-560054


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The M. S. Ramaiah University of Applied Sciences (MSRUAS) will focus on student-centric professional education and motivates its staff and students to contribute significantly to the growth of technology, science, economy and society through their imaginative, creative and innovative pursuits. Hence, the University has articulated the following vision and objectives.

Vision

MSRUAS aspires to be the premier university of choice in Asia for student centric professional education and services with a strong focus on applied research whilst maintaining the highest academic and ethical standards in a creative and innovative environment

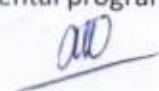
Mission

Our purpose is the creation and dissemination of knowledge. We are committed to creativity, innovation and excellence in our teaching and research. We value integrity, quality and teamwork in all our endeavors. We inspire critical thinking, personal development and a passion for lifelong learning. We serve the technical, scientific and economic needs of our Society.

Objectives

1. To disseminate knowledge and skills through instructions, teaching, training, seminars, workshops and symposia in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences to equip students and scholars to meet the needs of industries, business and society
2. To generate knowledge through research in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences to meet the challenges that arise in industry, business and society
3. To promote health, human well-being and provide holistic healthcare
4. To provide technical and scientific solutions to real life problems posed by industry, business and society in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences
5. To instill the spirit of entrepreneurship in our youth to help create more career opportunities in the society by incubating and nurturing technology product ideas and supporting technology backed business
6. To identify and nurture leadership skills in students and help in the development of our future leaders to enrich the society we live in
7. To develop partnership with universities, industries, businesses, research establishments, NGOs, international organizations, governmental organizations in India and abroad to enrich the experiences of faculties and students through research and developmental programmes


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Faculty	Art and Design
Department	Industrial Design
Programme Code	006
Programme Name	B.Des. (Product Design)
Dean of the Faculty	Prof. Dilip Kumar Mahanty
Head of the Department	Mr. H. S. Lohit


1. Title of the Award: B.Des. in Product Design
2. Mode of Study: Full-Time
3. Awarding Institution /Body: M. S. Ramaiah University of Applied Sciences, Bengaluru
4. Joint Award: Not Applicable
5. Teaching Institution: Faculty of Art and Design, M. S. Ramaiah University of Applied Sciences, Bengaluru
6. Date of Programme Specifications: July 2022
7. Date of Programme Approval by the Academic Council of MSRUAS: 14-July-2022
8. Next Review Date: July 2026
9. Programme Approving Regulating Body and Date of Approval: --
10. Programme Accredited Body and Date of Accreditation: Not Applicable
11. Grade Awarded by the Accreditation Body: Not Applicable
12. Programme Accreditation Validity: Not Applicable
13. Programme Benchmark: Not Applicable
14. Rationale for the Programme


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India is stated to be the largest consumer market in the world by the year 2030, according to a report by the global professional services company Deloitte in the year 2013. As the Indian economy continues to grow stronger, it offers vast opportunities for multinational firms to make further inroads into India as well as national firms to expand globally. With the increase in household income in the urban populace in India which is further stated to grow by around 10 percent annually for the next 8 years, according to a report by McKinsey Global Institute, a global management consulting firm in the year 2011, the Indian consumer is spending more on utility and luxury consumer products to match their needs and lifestyle.

The Indian consumer durables sector is competitive with both International and National players vying to woo consumers by offering newer, better and more value for money products. Some of the key players in the consumer durables sector in the Indian market include Philips, General Motors, Hyundai, Samsung, LG, Onida, Mahindra & Mahindra, Micromax, Tata Technologies, HCL Technologies, Godrej, Bajaj, TVS Motor Company, to name a few. To increase the value addition in their product offerings the firms have started focusing heavily on verticals such as product design.

As per data furnished by National Institute of Design to corporations such as Autodesk and others, it is estimated that India needs a workforce of 5000 to 8000 skilled designers per annum


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Faculty of Art and Design

whilst the number of designers graduating from educational institutes in India are less than 500. Furthermore, due to high demand, entry level designers are being offered higher salaries when compared to entry level tech graduates, according to The Economic Times Bureau, 2014. With better career prospects, design is being viewed as a better alternative for students to pursue. With an intention to create highly skilled, industry ready and sought-after product designers, the Faculty of Art and Design at the University has developed a superior design programme in the field of Product Design. This programme provides the prospective students with a strong design foundation coupled with art education so that the students can create not only aesthetically pleasing but also functionally appealing products. The graduates thus produced will be able to meet the human resources requirement of the product design sector. The graduates will be able to ideate and create newer and better product design solutions. Moreover, this acts as a first programme to develop further expertise in a chosen domain of product design.

As design is highly interdisciplinary in nature, the University provides an ideal platform for students to interact and work with others from different disciplines such as engineering, medicine and management. Furthermore, the Faculty of Art and Design at the University is presently associated with PACE (Partners for the Advancement of Collaborative Engineering Education) which links firms such as General Motors, Siemens, Hewlett-Packard with selected academic institutions worldwide to nurture young talent and create the product development teams of the future.

15. Programme Mission

The purpose of the programme is creation of innovative problem solvers in multi-disciplinary settings, entrepreneurs and leaders applying the knowledge, understanding, cognitive abilities, practical skills and transferable skills gained through systematic, flexible and rigorous learning in the chosen academic domain.

16. Graduate Attributes (GAs)

GA-1. Design knowledge: Ability to apply knowledge of art and Design fundamentals to solve complex problems in product development

GA-2. Manual and Digital Tool Usage: Ability to apply appropriate tools and techniques and comprehend utilization of resources appropriately to complex design activities.

GA-3. Design Analysis and Synthesis : Ability to analyse design problems, interpret data and arrive at meaningful conclusions involving design inferences

GA-4. Design and Development: Ability to design an artefact considering functionality, usability, public health, safety and the cultural, societal, and environmental considerations.

GA-5. Critique and Evaluate: Ability to comprehend the effect of design solutions on legal, cultural, social and public health and safety aspects

GA-6. Professional Design Practice: Ability to comprehend and solve complex design problems by interacting with the end users

GA-7. Environment and sustainability: Ability to develop sustainable solutions and understand their effect on society and environment



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- GA-8. Ethics:** Ability to apply ethical principles to design practices and professional responsibilities
- GA-9. Individual and teamwork:** Ability to work as a member of a team, to plan and to integrate knowledge of various design and engineering disciplines and to lead teams in multidisciplinary settings
- GA-10. Communication:** Ability to make effective oral presentations and communicate design ideas to a broad audience using written and oral means
- GA-11. Project management and finance:** Ability to lead and manage multidisciplinary teams by applying design and management principles
- GA-12. Life-long learning:** Ability to adapt to the changes and advancements in technology and engage in independent and life-long learning

17. Programme Outcomes (POs)

B.Des. graduates will be able to:

- PO 1.** Apply fundamental aspects of art, design and culture and apply its principles while designing.
- PO 2.** Apply manual and digital tools and techniques in various media to express and convey design ideas in 2D, 3D digital and physical form skilfully.
- PO 3.** Identify, interpret and generate insights for developing new products based on data gathered from various research methods including ethnographic research to support the ideation of relevant and appropriate design solutions.
- PO 4.** Design and develop solutions based on identified user needs considering style, theme, elements and principles of aesthetics, functionality and safety.
- PO 5.** Apply critical judgement and evaluate design solutions on aesthetic quality and intended end use, art and cultural impact.
- PO 6.** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional design practice.
- PO 7.** Identify the impact of the professional design solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO 8.** Apply ethical principles and commit to professional ethics and responsibilities and norms of the design practice.
- PO 9.** Ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.


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- PO 10. Ability to make effective oral presentations and communicate design ideas to a broad audience using written and oral means
- PO 11. Ability to work in groups and perform effectively in multidisciplinary teams by applying design and management principles
- PO 12. Ability to recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of trend change.

18. Programme Goal

The programme goal is to produce creative, innovative and skilled graduates with an ability to think independently and pursue a career in Product Design.

19. Program Educational Objectives (PEOs)

The objectives of the B.Des. (Product Design) Programme are to:

- PEO-1. Inculcate creative thinking to generate design ideas for new and innovative products
- PEO-2. Induce effective usage of elements and principles of design to develop aesthetically pleasing and functionally appropriate products for the Design Industry
- PEO-3. Impart usage of manual and digital tools and techniques to express design ideas and knowledge of materials and manufacturing techniques to create functional products
- PEO-4. Advocate strong human values, social, interpersonal and entrepreneurial skills required for professional success in evolving global professional environments

20. Programme Specific Outcomes (PSOs)

At the end of the B.Des. (Product Design) program, the graduate will be able to:

- PSO-1. Apply design fundamentals to solve complex design problems and create conceptual design solutions
- PSO-2. Demonstrate manual, digital model making, physical prototyping skills to convey design ideas along with aesthetic, material and functional parameters
- PSO-3. Adapt to technological advancements in modern design tools to communicate design ideas for a wide spectrum of product design applications
- PSO-4. Demonstrate an understanding of the importance of life-long learning through professional development, practical training, leadership qualities, specialized certifications and entrepreneurial skills for betterment of organization environment and society


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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

Programme Structure for Under Graduate 4 years Honours with Research program (for subjects with practicals and any one subject as major in 4th year)

Sem.	Discipline Core (DSC) (Credits) (L+T+P)	Discipline Elective(DSE) / Open Elective (OE) (Credits) (L+T+P)	Ability Enhancement Compulsory Courses (AECC), Languages (Credits)(L+T+P)	Skill Enhancement Courses (SEC)		Total Credits	
				Skill based (Credits) (L+T+P)	Value based (Credits) (L+T+P)		
I	Discipline A1(4+2) Discipline B1(4+2) <i>Elements of Design Print Making Techniques Foundation Drawing and Painting</i>	OE-1 (3) <i>Indian Art Appreciation/MOOC</i>	English For Communicati on-1/MOOC (3)		SEC-1: Studio Practice -1(2) (1+0+2)	Digital Fluency (2) (1+0+2)	22
II	Discipline A2(4+2) Discipline B2(4+2) <i>Creativity Techniques Design Drawing Design for Social Impact Digital Design Basics</i>	OE-2 (3) <i>Handicraft/MOOC</i>		Environme ntal Studies (2)		Health & Wellness/ Social & Emotional Learning (2) (1+0+2)	19
Exit option with Certificate (41) credits							
III	Discipline A3(4+2) Discipline B3(4+2) <i>Digital Illustration Techniques Materials, Finishes and Trim Product Photography</i>	OE-3 (3) <i>Sculpture/MOOC</i>	English For Communicati on-2/MOOC (3)		SEC-2: Artificial Intelligence 2(2)(1+0+2)	Innovation & Entrepreneurshi p (3) (0+0+3)	23
IV	Discipline A4(4+2) Discipline B4(4+2) <i>Digital modelling and Animation Design Thinking and Need Identification Mechanism Design</i>	OE-4 (3) <i>Water Color Painting/MOOC</i>		Ethics and Self- awareness (2)	SEC 3: Professional Communicatio n (2)	Internship/Traini ng/Project (3)	22
Exit option with Diploma (86) credits							
V	Discipline A5(3+2) Discipline B5(3+2) <i>Product Ergonomics Computer Aided Industrial Design and Rendering Manufacturing Process & Surface Finishing</i>	DSE-B Elective 1 (3)		Project management (3)	SEC-4: Constitution of India and Human Rights - 3(2) (1+0+2)	Sports/Yog a/NCC/Cult ural/NSS(2) (1+0+2)	20

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VI	Discipline A6(3+2) Discipline B6(3+2) <i>Product Design Project (Group Project)</i> <i>3D Modelling and Product Detailing</i>	DS-A Elective 1 (3) Res. Methodology (3)			SEC-5: Personality Development and Soft Skills (2)(1+0+2)	Internship/Training/Project (3) Vocational (3)	24
Exit option with Bachelor of Arts, Science, B.Sc. /B.Des., B.A.(Hons) degree (130 credits)							
Choose any one Discipline as Major							
VII	Discipline A/B-7(3+2) Discipline A/B-8(3+2) Discipline A/B-9(3+2) <i>Portfolio Design and Presentation</i> <i>Product Design Project</i> <i>Design Management and Professional Practice</i> <i>Advanced Form Exploration</i>	DS-A/B Elective 2(3) DS-A/B Elective 3(3)					
VIII		Research/Internship in A/B (21)					
Award of Bachelor Degree with Honours with Research (with the completion of courses equal to a minimum of 172 credits)							

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Mheekha Rao
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21. Programme Structure:

Program Structure and Course Code For B.Des in Product Design

Semester 1							
Discipline Core (DSC) (Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDC101A	Elements of Design	1		6	4	100
2	PDC102A	Foundation Drawing and Painting	1		6	4	100
3	PDC103A	Print Making Techniques	1		6	4	100
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
4	PDO101A	Open Elective-1/MOOC Courses	3		0	3	100
Ability Enhancement Compulsory Courses (AECC), Languages (Credits) (L+T+P)							
5	TSM101A	English For Communication-1 /MOOC Courses	3			3	100
Skill Enhancement Courses (SEC)- Skill based (Credits)(L+T+P)							
6	PDM101A	Studio Practice	1		2	2	50
Skill Enhancement Courses (SEC)- Value based (Credits)(L+T+P)							
7	CSM101A	Digital Fluency	1		2	2	50
Total			3		22	22	600
Total number of contact hours per week			35 Hours				
Number of credits to be registered			22				

Semester 2							
Discipline Core (DSC) (Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDC104A	Creativity Techniques	2			2	50
2	PDC105A	Design Drawing	1		6	4	100
3	PDC106A	Design For Social Impact	1		6	4	100
4	PDC107A	Digital Design Basics			4	2	50
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
5	PDO102A	Open Elective-2/MOOC Courses	1		4	3	100
Ability Enhancement Compulsory Courses (AECC), Languages (Credits) (L+T+P)							
6	BTN101A	Environmental Studies	2			2	50
Skill Enhancement Courses (SEC)- Value based (Credits)(L+T+P)							
7	AHU101A	Health and Wellbeing/ Social & Emotional Learning	1		2	2	50
Total						19	500
Total number of contact hours per week			30 Hours				
Number of credits to be registered			19				

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Semester 3							
Discipline Core (DSC) (Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDC201A	Digital Illustration techniques	1		6	4	100
2	PDC202A	Materials, Finishes and Trim	2		4	4	100
3	PDC203A	Product Photography	2		4	4	100
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
4	PDO201A	Open Elective-3/MOOC Courses	1		4	3	100
Ability Enhancement Compulsory Courses (AECC), Languages (Credits) (L+T+P)							
5	TSM102A	English For Communication-2 /MOOC Courses	3			3	100
Skill Enhancement Courses (SEC)- Skill based (Credits)(L+T+P)							
6	CSM301A	Artificial Intelligence	1		2	2	50
Skill Enhancement Courses (SEC)- Value based (Credits)(L+T+P)							
7	BAU201A	Innovation & Entrepreneurship			6	3	100
Total						23	650
Total number of contact hours per week			34 Hours				
Number of credits to be registered			23				

Semester 4							
Discipline Core (DSC) (Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDC204A	Digital modelling and Animation	1		6	4	100
2	PDC205A	Design Thinking and Need Identification	2	2	2	4	100
3	PDC206A	Mechanism Design	3		2	4	100
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
4	PDO202A	Open Elective-4/MOOC Courses	1		4	3	100
Ability Enhancement Compulsory Courses (AECC), Languages (Credits) (L+T+P)							
5	TSU301A	Ethics and Self-awareness	2			2	50
Skill Enhancement Courses (SEC)- Skill based (Credits)(L+T+P)							
6	TSU202A	Professional Communication	2			2	50
Skill Enhancement Courses (SEC)- Value based (Credits)(L+T+P)							
7	PDMV201A	Internship/Training/Project			6	3	100
Total						22	600
Total number of contact hours per week			33 Hours				
Number of credits to be registered			22				

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Semester 5							
Discipline Core (DSC) (Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDC301A	Product Ergonomics	2		2	3	100
2	PDC302A	Computer Aided Industrial Design and Rendering	1		6	4	100
3	PDC303A	Manufacturing Process & Surface Finishing	3			3	100
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
4	PDEXXXA	Discipline Elective-1	1		4	3	100
Ability Enhancement Compulsory Courses (AECC), Languages (Credits) (L+T+P)							
5	TSN201A	Project management	3			3	100
Skill Enhancement Courses (SEC)- Skill based (Credits)(L+T+P)							
6	LAN101A	Constitution of India and Human Rights	2			2	50
Skill Enhancement Courses (SEC)- Value based (Credits)(L+T+P)							
7	DSU101A	Sports/Yoga/NCC/Cultural/NSS				2	50
Total						20	600
Total number of contact hours per week			25 Hours				
Number of credits to be registered			20				

Semester 6							
Discipline Core (DSC) (Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDP301A	Product Design Project (Group Project)			14	7	100
2	PDC304A	3D Modelling and Product Detailing	1		4	3	100
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
3	PDEXXXA	Discipline Elective 2	1		4	3	50
4	PDUE305A	Res. Methodology	3			3	50
Skill Enhancement Courses (SEC)- Skill based (Credits)(L+T+P)							
5	PDUM302A	Personality Development and Soft Skills	1		2	2	100
Skill Enhancement Courses (SEC)- Value based (Credits)(L+T+P)							
6	PDPM301A	Internship/Training/Project			6	3	
7	PDMV301A	Vocational			6	3	
Total						24	600
Total number of contact hours per week			42 Hours				
Number of credits to be registered			20				

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Semester 7							
Discipline Core (DSC) (Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDC401A	Portfolio Design and Presentation			4	2	50
2	PDP401A	Product Design Project			14	7	100
3	PDC402A	Design Management and Professional Practice	3			3	100
4	PDC403A	Advanced Form Exploration	1		4	3	100
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
5	PDEXXXA	Discipline Elective- 3	1		4	3	100
6	PDEXXXA	Discipline Elective- 4	1		4	3	100
Total						21	550
Total number of contact hours per week			37 Hours				
Number of credits to be registered			21				

Semester 8							
Discipline Elective(DSE) / Open Elective (OE)(Credits) (L+T+P)							
Sl. No.	Code	Course Title	Lecture (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	PDP402A	Research/Internship			42	21	
Total						21	
Total number of contact hours per week			42 Hours				
Number of credits to be registered			21				

Discipline Elective			
Stream		Transport Design	Decorative Product Design
Sem. 5	Course Code	PDE301A	PDE302A
	Course Title	Vehicle Interior color and Trim	Decorative Products
Sem.6	Course Code	PDE303A	PDE304A
	Course Title	Vehicle Exterior Design	Lighting Design
Sem.7	Course Code	PDE401A	PDE402A
	Course Title	Digital Sculpting And Rendering	Furniture Design
Sem. 7	Course Code	PDE403A	PDE404A
	Course Title	Clay Modelling And Transport Design	Space And Environment Design

*Minimum of 40% students of a particular batch needed to offer a particular DE

22. Open Elective Offered

A number of Open Elective Courses from various Faculties of RUAS are offered as mentioned in the University's website. Students can choose the Open Electives of their choice. The students are permitted to choose online electives from the list approved by the respective HoD and Dean.

22.1 Innovation Courses in Lieu of Open Elective Courses

Students can earn 3-credits by participating in innovation activities as per the approved guidelines in lieu of Open Elective Courses. The activities could be related to any of the following:

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1. Indian Art Appreciation(PDO101A)
2. Handicraft(PDO102A)
3. Sculpture(PDO201A)
4. Watercolor Painting(PDO202A)

23. MOOC Courses

Students are supposed to choose MOOC course if they opt to, from the given list below

Sl No	Title	Awarding Agency	Link
1	ANIMATION By Dr. Abhishek Kumar & Dr. Achintya Singhal, Banaras Hindu University	SWAYAM	https://onlinecourses.swayam2.ac.in/cec22_cs22/preview
2	Visual Communication Design for Digital Media By Prof. Saptarshi Kolay, IIT Roorkee	NPTTEL	https://onlinecourses.nptel.ac.in/noc22_ce53/preview
3	FRENCH Échanger / Interactions (French) By Dr. Deepanwita Srivastava, Indira Gandhi National Open University	SWAYAM	https://onlinecourses.swayam2.ac.in/nou22_lg46/preview
4	Sanskrit Bhasha aur Sahitya By Dr. Soniya, Indira Gandhi National Open University (IGNOU)	SWAYAM	https://onlinecourses.swayam2.ac.in/nou22_lg35/preview
5	Mandarin (Chinese) for beginners By Dr. Deepanwita Srivastava, Indira Gandhi National Open University (IGNOU)	SWAYAM	https://onlinecourses.swayam2.ac.in/nou22_lg37/preview
6	Graphic Design Specialization	COURSERA	https://www.coursera.org/specializations/graphic-design
7	Graphic Design Elements for Non-Designers Specialization	COURSERA	https://www.coursera.org/specializations/graphic-design-elements-non-designers
8	3D Printing and Additive Manufacturing Specialization	COURSERA	https://www.coursera.org/specializations/3d-printing-additive-manufacturing
9	UI / UX Design Specialization from Coursera	COURSERA	https://www.coursera.org/specializations/ui-ux-design
10	Art and Design in the Digital Age	edX	https://www.edx.org/course/art-and-design-in-the-digital-age?index=product&queryID=bca89adb1a0270fe56cada2114771b2b&position=14

24. Course Delivery As per the Timetable


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25. Teaching and Learning Methods

1. Face to Face Lectures using Audio-Visuals
2. Workshops, Group Discussions, Debates, Presentations
3. Demonstrations
4. Guest Lectures
5. Laboratory work/Field work/Workshop
6. Industry Visit
7. Seminars
8. Group Exercises
9. Project Work
10. Project
11. Exhibitions
12. Technical Festivals

26. Assessment and Grading

26.1. Components of Grading

There shall be **two components** of grading in the assessment of each course:

Component 1, Continuous Evaluation (CE): This component involves multiple subcomponents (SC1, SC2, etc.) of learning assessment. The assessment of the subcomponents of CE is conducted during the semester at regular intervals. This subcomponent represents the formative assessment of students' learning.

Component 2, Semester-end Examination (SEE): This component represents the summative assessment carried out in the form an External Jury Presentation/Examination conducted at the end of the semester.

Marks obtained CE and SEE components have weightage of 40:60 (CE: 40% and SEE: 60%) in determining the final marks obtained by a student in a Course.

For courses having only laboratory component, Semester End Exam will be conducted for 50 marks and converted to 30 marks (60%).

- For courses having only theory Component, Semester End Exam will be conducted for 100 marks and converted to 60 marks.
- For courses having both theory and laboratory components, Semester End Exam (Jury system) will be conducted for 100 marks and converted to 60 marks.

For common courses offered by university, 60:40 evaluation (CE: 60% and SEE: 40%) will be followed.

The complete details of Grading are given in the Academic Regulations.


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26.2. Continuous Evaluation Policies

Continuous evaluation depends on the type of the course as discussed below:

26.2.1 Theory Courses

For Theory Courses Only					
Focus of COs on each Component or Subcomponent of Evaluation					
	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
Subcomponent Type ▶	Assignment 1	Assignment 2	Test	Assignment 3	SEE
CO-1					
CO-2					
CO-3					
CO-4					
CO-5					
CO-6					

The details of number of tests and Assignment to be conducted are presented in the Academic Regulations and Programme Specifications Document.

There shall be three Assignment evaluated for 5 marks each and a mandatory Test evaluated for 25 marks. The three creative submissions can be of any of the following types:

- Online Test
- Assignments/Problem Solving
- Field Assignment
- Open Book Test
- Portfolio
- Reports
- Case Study
- Group Task
- Jury
- Any other

After the four subcomponents are evaluated, the CE component marks are determined as:

CE Component Marks = Total of the marks obtained in all the four subcomponents

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26.2.2 Laboratory Course

For a laboratory course, the scheme for determining the CE marks is as under:

For Laboratory Courses Only					
Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent Type	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	Creative Submission 1	Creative Submission 2	Creative Submission 3	Creative Submission 4	Laboratory SEE
CO-1					
CO-2					
CO-3					
CO-4					
CO-5					
CO-6					

The details of number of creative submissions to be conducted are presented in the Academic Regulations and Programme Specifications Document

The subcomponents can be of any of the following types:

- Laboratory / Clinical Work Record
- Experiments
- Computer Simulations
- Creative Submission
- Virtual Labs
- Viva / Oral Exam
- Lab Manual Report
- Jury
- Any other (e.g. combinations)

Course leaders to declare the assessment components before the commencement of the session and get approval from HoD and Dean

After the subcomponents of CE are evaluated, the CE component Marks (10 Marks each) are determined as:

CE Component Marks = Total of the four subcomponent marks (SC1+SC2+SC3+SC4)


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26.2.3 Course Having a Combination of Theory and Laboratory

For a course that contains the combination of theory and laboratory sessions, the scheme for determining the CE marks is as under:

For Combined Courses (Theory + Laboratory)					
Focus of COs on each Component or Subcomponent of Evaluation					
Course Outcome	CE (Weightage: 40 %) Four components				SEE (Weightage: 60 %)
	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE Jury
CO-1					
CO-2					
CO-3					
CO-4					
CO-5					
CO-6					

The details of number of Creative Submissions to be conducted are presented in the Academic Regulations and Programme Specifications Document.

There shall be four Creative Submission each having 10 marks each. The CE component will be collation of all the 4 creative submissions submitted by students.

