# FACULTY OF DESIGN

Four Year Undergraduate Programme

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

Academic Year 2024-25 onwards

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## 1. Nature and extent of the program

The Faculty of Design offers the Bachelor of Design (B. Des.) Communication Design program, understanding the profound impact of effective communication in our interconnected world. This program is meticulously crafted to prepare students for the dynamic and evolving field of communication design, with a particular emphasis on Interaction Design, User Experience (UX) Design, and Information Design. Our goal is to equip students with the skills and knowledge necessary to excel in creating meaningful, user-centered communication solutions.

Our B. Des. Communication Design program focuses on three core areas: Interaction Design, User Experience (UX) Design, and Information Design. In Interaction Design, students learn to create intuitive and engaging interfaces that enhance user interaction with digital products, covering topics such as interface design principles, usability testing, and interactive prototyping to ensure seamless digital experiences. UX Design emphasizes the overall user experience with a product or service, teaching students to empathize with users, conduct thorough research, and apply human-centered design principles, including user research methods, information architecture, wireframing, and usability evaluation, to create meaningful and satisfying products. In Information Design, the program addresses the need to present complex information clearly and understandably, teaching students to organize and visualize data effectively through courses in data visualization, infographic design, and wayfinding, thus equipping them with the skills to produce visually compelling and accessible formats.

The B. Des. Communication Design program is designed to provide a holistic education that bridges creativity with strategic thinking, combining theoretical knowledge and practical application to help students deeply understand design principles and their real-world applications. Key highlights include an interdisciplinary approach that integrates graphic design, digital media, psychology, and technology for a well-rounded education; opportunities for industry engagement through internships, projects, and professional collaboration to build networks and gain industry insights; access to state-of-the-art facilities such as design studios, usability labs, and digital fabrication tools to support creativity and innovation; and a strong emphasis on ethical and sustainable design practices, encouraging students to consider the social and environmental impact of their work. Our commitment to an inclusive and supportive learning environment ensures that students from diverse backgrounds feel welcome and valued, enriching the learning experience and leading to more innovative and representative design solutions.

The B. Des. Communication Design program is dedicated to cultivating the next generation of communication designers, equipped with the skills to create impactful, user-centered, and sustainable design solutions. Our graduates are prepared to lead and innovate in the fields of interaction design, user experience design, and information design, driving the evolution of communication in a rapidly changing world.

## 2. PROGRAMME EDUCATIONAL OBJECTIVES (PEO's)

| PEO No. | Education Objective |
|---|---|
| PEO1 | **Creative Design Proficiency:** Graduates will demonstrate proficiency in creative communication design processes, including conceptualization, ideation, and development of innovative concepts that integrate aesthetic, cultural, and market influences, effectively applying these skills across various communication design mediums. |
| PEO2 | **Technical Competence:** Graduates will possess technical skills in communication design, encompassing graphic design, digital media, typography, and interactive design, enabling them to translate design concepts into impactful visual and multimedia solutions that meet industry standards and user needs. |
| PEO3 | **Industry Relevance:** Graduates will be equipped with an understanding of the global communication design industry, including emerging trends, audience behaviors, technological advancements, and sustainable practices. They will adapt to evolving industry demands and contribute effectively to diverse sectors such as advertising, branding, digital marketing, and user experience design. |
| PEO4 | **Communication and Collaboration:** Graduates will demonstrate effective communication skills and the ability to collaborate with diverse stakeholders, including clients, users, interdisciplinary teams, and communication design industry professionals. They will proficiently convey design concepts, negotiate requirements, and execute UX/UI projects that meet strategic objectives and user expectations. |
| PEO5 | **Professionalism and Ethical Practice:** Graduates will exhibit professionalism, integrity, and ethical responsibility in their conduct as communication designers, recognizing the social, cultural, and ethical implications of their communication design work. They will strive to create designs that promote inclusivity, diversity, sustainability, and positive societal impact. |