The creative work submission can be of any of the following types:

- Online Test
- Problem Solving
- Field Assignment
- Open Book Test
- Portfolio
- Reports
- Case Study
- Group Task
- Jury
- Any other

The laboratory subcomponent can be of any of the following types:

- Laboratory / Clinical Work Record
- Experiments
- Computer Simulations
- Creative Submission
- Virtual Labs
- Viva / Oral Exam
- Lab Manual Report
- Any other (e.g. combinations)

After the four subcomponents are evaluated, the CE component marks are

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determined as:

CE Component Marks = Total of the marks obtained in all the four subcomponents

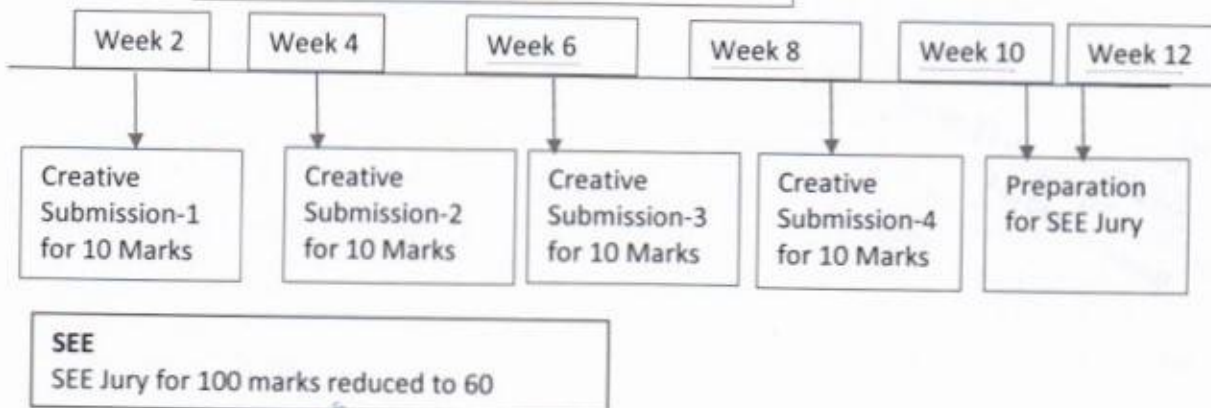
26.2.4 Ability Enhancement courses

For AECC Only		
Focus of COs on each Component or Subcomponent of Evaluation		
Subcomponent Type ▶	Component 1: CE (60% Weightage)	Component 2: SEE (40% Weightage)
	Terms Tests or Assignments	
CO-1		
CO-2		
CO-3		
CO-4		
CO-5		
CO-6		

The details of number of tests and assignments to be conducted are presented in the Academic Regulations and Programme Specifications Document.

- Course leaders to declare the assessment components before the commencement of the session and get approval from HoD and Dean

Schedule of CE Components in a Semester



27. Student Support for Learning

1. Course Notes
2. Reference Books in the Library
3. Magazines and Journals
4. Internet Facility
5. Computing Facility
6. Laboratory Facility
7. Workshop Facility
8. Staff Support
9. Lounges for Discussions

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10. Any other support that enhances their learning

28. Quality Control Measures

1. Review of Course Notes
2. Review of Question Papers and Assignment Questions
3. Student Feedback
4. Moderation of Assessed Work
5. Opportunities for students to see their assessed work
6. Review by external examiners and external examiners reports
7. Staff Student Consultative Committee meetings
8. Student exit feedback
9. Subject Assessment Board (SAB)
10. Programme Assessment Board (PAB)

29. Co-curricular Activities

Students are encouraged to take part in co-curricular activities like seminars, conferences, symposia, paper writing, attending industry exhibitions, project competitions and related activities for enhancing their knowledge and networking.

30. Cultural and Literary Activities

Annual cultural festivals are held to showcase the creative talents in students. They are involved in planning and organizing the activities.

31. Sports and Athletics

Students are encouraged to take part in sports and athletic events regularly. Annual sports meet will be held to demonstrate sportsmanship and competitive spirit.


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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

32. Programme Map (Course-PO-PSO Map)

Sem.	Course Title	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
1	Elements of Design	3	3	2	3	2		1		2	2	1	3	3	3	2	1
1	Foundation Drawing and Painting	2	3		1	1					3			2	3		
1	Print Making Techniques	2	3			2								1	3		
1	Indian Art Appreciation	3	1		3	3					3	2	1			3	1
1	Studio Practice-1	1	3	1	1										3		
1	English For Communication-1 /MOOC Courses																
1	Digital Fluency																
2	Design Drawing	3	3	2	3	2			1	1	1			2	3		
2	Creativity Techniques	1	2	1											3		
2	Digital Design Basics	2	2			3					2		1	1	3		
2	Design For Social Impact	1	3	1	2	3					1	3		2	3	2	
2	Handicraft			3		3	1	2	1		2						
2	Environmental Studies																
2	Health & Wellness/ Social & Emotional Learning																
3	Product Photography	2			3	1			1	1		2	3	1			3
3	Digital Illustration Techniques	2	3	1	2	1			1		3		1	3	3	2	1
3	Materials, Finishes and Trim		3	1				1							1		
3	Sculpture	2	3												3		
3	English For Communication-2 /MOOC Courses																
3	Innovation & Entrepreneurship																
4	Mechanism Design		2		3												
4	Digital modelling and Animation	1	3	1	1									1	3		
4	Design Thinking and Need Identification	2	1	2	4	1	1							1	2		
4	Watercolor Painting	2	3			1						3	1		3		
4	Constitution of India																
4	Professional Communication																
4	Internship/Training/Project	2	3	3	2	2	1	1	2	3	3	2	1	3	3	1	1
5	Product Ergonomics	1			3	1	3	2	3	1	2	1	2			3	1
5	Computer Aided Industrial Design and Rendering	1	3	1	2	1											

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

5	Manufacturing Process & Surface Finishing	2			1	3	2	2	1	2	3	1	3		2		
5	Vehicle Interior color and Trim	2	2	1	3						2			3	1	1	
5	Decorative Products	2	2		3						1			3	1		
5	Project management																
5	Ethics & Self Awareness																
5	Constitution of India and Human Rights																
5	Sports/Yoga/NCC/Cultural/NSS																
6	Product Design Group Project	2	3	3	2	2	1	1	2	3	3	2	1	3	3	1	1
6	3D Modelling and Product Detailing	3	2	2	2	3	2		2	2	3	1			3		
6	Vehicle Exterior Design	2	2	1	3	1								3	1	1	
6	Lighting Design	1	1	3	2	2					2			3	1		
6	Res. Methodology																
6	Personality Development and Soft Skills																
6	Internship/Training/Project																
6	Vocational																
7	Portfolio Design and Presentation	3	2	1	1				1		3	2	1	3	2		
7	Product Design Project	2	3	3	2	2	1	1	2	3	3	2	1	3	3	1	1
7	Design Management and Professional Practice								2	2	1	3					3
7	Advanced Form Exploration	3	3	2	2	3					2		1	2	2	1	
7	Digital Sculpting And Rendering	1	3	1	2	1								2	3		
7	Clay Modelling And Transport Design	2	3		1						2				3		
7	Furniture Design	2	3	2	3	1								3	3	1	
7	Space And Environment Design	3	3	2	2	1		1						3	3	1	
8	Research/Internship	2	3	3	2	2	1	1	2	3	3	2	1	3	3	1	1

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Course Specifications

B.Des in Product Design

Programme Code: 006

Faculty of Art and Design
Batch 2022-2023


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SEMESTER 1


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Course Specifications: Elements of Design

Course Title	Elements of Design
Course Code	PDC101A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable students to develop visually appealing and aesthetically pleasing basic forms and shapes using the elements of design. The students are taught to analyze line and form, materials and textures, space, natural and artificial light. Applications of these elements are also taught as per function, form, focal points, rhythm, proportion, human scale and variety in unity within a given space. They are trained to analyze the contents of drawings, artworks, paintings and other creations using elements of design. The students are taught to develop compositions using the elements and principles of design to achieve aesthetic and visually pleasing forms. The students are taught about the combination of elements to create aesthetic design solutions.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	115
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the basics of Design, describe the Elements of Design and significance of various elements of design
- CO-2. Discuss colour theory and its contextual purpose
- CO-3. Illustrate primitive geometric and organic shapes in different media
- CO-4. Apply the principles and elements of design to develop basic forms, linear, planar and volumetric characteristics of advanced form.
- CO-5. Critique the essence of artistic creation and Adapt emotions to portray form and expression
- CO-6. Demonstrate the application of design skills to create professional portfolios

4. Course Contents

Unit 1 (Awareness of Design): Introduction to Elements of design, from life to art, History, fine art and viewer's response, the creative process.

Unit 2 (Design Elements): Line: creating lines, expressive quality of line, line drawing, positive and negative areas, implies lines.

Shapes and form: Design that emphasize shape, types of shapes, sources of shapes, unfilled areas as shapes, implied shapes, holding shapes together, from shape to form, illogical use of

MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

forms

Space: Linear perspective, seal, over lapping and position, atmospheric perspective, illusionary space, shallow space

Texture: Actual texture, simulated texture, repetition of design elements, types of texture, rubbing and transfers, erasures

Value: Representing value gradation, from local colours to local value, local value to interpretive value, emphasis, spatial effect, emotional effect

Unit 3 (Colours): Characteristics of colour, computer colour choices, colour prejudices and colour, combination advancing and receding colours, subjective verses local colours, colour interactions

Unit 4 (Principle of design): Unity/harmony and methods of achieving it. Balance and its types ranging from symmetry, asymmetry, radial and mosaic, hierarchy scale/proportion dominance/emphasis, gradation of size and direction, repetition with variation, contrast as the juxtaposition of opposing elements, harmony, dominance as counteracting, confusion and monotony, unity in design elements, meaning and essence of artistic creations, Golden ration, Gestalt Principles

Unit 5 (Form study & Advanced forms): Use of manual tools to explore form using techniques such as bipolar spectrum etc. Expression of form, selection and combination of linear, planar and volumetric characteristics that constitute the formal elements and combining them to develop forms. Additive and subtractive nature of forms, types of forms including rectilinear and curvilinear volumes, composition of fragments, planar construction, lines and axis in space, convexity and concavity aspects of form

Unit 6 (Design and emotions): Emotional appeal, addressing user's needs, deducing emotions of the user to create forms using the elements of design, Metaphors, nature studies

Unit 7 (Evolution of design): History and design movements, Case studies of products and their importance in the evolution of design, Current and future Scenario.

Unit 8 (Application of Visual Language): Case studies, portfolio.

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5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	3	2											2			
CO-2	3													2		
CO-3	3	3	2											3		
CO-4	3	3		3		2							3			
CO-5	3	3		3	3									1		
CO-6				3						2				3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

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6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		15
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	15	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		75
1. Course Laboratory	75	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		115

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/ presentation are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	60 Marks
Maximum Marks ▶	10	10	10	10	
CO-1			X		
CO-2			X		
CO-3	X	X	X		
CO-4	X	X	X	X	
CO-5	X	X	X	X	
CO-6			X	X	

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Oei, L. and Kegel, C. D. (2002) The Elements of Design, Rediscovering Colours, Textures, Forms and Shapes, Thames and Hudson
3. Paul Zelanski, mary Pat Fisher(1996) Design principles and Problems, Harcourt Brace Collage Publishers, USA
4. Hannah, G. (2002) Elements of Design: Rowena Reed Kostellow and the Structure of Visual Relationships, Princeton Architectural Press

b. Recommended Reading

1. Evans, P. and Thomas, A. (2012) Exploring the Elements of Design, Thomson Australia
2. Kegel de, cecile, (2007) Elements of Design by Loan oei, Thames and Hudson
3. Eisemann , L. (2000) Pantone Guide to Communicating With Color, North light, Ohio

c. Magazines and Journals

1. Journal of Experimental Psychology: Human Perception and Performance, APA Journals
2. Journal of Design History, Oxford University
3. Form

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4. Domus

d. Websites

1. www.magazinedesigning.com
2. www.digital-web.com/articles/elements_of_design
3. www.pantone.com/pages/pantone/index.aspx
4. www.cis.rit.edu/mcsl
5. <https://www.coursera.org/>

e. Other Electronic Resources

1. <https://ocw.mit.edu/index.htm>


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Course Specifications: Foundation Drawing and Painting

Course Title	Foundation Drawing and Painting
Course Code	PDC102A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable the students to learn various drawing and painting techniques and methods to represent the physical world in a visual form. The students are taught the procedure of observation and studying the relationship of planes while evaluating proportions. Students are taught applied colour theory, colour palettes and direct painting techniques. They are also taught to analyze different representation techniques in various mediums. Students are trained to acquire the skills to transpose three-dimensional objects into their two-dimensional equivalents and translate these observations to paper

2. Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	105
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Sketch basic shapes in terms of geometric and organic forms
- CO-2. Demonstrate construction of object, composition and human anatomy as per proportions
- CO-3. Illustrate depth in composition using tonal gradation and value using different media
- CO-4. Demonstrate usage of gestures in live drawing Demonstrate the application of various painting techniques in different media
- CO-5. Create finished drawings and paintings of exhibition quality
- CO-6. Judge proportion, scale and spatial relationships

4. Course Contents

Unit 1 (Contour Drawing): Curvilinear & rectilinear lines, implied or actual lines, expression, lines used as value, contour lines or outlines, separating line, shadow line, hatching, negative space, representative lines, grouped objects, contour line, its types, elevations and depths, hatching and its techniques and variations

(Introduction to painting): Applied colour theory, understanding different palettes, basic water colour and oil painting techniques, direct painting techniques and painting of still life and models.

Unit 2 (Live Drawing): Still life anatomy, proportions, composition, human anatomy- muscle structure, bones, proportion, etc., animal and birds- formation and construction, gestures of living and non-living objects and their dynamisms.

Unit 3 (Basic Drawing): Basic shapes- organic, geometric, including their size, structure, anatomy, repetition, orientation etc., subtractive drawing- natural, artificial, co-occurrence, additive drawing - natural, artificial, co-occurrence, Positive and negative shapes - natural, artificial, co-occurrence

Painting techniques like wet on wet, wet on dry, methods inherent in watercolor and acrylic painting media such as colour interaction, transparency and opacity.

Unit 4 (Elements of Drawing and Composition): Tonal contrast, repetition and variety, symmetry, proportion, focal points, gravity, overlapping, visual balance, framing eye-movement, passage, unity of objects, using tangents, harmony

Unit 5 (Object Drawing): Outdoor real-life object sketching and painting, indoor still life sketching and painting, life-sketching of humans, animals and birds

Unit 6 (Compositing): Picking a good course, choosing the size, creating crop, placement, controlling lines, balancing positive and negative space, adding contrast, simplifying distracting elements, choosing colors deliberately

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2	3											1	2		
CO-2		2														
CO-3		3														
CO-4	1				1											
CO-5		1							2				3			
CO-6		1														

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		05
Demonstrations		20
1. Demonstration using Videos	06	
2. Demonstration using Physical Models / Systems	14	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		60
1. Course Laboratory	60	
2. Computer Laboratory	00	

MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		
1. Case Study Presentation	05	10
2. Guest Lecture	05	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		105

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/ presentation are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	Creative Submission-3	Creative Submission-4	60 Marks
Maximum Marks ▶	10	10	10	10	
CO-1	x	x	x		
CO-2		x	x		
CO-3	x		x		
CO-4			x	x	
CO-5		x	x	x	
CO-6		x	x	x	

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
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1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Oei, L. and Kegel, C. D. (2002) The Elements of Design, Rediscovering Colours, Textures, Forms and Shapes, Thames and Hudson
3. Paul Zelanski, Mary Pat Fisher (1996) Design principles and Problems, Harcourt Brace Collage Publishers, USA
4. Goswamy, B.N. (2005) Domains of Wonder: Selected Masterworks of Indian Painting, San Diego Museum of Art

b. Recommended Reading

1. Hannah, G. (2002) Elements of Design: Rowena Reed Kostellow and the Structure of Visual Relationships, Princeton Architectural Press Don Taylor
2. (2005) Custom Auto Interiors, California Bill's Automotive Handbooks
3. Schuessler, M. (2014) Foundational Arts: Mural Painting and Missionary Theater in New Spain, University of Arizona Press
3. The Public Catalogue Foundation, (2010) Oil Paintings in Public Ownership in Northumberland, Tees Valley & Tyne and Wear, The Public Catalogue Foundation
4. Ellis, A. and Roe, S (2006) Oil Paintings in Public Ownership in Norfolk, Public Catalogue Foundation

c. Magazines and Journals

1. Journal of Experimental Psychology: Human Perception and Performance, APA Journals
2. Journal of Design History, Oxford University

d. Websites

1. www.magazinedesigning.com
2. www.digital-web.com/articles/elements_of_design
3. www.pantone.com/pages/pantone/index.aspx
4. www.cis.rit.edu/mcsl

e. Other Electronic Resources

1. <https://ocw.mit.edu/index.htm>

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Course Specifications: Print Making Techniques

Course Title	Print Making Techniques
Course Code	PDC103A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable students to explore various techniques and processes of printmaking. The students are taught basic methods of colour separation, shade preparation and mixing of colours. The students are trained to create artworks using traditional and digital methods of printmaking.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	105
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe various methods of printmaking
- CO-2. Explain printmaking materials and techniques
- CO-3. Compare the mode of print making techniques
- CO-4. Generate required palette of colours using primary hues with the correct mixing techniques
- CO-5. Develop print artworks using traditional and modern methods of printmaking
- CO-6. Create works of art that employ the elements of Art and Design

4. Course Contents

Introduction to printmaking: General introduction to wiping, carving, registration, examples and types and their overall process.

Relief printmaking: Demonstrate various techniques for transferring drawings to the plate; become familiar with the different qualities of carving surfaces (linoleum, hard and soft woods, long and engrains); exercise safe and effective use of carving tools(knives, gouges, etc.) and maintain tools, demonstrate various relief print techniques such as reduction, multiple block prints

Introduction to screen printing: Screen-printing techniques in this versatile medium. Silkscreen from hand drawn, photographic, and digital imagery on paper, fabric, and other surfaces in a variety of colours. Handmade and photographic stencils. Screen preparation, colour separation for multi-plate prints, correct colour mixing, registration, screen mono printing, and basic

MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

methods of printing onto T-shirts

Solar plate etching: Also known as photopolymer etching, this is an easy and innovative way to create intaglio and photo etchings. Hand-drawn, photo-based, or digital images are exposed onto light-sensitive polymer plates, which are developed in water and printed on an etching press.

Monotype: Effectively use ink rollers and subtractive tools; use brush and ink and other tools for the application of ink; explore possibilities for multiple passes with roller and multiple passes with the plate.

Intaglio: Demonstrate sound techniques for dry or non-acid intaglio processes such as dry point and engraving; properly prepare plate for etching (beveling, filing, coating); demonstrate sound procedures for effective biting, heating, inking, wiping and pulling of plates; explore use of other intaglio methods such as soft ground, aquatint.

Digital printmaking: inkjet popular technology based upon the ejection of small drops of fluid by an actuator that is controlled by a digital computer system, Piezo, Thermal, and Continuous-Flow Inkjet Technologies, electrophotography based upon the deposition of either dry powder or liquid toner onto a photoreceptive surface, thermal transfer based upon using heat to transfer colour from thin carrier film to a rece

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	3												2			
CO-2				3												
CO-3					2											
CO-4				3												
CO-5		2									1	1			2	
CO-6				1					1							2

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		05
Demonstrations		15
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	15	
Tutorial		00
1. Tutorial	00	
Practical Work		75
1. Course Laboratory	75	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	

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Approved by the Academic Council at its 26th meeting held on 14 July 2022

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

4. Clinical Laboratory	00	00
5. Hospital	00	
6. Model Studio	00	
Others		
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		105

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/ presentation are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	60 Marks
Maximum Marks ▶	10 marks	10 marks	10 marks	10 marks	
CO-1			x		
CO-2			x		
CO-3			x		
CO-4	x	x	x	x	
CO-5	x	x	x	x	
CO-6	x	x	x	x	

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

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8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

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S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission

4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Saff, D. and Sacilotto, D. (1978) Printmaking: History and Process, Donald Deli, Holt, Rinehart and Winston.

b. Recommended Reading

1. Devon, M. (2009) Tamarind Techniques for Fine Art Lithography, Harry N. Abrams
2. Darlow, A. (2007) 301 Inkjet Tips and Techniques: An Essential Printing Resource for Photographers, Cengage Learning PTR
3. ohnson, H. (2004) Mastering Digital Printing, 2nd edn, Cengage Learning PTR.
4. Bethmann, D. (1997) Making Prints from Nature (Storey's Country Wisdom Bulletin), Storey Publishing, LLC.

c. Magazines and Journals

1. Libro de Artista, Universidad Nacional Autónoma de México,
2. Spain Printmaking Today, Cello Press Limited, U.K.
3. World Printmakers
4. World of Woodblock Printmaking
5. Magical Secrets, Crown Point Press, US

d. Websites

www.printeresting.org
www.artmondo.net/printworks

e. Other Electronic Resources


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Course Specifications: Studio Practice

Course Title	Studio Practice
Course Code	PDM101A
Course Type	Skill Enhancement Courses (SEC)- Skill based
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable the students to understand the tools, techniques and processes involved in model making. An overview of materials like clay, Plaster of Paris, sunboard, cardboard and sheet metal used in model making are covered. Students are trained to create form exploration models using basic model making tools and materials.

2. Course Size and Credits:

Number of Credits	2
Credit Structure (Lecture: Tutorial: Practical)	1:0:1
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	50
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe various processes involved in physical model making
- CO-2. Explain various tools and machines used for model
- CO-3. Choose appropriate materials to achieve desired form and finish in a physical model
- CO-4. Create form exploration models with different materials

4. Course Contents

Unit 1 (Softwood sections) : Various cedar like yellow cedar used for furniture, veneer, European redwood used for cupboard shelves.

Unit 2 (Cardboard/Mount board models): Developing contours and layouts, handling cardboard like cutting, sticking, bending, applying dimensions like papier-mache, plaster, mass formation glue, folding patterns, joining patterns, pattern creation after formation.

Unit 3 (Styrene/Acrylic/Sunboard)- Types of sheet, gauges, skin types for various purposes, cautionary considerations while using material, obtaining sheets, storing sheets, handling sheets like cutting, bending, sticking, glues and types for sheet work, layout development,

Unit 4 (Clay - Characteristics and properties), Types of clays- traditional and modern, pottery clay and modelling clay, non-kiln fired clay, various cutting tools and surface finishing tools, joining clay, storing clay, restoring clay by applying veneer and varnish quotes.

Unit 5 (Plaster Of Paris) - Classification of Plaster of Paris, acquiring materials, storing materials, materials used for the basic mould like wash basin, raw POP, soap spoon, the procedure of molding POP, One piece mould, two piece mould, multiple piece mould, weight reduction techniques.

Unit 6 (MDF/HDF (MILD/HIGH DENSITY FOAM))- Shaping process like slicing with sharp knives

MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

or a hot-wire cutter, sawing with serrated blades, rasping with files, and smoothing with sandpaper, applying surface finish and texture .

Unit 7 (Bamboo)-Mechanical Properties like Bamboo, a Hollow Tube , Nature's Structural Design, Modelling and Calculations, The Art of Modelling.

Unit 8(Metal) - Brass and its properties and handling techniques, Brass shim Also known as 'sculptor's shim' or 'brass fencing', model making and casting materials

Unit 9(Introduction to Tools and Machines) : Various tools used in the modeling industry pertaining to 2D as well as 3D models, cutting , joining, bending, surface finishing of materials like wood, clay, plaster, Styrofoam, metals. Processes like Vacuum forming, Planning, grinding, Clay oven-baking , pottery wheel, sheering and bending machine, welding, soldering, wire cut, table and hand drills, glass cutting.

Unit 10 (Details): Paper/Cartridge Sheet Craft-Modeling Techniques, Model Copies, Scoring, Cutting, Folding, Edging, Dry Fitting, Reinforcing, Gluing, Basing, Storing. Tools for handling paper

Unit 11 (Finishing) Like self-healing mat, hobby knives, scissors, metal rulers, permanent ink pens, glue. Types of paper used for printing, paper prototyping, packaging design, various gauges in paper, handmade paper

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1		3		1									1	3		
CO-2		2												2		
CO-3		3			2									3		
CO-4		2		2	1								2			

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		0
Demonstrations		0
1. Demonstration using Videos		
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		00
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop /	10	

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Kitchen		
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	30	
Others		
1. Case Study Presentation	00	00
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		5
Total Duration in Hours		45

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/presentation are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	Creative Submission-3	Creative Submission-4	SEE(50 Marks)
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1					
CO-2	X	X	X	X	X
CO-3	X	X	X	X	X
CO-4	X	X	X	X	X
CO-5					X

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Laboratory
2.	Understanding	Laboratory
3.	Critical Skills	Laboratory Instructions and Demonstrations
4.	Analytical Skills	Laboratory and Examination
5.	Problem Solving Skills	Laboratory and Examination
6.	Practical Skills	Laboratory
7.	Group Work	Laboratory
8.	Self-Learning	Laboratory
9.	Written Communication Skills	Laboratory and Examination
10.	Verbal Communication Skills	Laboratory and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Interaction with peers and tutors
13.	Information Management	Examination and presentation
14.	Personal Management	Interaction and discipline
15.	Leadership Skills	Time management and achieving the learning outcomes

9. Course Resources

a. Essential Reading

1. Course notes
- 2 (2012) Prototyping and Model making for Product Design,

b Laurence King Publishers Recommended Reading

1. Yadav, S.K. (2006) Workshop Practice, Discovery Publishing House.
2. Agostinho, S., Bennett, S., Lockyer, L. and Harper, B. (2011) 'The Future of Learning
3. Design', Learning, Media and Technology
4. Beetham, H. and Sharpe, R. (2007) Rethinking Pedagogy for a Digital Age, Routledge.

c Magazines and Journals

d Websites

e Other Electronic Resources

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Course Specifications: Indian Art Appreciation

Course Title	Indian Art Appreciation
Course Code	PDO101A
Course Type	Open Elective Course
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable students to understand the different forms of Indian art. The students are taught about key concepts, principles and techniques of aesthetics and art. The students are also taught about different Indian art forms such as architecture, tribal and folk art, sculpture, painting and writing of past and modern era. They are trained to use aesthetics and sensitivities to critique works of art.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	3:0:0
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the key concepts, principles and techniques of art.
- CO-2. Discuss different traditional and contemporary Indian art forms.
- CO-3. Evaluate the impact of art on human life and culture
- CO-4. Analyze various Indian craft forms and techniques
- CO-5. Critique the works of art.



Registrar

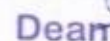
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4. Course Contents

Unit 1 (Art History): Basic premises, key concepts, definite principles and techniques of art. Methods of art enquiry in a historiographical framework, ways in which Indian art has been understood during the past two centuries.

Unit 2 (Aesthetics and Art Theory): Aesthetic theories, texts, and art practice, shastric concepts and precepts and their role in the understanding of Indian art. An introduction to the nature of art and aesthetic experience, worldview and artistic expression, aesthetics in a historical perspective.

Unit 3 (Early Indian Art and Architecture): Early Indian architecture, origin and development of the stupa, evolution of the rock-cut caves, evolution of temple architecture, imperial architecture during Sultanate & Mughal rule, colonial & modern architecture



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Unit 4 (Tribal and Folk Arts of India): Images in metal, woodcarving, terracotta, textile and other mediums including rock art and ritual paintings of various regions.

Unit 5 (Painting): Study of ancient and medieval Indian painting. Buddhist mural paintings of Ajanta and Bagh, mural painting in Badami, Kanchipuram, Panamalai, Tanjore, and Sittanavasal. Study of Western Indian (Jaina) manuscript painting and Eastern Indian (Pala) painting. Mughal paintings, Rajasthani paintings of Mewar, Bundi, Kota, Kishangarh, Bikaner and Jaipur. Pahari paintings with special emphasis on Basohli, Guler and Kangra schools.

Unit 6 (Writings of Important Thinkers): Bharata's Natyashastra, Prachina and Navina schools of Sanskrit poetics, Dhvani and Rasa in the writings of Anandavardhana and Abhinavagupta, canons of Indian art and their relationship to art practice, poetic metaphors in Indian sculpture and painting

Unit 7 (Modern Indian Art): Modernity in Indian art, indigenization and the trends in 1950s and 1960s; trends in abstraction since the 1970s; the 20th & 21st century contemporary trends towards globalization

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2									1					2	
CO-2	1									1		2	1			
CO-3	1				2							1				2
CO-4	3									1			1			
CO-5					3					1		1				3

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		39
Demonstrations		00
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		00
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	

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5. Hospital	00	06
6. Model Studio	00	
Others		
1. Case Study Presentation	03	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	03	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations	10	
Total Duration in Hours		55

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of Cos on each Component or Subcomponent of Evaluation					
Subcomponent▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Assignment 1	Assignment 2	Test	Assignment 3	SEE(100 Marks)
Maximum Marks▶	5	5	25	5	
CO-1	x		x		x
CO-2	x		x		x
CO-3	x	x	x	x	x
CO-4		x	x	x	x
CO-5		x		x	x

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.



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8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Assignment and Examination
4.	Analytical Skills	Assignment and Examination
5.	Problem Solving Skills	Assignment and Examination
6.	Practical Skills	Class Room Lectures, Assignment

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		and Examination and Field Work
7.	Group Work	Class Room Interaction
8.	Self-Learning	Assignment and Examination
9.	Written Communication Skills	Assignment and Examination
10.	Verbal Communication Skills	Presentation
11.	Presentation Skills	Class Room Interaction, Field Work
12.	Behavioral Skills	Field Work, Presentation
13.	Information Management	Assignment and Examination
14.	Personal Management	Class Room Interaction and Field Work
15.	Leadership Skills	Time management and achieving the learning outcomes

9. Course Resources

a. Essential Reading

1. Course notes
2. Coomaraswamy, A. (2000) History of Indian and Indonesian Art, Kessinger Publishing
3. Mitter, P. (2001), Indian Art, Oxford University Press

b. Recommended Reading

1. Singhanian, N (2018) Indian Art and Culture, 2nd Edition, McGraw Hill Education (India) Private Limited
2. Arnheim, R. (2004) Art and Visual Perception: A Psychology of the Creative Eye, First Edition, Fiftieth Anniversary Printing edition, University of California Press
3. Januszczak, W. (1996) Techniques of the Great Masters of Art, Chartwell Books, Inc
4. Schama, S. (2006) The Power of Art, Ecco
5. DePaola, T. (1996) The Legend of the Indian Paintbrush, Puffin Books

c. Magazines and Journals

1. ART India, The Art News Magazine of India
2. Indian Contemporary Art Journal
3. Journal of Indian Art

d. Websites

1. <https://www.theartnewspaper.com/keywords/indian-art>
2. <https://www.thebetterindia.com/topics/art/fine-arts/>



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Course Specifications: Environmental Studies

Course Title	Environmental Studies
Course Code	BTN101A
Course Type	Ability Enhancement Compulsory Course
Department	Product Design
Faculty	Art and Design

1. Course Summary

This course deals with essential aspects of environmental studies. The students are taught various issues associated with natural resources and concepts of ecosystems, conservation of the biodiversity and environmental pollution. The students also learn about social issues associated with the environment and the impact of human population on the environment.

2. Course Size and Credits:

Number of Credits	02
Credit Structure (Lecture:Tutorial:Practical)	2:0:0
Total Hours of Interaction	40
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Define the multidisciplinary nature of environmental studies
- CO-2. Classify and explain the various natural resources and their associated problems, ecosystems and environmental pollution
- CO-3. Examine the various social issues pertaining to the environment including sustainable development and energy issues
- CO-4. Apply the requisite knowledge to demonstrate biodiversity at local, national and Global levels
- CO-5. Analyze and document the environmental assets for a given location
- CO-6. Assess the impact of human population on the environment

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4. Course Contents

Unit 1 (Environmental studies): Definition, scope and importance, need for public awareness

Unit 2 (Natural resources): Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems, use and exploitation, environmental effects of extracting and using mineral resources

Unit 3 (Energy resources): Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources including case studies

Unit 4 (Land resources): Land as a resource, land degradation, man induced landslides, soil

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erosion and desertification, role of an individual in conservation of natural resources, equitable use of resources for sustainable lifestyles.

Unit 5 (Ecosystems): Concept of an ecosystem, Structure and function of an ecosystem, producers, consumers and decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids, introduction, types, characteristic features, structure and function of forest ecosystem, grassland ecosystem, desert ecosystem, aquatic ecosystems including ponds, streams, lakes, rivers, ocean estuaries.

Unit 6 (Biodiversity and its conservation): Introduction, definition, genetic, species and ecosystem diversity, bio geographical classification of india, value of biodiversity, consumptive use, productive use, social, ethical aesthetic and option values, biodiversity at global, national and local levels. threats to biodiversity: habitat loss, poaching of wildlife, endangered and endemic species of India

Unit 7 (Environmental Pollution): Definition, causes, effects and control measures of air, water pollution, soil, marine, noise, thermal and nuclear pollution, solid waste management, causes, effects and control measures of urban and industrial wastes, prevention of pollution and pollution case studies.

Unit 8 (Disaster management): Floods, earthquake, cyclone and landslides

Unit 9 (Social Issues and the Environment): From unsustainable to sustainable development, urban problems and related to energy, water conservation, rain water harvesting, watershed management, resettlement and rehabilitation of people, case studies.

Unit 10 (Environmental ethics): Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies, wasteland reclamation, consumerism and waste products, environmental protection act, act, water act, wildlife protection act, forest conservation act, issues involved in enforcement of environmental legislation and public awareness

Unit 11 (Human Population and the Environment): Population growth, variation among nations, environment and human health, human rights, value education, women and child welfare, role of information technology in environment and human health, case studies

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)				
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4	
CO-1						1											1
CO-2							3										1
CO-3							3										1
CO-4						1											1
CO-5						1											1
CO-6						1											1

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods
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Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		26
Demonstrations		00
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Numeracy		00
1. Solving Numerical Problems	00	
Practical Work		00
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		04
1. Case Study Presentation	04	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		40

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B. Des. (Product Design) Programme of Applied Sciences. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions / presentations are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of Cos on each Component or Subcomponent of Evaluation					
Subcomponent	Component 1: CE (60% Weightage)				Component 2: SEE (40% Weightage) (2 hrs)
	SC1	SC2	SC3	SC4	
Subcomponent Type	Presentation	Assignment/Quiz	Test	Assignment	50 Marks
Maximum Marks	10	10	30	10	
CO-1	x		x		x
CO-2	x		x		x
CO-3	x	x	x	x	x
CO-4		x		x	x
CO-5		x		x	x
CO-6		x		x	x

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The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Classroom lectures, Self-study
3.	Critical Skills	Assignment
4.	Analytical Skills	Assignment
5.	Problem Solving Skills	Assignment, Examination
6.	Practical Skills	Assignment
7.	Group Work	--
8.	Self-Learning	Self-study
9.	Written Communication Skills	Assignment, Examination
10.	Verbal Communication Skills	--
11.	Presentation Skills	--
12.	Behavioral Skills	--
13.	Information Management	Assignment
14.	Personal Management	--
15.	Leadership Skills	--

9. Course Resources

a. Essential Reading

1. Course notes
2. Bharucha, E. (2004) Environmental Studies. New Delhi: University Grants Commission

b. Recommended Reading

1. Jadhav, H. and Bhosale, V. M. (1995) Environmental Protection and Laws. Delhi: Himalaya Publishing House

c. Magazines and Journals

1. The Green Guide, Natural Geographic Society
2. Sanctuary Asia
3. Indian Journal of Environmental Protection

d. Websites

e. Other Electronic Resources


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Course Specifications: Creativity Techniques

Course Title	Creativity Techniques
Course Code	PDC104A
Course Type	Discipline Core
Department	Industrial Design/Fashion Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable the students to explore creativity techniques to generate original ideas. The students are taught to use ideation methods such as brainstorming, lateral thinking, mind-mapping and concept mapping. The students are trained to develop ideas and evaluate them through creative solutions.

2. Course Size and Credits:

Number of Credits	02
Credit Structure (Lecture: Tutorial: Practical)	2:0:0
Total Hours of Interaction	30
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	50
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe the creative thinking process for generating original ideas
- CO-2. Choose appropriate creative methods based on the requirements
- CO-3. Apply creative techniques for idea generation
- CO-4. Analyze and evaluate creative solutions
- CO-5. Develop creative solutions for the given requirements
- CO-6. Develop lateral thinking ability to solve problems

4. Course Contents

Unit 1 (Introduction): A brief introduction to the available methods and techniques for identification, organization and implementation of ideas, criteria applied to select a particular method or tool for idea implementation

Unit 2 (Ideation): Introduction to ideation and exercises like brainstorming, scenario-building, body-storming, idea clustering, mind-mapping, concept mapping and exploration of new creative techniques.

Unit 3 (Creative elicitation methods): Creative elicitation game and idea gathering through understanding problem solution, derivative idea, symbiotic idea, revolutionary idea, serendipitous discovery, targeted innovation in term of goal-based, innovative thinking with an artistic approach, philosophical idea generation and their implementation, computer-assisted discovery through selective programs for creativity analysis

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Unit 4 (Evaluation): Details in procedural techniques for evaluating and validating ideation process. procedure like concept mapping, evaluation matrix, analysis and evaluation through processes, criteria generation for evaluation, their mapping and selection, lateral thinking and the process of involving lateral thinking for evaluation.

Unit 5 (Concept development and practices): User profiles, experience models, scenarios and storyboarding, structured critiques like 6 hats by Edward de Bono, "rapid" prototyping, black cylinder experiment, targeted user-profiles, user-groups, selecting user-groups and defining a group persona for application of ideas to practice.

Unit 6 (Digital tools for evaluation): Feature and Function Matrices, process and task flows, case studies in task based matrices, examples and case studies of evaluation through matrices

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2	2											2			
CO-2		1										2	1			
CO-3		2		2												
CO-4		2	2			1				2			1			
CO-5		2	2		3								2	2	1	
CO-6			2		3								2	1	1	

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		16
Demonstrations		
1. Demonstration using Videos	00	00
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Numeracy		
1. Solving Numerical Problems	00	00
Practical Work		
1. Course Laboratory	00	00
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		
1. Case Study Presentation	04	04
2. Guest Lecture	00	
3. Industry / Field Visit	00	

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4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		30

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B. Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/ presentation are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	SEE(50 Marks)
Subcomponent Type ▶	Creative Submission 1	Creative Submission 2	Test	Creative submission 3	
Maximum Marks ▶	5	5	25	5	
CO-1			X		X
CO-2	X	X	X		X
CO-3	X	X	X		X
CO-4	X	X	X	X	X
CO-5			X	X	X
CO-6				X	

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

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8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Classroom lectures, Self-study
3.	Critical Skills	Assignment
4.	Analytical Skills	Assignment
5.	Problem Solving Skills	Assignment, Examination
6.	Practical Skills	Assignment
7.	Group Work	--
8.	Self-Learning	Self-study

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9.	Written Communication Skills	Assignment, Examination
10.	Verbal Communication Skills	--
11.	Presentation Skills	--
12.	Behavioral Skills	--
13.	Information Management	Assignment
14.	Personal Management	--
15.	Leadership Skills	--

9. Course Resources

a. Essential Reading

1. Course notes
2. Buxton, B. (2007) Sketching User Experiences: Getting the Design Right and the Right Design, Morgan Kaufmann

b. Recommended Reading

1. Liedtka, J., King, A. and Bennett, K. (2013) Solving Problems with Design Thinking: Ten Stories of What Works, Columbia University Press
2. Liedtka, J. and Ogilvie, T. (2011) Designing for Growth: A manager's design thinking toolkit, Columbia University Press
3. Amabile, T.M. (1998) How to Kill Creativity, Harvard Business Review
4. DeBono, E. (1993) Serious Creativity: Using the Power of Lateral Thinking to Create New Ideas, Harper Collins

c. Magazines and Journals

1. Do Crafts
2. Makeshift Magazine

d. Websites

1. creativity-online.com

e. Other Electronic Resources


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Course Specifications: English for Communication 1

Course Title	English for Communication 1
Course Code	TSM101A
Course Type	Ability Enhancement Compulsory Course
Department	Directorate of Transferable Skills and Leadership Development
Faculty	FLAHS/FMC/FMPS/FAD/SSS/SOL

1. Course Summary

The course aims at equipping the students with skills essential for effective communication in terms of speaking, writing and comprehension.

The course gives practical exposure to the students by equipping them to use appropriate body language and tone for conversation. It focusses on comprehension of words and building of the word repertoire for meaningful communication. Students are instructed on the ways to construct grammatically correct sentences and compose paragraphs and essays.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	3:0:0
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Directorate of Transferable Skills and Leadership Development
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Identify the nuances of communication skills
- CO-2. Apply the concepts of grammar in written communication
- CO-3. Apply professional etiquette as appropriate
- CO-4. Practice extempore and basic conversation skills
- CO-5. Practice comprehension skills
- CO-6. Compose precise paragraphs as per the given topic


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4. Course Contents

Unit 1 (Communication Skills):

Process of communication, terminologies used in communication process, active listening, communication barriers, types of communication – verbal and non-verbal

Unit 2 (Grammar)

Sentence formation, sentence types, different parts of speech, adjectives and articles, verbs and


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preposition, present and past tense, future tense, use of participles in different tenses, usage of tenses, rules of subject verb agreement

Unit 3 (Essentials of Speaking Skills):

Importance of spoken skills, appropriate use of language, appropriate use of tone, pitch and volume

Unit 4 (Extempore):

Preparation for extempore, mind mapping for speaking readiness, Content of extempore – beginning, body and conclusion, Delivery of extempore – body language and paralanguage

Unit 5 (Conversation Skills)

Body language in conversation, tones in conversation, conversation manners, stages of conversation – introduction, feed forward, close, order of introduction, conversation barriers

Unit 6 (Reading and the Techniques)

Skimming, scanning and reading in details

Unit 7 (Paragraph Writing)

Structure of paragraph – topic sentence, supporting sentence, conclusion sentence, functions of paragraph, paragraph patterns, paragraph writing principles – coherence, unity, order, length

Unit 8 (Comprehension)

Purpose of comprehension, low-level comprehension, high-level comprehension

Unit 9 (Précis Writing)

Paraphrasing techniques, Usage of appropriate words

Unit 10 (Professional Etiquette and Goal Setting)

Etiquette and its importance, types of etiquette – workplace, meeting, telephone, dining, norms of etiquette, goals, types of goal, setting SMART goal

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1									2						2
CO-2									2						2
CO-3									2						2
CO-4									2						2
CO-5									2						2
CO-6									2						2

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration Dean Hours
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Face to Face Lectures		15
Demonstrations		02
1. Demonstration using Videos	02	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Numeracy		0
1. Solving Numerical Problems	00	
Practical Work		04
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	04	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		14
1. Case Study Presentation	04	
2. Guest Lecture	02	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	04	
5. Group Discussions	04	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		45

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Sc Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of CO's on each Component or Subcomponent of Evaluation:

Subcomponent	Component 1: CE (60% Weightage)		Component 2: SEE (40% Weightage)
	SC1	SC2	
Subcomponent Type	Practical Assessment	Assignment	50 Marks
Maximum Marks	30	30	
CO-1	X	X	
CO-2			X
CO-3		X	X
CO-4	X		
CO-5	X	X	X

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The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs


The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Face to face lectures
2.	Understanding	Face to face lectures, group discussions
3.	Critical Skills	--
4.	Analytical Skills	Face to face lectures, activities, , group discussions, assignment
5.	Problem Solving Skills	--
6.	Practical Skills	Face to face lectures, activities, , group discussions, course work
7.	Group Work	Course work, practice, assignment, group discussion
8.	Self-Learning	Course work, practice, assignment, group discussion
9.	Written Communication Skills	Face to face lectures, Course work, practice, assignment, group discussion
10.	Verbal Communication Skills	Face to face lectures, Course work, practice, assignment, group discussion
11.	Presentation Skills	--
12.	Behavioral Skills	Course work, practice, assignment, group discussion, presentation practice, role plays
13.	Information Management	Assignment
14.	Personal Management	--
15.	Leadership Skills	--


9. Course Resources

a. Essential Reading

1. Class Notes
2. Raman M and Sharma S (2004) Technical Communication Principles and Practice. New Delhi: Oxford University Press
3. Hory Sankar Mukherjee, (2013), Business Communication, Oxford University Press
4. Kroehnert, Gary (2004), Basic Presentation Skills, Tata McGraw Hill


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b. Recommended Reading

1. Sathya Swaroop Debashish and Bhagaban Das, (2014), Business Communication, PHI, New Delhi
2. Young, Dona J (2006) Foundations of Business Communications: An Integrated Approach, Tata McGraw Hill
3. Kaul, Asha (2007) Effective Business Communication, Prentice Hall India
4. Bienvenu, Sherron (2008) The Presentation Skills Workshop, Prentice Hall
5. Kavita Tyagi and Padma Misra (2011) Professional Communication, PHI Learning Private Limited, New Delhi

c. Websites

1. www.myenglishpages.com
2. www.britishcouncil.com
3. www.englishmagazine.com
4. www.justenglishmagazine.com

d. Other Electronic Resources

1. Electronic resources on the course area are available on RUAS library




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SEMESTER 2


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Course Specifications: Design Drawing

Course Title	Design Drawing
Course Code	PDC105A
Course Type	Discipline
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to teach students the basic methods, principles and conventions followed by advanced exploration of the concepts and techniques. The students are taught drafting techniques to develop various views. The students are also taught to create freehand pictorial presentation drawings. The students are taught necessary skills for representing drawings conforming to standards. They are also taught about study of 3D forms with an understanding of the inter-relationship between form and content.

2. Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	105
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to

- CO-1. Describe the method of developing a design drawing and 3D forms and techniques to express design ideas graphically
- CO-2. Explain the use of drawing techniques for design detailing
- CO-3. Apply various techniques to create the perception of depth in design drawing
- CO-4. Demonstrate the use of 2D and 3D drawing skills in representing ideas
- CO-5. Develop physical skills for handling media and materials required in creating presentation image or design
- CO-6. Judge proportion, scale and spatial relationships Demonstrate a variety of design drawing techniques for generating and communicating complex forms and products

4. Course Contents

Unit 1 (Studying Sketch): Exploratory sketches, unpretentious and focus sketches, developmental sketches, thinking aid sketches, short-lived sketches, sketches that are replaced by the next sketch, sketching perception and purpose of exploring it in paper, reaching from a sketch to a presentation drawing.

Unit 2 (Perspective Drawing): Lines and planes in space, 2-D to 3-D, one-point perspective

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angles parallel lines, horizon line rays, line two-point perspective, line segments vanishing point, orthogonal lines as “visual rays”, perceived distance, curved arches, people, objects, wheels, drawings creation using several different vantage points, Division and Multiplication in perspective, Drawing ellipses

Unit 3 (Rendering): Stripling, hatching, pen work related to fast doodle rendering and pre-final model setup for design documentation as well as process description of thoughts, principles, inspiration, perspective and the appearance for product gestures, colour & texture, lighting – shadows as per single or multiple source of light, reflections -refractions as per materials on surface, indirect illumination, sampling of products for display.

Unit 4 (Sketching Progress): Singular Rounding, Multiple Rounding, Planes & Sections, Colour Basics, Coloured Background

Unit 5 (Design Detailing): Depiction of wood, tile, marble, paint and other materials, properties of glossy, dull, reflective and transparent finishes through renderings. Adding lighting for rendering an interior or exterior view of a product, lighting quality, perspectives and 3D views and illustration of sharp shadow lines

Unit 7 (Presentation Drawings): Explanatory Sketches- Exploded Drawing, Cut- away views, Instructional Drawings, Product context – Environment, User and Hand, Background Images, Tracing the Human Shape, Hands, People, composing of presentation Drawing using Gestalt

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1															
CO-2	2	3		2									1	2		
CO-3		2		2										3		
CO-4		3	2												3	
CO-5	1	2	1													
CO-6		1		3												

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		00
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	10	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		90
1. Course Laboratory	90	
2. Computer Laboratory	00	

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3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		
1. Case Study Presentation	03	03
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		02
Total Duration in Hours		105

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	Creative Submission-3	Creative Submission-4	60 Marks
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	X		X		
CO-2	X		X		
CO-3	X	X	X		
CO-4		X	X	X	
CO-5		X	X	X	
CO-6		X		X	

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

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S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Ching, F. and Juroszek, S. (2010) Design Drawing, 2nd Edition, AIA, Wiley
3. Robertson, S. (2013) How to Draw: Drawing and Sketching Objects and Environments, Design Studio Press

b. Recommended Reading

1. Ching and Frances, D. K. (2009) Graphics in Architecture, 5th edn, Wiley
2. Styles, K. and Bichard, A. (2004) Working Drawings Handbook, 4th edn, Routledge
3. Bhatt, N.D. (1999) Engineering Drawings, Charotar

c. Magazines and Journals

1. Drawing, F&W Media, US

d. Websites

1. www.smashingmagazine.com
2. www.ereatah.com


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Course Specifications: Design for Social Impact

Course Title	Design for Social Impact
Course Code	PDC106A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary


The aim of the course is to prepare students to create ideas for the wellbeing of society. Course includes overview of social design, means of identifying issues and wicked problems in society that need design intervention, Human centered approach to problem solving via community facilitation involving the sharing of conversation, ideas, beliefs and rituals. The course emphasizes on designing visuals/ props to emotionally impact a select audience; and also, on critiquing the approach sort to disburse information on the social cause.

2. Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	105
Number of Weeks in a Semester	16
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations


3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

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- CO-1. Identify underlying issues in need for change across various ~~expanses of our~~ society/ world or ecosystem
- CO-2. Prepare narratives based on social issues for effective dissemination of its information and reinforcing the need for change
- CO-3. Ideate solutions to proliferate awareness regarding the identified social issue using human centered design approach
- CO-4. Design visuals/ props regarding the identified social issue, to emotionally impact the target user
- CO-5. Critique the designs conceptualized

4. Course Contents

Unit 1 (Social Design): Introduction to Social design, Collaborative design, Design and humanity, Social change regarding social norms and behaviors, mapping and identifying issues, social media influence, Case studies.

Unit 2 (Story Telling and Narrative Design): Storytelling as social and cultural activity of sharing stories, Creating Personas, Design for Emotional value, User Experiences, Story ~~Design~~  playing, Plots and sub plots, Building a narrative, Case studies.

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Unit 3 (Wicked Problems): Social Problems, Complex human issues, placing the social issues as the priority, Strategies to tackle wicked problems, Defining and reframing Problems, Understanding requirements vs. wishes.