## 3. GRADUATE ATTRIBUTES:

| S. No. | Attributes | Description |
|---|---|---|
| 1 | Professional / Disciplinary Knowledge | Graduates will possess a comprehensive understanding of communication design principles, theories, and techniques, demonstrating proficiency in areas such as graphic design, typography, digital media, visual storytelling, and user experience design. |
| 2 | Technical / Laboratory / Practical Skills | Graduates will be adept in utilizing a wide range of tools, equipment, and technologies relevant to communication design, including graphic design software, digital media tools, interactive design platforms, and emerging technologies, ensuring their ability to create innovative and effective visual communication solutions. |
| 3 | Communication Skills | Graduates will effectively convey ideas, concepts, and design proposals through written, verbal, and visual means, demonstrating clear communication skills to engage with clients, collaborators, and stakeholders across diverse industries and communication design sectors. |
| 4 | Cooperation/Teamwork | Graduates will demonstrate the ability to collaborate effectively in multidisciplinary teams, fostering a cooperative and inclusive environment to achieve collective communication design & UX/UI goals and objectives. They will contribute their expertise while respecting diverse perspectives and roles within the team. |
| 5 | Professional Ethics | Graduates will uphold ethical standards and integrity in their professional practice as communication designers. They will demonstrate respect for intellectual property rights, ethical considerations in design decisions, and cultural sensitivity in representation and communication. |
| 6 | Research / Innovation-related Skills | Graduates will possess strong research capabilities to explore emerging trends, technologies, user behaviors, and design methodologies in communication design. They will integrate research findings into their design processes to foster innovation and creativity in their work. |
| 7 | Critical Thinking and Problem Solving | Graduates will analyze complex design challenges critically, employing strategic problem-solving skills to develop innovative and practical solutions that address user needs, business objectives, and societal impact within the dynamic landscape of communication design. |
| 8 | Reflective Thinking | Graduates will engage in reflective practice, evaluating their communication design processes, decisions, and outcomes to identify areas for improvement, personal growth, and professional development. They will continuously refine their skills and approaches based on self-assessment and feedback. |
| 9 | Information/Digital Literacy | Graduates will demonstrate proficiency in accessing, evaluating, and utilizing information from diverse sources, including digital platforms, databases, scholarly resources, and industry insights relevant to communication design. |
| 10 | Multi-cultural Competence | Graduates will exhibit cultural sensitivity and awareness, respecting diverse perspectives, traditions, and identities in their communication design practice. They will consider cultural implications and global contexts to create inclusive and meaningful design solutions. |

| 11 | Leadership Readiness/Qualities | Graduates will demonstrate leadership potential and qualities, inspiring and motivating others through effective communication, vision-setting, and decision-making within communication design projects and professional contexts. They will drive innovation and positive change in the field. |
|----|----|----|
| 12 | Lifelong Learning | Graduates will recognize the importance of continuous learning and professional development in the dynamic field of communication design. They will actively seek opportunities to enhance their skills, knowledge, and expertise, staying updated with industry trends and technological advancements. |

## 4. QUALIFICATION DESCRIPTORS:

**Knowledge and Understanding:** Students will demonstrate a comprehensive understanding of communication design principles, theories, history, and the impact of visual culture on society. They will also grasp the fundamentals of typography, color theory, layout design, and branding.

**Design Skills:** Students will demonstrate a comprehensive understanding of communication design principles, theories, history, and the impact of visual culture on society. They will also grasp the fundamentals of typography, color theory, layout design, and branding.

**Technical Competence:** Students will acquire technical competence in design processes such as digital illustration, motion graphics, web design, and print production. They will be capable of executing design concepts with precision and quality using industry-standard software and technologies.

**Creativity and Innovation:** Students will exhibit creativity and innovation in conceptualizing and developing communication designs that are aesthetically pleasing, culturally relevant, and market-driven. They will demonstrate originality and flair in their design work.

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

**Communication and Presentation:** Students will effectively communicate their design ideas through verbal, written, and visual means, presenting their work professionally to diverse audiences, including clients, and stakeholders.

**Collaboration and Teamwork:** Students will collaborate effectively with team members, clients, developers, marketers, and other stakeholders. They will demonstrate interpersonal skills, flexibility, and the ability to work collaboratively to achieve shared communication design goals.

**Ethical and Professional Practice:** Students will uphold ethical standards and professional integrity in all aspects of their work as communication designers. They will demonstrate awareness of social, cultural, and environmental implications and strive to create designs that promote inclusivity, diversity, and sustainability.

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

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

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

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

## 5. PROGRAMME OUTCOMES

| PO No. | Attribute | Competency |
|---|---|---|
| PO1 | Knowledge Acquisition | Obtain comprehensive and specialized knowledge in communication design, encompassing principles, theories, techniques, and global perspectives. They will demonstrate the ability to discern, evaluate, analyze, synthesize, and integrate existing and new knowledge to enhance understanding and innovation in communication design. |
| PO2 | Application of Design Fundamentals | Utilize their knowledge of design elements, principles, and communication concepts to generate innovative designs across diverse domains. They will proficiently employ techniques such as visual composition, typography, digital media, and interactive design to create prototypes and solutions that meet user needs and project objectives. |
| PO3 | Design Thinking | Employ lateral and creative thinking to conceive and solve communication design problems. They will assess a broad range of viable and optimal solutions, considering public health, safety, cultural, societal, and environmental factors in their design processes to create impactful and responsible design solutions. |
| PO4 | Business Management | Display comprehension of Communication and management principles, effectively applying them in personal work and as leaders within interdisciplinary teams. They will competently manage projects across specific disciplines, integrating economic and financial considerations to achieve strategic and operational goals in communication design projects. |
| PO5 | Sustainable Product Development | Embrace professional and intellectual integrity, adhering to ethical behavior and a professional code of conduct in communication design and scholarly pursuits. They will recognize the influence of research outcomes on professional practices and contribute to sustainable development within the field of communication design. |
| PO6 | Visual Communication | Effectively convey ideas visually through artistic digital illustrations, graphic illustrations, styling, photography, and visual display. They will utilize visual communication techniques to articulate concepts, narratives, and brand identities effectively to diverse audiences. |
| PO7 | Collaborative and Multidisciplinary Work | Showcase collaborative and multidisciplinary skills through innovative projects, integrating perspectives from design, technology, marketing, and other fields. They will contribute effectively to team dynamics, demonstrating leadership and teamwork abilities in achieving collective design objectives. |
| PO8 | Lifelong Learning | Exhibit a commitment to lifelong learning, continuously evolving their skills and knowledge in response to advancements in technology, industry trends, and user expectations. They will stay innovative and creative throughout their careers, adapting to the dynamic landscape of communication design. |
| PO9 | Research Skills | Demonstrate adept research skills, leveraging insights into historical, cultural, and market trends to inform their design processes. They will conduct rigorous research, resulting in conceptually rich and contextually relevant communication design solutions that resonate with target audiences. |
| PO10 | Communication Design Career | Pursue diverse career paths in communication design, including roles such as graphic designer, art director, UX/UI designer, digital marketer, visual storyteller, brand strategist, and creative director. They will contribute to various sectors, including advertising, digital media, publishing, and corporate communications, among others. |
| PO11 | Industry or Entrepreneurship Career | Pursue a professional career in the communication design industry or UI/UX industry as a technical designer, information designer, user experience designer, user interaction designer. |

**6. PROGRAMME'S SPECIFIC OUTCOMES (PSOs):**

| PSO No. | Competency |
|---------|------------|
| PSO1 | **Design Research and Concept Development**: Graduates will proficiently conduct design research to explore socio-cultural contexts, user behaviors, and technological innovations, translating insights into innovative communication design concepts and strategies that address complex communication challenges effectively. |
| PSO2 | **User Experience (UX) Design/ User Interface (UI) Design**: Graduates will excel in UX/UI design principles, conducting user research, creating personas, prototyping interfaces, and conducting usability testing to ensure intuitive and user-centered design solutions across digital and interactive media projects. |
| PSO3 | **Visual Communication Expertise**: Graduates will adeptly utilize principles of visual communication, including typography, layout, color theory, and imagery, to effectively convey messages across various media platforms, demonstrating a deep understanding of audience engagement and communication design objectives. |
| PSO4 | **Emerging Technologies and Design Innovation**: Graduates will stay abreast of emerging technologies and trends in communication design, applying innovative approaches such as augmented reality (AR), virtual reality (VR), Information Design and interactive installations to push the boundaries of traditional communication methods and enhance user engagement. |

## 7. COURSE STRUCTURE

### SEMESTER – I

| Course Code | Course Type | Course Title | L | T | P | Credit | IAE | ESE | Total |
|---|---|---|---|---|---|---|---|---|---|
| 15100101 | DSC-1 | History of Art and Design | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
| 15100102 | DSC-2 | Fundamentals of Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100103 | DSC-3 | Colors Theories in Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100104 | SEC-1 | Introduction to Design Process | 0 | 0 | 4 | 2 | 30 | 20 | 50 |
|  | GE- 1 | GE- 1 | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
|  | AECC-1 | AECC-1 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
|  | VAC-1 | VAC-1 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
|  |  | **Total** |  |  |  | **22** |  |  |  |

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

### SEMESTER – II

| Course Code | Course Type | Course Title | L | T | P | Credit | IAE | ESE | Total |
|---|---|---|---|---|---|---|---|---|---|
| 15100201 | **DSC -4** | Product Development Process | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
| 15100202 | **DSC-5** | Fundamentals of Drawing | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100203 | **DSC-6** | Design Research | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100204 | **SEC-2** | Material Exploration | 0 | 0 | 4 | 2 | 30 | 20 | 50 |
|  | **GE- 2** | GE- 2 | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
|  | **AECC- 2** | AECC- 2 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
|  | **VAC- 2** | VAC- 2 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
|  |  | **Total** |  |  |  | **22** |  |  |  |

**UG CERTIFICATE in Design - (Total Credit: 44)**

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

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

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

## SEMESTER – III

| Course Code | Course Type | Course Title | L | T | P | Credit | IAE | ESE | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | **Teaching Hours / Week** | | | | **Marks Distribution** | | |
| 15100301 | **DSC-7** | User Experience and Interaction Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100302 | **DSC-8** | User Centred Design Process | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100303 | **DSC-9** | Principles of Information Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100304 | **IACP/ SEC-3** | Internship I | 0 | 0 | 4 | 2 | 25 | 25 | 50 |
| 15100305 | **DSE-1** | Design Thinking Skills          or | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100306 | **DSE-1** | Interaction Design Skills        OR | 0 | 0 | 8 | | | | |
| | **GE 3** | GE 3 | 4 | 0 | 0 | | | | |
| | **AECC-3** | AECC-3 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | **VAC- 3** | VAC- 3 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | | **Total** | | | | **22** | | | |