Unit 4 (Human Centered Design): Design and Human Experience, Human-Centered Design theories, Constraints and possibilities of HCD, Concept Ideation and Visualization, Critically evaluating design concepts, Case studies

Unit 5 (Ethical Design): Ethical Hierarchy of Needs, Moral Design Practice, Eco-conscious Design, Sustainable Materials, Design for Service, Usability study, Unethical Design, case studies.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1		2														
CO-2				2									2			
CO-3	1	3												3		
CO-4		3		1	2								3		2	
CO-5					2					1	3			3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		10
Demonstrations		05
1. Demonstration using Videos	10	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		65
1. Course Laboratory	00	
2. Computer Laboratory	20	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	50	
Others		15
1. Case Study Presentation	05	
2. Guest Lecture	00	
3. Industry / Field Visit	05	
4. Brain Storming Sessions	00	

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5. Group Discussions	05	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		115

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the (B.Des. Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3, SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	60 Marks
Maximum Marks ▶	10	10	10	10	
CO-1			X		
CO-2			X		X
CO-3	X	X	X	X	X
CO-4	X	X	X	X	X
CO-5	X	X	X	X	X

The details of SC1, SC2, SC3 or SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

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8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Class Room Lectures, Laboratory
2.	Understanding	Class Room Lectures, Laboratory and Demonstration
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Class Room Lectures, Laboratory and Creative Work Submission
5.	Problem Solving Skills	Creative Work Submission and Laboratory
6.	Practical Skills	Creative Work Submission and Laboratory
7.	Group Work	Creative Work Submission and Laboratory
8.	Self-Learning	Creative Work Submission

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9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Interaction with peers, instructors and Presentation
13.	Information Management	Creative Work Submission, Laboratory, Presentation and Examination
14.	Personal Management	Interaction and requirements of discipline
15.	Leadership Skills	Effective management of learning, time management and achieving the learning outcomes

9. Course Resources

a. Essential Reading

1. Course notes
2. Papanek, Victor (2019). Design for the Real World: Human Ecology and Social Change, Publisher: Pantheon Books

b. Recommended Reading

1. Anna Dahlström. (2019) Storytelling in Design, Publisher: O'Reilly Media, Inc.
2. Ideo (2009) Design Kit: The Human-Centered Design Toolkit

c. Magazines and Journals

1. Stanford Social Innovation Review
2. International Journal of Design for Social Change
3. Imagine FX
4. Print Mag

d. Websites

1. www.designawards.core77.com
2. www.ideo.com
3. www.humanfactors.com
4. www.interaction-design.org

e. Other Electronic Resources

1. Personal computer


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Course Specifications: Digital Design Basics

Course Title	Digital Design Basics
Course Code	PDC107A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course deals with essentials of representing ideas and sketches using digital media. Students are also taught to use vector based software. Students are trained with essential graphics and visual communication skills that they can use to enhance almost every aspect of their work. Students are also trained creates posters and prepare portfolio of their designs.

2. Course Size and Credits:

Number of Credits	02
Credit Structure (Lecture: Tutorial: Practical)	0:0:2
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the use of digital software in field of design
- CO-2. Apply essential graphics and visual communication skills in designing
- CO-3. Create visual poster and edit required images using designing software
- CO-4. Apply different effects using the vector based software
- CO-5. Recommend appropriate printing environment for printing a poster

4. Course Contents

Unit 1 (Introduction to the design Software): Getting to know the workspace, creating and saving documents, using fonts, resizing, rotating and moving documents

Unit 2 (Basic Drawing Skills): Selecting and manipulating objects drawing and shaping objects arranging objects transforming objects outlining & filling objects arranging objects using layers, working with special effects and texts, special effect working with text working with paragraph special text effects using symbols and clipart working with bitmaps

Unit 3 (Working with Objects): Outlining and filling objects using symbols and clipart transforming objects. Using Text and Colour Using Text and Color Working With Paragraph Text Special Text Effects.

Unit 4 (Measurement and dimensions): Working with measurement and dimensions

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Unit 5 (Adding special effects): special effects creating output exporting drawings printing layouts and layers special age layouts arranging objects using layers styles and templates using styles and templates advanced effects special interactive effects custom creation tools working with bitmaps

Unit 6 (Page Layout): Printing, Exporting And Advanced Features Special Page Layouts, Exporting Drawings, Using Styles and Templates, Custom Creation Tools

Unit 7 (Case studies and Creating Portfolio): Showcasing most unique and creative work

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2	1											1	3		
CO-2	1	1						2		2				2		
CO-3			1							1				2		
CO-4										2				1		
CO-5								1								
CO-6																

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		00
Demonstrations		00
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		50
1. Course Laboratory	30	
2. Computer Laboratory	30	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	

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6. Discussing Possible Innovations	00
Term Tests, Laboratory Examination/Written Examination, Presentations	10
Total Duration in Hours	60

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2 and SC3), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission 1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(50 Marks)
Maximum Marks ▶	10 Marks	10 marks	10 Marks	10 Marks	
CO-1					
CO-2	X	X	X	X	X
CO-3	X	X	X	X	X
CO-4	X	X	X	X	X
CO-5	X	X	X	X	X

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination

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10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Gary David Bouton, (2012) CorelDraw X6 The Official Guide, McGraw-Hill Osborne Media

b. Recommended Reading

1. Worobiec, T. (2005) Digital Photo Artist: Creative Techniques and Ideas for Digital Image-making, Collins & Brown

c. Magazines and Journals

1. www.asianphotographyindia.com

d. Websites

1. www.magazinedesigning.com
2. www.coreldraw.com

e. Other Electronic Resources

1. <https://ocw.mit.edu/index.htm>


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Course Specifications: Handicraft

Course Title	Handicraft
Course Code	PDO102A
Course Type	Open Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable students to learn the heritage of Indian handicrafts and popular artifacts. Students are taught about ancient, medieval, modern and contemporary practices of handicraft sector in India. They are also taught about importance of craftsmanship in handicrafts. Students are also trained to acquire basic skills in handling various craft materials and the process of converting them into finished products.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain various philosophies and aesthetics of handicrafts in India
- CO-2. Describe various materials, processes and techniques of creating handicrafts
- CO-3. Distinguish craft traditions from various periods like ancient, medieval, modern and contemporary and their importance
- CO-4. Analyse basic premises in art movement across a timeline of history
- CO-5. Create artefacts using various materials like metal, clay and wood.
- CO-6. Develop artefacts using different art styles

4. Course Contents

Unit 1 (Philosophy): Various Philosophies expounded on Indian art.

Unit 2 (Aesthetics): Principles of aesthetics of different art styles, traditional painting, classical painting e.g. Miniature, Tanjore, architectural principles of Jain temples, Islamic architecture, Hindu temples, Buddhist monasteries and symbolism e.g. mandalas and symbols, tribal votive expressions, significance of colours, symbolism in forms, Sikh art and tantric art.

Unit 3 (Materials, Processes and Techniques): Materials used for crafts like bone, ivory, synthetics, plastics, wood, stone, metals, alloys, grasses, bamboo and cane, cotton, silk, wool, jute, coir, gems, glass, leather, horn and paper.

Unit 4 (Crafts Traditions): Overview of craft traditions from ancient and medieval, to modern and contemporary periods. Impact of living practices, hunting traditions, nomadic journeys, realistic

MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

practices, ceremonial occasions, customary beliefs, patronage on the culture of crafts.

Unit 5 (Clay): The most basic material, clay used for making earthen ware, figurines, bricks, tiles, beads Different practices, techniques and distribution of pottery and terracotta crafts in India.

Unit 6 (Metal Crafts): Indigenous methods and processes adopted for casting, polishing and finishing of handicrafts in metal.

Unit 7 (Jewellery): Jewellery made from terracotta, beads, precious stones and metals depicting traditional motifs, intricate, delicate and bold forms.

Unit 8 (Textile Crafts): Woven, dyed, printed, painted and embroidered textiles using material like cotton, silk and wool.

Unit 9 (Painting): The significance and role of paintings on walls, floor and roof of caves, dwellings, and religious structures. Pictorial communication narrating traditional practices, folklores, and folktales on paper, palm leaf, wood, cloth and other surfaces.

Unit 10 (Paper and paper crafts): Traditional craft products made from paper and paper Mache, across India. The process of selecting materials, preparation, mould making, colouring and finishing of handicrafts.

Unit 11: Crafts of northern India, southern India, eastern India and western India. Diversities and similarities between regions, materials, methods, designs and products.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)				
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4	
CO-1	2																
CO-2		3					2						2	3			
CO-3	3													2			
CO-4	3													1			
CO-5		3	2	2	2	1				2		1		3	2		
CO-6	1	3	1	2										3	2		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		00
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		60
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory		

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5. Hospital	00	10
6. Model Studio	00	
Others		
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	10	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations	10	
Total Duration in Hours		95

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	Creative Submission-3	Creative Submission-4	60 Marks
Maximum Marks ▶	10	10	10	10	
CO-1	x		x		
CO-2	x	x	x	x	x
CO-3	x		x		x
CO-4	x		x		x
CO-5		x	x	x	x
CO-6		x	x	x	x

The details of SC1, SC2, SC3 or SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field

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7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Jaitly, J. (2012) Crafts Atlas of India, Niyogi Books

b. Recommended Reading

1. Vatsyayan, K. (2010) Embroidery in Asia Sui Dhaga: Crossing Boundaries Through Needle & Thread, Wisdom Tree
2. Ranjan, A. and Ranjan, M.P. (2009) Handmade in India: A Geographic Encyclopedia of India Handicrafts, Abbeville Press
3. Ramani, S. (2007) Kalamkari and Traditional Design Heritage of India, Wisdom Tree
4. Goldstein-Lynch, E., Malone, N. and Mullins, S. (2007) Making Vinyl, Plastic, and Rubber Handbags: Sewing Stylish Projects from Unusual Materials, Quarry Books
5. Vatsyayan, K. (2003) The Square and the Circle of the Indian Arts, 1997 edn, Abhinav Publications

c. Magazines and Journals

1. Journal of Experimental Psychology: Human Perception and Performance, APA Journals
2. Journal of Design History, Oxford University

d. Websites

1. The Caravan - A Journal of Politics and Culture, Paresh Nath, Delhi Press India
2. Majesty Magazine, Rex Publications Limited, London
3. www.craftcentral.com

e. Other Electronic Resources

1. Personal Computer/Laptop




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Course Specifications: Digital Illustration Techniques

Course Title	Digital Illustration Techniques
Course Code	PDC201A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course aims to enable the students to develop compositions using the elements and principles of design to achieve aesthetic and visually pleasing forms. The students are taught about the combination of elements to create aesthetic design solutions. The students are trained to acquire the skills to balance the application of the elements of design while generating design solutions

2. Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	105
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO 1. Explain the perspective techniques used to sketch simple forms
- CO 2. Discuss aspects of lights and shadow in rendering a form
- CO 3. Analyze the visual characteristics of various materials
- CO 4. Explore simple and complex forms considering different perspective tools
- CO 5. Illustrate and render products using digital illustration software tools

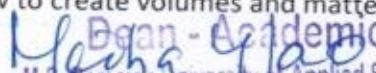
4. Course Contents

Unit 1 (Introduction to digital software): Layers, brushes, settings, gradients, blending modes, Lasso tools, Image editing options, Layer masks, Digital painting basics.

Unit 2 (Sketching): Basics of perspectives, Using Digital tablet to sketch simple forms such as cubes, ellipse, sphere, cones, cylinders and planes, lighting basics, Shading techniques, Pen and ink technique, Single and multiple direction Rounding.

Unit 3 (Advanced Perspectives): Cone of vision, Informative viewpoint, Central perspective, Birds eye and frogs eye Perspective, Multiplication technique, 3D curves and Cross section lines. Building complex volumes using 3 curves, addition and subtraction of volumes, Using Side view, top view and Front view to create volumes and matte rendering them


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Unit 4 (Lighting): Top, side and angular lighting, Direct and indirect lights, ambient light, occlusion, Edge lighting, Atmospheric perspective, Local lights

Unit 5 (Matte render): Assumptions for creating ideal lighting, Core shadow, cast shadow, single and multiple rounding, reflected light, occlusion, Value assessment, Simple form rendering

Unit 3 (Presentation techniques): Focal point, Background box, Composition, Explaining course of event/ Story board, Exploded Views, Explanatory sketches, Persuasive sketches, Instructional drawing

Unit 5 (Product Rendering): Gloss, Semi-Gloss, Aluminum, Steel, Chrome, Plastic, Glass, Metallic surface, partition lines.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)				
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4	
CO-1	3													2			
CO-2	3													2			
CO-3	2	3												2			
CO-4	3	3		3									3	3	3		
CO-5	3	3		3									3	3	3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in Hours	Total Duration in Hours
Face to Face Lectures		10
Demonstrations		5
1. Demonstration using Videos		
2. Demonstration using Physical Models/Systems		
3. Demonstration on a Computer	5	
Tutorial		90
1. Tutorial		
Practical Work		
1. Course Laboratory		
2. Computer Laboratory		
3. Engineering Workshop/Course Workshop/Kitchen	90	
4. Clinical Laboratory		
5. Hospital		
6. Model Studio		
Others		90
1. Case Study Presentation		
2. Guest Lecture		
3. Industry/Field Visit		


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4. Brain Storming Sessions	
5. Group Discussions	
6. Discussing Possible Innovations	
Term Tests, Laboratory Examination/Written Examination, Presentations	10
Total Duration in Hours	115

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	60 Marks
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	X		X		
CO-2	X		X		
CO-3	X		X		
CO-4	X	X	X	X	
CO-5		X	X	X	

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Self-study
3.	Critical Skills	Assignment
4.	Analytical Skills	--
5.	Problem Solving Skills	Assignment, Examination
6.	Practical Skills	Assignment
7.	Group Work	--

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8.	Self-Learning	Self-study
9.	Written Communication Skills	Assignment, Examination
10.	Verbal Communication Skills	--
11.	Presentation Skills	Presentation
12.	Behavioral Skills	--
13.	Information Management	Assignment
14.	Personal Management	--
15.	Leadership Skills	--

9. Course Resources

a. Essential Reading

1. Course notes
2. Powell, D. (1996) Design Rendering Techniques: A Guide to Drawing and Presenting Design Ideas, North Light Books
3. Caplin, Steve(2003) Complete Guide to Digital Illustration: Watson-Guptill

b. Recommended Reading

1. Zeegen, L. (2006) The Fundamentals of Illustration, Bloomsbury Publishing

c. Magazines and Journals

d. Websites

e. Other Electronic Resources

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Course Specifications: Materials Finishes and Trim

Course Title	Materials Finishes and Trim
Course Code	PDC202A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to impart knowledge of various materials used for product development. Students are taught about materials such as metals, polymers, composites and eco materials along with their properties and applications. Students are taught to select and propose appropriate materials based on the design requirement.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	2:0:2
Total Hours of Interaction	90
Number of Weeks in a Semester	16
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe materials used in product development
 CO-2. Explain properties and application of polymer materials used in a product development
 CO-3. Discuss various industrial applications of composite materials
 CO-4. Identify materials for appropriate industrial applications
 CO-5. Propose materials for different products to meet the design intent
 CO-6. Suggest alternative eco materials to replace commonly used metals and plastics for design applications

4. Course Contents

Introduction to material and their properties: Properties, manufacturing processes and applications of metals, polymers, composites.

Introduction to types of polymers : Thermoplastics, Acetals, Acrylics - PMMA, Acrylonitrile-Butadiene-Styrene - ABS, Cellulosics, Fluoro polymers - PTFE , Teflon, Polyamides (PA) - Nylons, Kevlar, Polyesters - PET, Polyethylene (PE) - HDPE, LDPE, Polypropylene (PP), Polystyrene (PS), Polyvinyl chloride (PVC). Properties and Applications.

Thermosets: Amino resins, Epoxies, Phenolics, Polyesters (Unsaturated Polyesters: FRP), Polyurethanes, Silicones. Properties and Applications.

Elastomers: Natural rubber, Synthetic rubbers - butadiene rubber, butyl rubber, chloroprene rubber, ethylene propylene rubber, isoprene rubber, nitrile rubber

Composites: Type of Composites - Metal Matrix Composites, Ceramic Matrix Composites, Polymer Matrix Composites, Nature of Composites, Types of Reinforcement Materials for Polymer Composites, Applications of polymer matrix composites, Glass fibres Forms of glass fibres, FRP Properties & Uses, FRP applications. Carbon and graphite fibres, Aramid fibres, Common polymeric materials - Polyester resins, Epoxy resins, Composites advantages, Applications - Industrial applications, Domestic applications.

Metals: Metals & Alloys - Ferrous Metals, Nonferrous Alloys, Applications - Alloy Steels, Steels, Stainless Steel. Non Ferrous Metals & Alloys - Aluminum and its alloys, Copper and its alloys, Magnesium, Zinc, Lead, Tin, Titanium, Nickel. Application. Precious Metals. Properties and applications

ECO materials: Bamboo, Wood and Fibers: Classification, Properties and Applications. Manufacturing Process for Bamboo and Fibers, Glass: Types, properties, uses and shaping processes

Product surface finishing techniques: Color, texture, finish and workability and their application in the field of design to develop innovative product ideas including various finishing techniques to achieve the desired surface qualities for visual and aesthetic appeal. Screen Printing, Pad Printing, Cubic Printing, Hot Stamping, In- mold Decoration. Plating: Vapor Metalizing, Electro-plating, Electro-less Plating, Anodizing. Polishing: Mechanical Polishing, Electro-polishing and Chemical Polishing. Coating: Solvent- based Painting, Water-based Painting, Electro-painting and Powder Coating

Selection of Materials: Motivation for selection, cost basis and service requirements selection for mechanical properties, strength, toughness, fatigue and creep. Selection for surface durability, corrosion and wear resistance. Relationship between materials selection and processing


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5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)				
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4	
CO-1				3			2							2			2
CO-2						2											2
CO-3						2											2
CO-4			2											2			
CO-5				1		1								2			1
CO-6							3										1

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		30
Demonstrations		10
1. Demonstration using Videos	00	Dean

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2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	15	
Tutorial		
1. Tutorial	00	00
Practical Work		
1. Course Laboratory	75	50
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		
1. Case Study Presentation	00	00
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		100

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	Creative Submission-3	Creative Submission-4	60 Marks
Maximum Marks ▶	10	10	10	10	
CO-1			X		
CO-2			X		X
CO-3			X		X
CO-4	X	X	X	X	X
CO-5	X	X	X	X	X
CO-6	X	X	X	X	X

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

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8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Ashby, M. and Johnson, K. (2009) Materials and Design: The Art and Science of material Selection in Product Design, 2nd revised edn, Butterworth- Heinemann Ltd

b. Recommended Reading

1. Karana, E., Pedgley, O., Rognoli, V (2013) Materials Experience: Fundamentals of Materials and Design, Butterworth-Heinemann Ltd
2. Ashby, M. and Johnson, K. (2009) Materials and Design: The Art and Science of Material Selection in Product Design, 2nd revised edn, Butterworth-Heinemann Ltd
3. Lesko, J. (2008) Industrial Design: Materials and Manufacturing Guide, 2nd edn, John Wiley & Sons
4. Gibson, R. (2007) Principles of Composite Material Mechanics, 2nd edn, CRC Press
5. Harper, C. (2007) Handbook of Materials for Product Design, 3rd edn, McGraw-Hill Professional

c. Magazines and Journals

d. Websites

1. Cambridge Educational Software

e. Other Electronic Resources

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Course Specifications: Product Photography

Course Title	Product Photography
Course Code	PDC203A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable students to learn the basics of photography to capture images utilizing both natural and artificial light. Students are taught the techniques and strategies for integrating principles of composition and design into their images and working with the principles associated with light and optics. Students are trained to acquire skills to handle cameras, light-sensitive materials, equipment along with photographic finishing techniques.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	90
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the photographic compositional principles and elements in capturing an image
- CO-2. Describe the basic aspects of optics and light necessary to achieve good results
- CO-3. Demonstrate the use of photographic equipment and accessories to capture an aesthetically pleasing image
- CO-4. Demonstrate various photographic techniques using various lighting techniques and in camera adjustments to capture an image
- CO-5. Apply photographic techniques for presentation of products and documentation of events

4. Course Contents

Unit 1 (Introduction to Photography): What is Photography, Light: How Images are Formed, Wavelength and Colors, Shadows, Light Intensity and Distance.

Unit 2 (Photography and Cameras): Photography and Camera, Technological advancement of camera through the ages, components & working of compact & SLR Camera, compact & DSLR Camera & accessories, peripheral equipment like cables, lights, flashguns, lenses, filters, tripods

Unit 3 (Compositional Elements and Principles): Reading a photograph, understanding course in a photograph, composition basics, rules and guidelines to great photographs, light, exposure to various types of photography like nature, portraits, wildlife, sports, documentation, journalism etc, Discussing work of renowned photographers – Ansel Adams, Richard Avedon, W. Eugene Smith, Martin Parr, Robert Capa and others

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Unit 4 (Camera Basics & Lighting Techniques): Techniques of using camera, basics of optics, light, exposure, focus, depth of field, Aperture and f-numbers, shutter speed, ISO, white balance, color balance, direction and quality of light

Unit 5 (Exposure and Measurement): Filter Kits, Image Stabilization, Practical Flash Exposure Tips, Using Different Focal Length Lenses, Storing Film, B/W Photography and Color Photography, Studio Photography using Flash, Product photography

Unit 6 (Camera and Lighting for studio photography): High key, Low key, broad lighting, short lighting, butterfly lighting, paramount lighting, Rembrandt lighting, Split lighting, soft box lighting techniques, Photographic investigation of a location and situation and experimental photography, Dark room techniques, Techniques of slide making, Exposing Different Films, digital printing

Unit 7 (Beyond The Still Image): Panoramic photography, stereo photography, panning and zooming photographs, Lenticular photography, photographing in infrared, pin hole photography

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2			3	2			1					3		1	2
CO-2	2			1				1				2	1		1	1
CO-3	1			2	2	1							1		1	
CO-4	2		3	2	1	1	2					1	2		1	
CO-5	1		2	2		1				2			1			1

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	03	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	02	
Tutorial		00
1. Tutorial	00	
Practical Work		75
1. Course Laboratory	75	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	


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Others		
1. Case Study Presentation	01	10
2. Guest Lecture	01	
3. Industry / Field Visit	04	
4. Brain Storming Sessions	01	
5. Group Discussions	01	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		115

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/presentation are set to measure the attainment of the COs. In either component (CE and SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	60 Marks
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	x		x		
CO-2	x	x	x	x	x
CO-3		x	x	x	x
CO-4		x	x	x	x
CO-5		x	x	x	x

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Design

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		Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Class Notes
2. Rosenblum, N. (2008) A World History of Photography, 4th edn, Abbeville Press

b. Recommended Reading

1. Barthes, R. and Howard, R. (1982) Camera Lucida: Reflections on Photography, Hill and Wang
2. Berger, J. (1990) Ways of Seeing: Based on the BBC Television Series, Penguin Books
3. Kelby, S. (2006) The Digital Photography Book, Peachpit Press

c. Magazines and Journals

1. Asian Photography, SAP Media Worldwide Ltd, Mumbai
2. Black & White Magazine, GMC Group, UK
3. British Journal of Photography, Aptitude Media, UK
4. Photo Technique, Preston Publications, New York

d. Websites

1. www.asianphotographyindia.com
2. www.betterphotography.in


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Course Specifications: Sculpture

Course Title	Sculpture
Course Code	PDO201A
Course Type	Open Core Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The main aim of the course is to enable students to understand sculpture as creation of a three dimensional object that aims to express an emotion, feeling or event related to the person creating it. The students are taught about the existence of sculptures for thousands of years and today and their present art forms. They are also be taught about professional practices in sculpture, materials, and tools, handling and finishing the sculpture. The students are taught to acquire the skills to work in community arts projects, arts administration, museum and exhibition curatorship.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain various philosophies and aesthetics of sculpture in India and abroad
- CO-2. Describe various materials, processes and techniques of Sculpting
- CO-3. Distinguish sculpting traditions from ancient to medieval, modern and contemporary periods and their importance
- CO-4. Apply basic design principles to a specific aesthetic intent for creating three dimensional design
- CO-5. Prepare creative sculptural works using tools and techniques from concept to finished product
- CO-6. Create sample works with various materials explored for process and techniques

4. Course Contents

Unit 1 (Construction of forms): Construction and or modeling of 3- dimensional geometrical forms such as cubes, cones, spheres, cylinders, slabs etc. and organization of forms for 3-D design, use of paper, card- board, clay, POP, 3- S Design. Use of elements and principles of 3-D Design.

Unit 2 (Life Study): Study form the Head study & drawing with emphasis on and construction perspective and rendering in linear and massive drawing. Experience with material quality for fee values in gray, texture and colour in rendering, use of media pencil, charcoal etc. and their techniques. Study of human form & structure with reference of anatomy of head. Understanding the plans and Structure. (Round & Relief)

Unit 3 (Portrait): Sculpture, or other artistic representation of a person, in which the face and its expression is predominant. Display the likeness, personality, and even the mood of the

person. Composed image of a person in a still position. Person looking directly or indirectly at the sculptor, effects of unnoticed posture and noticed posture, environment and attitude. Engaging the course with the viewer.

Unit 4 (Figures): Using Plastelina and a base, work from live or representative human models. Proportion, scale, basic anatomy, and implied movement will be discussed. These works will not be permanent and materials will be recycled, unless purchased by you to take home. Preciousness and detail is not a concern. From this model, a more permanent piece will be built from expanded polystyrene (Styrofoam) and coated with a cementitious material such as Dry-vit and wire mesh for structural stability.