## SEMESTER – IV

| Course Code | Course Type | Course Title | L | T | P | Credit | IAE | ESE | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | **Teaching Hours / Week** | | | | **Marks Distribution** | | |
| 15100401 | **DSC-10** | User Research and Visual Communication | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100402 | **DSC-11** | Design Studio I | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100403 | **DSC-12** | Machine Learning for Designers | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100404 | **IACP/ SEC-4** | Internship II | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| 15100405 | **DSE-2** | Notification and Dialogs Design Skills    or | 0 | 0 | 8 | 4 | 30 | 20 | 50 |
| 15100406 | **DSE-2** | Typography Skills              OR | 0 | 0 | 8 | | | | |
| | **GE 4** | GE 4 | 4 | 0 | 0 | | | | |
| | **AECC-4** | AECC-4 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | **VAC- 4** | VAC- 4 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | | **Total** | | | | **22** | | | |

**UG DIPLOMA in Communication Design- (Total Credit: 88)**

| Semester | Discipline Specific Electives | IACP/ Skill Enhancement Courses | Ability Enhancement Compulsory Courses | Value Added Courses |
|---|---|---|---|---|
| III | **DSE1:** Design Thinking Skills / Interaction Design Skills | Internship I | Environment Science/ MIL | Value Added Course (VAC-3) |
| IV | DSE2: Notification and Dialogs Design Skills / Typography Skills | Internship II | Environment Science/ MIL | Value Added Course (VAC-4) |

**SEMESTER – V**

| Course Code | Course Type | Course Title | L | T | P | Credit | IAE | ESE | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | Teaching Hours / Week | | | | Marks Distribution | | |
| 15100501 | DSC-13 | Usability Engineering and User Testing | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100502 | DSC-14 | Design Studio II | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100503 | DSC-15 | Service Experience Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100504 | IACP/ SEC-5 | Internship III | 0 | 0 | 4 | 2 | 25 | 25 | 50 |
| 15100505 | DSE-3 | Instructional System Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100506 | DSE-3 | Instructional Design for Digital Products | 0 | 0 | 8 | | | | |
| | GE- 5 | GE- 5 | 4 | 0 | 0 | 2 | 30 | 20 | 50 |
| | | **Total** | | | | **22** | | | |

**SEMESTER – VI**

| Course Code | Course Type | Course Title | L | T | P | Credit | IAE | ESE | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | Teaching Hours / Week | | | | Marks Distribution | | |
| 15100601 | DSC-16 | User Data Analytics and User Modelling | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100602 | DSC-17 | Augmented Reality and Virtual Reality | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100603 | DSC-18 | Interactive System Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100604 | IACP/ SEC-6 | Internship IV | 0 | 0 | 4 | 2 | 25 | 25 | 50 |
| 15100605 | DSE-4 | Semiotics of Digital Interfaces | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100606 | DSE-4 | Design Semantics | 0 | 0 | 8 | | | | |
| | GE-6 | GE-6 | 0 | 0 | 4 | 2 | 30 | 20 | 50 |
| | | **Total** | | | | **22** | | | |

**Bachelor of Design (Honours) Communication Design  (Total Credits: 132)**

| Semester | Discipline Specific Electives | IACP/ Skill Enhancement Courses |
|---|---|---|
| V | **DSE3:** Instructional System Design/ Instructional Design for Digital Products | Internship III/ Industry Project III |
| VI | **DSE4:** Semiotics of Digital Interfaces / Design Semantics | Internship IV/ Industry Project IV |

**SEMESTER –VII**

| Course Code | Course Type | Course Title | Teaching Hours / Week | | | Credit | Marks Distribution | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | | IAE | ESE | Total |
| 15100701 | DSC-19 | Communication Portfolio | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100702 | DSE 5 | User Data Analytics and User Modelling | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100703 | DSE 5 | Infographics **AND** | 0 | 0 | 8 | | | | |
| 15100704 | DSE 6 | Visual Interface Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100705 | DSE 6 | Film and Video Design **AND** | 0 | 0 | 8 | | | | |
| 15100706 | DSE 7 | UI Guidelines and Applications        or | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100707 | DSE 7 | Communication Design Research     OR | 0 | 0 | 8 | | | | |
| | GE-7 | GE-7 | 4 | 0 | 0 | | | | |
| 15100708 | RP 1 | Dissertation I | 0 | 0 | 12 | 6 | 50 | 50 | 100 |
| | | **Total** | | | | **22** | | | |

**SEMESTER –VIII**

| Course Code | Course Type | Course Title | Teaching Hours / Week | | | Credit | Marks Distribution | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | | IAE | ESE | Total |
| 15100801 | DSC-20 | Communication Design Project | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100802 | DSE 8 | UX Design for Social Needs | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100803 | DSE 8 | Creativity and Innovation in Design **AND** | 0 | 0 | 8 | | | | |
| 15100804 | DSE 9 | Personalised and Adaptive Interfaces | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100805 | DSE 9 | Inclusive Design **AND** | 0 | 0 | 8 | | | | |
| 15100806 | DSE 10 | User Survey Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100807 | DSE 10 | User Experience Design | 0 | 0 | 8 | | | | |
| 15100808 | RP 2 | Dissertation II | 0 | 0 | 12 | 6 | 50 | 50 | 100 |
| | | **Total** | | | | **22** | | | |

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

| Semester | Discipline Specific Electives | Dissertation / Research Project |
|---|---|---|
| VII | **DSE 5:** User Data Analytics and User Modelling/ Infographics **AND** <br> **DSE 6:** Visual Interface Design/ Film and Video Design **AND** <br> **DSE 7 or  GE 7:** UI Guidelines and Applications/ Communication Design Research **or GE7** | Dissertation -I |
| VIII | **DSE 8:** UX Design for Social Needs/ Creativity and Innovation in Design **AND** <br> **DSE 9:** Personalised and Adaptive Interfaces/ Inclusive Design **AND** <br> **DSE 10:** User Survey Design / User Experience Design | Dissertation - II |

## 8. SEMESTER-WISE COURSE DETAILS

### SEMESTER – I

| Course Code | Course Type | Course Title | Teaching Hours / Week | | | Credit | Marks Distribution | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | | IAE | ESE | Total |
| 15100101 | DSC-1 | History of Art and Design | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
| 15100102 | DSC-2 | Fundamentals of Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100103 | DSC-3 | Colors Theories in Design | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100104 | SEC-1 | Introduction to Design Process | 0 | 0 | 4 | 2 | 30 | 20 | 50 |
| | GE- 1 | GE- 1 | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
| | AECC-1 | AECC-1 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | VAC-1 | VAC-1 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | | **Total** | | | | **22** | | | |

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

| Name of the Department | Faculty of Design |
|---|---|
| Name of the Program | B. Des. (Honours/ Honours with Research) Communication Design |
| Course Code | 15100101 |
| Course Title | History of Art and Design |
| Academic Year | I |
| Semester | I |
| Number of Credits | 4 |
| Course Prerequisite | NA |
| Course Synopsis | The "History of Art and Design" course offers an exploration of art and design evolution from ancient times to today. Students will study key historical periods, movements, influential figures, and significant works, understanding the cultural, social, and political contexts that shaped various styles and practices. Through lectures and critical discussions, students will recognize diverse media and techniques, from traditional to modern digital works. By the course's end, students will recall major milestones, understand influential contexts, apply historical knowledge to contemporary analysis, critically evaluate various influences, and create works inspired by historical principles. This course cultivates a comprehensive perspective on art and design history, equipping students with the knowledge to appreciate and contribute meaningfully to the field. |

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

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

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

**Mapping with Programme Outcomes**

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

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

**Course Content:**

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

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

| 4 | **Unit 4: Modern Art Movements** | • Understand: Creation of low-fidelity prototypes. (C2) |
|---|---|---|
| | • 19th Century: Realism, Impressionism, and Post-Impressionism. <br> • Early 20th Century: Cubism, Fauvism, Expressionism, and the impact of World Wars on art. <br> • Mid to Late 20th Century: Abstract Expressionism, Pop Art, Minimalism, and Conceptual Art. | • Apply: Iterative prototyping and rapid experimentation. (C3) <br> • Analyze: Testing and gathering feedback on prototypes. (C4) |
| 5 | **Unit 5: Contemporary Art and Design** | • Remember: Identify key characteristics of Realism, Impressionism, Post-Impressionism, Cubism, Fauvism, Expressionism, Abstract Expressionism, Pop Art, Minimalism, and Conceptual Art. (C1) |
| | • Late 20th to 21st Century: Digital art, new media, and the global art scene. <br> • Postmodernism: Deconstruction, appropriation, and diverse cultural influences. <br> • Current Trends: Sustainability in design, the influence of technology, and interdisciplinary practices in contemporary art and design. | • Understand: Explain the social and historical contexts that influenced these modern art movements. (C2) <br> • Apply: Compare techniques and themes from modern art movements in contemporary works. (C3) <br> • Analyze: Evaluate the impact of 19th and 20th-century art movements on contemporary art. (C4) |

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

| Feedback Process | 1. Student's Feedback |
|---|---|
| | |

| References: | (List of reference books) |
|---|---|

**Text Books:**

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

**Reference Books:**

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

| Name of the Department | Faculty of Design |
|---|---|
| Name of the Program | B. Des. (Honours/ Honours with Research) Communication Design |
| Course Code | 15100102 |
| Course Title | Fundamentals of Design |
| Academic Year | I |
| Semester | I |
| Number of Credits | 4 |
| Course Prerequisite | NA |
| Course Synopsis | The "Fundamentals of Design" course introduces foundational principles essential for effective visual communication and creative expression. Students explore the elements of design such as line, shape, color, texture, space, and typography, alongside principles like balance, contrast, emphasis, movement, unity, and proportion. Through practical exercises and theoretical insights, students learn to apply these principles across various design disciplines, including graphic design, fashion design, and interior design. The course emphasizes critical thinking in design decision-making and encourages experimentation with different techniques and mediums to develop a cohesive visual language. |