Unit 5 (Moulding and Casting): (Bronze and Fiber Glass casting) casting processes- Exploration of several methods of casting smaller to medium sized sculptures. , Bronze and Fiber glass will be discussed in detail.

Unit 6 (Maquette): Starting from 2-D paper, visualizing and physically create simple geometric sculptural forms. This is accomplished through scoring, cutting, folding, and gluing or taping elements together.

Unit 7 (Stone Carving): Process understanding by controlled removal of stone, typical and primitive styles. Understand works of Paleolithic societies to create flint tools, their usage and applications Stone carving to produce lettering known as lettering. The process of removing stone from earth, mining or quarrying. Typical artistic process of sculpting. Activities involved in making some types of petroglyphs.

Unit 8 (Plaster, additive & subtractive): The additive and subtractive processes of sculptural creation using casting plaster. Creation of one mold/casting from a simple object, a detailed carving of an actual object (actual size) using the subtractive process, and another work of a sculpturally complex abstract non-objective form, using the additive and subtractive process. Using low quality carving chisels, mallets, rasps, drills, scraping tools, cardboard and hot glue for mold making.

Unit 9 (Freeform building with clay): Experimenting with the medium of ceramic clay, creation of large forms. Appreciation of the possibilities and limitations of the material without the addition of other structural materials. Open, or negative spaces, textures and detailing.

Unit 10 (Copying a masterwork): Studying and duplicating an existing work of art, materials, physical form, and artistic intent, Materials and tools.

Unit 11 (Relief carving): Work with a pine board, quality wood chisels, coping saws, scroll saws, jigsaws, rasps, and files, creating an interwoven organic form. Planning the work on paper, and then transferred to the board. Drawing techniques related to relief carving.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1															
CO-2					1											
CO-3			1													
CO-4	3												2			
CO-5				3										1		
CO-6			2											2		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration
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		in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	01	
2. Demonstration using Physical Models / Systems	04	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	55	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	20	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/ jury are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10	10	10	10	
CO-1	x		x		
CO-2	x		x		
CO-3	x	x	x	x	
CO-4	x	x	x	x	
CO-5		x		x	
CO-6		x		x	

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

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The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Berkson, C. (2011) Life of Form in The Indian Sculpture, Abhinav Publications

b. Recommended Reading


1. Buonarroti, M. and Wallace, W. (2009) Michelangelo: The Complete Sculpture, Painting, Architecture, Universe
2. Morley, G., Dube, Dn. and Vatsyayan, K. (2005) Indian Sculpture, Roli Books
3. Forman, W. (1962) Indian Sculpture: Masterpieces of Indian, Khmer and Cham Art, 2 nd Edition, Spring Books Publications

c. Magazines and Journals

1. Sculptor Magazine, International Sculpture Center, Washington
2. Sculpture Review Magazine, National Sculpture Society, USA

d. Websites

1. www.sculptor.org


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Course Specifications: English for Communication 2

Course Title	English for Communication-2
Course Code	TSM102A
Course Type	Ability Enhancement Compulsory Course
Department	Directorate of Transferable Skills and Leadership Development
Faculty	FLAHS/FMC/FMPS/FAD/SSS/SOL

1. Course Summary

This course equips students with professional oral and written communication skills. The course enables the students to draft letters, reports and e-mails for professional communication. The students will be trained to deliver oral presentations and participate in group discussion. The students will be equipped with analyzing and reading the complex documents and given case studies to solve and arrive at a solution using their professional communication proficiency and analytical skills.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	3:0:0
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Directorate of Transferable Skills and Leadership Development
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the nuances of professional communication
- CO-2. Compose professional written document as appropriate
- CO-3. Discuss the importance of Time and Stress Management
- CO-4. Practice basic presentation skills, group discussion and debating skills
- CO-5. Demonstrate comprehension of complex document

4. Course Contents

Unit 1 (Basics of Communication):

Forms and channels for professional communication, directions of professional communication, styles of professional communication

Unit 2 (Essay Writing):

Structure of an essay – introduction, body and conclusion, ordering of essay structure, Usage of transitioning words, use of appropriate language and tone

Unit 3 (Letter Writing):

Purpose of letter writing, Letter format – address, date, salutation, subject line, body of the letter, complimentary close, signature, types of letter – Information letter, complaint letter, request letter

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for projects / internships / industry visits, use of appropriate language and tone while drafting letter, Agenda and Minutes of meeting, Cover letter and CVs

Unit 4 (E-mail):

E-mail as a channel of communication, e-mail format – 'To', 'CC', 'BCC', 'Subject Line', Salutation, Body, and Complementary Close, Situational usage of e-mail

Unit 5 (Time Management and Stress Management):

The concept of time and stress management, Time management grid, prioritization, types of stress, ways to handle stress

Unit 6 (Presentation Skills):

The importance of presentation skills, various stages of presentation planning – development of structure and style, interpersonal sensitivity, presentation accessories and equipment, time management during presentation, stages of presentation – introduction, body and conclusion, presentation etiquette

Unit 7 (Debate)

Importance of debating skills, various stages of debate planning – development of structure and style, interpersonal sensitivity, time and stress management as a debating skill, stages for debate, debate etiquette

Unit 8 (Group Discussion)

Purpose of group discussion, various stages of group discussion planning – development of structure and style, interpersonal sensitivity, types of group discussion, group discussion delivery, group discussion etiquette

Unit 9 (Comprehension – Advanced)

Active listening, listening comprehension and paraphrasing techniques, comprehension of complex documents


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Unit 10 (Report Writing)


Purpose of report writing, report format, use of language while report writing

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1								2							2
CO-2								2							2
CO-3								2							2
CO-4							2	2							2
CO-5								2							2
CO-6								2							2

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

Approved by the Academic Council at its 26th meeting held on 14 July 2022


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6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		02
1. Demonstration using Videos	02	
2. Demonstration using Physical Models/Systems		
3. Demonstration on a Computer		
Numeracy		00
1. Solving Numerical Problems		
Practical Work		04
1. Course Laboratory		
2. Computer Laboratory		
3. Engineering Workshop/Course Workshop/Kitchen	4	
4. Clinical Laboratory		
5. Hospital		
6. Model Studio		
Others		14
1. Case Study Presentation	4	
2. Guest Lecture	2	
3. Industry/Field Visit		
4. Brain Storming Sessions	4	
5. Group Discussions	4	
6. Discussing Possible Innovations		
Term Tests, Written Examination, Presentations		10
Total Duration in Hours		45

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.sc Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the CO's. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of CO's on each Component or Subcomponent of Evaluation:

Subcomponent	Component 1: CE (60% Weightage)		Component 2: SEE (40% Weightage)
	SC1	SC2	
Subcomponent Type	Practical Assessment	Assignment	50 Marks
Maximum Marks	30	30	
CO-1	X		X
CO-2	X	X	X
CO-3	X	X	X
CO-4		X	X

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CO-5		X	X
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The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S.No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Face to face lectures
2.	Understanding	Face to face lectures, group discussions
3.	Critical Skills	
4.	Analytical Skills	Face to face lectures, activities, , group discussions, assignment
5.	Problem Solving Skills	
6.	Practical Skills	Face to face lectures, activities, , group discussions, course work
7.	Group Work	Course work, practice, assignment, group discussion
8.	Self-Learning	Course work, practice, assignment, group discussion
9.	Written Communication Skills	Face to face lectures, Course work, practice, assignment, group discussion
10.	Verbal Communication Skills	Face to face lectures, Course work, practice, assignment, group discussion
11.	Presentation Skills	
12.	Behavioral Skills	Course work, practice, assignment, group discussion, presentation practice, role plays
13.	Information Management	Assignment
14.	Personal Management	
15.	Leadership Skills	

9. Course Resources

a. Essential Reading

1. Class Notes
2. Raman M and Sharma S (2004) Technical Communication: Principles and Practice. New Delhi: Oxford University Press
3. Hory Sankar Mukherjee, (2013), Business Communication, Oxford University Press
4. Kroehnert, Gary (2004), Basic Presentation Skills, Tata McGraw Hill

b. Recommended Reading

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1. Sarvesh Gulati , (2010), Corporate Grooming and Etiquette, New Delhi, Rupa Publications India Pvt. Ltd
2. Simon Sinek , (2011), Start With Why, United States of America, Penguin Group
3. Kavita Tyagi and Padma Misra , 2011, Professional Communication, New Delhi, Prentice Hall India

c. Websites

- <http://www.businessballs.com/presentation.htm>
- <http://www.allyoucanread.com/top-10-business-magazines/>
- <https://student-learning.tcd.ie/undergraduate/topics/self-management/>

d. Other Electronic Resources

1. Electronic resources on the course area are available on RUAS library


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SEMESTER 4



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Course Specifications: Digital Modeling and Animation

Course Title	Digital Modeling and Animation
Course Code	PDC204A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable students to model, animate and render 3D objects and environment with appropriate textures and lights at an elementary level. Students will be taught the principles staging and frame composing along with the methods of modelling, rendering and animating an object to visualize its design. They will also be trained to use a 3D modeling and rendering tool to create and showcase a digital product.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	105
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO 1. Explain the principles of lighting and shading, camera staging and layouting to visualize a consumer/industrial product and its environment
- CO 2. Differentiate various methods to model, render and animate a consumer/industrial product
- CO 3. Identify suitable techniques to model, render and animate it
- CO 4. Create models of 3D objects and environments
- CO 5. Demonstrate animation and rendering of 3D models with suitable textures and lights

4. Course Contents

Unit 1 (Modelling): Concepts of 3d modelling and various digital modelling methods to create properties and environments, gathering references and observation, working with NURBS and Polygons to create simple and complex properties and environments, Working with various surface building tools and techniques to create realistic product modelling

Unit 2 (Texturing): Concepts of colour, materials and shaders, types of textures and UV mapping process, Application of various types of materials and textures through examples, Working with different nodes to tweak materials and textures using photo references, Working with projection techniques, tweaking UV map's and texture painting process for complex properties and environments, colour Bump specular maps to create details, Tuning and finalizing texture maps for properties and environments

Unit 3 (Camera Staging and Lay outing): Rules of composition, staging and lay outing, Golden ratio, rule of thirds, looking space, lead room, frame inside a frame, minimalism etc for stronger

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compositions, award winning photographs and live action films, Arranging 3d assets to create layouts, Working with 3d camera and its attributes to stage properties, Creating and managing camera animation with smooth movement and frame gates

Unit 4 (Rigging and Animation): approaches and techniques to animate a shot, frame rates, applications and limitations of inverse and forward kinematics, skin binding process and its methods, Process of animating objects on a timeline and with set driven key, Understanding joints and its orientations to build effective hierarchies, Working with joint hierarchies to build rigs for 3d products. Setting up controllers for animation, Working with different binding techniques to skin 3d mesh suitable for animation, Animating objects using controllers by blocking the key poses to get the desired action. Refining the poses to achieve precision, Improvising and fine tuning it by adding breakdowns and in-betweens

Unit 5 (Lighting and Rendering): Principles of lighting, properties and attributes of light, colour temperatures, importance of shadows and its types in 3d environment, hard and soft light with its pros and cons, rendering process and output formats, Process of effectively lighting an object or a subject with 3 point lighting setup to get an aesthetically pleasing output, Various rendering methods and process, different file formats to get the final output, Working with different types of lights and tweaking their attributes to light up an architecture, environment and objects in it, Rendering the output


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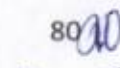
5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1															
CO-2			1													
CO-3			2											2		
CO-4		3	2	2						2	1		1			
CO-5		3		3	2					3				3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		00
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		80
1. Course Laboratory	80	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	


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4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		
1. Case Study Presentation	05	10
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	05	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		115

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	X		X		
CO-2	X		X		X
CO-3		X		X	X
CO-4		X		X	X
CO-5		X		X	X

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work

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		Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

3. Class Notes
4. Murdock, K. (2017) Introducing Autodesk Maya 2013, SDC Publications.

b. Hill Recommended Reading

1. Lanier, L. (2006) Advanced Maya® Texturing and Lighting, Sybex.
2. Nass, P. (2012) Autodesk Maya 2013 Essentials, John Wiley & Sons, Inc
3. Birn, J (2013) Digital Lighting and Rendering, New Riders.

c. Magazines and Journals

1. Drawing, F&W Media, US

d. Websites

1. www.artistdaily.com
2. www.uncubemagazine.com

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Course Specifications: Design Thinking and Need Identification

Course Title	Design Thinking and Need Identification
Course Code	PDC205A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course enables the students to apply various design research methods to gain insight into the needs and aspirations of the user. The students are taught about conducting product study, market study and user study to identify areas of design intervention. Students are also taught to create a design brief based on the research data obtained.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	2:1:1
Total Hours of Interaction	90
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain Ideal product design and the design thinking process
- CO-2. Conduct Product Study, Market Study and User Study to obtain aspects for design intervention
- CO-3. Identify user needs for new product design exploration
- CO-4. Analyze research data for insights and create a design brief
- CO-5. Create Personas and ideate new product concepts based on design brief

4. Course Contents

Unit 1 (Design Thinking): Design Thinking Process and Ideal product design, Life cycle of a product, Business perspective of product design, Deconstructing design - Divergence, Transformation, Convergence, New Product Design Strategies with case studies

Unit 2 (Product Study): Features, Parts, Material, Accessory, Unique Selling Point, Alternative Mode of Use, Usage Environment, Product Comparison, Color- Material-Pattern Trend Study

Unit 3 (Market Study): Introduction, Meaning of Research, Research Characteristics, Various Types of Research, Marketing Research and its Management, Nature and Scope of Marketing Research: Value and Cost of Information Introduction Market Size, Benchmarking Products, Main Market, Players, Benchmarking Products, Meaning and Nature of Secondary Data, Advantages of Secondary Data, Drawbacks of Secondary Data, Types of Secondary Data Sources, Primary Data and its Types

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Unit 4 (User Study): Major Stakeholders for the product, Product Versatility, Empathy Tool - Assessing how Users Think and Feel, See and Hear, Say and Do and their Pain and Gain Details

Unit 5 (Design Research Methods): Introduction to design research, Methods and Methodology, Different types of research methods that can be incorporated in Design, Components of research design; differences between qualitative and quantitative designs; suitability of various study designs, Choosing the appropriate method for data collection, the level of formality in interviews and surveys, and selecting samples; qualitative research and evaluation research, User Centered Design Research

Unit 6 (Product Gap): Perceptual mapping, Need and Product Gap Identification, identify concepts related to your research and develop operational definitions, building a conceptual model for your research, analyzing the relationships between identified variables to understand what data you need to collect in your research

Unit 7 (Product Brief): Product Overview, Design Objective, Target User, Distribution, End Use, Key Features / Benefits, Design Language, Competition, Budget and Schedule, Design Team, Client

Proposing Design Concepts: Scenario and Persona, Ideating new concepts based on Design Brief

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1		2		1									3	2		
CO-2		2											1			
CO-3		3												3		
CO-4		3	1	2									2	3		
CO-5		2							1				2	3		
CO-6	1	3		2									1			

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		25
Demonstrations		05
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	15	
Tutorial		15
1. Tutorial	00	
Practical Work		30
1. Course Laboratory	75	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop /	00	

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Kitchen		
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		15
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		100

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10	10	10	10	
CO-1			X		X
CO-2			X		X
CO-3	X	X	X	X	X
CO-4	X	X	X	X	X
CO-5	X	X	X	X	X

The details of SC1, SC2, SC3 or SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission

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4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Class Notes
2. Ulrich, K.T. and Eppinger, S. D. (2003) Product Design and Development. 4th edition. McGraw-Hill

b. Recommended Reading

1. Creswell J.W. (2008) Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 3rd edition, Sage Publications
2. Bordens K. and Abbott B. B. (2007) Research Design and Methods: A Process Approach. 7th edition, McGraw Hill
3. O'Grady J.V and O'Grady K (2006) A Designer Research Manual: Succeed in design by Knowing your clients and what they really Need(design Field Guide), Rockport Publishers
4. Madison D.S. (2005) Critical Ethnography: Method, Ethics, and Performance. 1st edition, Sage Publications

c. Magazines and Journals

1. ID Magazine
2. Journal of Design Research, Inderscience Publishers
3. Ethnography, Sage Journals

d. Websites

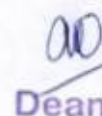
1. www.ulrich-eppinger.net
2. www.qfdi.org



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Course Specifications: Mechanism Design

Course Title	Mechanism Design
Course Code	PDC206A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course deals with mechanisms and their application for product development. The students are taught about linkages, wedges, cam, followers and gears. Students are trained to analyze existing mechanisms used in products and propose new variants. They are also trained to construct physical model of the proposed mechanism.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	3:0:1
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe simple mechanisms and underlying principles
- CO-2. Classify mechanisms and identify their applications
- CO-3. Propose mechanisms for products to achieve desired functionality
- CO-4. Demonstrate the working principles through physical model
- CO-5. Demonstrate role of mechanisms used in products including toys

4. Course Contents

Unit 1 (Applications of mechanisms in product design): Introduction to Consumer products, Consumer durables, transportation Design, and Construction equipment

Unit 2 (Mechanism of Motion): Types of Motion; Displacement; Velocity, Acceleration; Relation between Linear and Angular Motion; Acceleration of a Particle along a Circular Path.

Unit 3 (Introduction to kinematics and planar mechanisms): four-bar chain; four-bar chain inversions; slider crank chain; slider crank chain inversions; double slider crank chain; double slider crank chain inversions; Quick return motion mechanisms; Straight line motion mechanisms; Intermittent Motion mechanisms; Toggle mechanism; Elliptical Trammel Mechanism; Pantograph.

Unit 4 (Simple Machines and their applications): Levers, Wedges, Pulley, Wheel and axle, Inclined Planes, Screw Mechanism, Linkages with simple calculations

Unit 5 (Cam and followers): Introduction to Cams; Classification of followers; Classification of Cams; Cam nomenclature; Motion of the Follower, construction of CAM profiles

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Unit 6 (Power transmission Gear Drive): Ordinary and planetary gear trains gearing fundamentals: conjugate action, contact ratio and tooth systems with calculations

Unit 7 (Simple mechanism): Analyse simple physical mechanisms used in toys, mechanisms of electro – mechanical components to understand the functions and generate new variants of mechanisms, construct simple physical model.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1																
CO-2														1		
CO-3	1		2	3												
CO-4	1					2							1	2		
CO-5		2				2								2		
CO-6																

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		45
Demonstrations		05
1. Demonstration using Videos	01	
2. Demonstration using Physical Models / Systems	04	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		30
1. Course Laboratory	30	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	SEE(60 Marks)
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 marks	
CO-1	X		X	X	X
CO-2	X		X	X	X
CO-3	X	X	X	X	X
CO-4		X	X	X	X
CO-5		X	X	X	
CO-6					

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors

14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Wilson, C. E. and Sadler, J. P. (2003) Kinematics and Dynamics of Machinery, 3rd edn, Prentice Hall

b. Recommended Reading

1. Lesko, J. (2008) Industrial Design: Materials and Manufacturing Guide, 2nd edn, John Wiley & Sons

c. Magazines and Journals

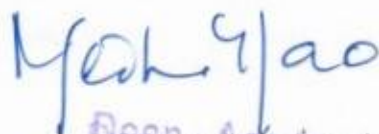
1. THE ARTIST Journal of Mechanisms J Mech, Elsevier Science
2. Mechanism and Machine Theory, Elsevier
3. JSME International Journal - Series C: Mechanical Systems Machine Elements and Manufacturing. Quarterly, JSME

d. Websites

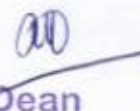
1. www.flying-pig.co.uk/mechanisms



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Course Specifications: Watercolor Painting

Course Title	Foundation Painting
Course Code	PDO202A
Course Type	Open Elective Course
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable the students to learn water colour painting techniques. Students are taught applied colour theory, colour palettes and direct painting techniques. They are trained to acquire skills in studio practice including representations of still life and models. They are also exposed to group and individual critique, lectures and demonstrations.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the basic principles of aesthetic design and colour, concepts, media and formats
- CO-2. Discuss the evolution, traditions and conventions of painting along with issues related to
- CO-3. Identify the traditional and modern approaches to painting
- CO-4. Demonstrate the application of various water colour painting techniques
- CO-5. Create finished paintings of exhibition quality

4. Course Contents

Unit 1 (Introduction to painting): Applied colour theory, understanding different palettes, basic water colour painting techniques, direct painting techniques and painting of still life and models.

Unit 2 (Material and techniques for watercolor painting): Exploring the versatility and compatibility of water-based media in order to extend, shape and redefine issues of composition, formats and content in painting, techniques like wet on wet, wet on dry, methods inherent in watercolor

Unit 3 (Working from life): In-depth exploration of specific locations in order to understand and create a sense of place. Relationship between on-site observational work and studio-based work. Observational drawing and painting skills through composition, spatial dynamism

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place.

Unit 4 (Image and text): Exploration of the possibility of image and text to interrelate, interpret, and extend each other into new dimensions of meaning and visual impact. Working in drawing and painting, students use image and text to tell a story or a poem, text as visual information, and calligraphy as a visual form of language. Work with a variety of surfaces, Formats and series work.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2															
CO-2	1															
CO-3	1															
CO-4	2				1									3		
CO-5		3									3			3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	01	
2. Demonstration using Physical Models / Systems	04	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	55	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

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The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/ jury are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	SEE(60 Marks)
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	x		x		x
CO-2	x		x		x
CO-3		x	x		x
CO-4		x	x	x	x
CO-5		x		x	x

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission,

		Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Goswamy, B.N. (2005) Domains of Wonder: Selected Masterworks of Indian Painting, San Diego Museum of Art

b. Recommended Reading

1. Schuessler, M. (2014) Foundational Arts: Mural Painting and Missionary Theater in New Spain, University of Arizona Press
2. The Public Catalogue Foundation, (2010) Oil Paintings in Public Ownership in Northumberland, Tees Valley & Tyne and Wear, The Public Catalogue Foundation
4. Pal, P. (1993) Indian Painting, Harry N Abrams
5. Ironside, J. (1987) Spaces and Places: Eight Decades of Landscape Painting in Alberta, Alberta Art Foundation

c. Magazines and Journals

1. THE ARTIST
2. PAINTING
3. www.artistsnetwork.com/the-artists-magazine
4. www.paintworksmag.com

d. Websites

1. www.artistdaily.com
4. www.cis.rit.edu/mcsl


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SEMESTER 5


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Course Specifications: Product Ergonomics

Course Title	Product Ergonomics
Course Code	PDC301A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course prepares students to create human centric design solutions through application of ergonomic factors. Students are taught fundamentals of ergonomics, human body structure and function, posture, movement and biomechanics, physiological and psychological aspects. Human error and risk perception, occupational stress, safety and ergonomic criteria for design are dealt with. Students are trained to handle anthropometric measuring instruments and equipment for ergonomic data collection.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	2:0:1
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe fundamental ergonomic and anthropometric considerations for product design
- CO-2. Demonstrate use of anthropometric instruments and equipment for ergonomic data collection
- CO-3. Analyse and identify deficiencies relating to ergonomic factors in products
- CO-4. Develop design solutions to eliminate the deficiencies identified using Indian anthropometry data
- CO-5. Apply ergonomic principles to the creation of safer products

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4. Course Contents

Unit 1 (Introduction to Ergonomics): Introduction to origin and evolution to ergonomics, human centric approach to product design.

Unit 2 (Ergonomics/ Human factors): Fitting task to man their contractual structure, ergonomics/ human Factors fundamentals, physiology (work physiology) and stress, human body- structure and function, anthropometrics

Unit 3 (Human Physical Dimension): Body growth and somatotypes, types of postures like stand postures, sitting postures, squatting and cross legged postures, measuring techniques, Measuring technique and percentile calculations

Unit 4 (Posture and Movement): Human body structure and function, Posture and job

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

relation, Work surface like Horizontal and vertical surface movement and characteristics

Unit 5 (Behavior and Perception): Psycho-social behavior, Human error and risk perception aspects, Human errors and RSI The human errors, the errors of omission and errors of commission, Sequence error, Factors contributing to accidents, Risk perception of accidents, How to prevent RS

Unit 6 (Design intervention): Workstation design, safety and stress at workplace in view to reduce the potential fatigue, Comports and discomforts acts

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1		3	1	1			1	1				1			2
CO-2			2			3	2	1				1			1	1
CO-3			3		2	3	2	1			2		1		2	3
CO-4	1	1	2	3	3	1	1	1				1	3	2		2
CO-5	1		2	2	1	2		1		2			2	1	2	1

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	03	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	02	
Tutorial		00
1. Tutorial	00	
Practical Work		30
1. Course Laboratory	45	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		10
1. Case Study Presentation	01	
2. Guest Lecture	01	
3. Industry / Field Visit	04	
4. Brain Storming Sessions	01	
5. Group Discussions	01	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		70

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7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/presentation are set to measure the attainment of the COs. In either component (CE and SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	x		x		x
CO-2		x	x	x	x
CO-3	x	x	x	x	x
CO-4		x	x	x	x
CO-5		x	x	x	x

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors

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14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Class Notes
2. Chakrabarty, D. (1999) Indian Anthropometric Dimensions for Ergonomic Design

b. Recommended Reading

1. Caplan and Ralph (2005) By Design Why there are no Locks on the Bathroom Doors in the Hotel Louis XIV and Other Object Lessons, FairChild publication
2. Dreyfuss, H. (2003) Designing for People, Viking Press
3. Stanton, N. A. and Young, M. S. (1999) Guide to Methodology in Ergonomics, Taylor and Francis

c. Websites

1. <https://ergonomics.org/>
2. <https://www.osha.gov/SLTC/ergonomics/>


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Course Specifications: Computer Aided Industrial Design and Rendering

Course Title	Computer Aided Industrial Design and Rendering
Course Code	PDC302A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course is intended to prepare students to convert 2D sketches into digital 3D surface models. Students are taught about generation of geometric curves, surface modelling and editing techniques. Students are also trained to implement surface modeling techniques and develop digital models using reverse engineering. They are trained to communicate design concepts through digital models using 3D modelling and rendering software.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	105
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the application of computer graphics for visualizing concepts
- CO-2. Describe modeling techniques and editing methods for surface generation
- CO-3. Apply modeling techniques to create curves and surfaces
- CO-4. Analyse created curves and surfaces to achieve realistic model
- CO-5. Demonstrate the use of rendering software to render 3D digital models

4. Course Contents

Unit 1(Introduction to surface modelling): application of computer graphics for visualizing concepts. Basics of curve and surface based modelling, Software used in industrial product design, Basic terms used in geometric modelling, graphics tablet and uses while developing concepts

Unit 2 (Geometrical curves): Representation of curves, Cubic Spline, Bezier curves, B-spline Curve, Nurbs Curve, Curve Manipulation, Evaluating points on curves, Blending, Segmentation, Trimming, Intersection, Transformations and Curvature Analysis.

Unit 3(Surface creation Methods): Extrude surface, Rail surface, Skin surface, surface of revolution, Planner surface, Bevel surface, Square surface, Tube surface, Multi surface, Flange surface

Unit 4(Surface editing methods): Surface manipulation, Segmentation, trimming, Intersection, transformations of 2D and 3D surfaces like move, rotate and scaling. Absolute and relative methods of transforming.

Unit 5(Class A surface modeling): Importance of Class A surface modeling, Geometric and Parametric

MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

Continuity, Positional Continuity, Tangent Continuity, Curvature Continuity and Surface Evaluation.

Unit 6(Presenting Design concepts): Rendering Introduction, Hardware Shade Light Settings, Hardware Shade Environment Effects, Environments, Creating Image Files, Bookmarks

Unit 7(Surface building methods): Introduction to reverse engineering (RE), cloud points data,3D scanning, treatment of digital scanned data, Applications of reverse engineering(RE) advantages and disadvantages of RE, Data Exchange high-quality CAD translators for industry standard data formats such as DXF, IGES, and STEP files

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1															
CO-2		3	1													
CO-3			2											3		
CO-4		3	2										1			
CO-5		3		1	2									3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		10
Demonstrations		20
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	20	
Tutorial		00
1. Tutorial	00	
Practical Work		75
1. Course Laboratory	75	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		115

7. Course Assessment and Reassessment

Approved by the Academic Council at its 26th meeting held on 14 July 2022

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3, SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	60 Marks
Maximum Marks ▶	10	10	10	10	
CO-1			X		X
CO-2	X	X	X		X
CO-3	X	X	X		X
CO-4	X	X	X	X	X
CO-5			X	X	X

The details of SC1, SC2, SC3, SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:


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S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination


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15.	Leadership Skills	Interaction with peers and tutors
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9. Course Resources

a. Essential Reading

1. Class Notes
2. Plastock, Roy A and Kalley, Gordon, Theory and Problems of Computer Graphics, McGraw

b. Hill Recommended Reading

1. Karen E. Goulekas, (2001) Visual effects in a Digital World; Morgan Kaufmann
2. Aiken, Peter (1996) Data Reverse Engineering, McGraw-Hill
3. Linda Wills, (1996) Reverse Engineering, Kluiver Academic Publishers.

c. Magazines and Journals

1. Autoworld, Looseleaf Law Publications, Inc, Flusing New York

d. Websites

1. www.autodesk.com


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Course Specifications: Manufacturing Process and Surface Finishing

Course Title	Manufacturing Process and Surface Finishing
Course Code	PDC303A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course intends to prepare students to propose manufacturing processes for products to meet design requirements. Students are taught manufacturing processes for metals, ceramics, polymers and composites. Advanced manufacturing processes, surface engineering and criteria for selecting material and process combinations are also taught. Students learn about the application of CES software for material selection.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	3:0:0
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe materials and their suitability to meet the design requirement
- CO-2. Discuss manufacturing processes for non-metals, their utility and essential properties
- CO-3. Identify appropriate manufacturing process for various polymers
- CO-4. Explain various types of manufacturing techniques using metallic materials
- CO-5. Compare different manufacturing processes applicable for a given material
- CO-6. Relate appropriate processes and suitable materials for manufacturing a specified product

4. Course Contents

Unit 1 (Non Metals Manufacturing Processes): General properties and importance of polymers- Thermal and electrical properties, mechanical properties- Criteria for selection- Composite materials- fibers- Boron, glass, carbon, organic- Ceramic and metallic fibres- Matrix materials- Polymer, metal and ceramics- properties and applications.

Unit 2 (Polymer Manufacturing Processes (Thermoplastic)): Injection Moulding , Injection Blow Moulding, Thermoforming, Insert Moulding, Expanded Polystyrene Moulding, Vacuum Forming, Blown Film , Structural Foam, Rotational Moulding - Typical Materials Used and Typical Products Produced.

Unit 3 (Polymer Manufacturing Processes (Thermoset)): SMC Moulding (Compression Moulding), DMC Moulding (Transfer Moulding), DMC Moulding (Compression Moulding), Typical Materials Used and Typical Products Produced.

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Unit 4 (Composites –Manufacturing Processes): Batch Processes, Continuous Processes, Manufacturing Process Selection. Thermoset Manufacturing Processes: Wet Hand Lay-up, Spray-up, TS Compression Moulding, TS Prepreg Lay-up, Liquid Composite Moulding, TS Pultrusion, Thermoset Filament Winding, Diaphragm Forming, Injection Moulding, and Typical Materials Used & Typical Products Produced. Thermoplastic Manufacturing Processes: TP Prepreg Lay-up, TP Compression Moulding, Diaphragm Forming, TP Pultrusion, Roll Forming.

Unit 5 (Metals –Manufacturing Process): Casting: Expendable mould- Sand, Shell, Expandable pattern, Plaster-mold, Ceramic-mold casting, Investment casting, and Vacuum casting. Permanent mold- Pressure Die Casting, Hot Chamber Die Casting, Cold Chamber Die Casting, Centrifugal casting, Forming & Shaping: Rolling, Forging, Extrusion, Drawing and Sheet forming, Machining: Turning, Milling, Drilling, Boring, Shaping, Broaching and Grinding, Joining: Welding, Brazing, Soldering, Bonding, Finishing: Lapping, Polishing, Deburring, Surface treating, coating.

Unit 6 (Sheet Metal): Introduction, Sheet metal processing, Sheet metal forming processes - Shearing processes, Forming processes, Finishing processes Shearing Process- Punching, Blanking, Perforating, Parting, Notching, Lancing. Forming process - Bending, Stretching, Drawing, Roll forming Equipment - Presses (Mechanical Press, Hydraulic Press), Dies and Punches (Simple, Compound, Combination, Progressive), Applications and Typical Products.

Unit 7 (Joining Profiles): Joint Geometries, Adhesives, and Fasteners: Sewing, Rivets and Staples, Threaded Fasteners, Snap Fits.

Unit 8 (Welding): Hot Gas Welding, Hot Bar Welding, Hot Plate Welding, Ultrasonic Welding, Power-beam Welding, Brazing Soldering, Torch Welding, MIG Welding, TIG Welding, Resistance Welding, Friction Welding, Diffusion and Glaze Bonding.

Unit 9 (Surface Profiles): Printing: Screen Printing, Pad Printing, Cubic Printing, and Hot Stamping, in-mold Decoration. Plating: Vapor Metalizing, Electro-plating, Electro-less Plating, Anodizing. Polishing: Mechanical Polishing, Electro-polishing and Chemical Polishing. Coating: Solvent- based Painting, Water-based Painting, Electro-painting and Powder Coating.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2		3	1		1	2						3	1		
CO-2	2						3			2	1		2	2		
CO-3			3				3						2	2	3	
CO-4			3			1	2			2	1		2	2		
CO-5			3				3	1			1	2	2	2	2	
CO-6							3	1			1	2	2	2		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

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6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		35
Demonstrations		05
1. Demonstration using Videos	05	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		00
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		05
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	05	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		55

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission 1	Creative Submission 2	Test	Creative submission 3	SEE(100 Marks)
Maximum Marks ▶	5	5	25	5	
CO-1	x		x		x
CO-2	x		x		x
CO-3	x	x	x	x	x
CO-4	x	x	x	x	x
CO-5		x	x	x	x
CO-6		x	x	x	x

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Lefteri, C. (2012) Making It: Manufacturing Techniques for Product Design, 2nd edn, Laurence King Publishing

b. Recommended Reading

1. Lesko, J. (2008) Industrial Design: Materials and Manufacturing Guide, 2nd edn, John Wiley & Sons
2. Mazumdar, S. (2001) Composites Manufacturing: Materials, Product, and Process Engineering, CRC Press
3. Bryce, D. (1998) Plastic Injection Molding: Material Selection and Product Design

c. Magazines and Journals

1. International Journal of Sustainable Manufacturing: Inderscience publisher
2. International Journal of Manufacturing Research: Inderscience publisher
3. International Journal of Design Engineering: Inderscience publisher
4. International Journal of Product Development: Inderscience publisher

d. Websites

1. <https://www.researchgate.net>
2. <https://nptel.ac.in/courses>

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3. <https://www.coursera.org/>
4. Cambridge Educational Software - EduPack (<https://www.grantadesign.com>)

e. Other Electronic Resources

1. Personal Computer or Laptop


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Course Specifications: Vehicle Interior Color and Trim

Course Title	Vehicle Interior Color and Trim
Course Code	PDE301A
Course Type	Discipline Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This Course deals with interior design of automobiles for ergonomics, aesthetics, comfort and convenience. Students are taught aesthetics, colour and trim, principles of ergonomics, body movements and postures and visual ergonomics. Students are trained in designing of interior features and components such as dash boards, displays, controls, door panels, upholstery, safety, comfort and convenience. Students are trained on ergonomic study of automobile interiors using appropriate anthropometric data and tools.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO 1. Discuss the importance of ergonomics, comfort and aesthetics in automotive interior designs
- CO 2. Relate materials, comfort and aesthetics, colour and trim to develop automotive interior concept
- CO 3. Design automotive interiors based on identified themes
- CO 4. Analyse the current trends in interior design materials, trims, accessories and finishes for adoption
- CO 5. Design automotive interiors for ergonomics, aesthetics, comfort and convenience
- CO 6. Use digital rendering tools for automotive interior design

4. Course Contents

Unit 1(Automotive Interior Basics): Interior components, Dashboard Components, Present and future trends, Customer requirements Evolution, and Different types of Benchmarking. Material- Plastic Specifications, Selection. Branding, specification, major functions, & customer expectations

Unit 2 (Designing and sketching): Instrumental Panels and Consoles, Steering wheel, telematics screen, air distribution vents, door trims, instrument cluster, driver's side air bag, knee blocker, center stack and center console

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

Unit 3(Colour and Trim): Colour theory foundations, target & lifestyle analysis, studying emerging trends and converting them into sensorial matter, how to conduct materials research, case study on the creation of innovative materials, definition of a general theme/inspiration to define various atmospheres to suit different range levels and interior expressions, keywords and key visuals research, creation of a mood board for each atmosphere, relevant colour codes, definition of the chromatic model, application to both exterior and interior, presentation (digital and CMF-colour, material, finish boards)

Unit 4(Occupant Packaging): Seating, Dimensions, Driving operations, Non Driving Operations, User interface; Responsibility in vehicle design. Ergonomic Study of Interior: Steering wheel setup and instrument cluster visibility, reach envelopes for various vehicle classes

Unit 5(Comfort, Convenience and safety): Night vision, Head-up displays, Implication of controls, Air bag deployment, H-Point travel range, Touch pads for drivers, Voice recognition, Console developments and innovations, Modular cockpits, Dashboard instruments, Advances in electronic displays, Importance of personal entertainment systems and positioning of output devices

Unit 6(Laboratory): Sketching exercises, Ergonomic Analysis and CAD modelling & Rendering exercises

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1					1							1			
CO-2							2									
CO-3	1	2		3									1			
CO-4					2									2		
CO-5	1	3	1	1	1								2	3		
CO-6		3											2	3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	05	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		50
1. Course Laboratory	00	
2. Computer Laboratory	40	
3. Engineering Workshop / Course/Workshop / Kitchen	10	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	

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Others		05
1. Case Study Presentation	05	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10	10	10	10	
CO-1	X		X		X
CO-2	X		X		X
CO-3		X	X		X
CO-4		X	X	X	X
CO-5		X	X	X	X
CO-6		X	X	X	X

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

Sl.No.	Curriculum and Capabilities	How imparted during the course
1.	Knowledge	Class Room Lectures
2.	Understanding	Class Room Lectures

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3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Class Room Lectures, Laboratory and Creative Work Submission
5.	Problem Solving Skills	Creative Work Submission and Examination
6.	Practical Skills	Creative Work Submission and Practical
7.	Group Work	Creative Work Submission and Practical
8.	Self-Learning	Creative Work Submission and Practical
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Interaction with peers, instructors
13.	Information Management	Creative Work Submission, Presentation and Examination
14.	Personal Management	Interaction and requirements of discipline
15.	Leadership Skills	Time management and achieving the learning outcomes

9. Course Resources

a. Essential Reading

1. Course notes
2. Vivek, D. B. (2011) Ergonomics in Automotive Design, CRC Press
3. Bell, B (2003) Concept Car Design: Driving the Dream (interior and Industrial Design), Rotot Vision

b. Recommended Reading

1. Glancey J. (1999) Modern: Masters of the 20th – Century interior.
2. Taylor, D. (2005) Custom Auto Interiors, California Bill's Automotive Handbooks
3. Vink, P. (2004) Comfort and Design: Principles and Good Design, CRC Press
4. Newbury, S. (2007) The Car Design Yearbook 5: The Definitive Annual Guide to All New Concept and Production Cars Worldwide, Merrell.
5. Nikolaos, G. (2012) Automotive Ergonomics: Driver Vehicle Interaction, CRC Press

c. Magazines and Journals

1. Journal of Experimental Psychology: Human Perception and Performance, APA Journals
2. Journal of Design History, Oxford University Press

d. Websites

1. www.carbodydesign.com
2. www.simkom.com
3. www.humancenterdesign.org

e. Other Electronic Resources

1. Personal computer


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Course Specifications: Decorative Products

Course Title	Decorative Products
Course Code	PDE302A
Course Type	Discipline Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course enables the students to design and develop decorative items based on the design theme. Students are taught to design decorative items like sculptures, ceramic items and wall hangings. This course also deals with the various techniques to manufacture the decorative items and install them at the required location

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture:Tutorial:Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe different decorating styles and trends
 CO-2. Explain different techniques used in creation of products for decoration
 CO-3. Design artefacts for various environment
 CO-4. Create decorative products using different materials
 CO-5. Demonstrate the application of various finishing techniques to the required effect

4. Course Contents

Style and theme: Modern, Contemporary, Minimalist, Industrial, Mid-Century Moder, Scandinavian,

Traditional, Transitional, French Country, Rustic

Ceramic art: Studio pottery, Tableware, Figurines, wall hangings, Slipware, creation ceramic decorative products like vases, plates, artefacts in different styles and finishes

Decorative style : Ceramic- Chinese ceramics, Japanese Pottery, Korean Pottery, Islamic pottery, vases made of cement, Persian rug, Adam Style, Carpet, Neoclassicism, Rococo

Finishing: forming and shaping, firing: Baking in a kiln, glazing/decorating : coating the object with a glaze, application of various decorative techniques like painting, Slip and Sgraffito, Glazing by Numbers, Slip Transfers, Urchin Texture, Color Underglaze Designs , Refiring to harden the glaze, Slips and Engobes.


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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

Glass artefacts: Stained glass, Blown glass, Sandblasting, Copper foil technique, Kiln-formed glass, Cut glass art, Art cut, Moulded art glass, Decorating techniques: Colour, Texture, Surfaces.

Decoration/Techniques on Glass: Cutting, Enamelling, Etching, Engraving, Battuto, Slumping, enamel paints on float glass, decorated float glass, waterjet cutting, kiln worked glass

Sculpture and installations: Type of sculptures – stand alone, relief, kinetic, wall art and murals using materials like plaster of Paris, wood and MDF.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2			3	2								2	3		
CO-2		3													2	
CO-3			1				2									2
CO-4				2										3		
CO-5					3	2										3
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution																

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	02	
2. Demonstration using Physical Models / Systems	03	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	55	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/ Written Examination, Presentations		10
Total Duration in Hours		85

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7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B. Design (B Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of Cos on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10	10	10	10	
CO-1	X		X		X
CO-2	X		X		X
CO-3		X	X	X	X
CO-4		X	X	X	X
CO-5		X	X	X	X

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation

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MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Treena C. and David V. (2008), Designer's Guide to Decorative Accessories, Prentice Hall

b. Recommended Reading

1. Michael A., Kara J. (2002), Materials and Design: The Art and Science of material selection in product design, Butter Worth Heinemann
2. Unknown (1996), International Design Yearbook, 1995: Furniture, Lighting, Tableware,
3. Joseph DeChiara, Julius P. and Martin Z., (2001) Time-Saver Standards for Interior Design and Space Planning, 2nd edition, Mc-Graw Hill Professional

c. Magazines and Journals

1. Interior Design: The Fundamental Guide To Interior Design Basics

d. Websites

1. www.interiordesign.net

e. Other Electronic Resources




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Course Specifications: 3D Modelling and Product Detailing

Course Title	3D Modelling and Product Detailing
Course Code	PDC304A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable the students to learn and apply 3D modelling techniques to create digital models and understand the significance and principle of drawings. Students are taught solid modelling, assembly techniques, parametric sketching and data exchange formatting. Creating detailed drawings with applications of GD & T. Students are also trained to use appropriate software and tools to create 3D models, assemblies, detailed drawings, mechanisms and their simulations.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	90
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain various techniques involved in CAD drawing and 3D modelling
- CO-2. Apply geometrical dimensions and tolerances for products
- CO-3. Create 3D models based on parameters and constraints and interfacing
- CO-4. Develop parts and product assemblies using 3D modelling software
- CO-5. Create the detailing drawings, bill materials and product details
- CO-6. Simulate joints and mechanisms and animation using CAD tools

4. Course Contents

Unit 1 (Introduction to drawing): Importance and areas of applications – Conventions, abbreviations and symbols. Principles of drawing, first angles and third angle projections- Scales, types of lines, title block, part drawing assembly drawing and detail drawings.

Unit 2 (Introduction CAD Modelling): Introduction to CAD tools and Applications, Hardware requirement, CAD chronology, Types of 3D Modelling. Modelling and viewing, software documentation, efficient use of CAD software to generate 3D models.

Unit 3 (Solid modelling): Solid Representation - Boundary Representation (B-rep), Constructive Solid Geometry (CSG) and other methods, Design Applications: Mass property calculations, CAD database structure. Regularized Boolean set operations primitive instancing sweep representations, boundary representation, Types of curves, synthetic curves – Hermite, cubic splines, Bezier curves, B-Splines, rational curves – NURBS

Unit 4 (Geometrical Transformation and modelling Technique): 2D & 3D transformation (translation, scaling, rotation), Feature Based Modelling, Behavioural Modelling Techniques for visual realism, Surface removal, shading and Rendering. Parametric modelling, Feature recognition, Tolerance Modelling, Tolerance representation specification.

Unit 5 (Dimensions, fits and tolerances): Introduction to GD & T, Dimensioning, Principles of dimensioning methods, use of symbols and abbreviations in machine drawing, allowances, tolerance and surface finish, Detailing of plastic products and sheet metal parts and products

Unit 6 (Assembly Modelling): Importance of assembly modelling, interferences of positions and orientation, assembly analysis, mass property calculations. Top-down Assemblies and bottom up assembly methods, Symmetrical sub- assemblies, Interference Detection, Sectioning of Assembly, and Exploding of Assembly. Assembly and detail drawings, bill of materials for assembly drawing

Unit 7 (Data Interfacing): Introduction to data exchange format, Graphics and computing standards - Open GL Data Exchange standards DXF, IGES, STEP, PNG, DRG

Unit 8 (Product Data Management (PDM)): Introduction to PDM, advantages and disadvantages Simulations: Simulations of Simple joints like slider crank mechanism, cam and follower, reciprocating mechanism, gear mechanism, rack and pinion, revolute joints using Catia software

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1		3			1								3	3	3	
CO-2		2			1									2		
CO-3		2											1	3	2	
CO-4		3	2											3	2	
CO-5				2	1									2		
CO-6		3		2									1			

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	05	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		60
1. Course Laboratory	60	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	

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5. Hospital	00	00
6. Model Studio	00	
Others		
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		90

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	Creative Submission-3	Creative Submission-4	SEE(60 Marks)
Maximum Marks ▶	10	10	10	10	
CO-1	X		X		X
CO-2	X	X	X	X	X
CO-3	X	X	X	X	X
CO-4		X	X	X	X
CO-5	X	X	X	X	X
CO-6			X	X	X

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

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S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work

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		Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Zeid, I. (1991) CAD/CAM Theory and Practice, McGraw-Hill Mechanical Engineering

b. Recommended Reading

1. Zeid, I. and Sivasubramanian, R. (2008) CAD/CAM Theory and Practice, Tata McGraw – Hill Rao, P.N. (2007) CAD/CAM Principles and Applications, 2nd edn, Tata McGraw Hill
2. Donald, R. and Winer, R. S. (2007) Product Management 4th edn, Tata McGraw –Hill Publishing Company Limited
3. Bhatt, N.D. and Panchal, V. (2006) Engineering Drawing, 49th edn, Charotar Publishing House, Gujarat
4. Stant Ashby, M. and Johnson, K. (2009) Materials and Design, 2nd edn, The Art and Science of Material Selection in Product Design, Butterworth-Heinemann

c. Magazines and Journals

1. Mechanism and Machine theory, Elsevier
2. Journal of Mechanisms, Elsevier

d. Websites

1. www.technologystudent.com


e. Other Electronic Resources

1. Personal computer
2. Catia Software


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Course Specifications: Vehicle Exterior design

Course Title	Vehicle Exterior design
Course Code	PDE303A
Course Type	Discipline Core Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course deals with design of automobile exteriors. Students are taught automotive exterior design expressions and metaphors, automotive front and rear end design, automotive packaging, lighting system styling. Students are trained to express their design through manual sketches and digital illustration

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO 1. Discuss styling and body design principles for automotive exteriors
- CO 2. Recognize the body design requirements for different classes of vehicles
- CO 3. Analyse automotive exterior design trends
- CO 4. Design automotive exteriors using current tools and techniques
- CO 5. Create digital rendering of automotive exterior design

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4. Course Contents

Unit 1(Automotive Design): Automotive Design Terminology and sketching - Overview, Automotive design terminology, Automotive design process and factors influencing automotive design, Common automotive lines, Automotive Sketching: Grids, Multiplication techniques, Side view, Perspective View, Creative representation of automobiles, Car body sketching with wide angle lens, Wheel wells, wheels and tires, Rendering and presentation techniques

Unit 2 (Cars): Classification of cars - Development and history behind different body styles, Micro cars, Hatchback and its sub types, Sedan and its sub-types, Coupe and its variants, Convertible and its variants, Station Wagon, Sports Utility Vehicles, Multi Utility Vehicles, Classification of chassis

Unit 3 (Packaging): Automotive Front& Rear end design and Packaging - Definition and different layout sectors in packaging, Interior dimensions, Exterior dimensions, Front end engine

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compartment), Rear end (luggage space), Under-body, Regulatory requirements, Factors affecting the front end design, Front end design for better air cooling, Bumper design theme

Unit 4 (Exterior): Automotive Grille and Lighting - Evolution of grille design, Grille design as a new brand image, Hood design, Latest design trends, Tail lamp, Spoiler, Bumper design, Overall Rear design for Aerodynamics Evolution of automotive lighting design, Light sources used in lighting, Headlamp design and styling, Latest trends in automotive lighting

Unit 5 (Glasses): Automotive Glasses - Different types of automotive glasses, Recent development in automotive glass design, Importance of glass in car design

Unit 6 (Paints): Surface Protection and Automotive Painting - Different types of corrosion on automotive bodies, Corrosion protection methods, Automotive body painting procedure, Paint components and latest trends in automotive body colors
Case studies, portfolio

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1	2											2			
CO-2					1									1		
CO-3		3	2	2	1									2		
CO-4		3												3		
CO-5		2		3						1					2	

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		10
Demonstrations		05
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	05	
Tutorial		00
1. Tutorial	00	
Practical Work		05
1. Course Laboratory	00	
2. Computer Laboratory	25	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	30	
Others		05
1. Case Study Presentation	05	

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2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the (B.Des. Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3, SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10	10	10	10	
CO-1			X		X
CO-2			X		X
CO-3	X	X	X	X	X
CO-4	X	X	X	X	X
CO-5	X	X	X	X	X

The details of SC1, SC2, SC3, SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Class Room Lectures, Laboratory
2.	Understanding	Class Room Lectures, Laboratory
3.	Critical Skills	Class Room Lectures, Creative Work Submission
4.	Analytical Skills	Class Room Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Class room, Laboratory, Examination and Creative Work Submission
6.	Practical Skills	Laboratory, Creative Work

		Submission and Examination
7.	Group Work	Creative Work Submission
8.	Self-Learning	Creative Work Submission
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Interaction with peers, instructors and tutors
13.	Information Management	Creative Work Submission and Examination
14.	Personal Management	Interaction and requirements of discipline
15.	Leadership Skills	Effective management of learning, time management, achieving the learning outcomes

9. Course Resources

a. Essential Reading

1. Course notes
2. Fenton, J (2000) Handbook of Automotive Body and System Design, Professional Engineering Publishing

b. Recommended Reading

1. Erik Eckermann. (2002) World History of the Automobile, SAE International
 2. Hans-Hermann Brasess and Ulrich Seiffert. (2005) Handbook of Automotive Engineering, SAE International
 3. Stephen Newbury. (2007) Car Design Year Book 1 to 5, Marrell
 4. Tony Lewin. (2003) How to Design Car Like A Pro, Motor books International
 5. Davies, S. M. G. (2003) H-Point, The Fundamentals of car design and Packaging, Stuart Macay
- Geoffrey Davies. Materials for Automobile Bodies, Butterworth-Heinemann Ltd

c. Magazines and Journals

1. Automotive Engineering (Society of Automotive Engineers) [www.sae.org].

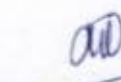
Websites

1. www.carbodydesign.com
2. www.style4cars.com
3. www.cardesignnews.com
4. www.designertechniques.com
5. www.simkom.com


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Course Specifications: Lighting Design

Course Title	Lighting Design
Course Code	PDE304A
Course Type	Discipline Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aims of the course is to familiarize students in Lighting design which is an ever-growing category of product design, constantly evolving alongside technological advances in available lamp hardware. Students will explore the various types of lamp options, including incandescent, halogen, fluorescent, and LED. Students will be taught about various lamp typologies (sconces, floor lamps, table lamps, chandeliers, pendants, etc). Students are encouraged to work in a variety of materials and scales, developing their designs from sketches, models, and renderings, to a fully realized object. Designs will evolve through in-class discussions, pin-ups, and critiques. Focus will be on design and fabrication of lighting as an object in a space and lighting of a space.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe the various styles and themes Lighting Design
- CO-2. Analyze the residential and office theme and appropriately design lighting fixtures on respective layouts and schemes accordingly
- CO-3. Identify and use appropriate materials for designing various types of lighting fixtures
- CO-4. Create sketches and basic lighting layouts using manual techniques and drawing methods
- CO-5. Prepare lighting design based on theme location and use for a particular layouts

4. Course Contents

Unit 1 (Introduction): Introduction to Lighting Design. Understanding historical context and critical thinking of lighting design. Lighting design as an expression of interdependent relationships involving technology, identity, culture and architecture. Timeline of lighting styles ranging from 17th century to 20th century will be examined .Role and development of lighting design through the ages

Unit 2 (Lighting Design): Lighting design through art history, Evolution of Lighting design, Styles

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and techniques of lighting design through manufacturing and technology. Styles and period design will be explored. Introduction to the tools of lighting: natural daylight, lighting technologies. Human response to lighting and its effects. Vision and nature of light, the eye and psychology of seeing.