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

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

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

**Mapping with Programme Outcomes**

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

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

## Course Content:

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

| Unit | Content | Competencies |
|:---:|---|---|
| 1 | **Introduction to Elements and Principles of Design**<br>Definition and scope of design. How design is different from art, a brief on all forms of design, the introduction of design elements and principles. Importance and relevance of design in various industries like Fashion, Interiors, Animation, Product and Communication.<br>**Principles of Composition**<br>Layout and Composition: grids, rule of thirds, focal points. Visual Hierarchy: organization, grouping. Typography in Design: readability, hierarchy, alignment. Cropping, framing, negative space | • Understand: Explain the difference between design and art. (C2)<br>• Apply: Use design principles in various industries like fashion and interiors. (C3)<br>• Analyze: Evaluate composition techniques such as grids and the rule of thirds. (C4)<br>• Create: Develop designs utilizing visual hierarchy and typography principles. (C5) |
| 2 | **Design Element – Lines**<br>Types of lines and their visual effects. Creating emphasis and direction through lines. Line quality and expressive potential. Application of lines in various design contexts.<br>**Design Element – Shapes, Forms and Shape**<br>Basic geometric shapes and their visual properties. Organic shapes and natural forms. Creating depth and dimension through form. Application of shapes and forms in design compositions. Composition of positive and negative space.<br>**Design Element - Colour and Texture**<br>Color theory and the color wheel and properties of color. Properties of color: hue, value, saturation. Visual texture vs. tactile texture. Creating texture through various techniques. Incorporating texture in design compositions. Balancing texture with other elements. | • Understand: Explain how lines, shapes/forms, color, and texture influence visual design. (C2)<br>• Apply: Use lines to create emphasis and direction; apply shapes/forms and color theory in design compositions. (C3)<br>• Analyse: Evaluate the expressive potential of lines, the visual properties of shapes/forms, and the balance of texture in designs. (C4) |
| 3 | **Design Element – Typography**<br>Typeface selection, hierarchy, legibility and classification. Typographic hierarchy and readability (legibility). Alignment, spacing, and kerning. Expressive typography and typographic artistry.<br>**Design Element - Values and Sciography**<br>Definition and importance of values and shading in design. Creating textures and patterns through shading. Composition using values and sciography. Core shadow, cast shadow, and reflected light. | • Understand: Explain the importance of legibility, alignment, and values in design. (C2)<br>• Apply: Utilize typography for hierarchy and readability; apply shading techniques to create textures. (C3)<br>• Analyse: Evaluate the use of values in compositions; analyze shadows and light effects. (C4)<br>• Create: Develop designs with expressive typography and effective use of shading and values for visual impact. (C5) |
| 4 | **Design Element - Space, Scale and proportion**<br>Definition and importance of space in design. Utilizing Positive and negative space by composition and its visual impact and emphasis. Role of space in creating visual hierarchy. Applying | • Remember: Recall definitions of space, positive/negative space, scale, proportion, and the Golden Ratio. (C1)<br>• Understand: Explain the importance of |

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

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

| Feedback Process | 1. Student's Feedback |
|---|---|
| | |

| **References:** | (List of reference books) |
|---|---|

**Text Books:**

- An Illustrated Field Guide to the Elements & Principles of Art & Design,  Joshua Field, lulu.com (Edition First Edition), 2018.
- Illustrated Elements of Art & Principles of Design,  Gerald F Brommer,Crystal Productions, 2010.
- Designing with Color Chris Dorosz, J.R. Watson, Fairchild Book, 2010

**Reference Books:**

- Design Elements, Color Fundamentals, Aaris Sherin, Rockport Publishers, 2012.
- Beyond Design, Sandra J. Keiser& Myrna B.Garner, Deborah Vandermar, Fairchild Books, 2017.
- Color and Design Marilyn DeLong, Barbara Martinson, Berg Publishers, 2013.

| Name of the Department | Faculty of Design |
|---|---|
| Name of the Program | B. Des. (Honours/ Honours with Research) Communication Design |
| Course Code | 15100103 |
| Course Title | Colors Theories in Design |
| Academic Year | I |
| Semester | I |
| Number of Credits | 4 |
| Course Prerequisite | NA |
| Course Synopsis | The "Colors Theories in Design" course explores the principles and applications of color in various design disciplines. Students delve into color theory, including the color wheel, color harmony, and the psychological effects of color. Through practical exercises and theoretical discussions, students learn to manipulate color to evoke emotions, convey messages, and create visual hierarchy in design. The course covers the use of color in graphic design, interior design, fashion design, and digital media, emphasizing both traditional and contemporary approaches to color usage. |

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

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

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

**Mapping with Programme Outcomes**

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

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

## Course Content:

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

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

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

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

| Feedback Process | 1. Student's Feedback |
| --- | --- |
| | |

| **References:** | (List of reference books) |
| --- | --- |

**Text Books:**

- Color and Meaning: Art, Science, and Symbolism, John Gage, Univ of California Pr, 2000.
- Color Theory, Patti Mollica; Walter Foster Publishing, 2013.
- The Secret Language of Color, Arielle and Joann Eckstut, Black Dog & Leventhal, 2013.

**Reference Books:**

- Interaction of Color by Josef Albers, Nicholas Fox Weber, Yale University Press, 2013.
- Color Psychology And Color Therapy, Faber Birren, Ingram Short Title, 2013.

| Name of the Department | Faculty of Design |
|---|---|
| **Name of the Program** | B. Des. (Honours/ Honours with Research) Communication Design |
| **Course Code** | 15100104 |
| **Course Title** | Introduction to Design Process |
| **Academic Year** | I |
| **Semester** | I |
| **Number of Credits** | 2 |
| **Course Prerequisite** | NA |
| **Course Synopsis** | Design Process offers a structured exploration of the creative journey from concept to realization, providing students with a comprehensive understanding of the principles and stages involved in effective design. Through a blend of theoretical concepts and practical exercises, students learn to navigate each phase of the design process, including research, ideation, conceptualization, prototyping, iteration, and refinement. Emphasizing creativity, critical thinking, and problem-solving skills, this course equips students with the tools and methodologies to generate innovative design solutions across various disciplines, from product and graphic design to fashion and interior design. Through hands-on projects, critiques, and case studies, students gain practical experience in applying design principles and techniques, fostering a holistic approach to design thinking and practice. |

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

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

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

**Mapping with Programme Outcomes**

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

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

## Course Content:

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

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

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

| | |
|---|---|
| **Feedback Process** | 1.  Student's Feedback |

| | |
|---|---|
| **References:** | (List of reference books) |

**Text Books:**

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

**Reference Books:**

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

**SEMESTER – II**

| Course Code | Course Type | Course Title | Teaching Hours / Week | | | Credit | Marks Distribution | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | | IAE | ESE | Total |
| 15100201 | DSC -4 | Product Development Process | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
| 15100202 | DSC-5 | Fundamentals of Drawing | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100203 | DSC-6 | Design Research | 0 | 0 | 8 | 4 | 60 | 40 | 100 |
| 15100204 | SEC-2 | Material Exploration | 0 | 0 | 4 | 2 | 30 | 20 | 50 |
| | GE- 2 | GE- 2 | 4 | 0 | 0 | 4 | 60 | 40 | 100 |
| | AECC- 2 | AECC- 2 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | VAC- 2 | VAC- 2 | 2 | 0 | 0 | 2 | 30 | 20 | 50 |
| | | **Total** | | | | **22** | | | |

**UG CERTIFICATE in Design - (Total Credit: 44)**

| Name of the Department | Faculty of Design |
|---|---|
| Name of the Program | B. Des. (Honours/ Honours with Research) Communication Design |
| Course Code | 15100201 |
| Course Title | Product Development Process |
| Academic Year | I |
| Semester | II |
| Number of Credits | 4 |
| Course Prerequisite | NA |
| Course Synopsis | The "Product Development Process" course explores the systematic approach to designing and launching new products. It covers the entire lifecycle from idea generation to market introduction, focusing on research, design, prototyping, testing, and production. Students learn about consumer insights, market trends, feasibility analysis, and manufacturing considerations essential for successful product development across various industries. |

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

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

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

**Mapping with Programme Outcomes**

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

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

# Course Content:

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

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

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

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

| | |
|---|---|
| **Feedback Process** | 1. Student's Feedback |
| | |

| **References:** | (List of reference books) |
|---|---|

**Text Books:**

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

**Reference Books:**

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

| Name of the Department | Faculty of Design |
|---|---|
| Name of the Program | B. Des. (Honours/ Honours with Research) Communication Design |
| Course Code | 15100202 |
| Course Title | Fundamentals of Drawing |
| Academic Year | I |
| Semester | II |
| Number of Credits | 4 |
| Course Prerequisite | NA |
| Course Synopsis | The course "Fundamentals of Drawing" serves as a foundational exploration of essential techniques and principles in visual art and design. Through a series of practical exercises and theoretical studies, students delve into the basic elements of drawing, including line, shape, form, space, value, and texture. Emphasis is placed on developing observational skills, understanding perspective, and mastering various rendering techniques using both traditional and contemporary drawing tools. Students explore the expressive potential of drawing across different subject matters, from still life and landscape to human anatomy and abstract compositions. The course integrates hands-on studio work with theoretical discussions on the historical and cultural contexts of drawing, providing students with a comprehensive understanding of its role in visual communication and artistic expression. By the end of the course, students are expected to demonstrate proficiency in fundamental drawing skills, the ability to analyze and critique artworks, and the application of theoretical principles in their creative practice. They will have developed a portfolio showcasing their progression in technical proficiency, creativity, and conceptual thinking through diverse drawing assignments. Ultimately, "Fundamentals of Drawing" prepares students for further specialization in design disciplines where drawing serves as a crucial tool for ideation, visualization, and communication of ideas. |

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

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

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

**Mapping with Programme Outcomes**

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

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

# Course Content:

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

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

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

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

| Feedback Process | 1. Student's Feedback |
|---|---|
|  |  |

| **References:** | (List of reference books) |
|---|---|

**Text Books:**

- Keys to Drawing, Bert Dodson, North Light Books, 1990.
- The Complete Book of Drawing, Barrington Barber, Arcturus Publishing, 2012.
- How to Draw What You See, Rudy De Reyna, Watson-Guptill Publications Inc.,U.S., 1996.