Unit 3 (Principles and Practices of Lighting Design): Key principles and practices of daylighting design, with an emphasis on day lighting, artificial lighting and design criteria for artificial lighting. Lighting design principles.

Unit 4 (Elements of Lighting Design): Key elements of lighting design. Application of lighting design and sustainability. Lighting units and terminology – data presentation and analysis of visual tasks, effect of material and surface texture on light flow. Types of lighting, LED, Oled, Candescent Lighting, Fluorescent lighting.

Unit 5 (Lighting Design): Interior (including general and daylight, display, effect etc.), Exterior (including an overview of road, area and decorative). Interior Lighting Design, Daylight & Window Design, Exterior Lighting Design.

Unit 6 (Materials for Lighting Design): Application of natural and manmade materials including stone and brick, wood, glass, plastics, metals and composites. Emulsion, cement, mastic, bituminous felt, their properties and uses. Materials for walls, flooring and roof covers. Properties of fabrics and application of various fabrics and upholstery materials. Various types of paints and surface finishes and their applications.

Unit 7 (Lighting planning and Layouting): Basic anthropometrics - measurements of human body in different postures and their application for lighting planning and lay outing. Design methodology- study of furniture to suit specific needs like health care, recreational facilities like resorts, academic and educational facilities, sports facilities, theme parks and playgrounds. Introduction to lighting photometry and luminaire design. Light sources (daylight and artificial), daylight factor, light production, lamps, control gear, spectral distribution, color appearance and rendering, lamp efficiency

Unit 8 (Lighting Technology, manufacturing and finishing processes): Traditional lighting making processes across various culture, Advancement of mass manufacturing of lighting products through the ages, finishing processes to obtain substantial texture and finish on lighting products through manufacturing or polishing processes

Unit 7 (Lighting design for Homes and Offices): Area lighting, Space Lighting, Decorative Lighting, Active and Passive Lighting, Planning and Conservation of light, Lighting-Strategies, Lighting Maintenance and policy

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	1												1			
CO-2	1															
CO-3	1			1		1	2									
CO-4	2	2	2	2	1	2							3	2		
CO-5		3	3	2		2										
CO-6																

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

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6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	01	
2. Demonstration using Physical Models / Systems	04	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	55	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		00
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10 Marks	10 Marks	100 Marks	10 Marks	
CO-1	x		x		x
CO-2	x		x		x
CO-3		x	x	x	x
CO-4		x	x	x	x
CO-5		x	x	x	x

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The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.					

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Course notes
2. Karlen, M., Benya, J. R. (2017) Lighting Design Basics, Wiley

b. Recommended Reading

1. Klanten, R., Bolhofer, K., Bruce, H. R. (2011) Lux: Lamps and Lights, Bruce
2. Griffiths, A. (2014) 21st Century Lighting Design
3. Coles, A., Doze, P., Krzentowski, D., Rubini, C. (2011) The Complete Designers' Lights 1950-1990

c. Magazines and Journals

1. Architectural Lighting Magazine
2. IALD Magazine
3. Lighting Illumination in Architecture

d. Websites

1. www.awards.lighting.co
2. www.lightingdesign.com

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Semester 6

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Course Specifications: Product Design Group Project

Course Title	Product Design Group Project
Course Code	PDP301A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable students to work in Interdisciplinary teams to tackle problems based on requirements and generate product design brief, concepts and 3D models for visualization. The students also acquire skills related to task management, efficiency and timelines. They also develop working models and technical reports for validation and presentation.

2. Course Size and Credits:

Number of Credits	07
Credit Structure (Lecture: Tutorial: Practical)	0:0:7
Total Hours of Interaction	210
Number of Weeks in a Semester	16
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Define the need for developing or improving the design of an existing product through an organized survey of literature
- CO-2. Synthesize the product design brief
- CO-3. Create solutions by developing concepts for the product to meet the product design brief
- CO-4. Prepare product digital renderings and technical report for presentation
- CO-5. Prepare the working model and demonstrate the working principle of the product
- CO-6. Evaluate the design

4. Course Contents

Unit 1: Collection of relevant literature and review of literature

Unit 2: Interaction with the users and collection of data

Unit 3: Data Analysis, Formulation of a problem of suitable size based on customer voice

Unit 4: Prepare the product design specifications

Unit 5: Generate the concepts and detail design of concepts



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Unit 6: Choosing a modelling environment, learning the appropriate tools and techniques

Unit 7: Modelling, simulation and analysis of design

Unit 8: Defining performance parameters, Evaluation of performance, presentation of performance characteristics through customer feedback

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2	2	3	3	3	3	3	2	1				3	2		1
CO-2	3												3	2		1
CO-3	2	3	2	2			2	2	2	2	2	3	3	1		1
CO-4	3	2	3	1	3	2	2	2	2	3	2	2	3	1		1
CO-5	3	2	1	2	1	2	2	1	2	3	3	3	3	3	3	1
CO-6	2	2	3	3	3	3	3	2	1			1	3	2		1

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in Hours
Literature collection, review of literature, Developing questionnaires, analysis of data and defining and user study	20
Prepare the product design brief	10
Ideate design concept	40
Create and rendered 3D models	30
Select the final concept	10
Take the user feed back	10
Prepare the working model and demonstrate	70
Demonstration, Presentation and technical report writing	20
Total Duration in Hours	210

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B. Des (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

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The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1 and SC2), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation			
Subcomponent ▶	Component 1: CE (40% Weightage)		Component 2: SEE (60% Weightage)
	SC1	SC2	
Subcomponent Type ▶	Interim Presentation	Final presentation	SEE(60 Marks)
Maximum Marks ▶	20	20	
CO-1	x	x	x
CO-2	x	x	
CO-3	x	x	
CO-4	x	x	x
CO-5		x	x
CO-6		x	x
The details of SC1 and SC2 are presented in the Programme Specifications Document.			

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

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1. Presentations made by the Head of the Department on "Importance of Project work and The Methodology to be followed for successful Completion of Project work"

b. Recommended Reading

1. Course Notes, Manuals of Tools and Techniques Chosen to Solve the Design Problem

c. Magazines and Journals

d. Websites

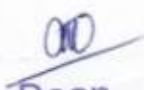
e. Other Electronic Resources

1. Personal computer


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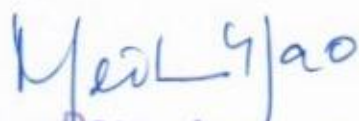

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Semester 7



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Course Specifications: Portfolio Design and Presentation

Course Title	Portfolio Design and Presentation
Course Code	PDC401A
Course Type	Laboratory
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of the course is to enable students with a foundation in graphic design to develop skills to create and present their idea. The students are taught the process of representing images used to communicate ideas through visually. They are also thought the fundamentals of graphic design. The students are trained to prepare portfolio presentations.

2. Course Size and Credits:

Number of Credits	02
Credit Structure (Lecture: Tutorial: Practical)	0:0:2
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	50
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe the process required to develop a portfolio
- CO-2. Explain the importance of portfolio
- CO-3. Design and develop mood, color, swatch and inspiration boards for developed designs and products
- CO-4. Develop effective and cogent information graphics using digital tools
- CO-5. Create visual representations and finished designs for presentation work

4. Course Contents

Unit 1 (Portfolio): Different types of portfolios, Different portfolio layout and media

Unit 2 (Crash Course in Aesthetics): Line weight, Color schemes, Typography, Scale and juxtaposition, graphic elements

Unit 3 (Design Boards): Product Development Inspiration board, Mood Board, Color Board, Story Board, Theme Board, Client Board, Swatch board, Spec sheet

Unit 4 (Layout): Collection and organizing of designs/ products for showcasing with inspiration details, Type groups, styles and applications, Spaces, leading and kerning, Alignments, paragraphs and margins, Layout, grids and pages

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Unit 5 (Presentation-1): Mock-ups, thumbnails and visual concepts, Positive and Negative space, Proximity and Alignment, Contrast and Hierarchy, Image development, Layout, text and type, Manual art work techniques, Mounting and presentation, animation and motion graphics

Unit 6 (Presentation-2): Demonstration and presentation of illustration (with line/block/flesh sketches), spec sheet details for the final collection, application of design principles and elements in creating layout for portfolio presentations, online portfolio, Print basics

Unit 7 (Vector Graphics): Shapes and paths, the vector graphic building blocks, How to use Illustrator, vector graphics to the "Paper", Vector graphic attributes. Create detailed vector graphics, Work with appropriate filetypes Prepare files for print and web


5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1								2				1				
CO-2		2								1						
CO-3	2		3		2											
CO-4				2										2		
CO-5								1		3					3	

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		00
Demonstrations		20
1. Demonstration using Videos	05	
2. Demonstration using Physical Models / Systems	15	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		35
1. Course Laboratory	35	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		05
1. Case Study Presentation	05	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	


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Term Tests, Laboratory Examination/Written Examination, Presentations	10
Total Duration in Hours	50

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Electronics and Communication Engineering) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2 and SC3), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation			
Subcomponent ▶	Component 1: CE (40% Weightage)		Component 2: SEE (60% Weightage)
	SC1	SC2	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	SEE(50 Marks)
Maximum Marks ▶	20	20	
CO-1			x
CO-2			x
CO-3	x	x	x
CO-4	x	x	x
CO-5	x	x	x
The details of SC1 and SC2 are presented in the Programme Specifications Document.			

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Laboratory
2.	Understanding	Laboratory
3.	Critical Skills	Laboratory Instructions and Demonstrations
4.	Analytical Skills	Laboratory and Examination
5.	Problem Solving Skills	Creative Work Submission, Laboratory and Examination
6.	Practical Skills	Laboratory
7.	Group Work	Laboratory
8.	Self-Learning	Laboratory
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Presentation
11.	Presentation Skills	Presentation

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12.	Behavioral Skills	Interaction with peers and tutors
13.	Information Management	Examination and presentation
14.	Personal Management	Interaction and discipline
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Class Notes
2. Michael J. (2013), Burn Your Portfolio: Stuff They Don't Teach You in Design School, New Riders

b. Recommended Reading

1. Craig W. (2013), Design/Portfolio: Self Promotion at Its Best, Hachette Book Group
2. Carolyn K. , Jessica G., (2010), The Graphic Design Exercise Book, HOW Books

c. Magazines and Journals

d. Websites

1. www.behance.com
2. www.coroflot.com
3. www.core77.com
4. www.dezeen.com
5. www.issue.com

e. Other Electronic Resources



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Course Specifications: Design Management and Professional Practice

Course Title	Design Management and Professional Practice
Course Code	PDC402A
Course Type	Discipline Core
Department	Product Design
Faculty	Art and Design

1. Course Summary

This course enables the students to understand the different aspects of design management. Students are taught about the creative industry, managing design firms, cross-functional teams and product opportunity mapping. The students are also taught about intellectual property rights and trade secrets.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture:Tutorial:Practical)	3:0:0
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain different aspects of creative industry
- CO-2. Explain different aspects of design management
- CO-3. Discuss effective design management practices
- CO-4. Identify new product opportunities and its market feasibility

4. Course Contents

Unit 1 (Creative Industry Sector): introduction to cultural and creative industries, creative sectors, characteristics of creative industries, creative economy sectors, external influences for the creative industry, present scenario of the creative economy

Unit 2 (Design management fundamentals): what is design management, origin of the design management, design as a creative process, design as a management process, and design as a profession

Unit 3 (Managing Design workforce): understanding designer's skills and strengths, design process management, developing design ideas and feasibility evaluation

Unit 4 (Management of the Design Firm): Types of design firm, in-house design capabilities, external design capabilities, the core competencies of a design firm, keeping the design firm creative and efficient, and management excellence

Unit 5 (Product Opportunity and Planning): drafting a design brief, developing product design

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plans, researching the market, project teams, project budget .

Unit 6 (Managing Design Rights and Trade Secrets): : IPR issues - objectives of IPR, understanding copyrights, trademarks, patents, industrial design rights and trade secrets

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1							1									1
CO-2							2									1
CO-3											3					3
CO-4			3													3

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		35
Demonstrations		00
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	00	
Numeracy		00
1. Solving Numerical Problems	00	
Practical Work		00
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		10
1. Case Study Presentation	10	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		55

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B. Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme

Specifications document.

The evaluation questions/presentations are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of Cos on each Component or Subcomponent of Evaluation					
Subcomponent▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Assignment 1	Assignment 2	Test	Assignment 3	SEE(100 Marks)
Maximum Marks▶	5	5	25	5	
CO-1	x		x		x
CO-2	x		x		x
CO-3	x	x	x	x	x
CO-4		x		x	x

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Classroom lectures, Self-study
3.	Critical Skills	Assignment
4.	Analytical Skills	Assignment
5.	Problem Solving Skills	Assignment, Examination
6.	Practical Skills	Assignment
7.	Group Work	--
8.	Self-Learning	Self-study
9.	Written Communication Skills	Assignment, Examination
10.	Verbal Communication Skills	--
11.	Presentation Skills	--
12.	Behavioral Skills	--
13.	Information Management	Assignment
14.	Personal Management	--
15.	Leadership Skills	--

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9. Course Resources

a. Essential Reading

1. Course notes
2. De Mozota, Borja, Brigitte, Design Management : Using Design to Build brand value and Corporate Innovation, All Worth Press
3. Lehmann, Donald R; Winer, Russell S, Product Management, Tata McGraw-Hil

b. Recommended Reading

1. David, B. and Stasiowski, F. (1982) Project Management for the Design Professional, Whitney Library of Design, New York
2. Rose, S. W. (1987) Achieving Excellence in Your Design Practice, Whitney Library of Design, New York
3. Mark, O. (1990) Design Management - a Handbook of Issues and Methods, Basil Blackwell Ltd.
4. Pulos and Arthur J, (1975) Contract Selling Industrial Design Services, Office of Design, Department of Industry, Trade and Commerce, Ottawa
5. Howard , A. (1987) Safer by Design, Design Council, London

c. Magazines and Journals

d. Websites

1. www.dmi.org

e. Other Electronic Resources



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Course Specifications: Advanced Form Exploration

Course Title	Advanced Form Exploration
Course Code	PDC403A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course enables students to acquire knowledge of form design and implement it for visual design of products. Students are taught to apply the principles for visualization of form generation, form transition, visual composition, exploded view, radii transformation, topology, orientable and non-orientable surfaces in 2D and 3D. Students are trained on sketching and physical model making of advanced forms.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Describe various types of forms
- CO-2. Explain the use of metaphors and abstraction to generate new forms
- CO-3. Apply principles to generate 2D and 3D form
- CO-4. Use various materials to create 3D forms
- CO-5. Create 3D forms using various methods including orientable and non-orientable form derivation

4. Course Contents

Unit 1 (Form Studies): Exploration of 2D and 3D form, Two-dimensional and Three-dimensional Form transition, Form exploration process : Nature and form, color and form, Use of metaphors and family concept to generate new forms, Archimedean solids & platonic solids : Introduction, Basic form generation, Theory of forms, Basic 3D Forms : Cube, tetrahedron, octahedron and their imaginative use in generating complex forms and structures

Unit 2 (Product Expressions): Types of forms and its characteristics : Study of product expressions by analyzing in terms of elements like form, proportion, color, texture Expressions in Form like soft, hard, warm, cold, precise, gross, delicate, strong, fragile, rugged Form generation using Piecewise Clothoid Curves methods, Use of combinatorial methods

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of 3D form generation, Relationship between form, material and process, Form exploration in the context of products

Unit 3 (Abstraction): Abstraction in form, Study of 3D abstraction in art and sculpture, Exploration of industrial material and processes as elements of design through 3D abstraction of entities in nature

Unit 4 (Space and Form): Design and Visualization of forms, Spatial and Constructive Elements of Form, Form and Space-Form and Counter-form - Interior (The Loft), Urban space – ensemble Detailed study of the structural, perceptual and spatial properties of well-ordered three-dimensional orientable and non-orientable forms, their composition and the process of designing them

Unit 5 (Application of Forms): Case studies, portfolio

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2	2		1									1			
CO-2			2	3									1			
CO-3		3												2		
CO-4	1	3												3		
CO-5		2	3										3			

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		10
Demonstrations		05
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	05	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	00	
2. Computer Laboratory	25	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	30	
Others		05
1. Case Study Presentation	05	
2. Guest Lecture	00	

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3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the (B.Des. Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3, SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission-2	Creative Submission-3	Creative Submission-4	SEE(60 Marks)
Maximum Marks ▶	10	10	10	10	
CO-1			X		X
CO-2			X		X
CO-3	X	X	X	X	X
CO-4	X	X	X	X	X
CO-5	X	X	X	X	X
The details of SC1, SC2, SC3, SC4 are presented in the Programme Specifications Document.					

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Class Room Lectures, Laboratory
2.	Understanding	Class Room Lectures, Laboratory
3.	Critical Skills	Class Room Lectures, Creative Work Submission
4.	Analytical Skills	Class Room Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Class room, Laboratory, Examination and Creative Work Submission
6.	Practical Skills	Laboratory, Creative Work Submission and Examination

7.	Group Work	Creative Work Submission
8.	Self-Learning	Creative Work Submission
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Interaction with peers, instructors and tutors
13.	Information Management	Creative Work Submission and Examination
14.	Personal Management	Interaction and requirements of discipline
15.	Leadership Skills	Effective management of learning, time management, achieving the learning outcomes

9. Course Resources

a. Essential Reading

1. Course notes
2. Gail Greet, H. (2002) Elements of Design, Princeton Architectural Press

b. Recommended Reading

1. Mario, L. (2003) The Golden Ratio: The Story of PHI, the World's Most Astonishing Number, Broadway
2. Elam, K. (2001) Geometry of Design: Studies in Proportion and Composition, Princeton Architectural Press
3. Thompson, Wentworth, D. Bonner, John Tyler (Editor) (N. D.) On Growth and Form D" Arcy, Thompson
4. Lawlor, Robert; Sacred Geometry: Philosophy and Practice (Art and Imagination), Publisher: Thames & Hudson, 1989
5. Kepes, Gyorgy; Language of Vision, dover Publications, 1995
6. Byers, Mel; The Design Encyclopedia, Publisher: John Wiley & Sons Publications

c. Magazines and Journals

1. Azure Magazine, Azure Publishing Inc.213 Sterling Rd. Suite 206 Toronto Ont, Canada
2. Domus India, Spenta Multimedia Pvt Ltd, Mumbai
3. Design Magazine, Bluelarix designworks, Gedempt hamerkanaal, amsterdam, The Netherlands

d. Websites

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Course Specifications: Digital Sculpting and Rendering

Course Title	Digital Sculpting and Rendering
Course Code	PDE401A
Course Type	Discipline Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course is intended to prepare students to convert 2D sketches into digital 3D surface models. Students are taught about generation of geometric curves, surface modelling and editing techniques. Students are also trained to implement surface modelling techniques and develop digital models using reverse engineering. They are trained to communicate transportation design concepts through digital models using 3D modelling and rendering software.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Explain the application of free form modelling for transportation design
- CO-2. Describe surface generation methods for exterior and interior sculpting
- CO-3. Apply modelling techniques to create vehicle packaging, exteriors and interiors
- CO-4. Analyse created curves and surfaces to achieve realistic model of vehicle
- CO-5. Demonstrate the use of modelling and render software to 3D digital models

4. Course Contents

Unit 1 (Introduction to transportation design): Vehicle package design, vehicle exterior design, and vehicle interior design. Basics of free form modelling, Software used in transportation design, Basic terms used in geometric modelling, graphics tablet and uses while developing concepts

Unit 2 (Digital Sculpting for transportation): Blue prints and canvas images, creation of layers, primitives for automotive components, curve network, curve editing, curve alignment, curve curvature


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Unit 3 (Freeform Modelling): Surface creation Methods: Square surface, rail surface, blend surface, surface fillet, surface alignment for vehicle exterior and interior

Surface editing methods: Surface manipulation, Segmentation, trimming, Intersection, transformations of 2D and 3D surfaces like move, rotate and scaling. Absolute and relative methods of transforming

Surface evaluation methods: Surface continuity, surface highlights, dynamic section, diagnostic shade and types

Unit 4 (Rendering): Presenting transportation concepts: Rendering of a vehicle, selection of material for rendering to show highlights, Light Settings to showcase the aesthetic features of a vehicle, Hardware Shade Environment Effects, Creating Image Files

Unit 5 (Class A): Class A surface modelling: Importance of Class A surface modelling, Geometric and Parametric Continuity, Positional Continuity, Tangent Continuity, Curvature Continuity and Surface Evaluation.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1			2													
CO-2		2											2			
CO-3		3	2	1									3	1		
CO-4			2		3								1	3		
CO-5				2						2				2	2	

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		10
Demonstrations		05
1. Demonstration using Videos	00	
2. Demonstration using Physical Models / Systems	05	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	00	
2. Computer Laboratory	55	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		05
1. Case Study Presentation	05	

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2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations	10	
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the (B.Des. Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3, SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	60 Marks
Maximum Marks ▶	10	10	10	10	
CO-1			X		
CO-2			X		X
CO-3	X	X	X	X	X
CO-4	X	X	X	X	X
CO-5	X	X	X	X	X
The details of SC1, SC2, SC3, SC4 are presented in the Programme Specifications Document.					

The Course Leader, assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Class Room Lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work
4.	Analytical Skills	Class Room Lectures, Creative Work and Examination
5.	Problem Solving Skills	Examination and Creative Work
6.	Practical Skills	Practical and Creative Work
7.	Group Work	Practical and Creative Work

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8.	Self-Learning	Practical and Creative Work
9.	Written Communication Skills	Creative Work and Examination
10.	Verbal Communication Skills	Creative Work and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Interaction with peers and tutors
13.	Information Management	Creative Work, Examination and Presentation
14.	Personal Management	Interaction and Discipline
15.	Leadership Skills	Time management and achieving the learning outcomes

9. Course Resources

a. Essential Reading

1. Course notes
2. Plastock, Roy A and Kalley, Gordon, Theory and Problems of Computer Graphics, McGraw Hill

b. Recommended Reading

1. Karen E. Goulekas, (2001) Visual effects in a Digital World; Morgan Kaufmann
2. Aiken, Peter (1996) Data Reverse Engineering, McGraw-Hill
3. Linda Wills, (1996) Reverse Engineering, Kluiver Academic Publishers

c. Magazines and Journals

1. Auto&Design, AUTO & DESIGN SRL, Italy
2. Intelligent Transport, Russell Publishing Ltd, Court Lodge, Hogtrough Hill, Brasted, Kent, TN16 1NU, United Kingdom
3. Car Design News, Ultima Media Ltd, London, UK

d. Websites

1. au.autodesk.com/india

e. Other Electronic Resources




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Course Specifications: Furniture Design

Course Title	Furniture Design
Course Code	PDE402A
Course Type	Professional Core Elective Course
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aims of the course is to familiarize students with furniture design and manufacture of furniture and other furnishing objects. Course area includes overview in history of modern design, in current situation in furniture design, in typology, ergonomics, materials, furniture construction and furniture production technology related to furniture design. Emphasis in theoretical as well as in creative part is put on constructions and technology of furniture manufacturing, on principles of industrial design for small and large small production, but also for tailor-made solutions for individual users.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	1:0:3
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO 1. Describe the various styles and themes Furniture Design
- CO 2. Analyze the residential and office theme and appropriately design furniture on respective layouts and schemes accordingly
- CO 3. Identify and use appropriate materials, joints, fixtures, manufacturing processes for designing various types of furniture
- CO 4. Create sketches and basic furniture layouts using manual techniques and drawing methods
- CO 5. Prepare furniture design based on theme location and use for a particular layouts

4. Course Contents

Unit 1(Introduction): Introduction to Furniture Design. Understanding historical context and critical thinking of furniture design. Furniture design as an expression of interdependent relationships involving technology, identity, culture and architecture. Timeline of furniture styles ranging from 17th century to 20th century will be examined .Role and development of furniture design through the ages.

Unit 2 (Furniture Design): Furniture design through art history, Evolution of Furniture design, Styles and techniques of furniture design through manufacturing and technology. Styles and period design will be explored.

Unit 3(Principles and Practices of Furniture Design): Key principles and practices of furniture design, with an emphasis on furniture as a vital support for human activity.

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Unit 4(Materials for Furniture Design): Application of natural and manmade materials including stone and brick, wood, glass, plastics, metals and composites. Emulsion, cement, mastic, bituminous felt, their properties and uses. Materials for walls, flooring and roof covers. Properties of fabrics and application of various fabrics and upholstery materials. Various types of paints and surface finishes and their applications. Upcycled and recycled furniture.

Unit 5(Furniture planning and Layouting: Basic anthropometrics): measurements of human body in different postures and their application for furniture planning. Design methodology- study of furniture to suit specific needs like health care, recreational facilities like resorts, academic and educational facilities, sports facilities, theme parks and playgrounds.

Unit 6 (Furniture Construction): Joinery, carcass construction and design, carving, turning, milling, fittings, Lamination, Veneering, marquetry

Unit 7 (Furniture Technology, manufacturing and Finishing processes): Traditional furniture making processes across various culture, Advancement of mass manufacturing of furniture products through the ages, finishing processes to obtain substantial texture and finish on furniture products through manufacturing or polishing processes.

Unit 8(Furniture design for Homes and Offices): Sitting Furniture, Table Furniture, Bed Furniture, Storage Furniture, Office Furniture and accessories

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)				
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4	
CO-1																	
CO-2			2														
CO-3			3				2										
CO-4	2	3		2						1			2	3			
CO-5	2	3	2	3			1			2	2		2	3			

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	03	
2. Demonstration using Physical Models / Systems	02	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	55	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	

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5. Hospital	00	00
6. Model Studio	00	
Others		
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations	10	
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	Creative Submission 1	Creative Submission 2	Test	Creative submission 3	SEE
Maximum Marks ▶	5	5	25	5	100
CO-1	x		x		x
CO-2	x	x	x	x	x
CO-3	x	x	x	x	x
CO-4		x	x	x	x
CO-5	x	x	x	x	x

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination

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5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

3. Class Notes
4. Greene, Jeffrey, P. (1996) American Furniture of the 18th Century: History, Technique, and Structure. Newtown, CT: Taunton Press

b. Hill Recommended Reading

1. Newton, C. T. (1981) Fine Woodworking Techniques Book 1, CT. Taunton Press
2. Hoadley, R. B., Newton, C. T. () Understanding Wood: A Craftsman's Guide to Wood Technology. Taunton Press
3. Cooke, Edward S., Jr., Gerald W. R. Ward, Kelly H., L'Ecuyer., (2004) The Maker's Hand: American Studio Furniture 1940-1990. MA: Museum of Fine Arts Publications
4. Kates, G. (1962) Chinese Household Furniture. NY: Dover Publications

c. Magazines and Journals

1. Mechanism and Machine theory, Elsevier
2. Design Space, Design Space Media Group, LLC, Georgia, USA
3. Architecture and Interiors India, ITP Publishing Group, India
4. Inside Outside, Business India group, India
5. Interior Design, LLC Publication, Canada
6. Domus India, Spenta Multimedia Pvt Ltd, Mumbai

d. Websites

- 1 www.interiordesign.net
2. www.homeanddesign.com
3. www.domusweb.it

e. Other Electronic Resources

1. Personal computer


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Course Specifications: Clay Modeling and Transport Design

Course Title	Clay Modeling and Transport Design
Course Code	PDE403A
Course Type	Discipline Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to enable the students to create physical models of objects using various model making tools and techniques. Students are taught the skills and techniques required to work with materials like, industrial clay. They are also taught the application of various industrial clay modeling tools for carving various geometric and organic forms. Students are trained to achieve the desired material effect using various finishing techniques.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO 1. Explain the basics procedures adopted to develop industrial clay models
- CO 2. Describe and Identify appropriate tools use for specific form creation
- CO 3. Demonstrate modeling skills using industrial clay for transportation design
- CO 4. Create industrial clay models with appropriate finishing for presentation
- CO 5. Demonstrate the application of various finishing techniques to the required effect

4. Course Contents

Unit 1(Introduction to industrial clay): Usage and applications of different types of clay and chemicals
Industrial Clay is chemical composed clay used for 3D modeling design products, such as automobile, motorcycle, and consumer electronics products

Unit 2 (Model making tools): Hand tools and finishing material :Identifying, appropriate usage, and applications, industrial clay modeling tool ,termocol model working tools like File , hand-saw, marking gauge, marking knife, sandpaper, sliding bevel, tape measurement, try square, rendering tape and modeling tape

Unit 3(Industrial clay modeling equipment's): Clay Oven temperature setting, Clay Oven & Warmer, Mylar film sheet, clay shaper

Unit 4(Thermocol model): create the basic model with thermocol material, applying clay

Unit 5(Working with industrial Clay): Characteristics of Industrial Clay: Softness, hardness and workability, Techniques of applying industrial clay on thermocol armatures and scaffolds to develop

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forms Methods, Taping all surrounding surfaces, paper cover, lacquering, wet Clay Peel, dried Clay Peel

Unit 6 (Finishing): Processes and techniques application of Film Sheet, Clay model dedicated film series playing an active part in various scenes, Color Film series for Clay Modeling, Chrome -plated style sheet, Aluminum foil for Clay Modeling. Examples of clay modeling in various automotive clay studio

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1		3	1										1	1		
CO-2			3											1		
CO-3		3											1	3		
CO-4		3		1										3		
CO-5		3												3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		5
1. Demonstration using Videos	03	
2. Demonstration using Physical Models / Systems	02	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	60	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		0
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		85

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the

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Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	x		x		x
CO-2	x		x		x
CO-3		x	x	x	x
CO-4		x	x	x	x
CO-5		x	x	x	x

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field
7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Class Notes
2. Yadav, S.K. (2006) Workshop Practice, Discovery Publishing House

b. Recommended Reading

1. Hallgrímsson, B. (2012) Prototyping and Model making for Product Design, Laurence King Publishers
2. Harold Van Doren Industrial Design – A Practical Guide McGraw-Hill Book Company, Inc.,

c. Magazines and Journals

1. Form, Peter Wesner, Germany



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Course Specifications: Space and Environment Design

Course Title	Space and Environment Design
Course Code	PDE404A
Course Type	Discipline Elective
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

This course aims at enabling the students to learn the fundamental aspects of Space and Environment Design. Students are taught the creative and technical skills required for designing aesthetically pleasing public spaces and environment to suit specific needs like health care, recreational facilities, resorts, academic, educational and sports facilities, theme parks and playgrounds. Students are trained to acquire skills in free hand drawing to prepare basic schemes and layouts for various types of spaces. They are also taught the elements and principles of design, aesthetic design, lighting, materials and finishes along with the historical and modern themes used to create various types of spaces for specific environments.

2. Course Size and Credits:

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	1:0:2
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO 1. Describe the various styles and themes for Space and Environmental Design
- CO 2. Analyze the natural site conditions, elements and topography and propose layouts and schemes accordingly
- CO 3. Identify and use appropriate codes, rules and regulations regarding functional and safety requirements for designing various types of spaces and environment
- CO 4. Create sketches and basic layouts using manual techniques and drawing methods
- CO 5. Prepare Space and Environmental Design schemes, layouts and details for presentation

4. Course Contents

Unit 1(Introduction): Introduction to Space considerations and Environment Design. General understanding of effect of space on the environment. Design and integration with site, natural features and architecture. Role of space and environment planner in a project and his relation with other consultants, contractors and clients, technical knowledge and other skills required as inputs including the scope of Space and Environment Design.

Unit 2 (Space and Environment Design materials): Application of natural and manmade materials including stone and brick, wood, glass, plastics, metals and composites. emulsion, cement, mastic, bituminous felt, their properties and uses. Materials for walls, flooring and roof covers. Properties of fabrics and application of various fabrics and upholstery materials. Various types of paints and surface finishes and their applications

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Unit 3(Space planning): Basic anthropometrics - measurements of human body in different postures and their application for space planning. Design methodology- study of spaces such public spaces and environment to suit specific needs like health care, recreational facilities like resorts, academic and educational facilities, sports facilities, theme parks and playgrounds.

Unit 4: Elements of Design, Principles of Design, Decorative Arts and aesthetics, Site planning, building elements and structural systems in architecture, socio-cultural and historical context. Focus on Indian context for space and environment trends and emerging markets.

Unit 5(Lighting): Basic theory of Lighting - Quality and quantity of different sources of light. Advantages and characteristics of daylight and artificial lighting. Integration of day lighting with artificial lighting including lamps and lighting fixtures. Building services, electrical and communication systems and ventilation.

Unit 6 (Accessories for spaces): Integration of accessories and trims in exterior and interior design, materials, processes and surface finishes of accessories, principles of size, proportion, functionality, aesthetics, colour, texture and related aspects with focus on the Indian tradition and context.

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2															
CO-2			2													
CO-3			3													
CO-4		3		2						1				2		
CO-5	1	3	2	3			1			2	2		2	3		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		15
Demonstrations		05
1. Demonstration using Videos	03	
2. Demonstration using Physical Models / Systems	02	
3. Demonstration on a Computer	00	
Tutorial		00
1. Tutorial	00	
Practical Work		55
1. Course Laboratory	55	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	00	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	00	
Others		

1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	00	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations	10	
Total Duration in Hours	85	

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 and SC4), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation					
Subcomponent ▶	Component 1: CE (40% Weightage)				Component 2: SEE (60% Weightage)
	SC1	SC2	SC3	SC4	
Subcomponent Type ▶	Creative Submission-1	Creative Submission 2	Creative Submission 3	Creative Submission 4	SEE(60 Marks)
Maximum Marks ▶	10 Marks	10 Marks	10 Marks	10 Marks	
CO-1	x		x		
CO-2	x	x	x		x
CO-3		x		x	x
CO-4		x		x	x
CO-5		x		x	x

The details of SC1, SC2, SC3 and SC4 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Class Room Lectures
3.	Critical Skills	Creative Work Submission
4.	Analytical Skills	Classroom Lectures, Creative Work Submission and Examination
5.	Problem Solving Skills	Examination and Creative Work Submission
6.	Practical Skills	Class Room Lectures, Laboratory and Field.

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7.	Group Work	Work
8.	Self-Learning	Class Room Interaction
9.	Written Communication Skills	Creative Work Submission and Examination
10.	Verbal Communication Skills	Creative Work Submission and Examination
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Interaction with peers and tutors
14.	Personal Management	Creative Work Submission, Presentation and Examination
15.	Leadership Skills	Interaction with peers and tutors

9. Course Resources

a. Essential Reading

1. Class Notes
2. Mark Carlen, (2009), Space Planning Basics, John Wiley and Sons Inc., USA

b. Hill Recommended Reading

1. Childs, M. C. (2004) Squares: A Public Place Design Guide for Urbanists, University of New Mexico Press.
2. Marcus, C. C., Francis, C. (1998) People Places: Design Guidelines for Urban Open Space, Wiley Press
3. Schumacher, E. F. (1973) Small Is Beautiful: Economics as if People Mattered.
4. Wong, W. (1972). Principles of two Dimensional Design. Van Nostrand Reinhold
5. Panero, J., Zelnik, M. (1979), Human Dimension and Interior Space, The Architectural Press Ltd
6. Ernst, Neufert, P. (2000) Neufert Architects' Data, Blackwell Science Ltd, UK
7. Ching, F. D. (2014), Design Drawing, John Wiley India Pvt. Ltd Magazines and Journals
8. Autoworld, Looseleaf Law Publications, Inc, Flusing New York

c. Magazines and Journals


1. Design Space, Design Space Media Group, LLC, Georgia, USA
2. Architecture and Interiors India, ITP Publishing Group, India
3. Inside Outside, Business India group, India
4. Interior Design, LLC Publication, Canada
5. Domus India, Spenta Multimedia Pvt Ltd, Mumbai

e. Websites

- 1 www.architectureandinteriorsindia.com
2. www.insideoutsideindia.com
3. www.domusweb.it


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Semester 8


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Course Specifications: Product Design Project

Course Title	Product Design Project
Course Code	PDP401A
Course Type	Discipline Core
Department	Industrial Design
Faculty	Art and Design

1. Course Summary

The aim of this course is to give students an experience of identifying problems based on consumer requirements and generate the product design brief, concepts, 3D models and digitally render the product for visualization. The students are expected to work individually and are required to develop an appropriate solution by identifying a problem for better design outcome. They also develop technical reports documenting the project work.

2. Course Size and Credits:

Number of Credits	7
Credit Structure (Lecture: Tutorial: Practical)	0:0:7
Total Hours of Interaction	210
Number of Weeks in a Semester	15
Department Responsible	Industrial Design
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

- CO-1. Define the need for developing or improving the design of an existing product through an organised survey of literature
- CO-2. Synthesize the product design brief
- CO-3. Create solutions by developing concepts for the product to meet the product design brief
- CO-4. Prepare product digital renderings and technical report for presentation
- CO-5. Evaluate the design

4. Course Contents

Unit 1 (Research): Collection of relevant literature and review of literature

Unit 2 (Customer Survey): Interaction with the users and collection of data

Unit 3 (Analysis): Data Analysis, Formulation of a problem of suitable size based on customer voice

Unit 4 (Design): Prepare the product design specifications

Unit 5 (Concept): Generate the concepts and detail design of concepts

Unit 6 (3D Modelling): Choosing a modelling environment, learning the appropriate tools and techniques

5. Course Map (CO-PO-PSO Map)

MSRUAS Programme Structure and Course Details of B.Des in Product Design 2022-2023

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	2	2	3	3	3	3	3	2	1				3	2		1
CO-2	3												3	2		1
CO-3	2	3	2	2			2	2	2	2	2	3	3	1		1
CO-4	3	2	3	1	3	2	2	2	2	3	2	2	3	1		1
CO-5	3	2	1	2	1	2	2	1	2	3	3	3	3	3	3	1

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures		30
Demonstrations		10
1. Demonstration using Videos	05	
2. Demonstration using Physical Models / Systems	00	
3. Demonstration on a Computer	05	
Tutorial		00
1. Tutorial	00	
Practical Work		60
1. Course Laboratory	00	
2. Computer Laboratory	00	
3. Engineering Workshop / Course/Workshop / Kitchen	30	
4. Clinical Laboratory	00	
5. Hospital	00	
6. Model Studio	30	
Others		100
1. Case Study Presentation	20	
2. Guest Lecture	00	
3. Industry / Field Visit	20	
4. Brain Storming Sessions	20	
5. Group Discussions	20	
6. Discussing Possible Innovations	20	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		210

7. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Des. (Product Design) Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

The evaluation questions/presentation are set to measure the attainment of the COs, either component (CE and SEE) or subcomponent of CE (SC1& SC2), COs are assessed as illustrated in the following Table.

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Focus of COs on each Component or Subcomponent of Evaluation			
Subcomponent ▶	Component 1: CE (40% Weightage)		Component 2: SEE (60% Weightage)
	SC1	SC2	
Subcomponent Type ▶	Interim Presentation	Final Presentation	SEE(60 Marks)
Maximum Marks ▶	20 Marks	20 Marks	
CO-1	x		x
CO-2	x		x
CO-3	x		x
CO-4	x	x	x
CO-5	x		x

The details of SC1 & SC2 are presented in the Programme Specifications Document.

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester.

Course reassessment policies are presented in the Academic Regulations document.

8. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Project Work
2.	Understanding	Project Work
3.	Critical Skills	Project Work
4.	Analytical Skills	Project Work
5.	Problem Solving Skills	Project Work
6.	Practical Skills	Project Work, Laboratory and Field
7.	Group Work	Project work, interaction during the data
8.	Self-Learning	collection
9.	Written Communication Skills	Project work, interaction during the data
10.	Verbal Communication Skills	collection
11.	Presentation Skills	Presentation
12.	Behavioral Skills	Presentation
13.	Information Management	Project work
14.	Personal Management	Project work
15.	Leadership Skills	Project work

9. Course Resources

a. Essential Reading

1. Presentations made by the Head of the Department on "Importance of Project work and The Methodology to be followed for successful Completion of Project work"

b. Recommended Reading

1. Course Notes, Manuals of Tools and Techniques Chosen to Solve the Design Problem

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Health and Wellbeing

Course Title	Health and well being
Course Code	AHU101A
Department	Allied Health Sciences
Faculty	Faculty of Life and Allied Health Sciences

I. Course Summary:

1. Aim and Summary

The course is intended to introduce the concept of health and wellbeing and the ways in which it could be achieved through integrative lifestyle. Students undergo various health issues during their student period. Hence, it is imperative for them to maintain optimum health through proper diet, healthy lifestyles, and adequate physical activity. This course will provide simple and practical guidance to the students with latest scientific evidence in the field of lifestyle medicine (modern medicine), Ayurveda, and Yoga, and Meditation. The course also intends to equip students with handy tool as a continuous resource to facilitate lifestyle changes.

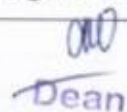
II. Aim

- a) The course aims to provide students:
- b) To enhance health and wellbeing through integrative lifestyle.

III. Course Size and Credits:

Number of credits	02
Total hours of classroom interaction during the semester	15
Number of practical/tutorial hours during the semester	15
Course leaders	Dr. Krishnamurthy Jayanna Mr. Shivanand Savatagi
Number of semester weeks	16
Department responsible	Allied Health Sciences (Division of Integrative Health Sciences)
Course evaluation	Total Marks: 50
Pass requirement	As per the Academic Regulations
Attendance requirement	As per the Academic Regulations


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I. Teaching, Learning and Assessment

1. Course Outcomes (CO)

No	Course Outcomes
1	To understand the definitions and scope of health, wellbeing and quality of life, and how they are changing in current times
2	To understand the relationship between lifestyles and health and wellbeing; and science of Integrative Lifestyle based on modern and traditional approaches
3	To apply tools and methods related to different aspects of Integrative Lifestyle
4	To apply the concepts of comprehensive Integrative Lifestyle for improving health and wellbeing

2. Course Contents

Unit-1: Health, wellbeing, and quality of life

- Definitions, determinants, and dimensions
- Changing paradigms of lifestyles
- Reasons for change in lifestyle paradigms
- Effects of changing lifestyles on Health and Wellbeing
- Understanding Integrative Lifestyle (definition and components)

Unit-2: Science of lifestyle based on Modern Medicine

- Nutrition: Energy, metabolism, healthy and balanced diet, Calories, Understanding through charts and scales
- Healthy sleep: Science of sleep, importance, sleep hygiene
- Physical activity and its benefits
- Substance use (tobacco, alcohol), healthy habits and healthy lifestyles
- Stress management and Sleep hygiene as part of Healthy lifestyle

Unit -3: Ayurveda Lifestyle

- Individual's unique body – mind constitution
- Variations in individual's constitutions (diurnal effects, seasonal effects, age related effects and effects of food)
- Recommendations (Daily, Seasonal) for Ayurvedic lifestyle customized to individual constitution

Unit-4: Yoga and Meditation

- Philosophy and Science of Yoga and Meditation
- Practical demonstration of simple yoga techniques
- Heartfulness meditation and supportive practices demonstration

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3. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)		
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1									2			2			2
CO-2									2			2			2
CO-3									2			2			2
CO-4									2			2			2

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

3. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration (hours)	Total Duration in Hours
Face to Face Lectures		10
Demonstrations		02
1. Demonstration using Videos		
2. Demonstration using Physical Models/ Systems/in person	02	
3. Demonstration on a Computer/online classes		
Numeracy		
1. Solving Numerical Problems		
Practical Work		13
1. Course Laboratory		
2. Computer Laboratory		
3. Engineering Workshop/Course Workshon/Kitchen		
4. Clinical Laboratory		
5. Hospital		
6. Model Studio		
Others		13
1. Case Study Presentation	02	
2. Guest Lecture	03	
3. Industry/Field Visit		
4. Brain Storming Sessions	02	
5. Group Discussions	04	
6. Discussing Possible Innovations		
Written Examination (MCQ and Essay – CE based evaluation)		05
Total Duration in Hours		30

5. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the B.Sc Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document.

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The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3 or SC4), COs are assessed as illustrated in the following Table.

Focus of CO's on each Component or Subcomponent of Evaluation:

	Component 1: CE (60% Weightage)		Component 2: SEE (40% Weightage)
Subcomponent	SC1	SC2	
Subcomponent Type	Practical Assessment	Assignment	50 Marks
Maximum Marks	30	30	
CO-1		X	
CO-2			X
CO-3	X	X	X
CO-4	X		

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the semester. The overall 40% is required to clear the course that includes CE and SEE components.

Course reassessment policies are presented in the Academic Regulations document.

6. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Face to face lectures
2.	Understanding	Face to face lectures, group discussions
3.	Critical Skills	--
4.	Analytical Skills	Face to face lectures, activities, , group discussions, assignment
5.	Problem Solving Skills	--
6.	Practical Skills	Face to face lectures, activities, , group discussions, course work
7.	Group Work	Course work, practice, assignment, group discussion
8.	Self-Learning	Course work, practice, assignment, group discussion

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9.	Written Communication Skills	Face to face lectures, Course work, practice, assignment, group discussion
10.	Verbal Communication Skills	Face to face lectures, Course work, practice, assignment, group discussion
11.	Presentation Skills	--
12.	Behavioral Skills	Course work, practice, assignment, group discussion, presentation practice, role plays
13.	Information Management	Assignment
14.	Personal Management	--
15.	Leadership Skills	--

ii. Course resources

a. Essential Reading

- Science and practice of Integrative Health and Wellbeing Lifestyle
- Simple Heartfulness Practices
- Chandola H M. Lifestyle disorders: Ayurveda with lots of potential for prevention. Year : 2012 / Volume: 33 | Issue Number: 3 / Page: 327-327
- Cohen, M. Challenges and Future Directions for Integrative Medicine in Clinical Practice. Evid-Based-Integrative-Med2. 117-122 (2005).
- Diet, nutrition and the prevention of chronic diseases: report of a Joint WHO/FAO Expert Consultation. WHO Technical Report Series, No. 916. Geneva: World Health Organization; 2003.
- Horst R, Jaeger M, Smeekens S et al. Host and Environmental Factor Influencing Individual Human Cytokine Responses. 2016, Cell167, 1111-1124
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- What is Integrative Healthcare? - Duke Integrative Medicine. (2020),. Retrieved 23 August 2020, from <https://dukeintegrativemedicine.org/leadership-program/what-is-integrative-healthcare/>
- Kamlesh D Patel. The Profound Beauty of Yoga. Heartfulness Collector's Edition. December 2018
- Kamlesh D Patel. Yogic Psychology. Heartfulness Collectors' edition. December 2019

b. Recommended Reading

- Heartfulness Way
- Designing Destiny
- Disease burden and mortality estimates. (2020). Retrieved 23 August 2020, from https://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html
- Garaulet, M., Gómez-Abellán, P., Alburquerque-Béjar, J. et al. Timing of food intake predicts weight loss effectiveness. Int Obes 37, 604-611 (2013)

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- PILCHER et al. Sleep quality versus sleep quantity: relationships between sleep and measures of health, well-being and sleepiness in college students. Journal of Psychosomatic Research, Vol. 42, No. 6, pp. 583-596. 1997
- Rebel DK, Greeson JM, Brainard GC, Rosenzweig S. Mindfulness-based stress reduction and health-related quality of life in a heterogeneous patient population. Gen Hosp Psychiatry. 2001
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- Types of Stressors (Eustress vs. Distress). (2020). Retrieved 23 August 2020, from <https://www.mentalhelp.net/articles/types-of-stressors-eustress-vs-distress/>
- Vasant Lad. The Complementary Book of Ayurvedic Home Remedies. London. 2006.
- Wang C (2014). Challenges for the Future of Complementary and Integrative Care. Health Care Current Reviews 2: e102.doi:10.4172/2375-4275.1000e102

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