**Reference Books:**

- The New Drawing on the Right Side of the Brain, Betty Edwards, HarperCollins, 2001
- Figure Drawing, Andrew Loomis,  Titan Books, 2011
- The Natural Way to Draw - A Working Plan for Art Study, Kimon Nicolaides, Souvenir Press, 2008

| Name of the Department | Faculty of Design |
|---|---|
| Name of the Program | B. Des. (Honours/ Honours with Research) Communication Design |
| Course Code | 15100203 |
| Course Title | Design Research |
| Academic Year | I |
| Semester | II |
| Number of Credits | 4 |
| Course Prerequisite | NA |
| Course Synopsis | This course explores the methodologies and principles of conducting design research, emphasizing the role of research in informing and guiding design processes. Students will learn to critically analyze design problems, conduct primary and secondary research, and apply research findings to develop innovative design solutions. The course covers various research methods applicable to different design disciplines, including qualitative and quantitative approaches, user-centered design, ethnography, and trend analysis. Additionally, students will engage in case studies, practical projects, and workshops to enhance their research skills and understand the ethical implications of design research. |

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

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

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

**Mapping with Programme Outcomes**

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

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

# Course Content:

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

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

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

| Feedback Process | 1. Student's Feedback |
|---|---|

| References: | (List of reference books) |
| --- | --- |

**Text Books:**

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

**Reference Books:**

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

| Name of the Department | Faculty of Design |
|---|---|
| Name of the Program | B. Des. (Honours/ Honours with Research) Communication Design |
| Course Code | 15100204 |
| Course Title | Material Exploration |
| Academic Year | I |
| Semester | II |
| Number of Credits | 2 |
| Course Prerequisite | NA |
| Course Synopsis | This course introduces students to the fundamental principles and practical applications of materials used in design. It focuses on understanding the properties, characteristics, and potential applications of various materials in different design contexts. Through hands-on experimentation and theoretical study, students explore how materials interact with light, texture, form, and function. Emphasis is placed on sustainable practices, innovative uses of materials, and the impact of material choices on design aesthetics and functionality. |

**Course Outcomes:**

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

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

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

**Mapping with Programme Outcomes**

| Cos | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO10 | PO11 | PSO 1 | PSO 2 | PSO 3 | PSO 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | - | 3 | 2 | 3 | 3 | - | 3 | - | 2 | - | 3 | - | - | - | - |
| CO2 | - | 2 | 3 | 3 | 2 | - | 3 | - | 3 | - | 2 | - | - | - | - |
| CO3 | - | 3 | 3 | 3 | 3 | - | 3 | - | 2 | - | 3 | - | - | - | - |
| CO4 | - | 3 | 3 | 3 | 3 | - | 3 | - | 3 | - | 2 | - | - | - | - |
| CO5 | - | 3 | 2 | 3 | 3 | - | 3 | - | 3 | - | 3 | - | - | - | - |
| Average | | 2.8 | 2.6 | 3 | 2.8 | | 3 | | 2.6 | | 2.6 | | | | |

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

**Course Content:**

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

| Unit | Content | Competencies |
|---|---|---|
| 1 | **Unit 1: Introduction to Materials**<br><br>• Overview of material science and its relevance to design<br>• Classification of materials: metals, polymers, ceramics, composites, etc.<br>• Properties of materials: mechanical, thermal, electrical, optical, and durability<br>• Environmental impact and sustainability considerations in material selection | • Remember: Recall the classification and properties of different materials. (C2)<br>• Understand: Understand the basic principles of material science and their relevance to design. (C2)<br>• Apply: Apply knowledge of material properties to select appropriate materials for specific design contexts. (C3)<br>• Analyse: Analyse the environmental impact of material choices in design. (C4) |
| 2 | **Unit 2: Metals and Alloys**<br><br>• Properties and characteristics of metals used in design: steel, aluminum, copper, etc.<br>• Manufacturing processes: casting, forging, machining, and surface treatments<br>• Applications of metals in product design, furniture, architecture, and automotive industries<br>• Case studies of iconic metal designs and innovations | • Understand: Understand metalworking processes and their impact on material properties. (C2)<br>• Apply: Apply metal selection criteria to design scenarios. (C3)<br>• Analyse: Analyse case studies of metal applications in design. (C4)<br>• Create: Create simple metal prototypes using basic fabrication techniques. (C5) |
| 3 | **Unit 3: Polymers and Plastics**<br><br>• Introduction to polymers: thermoplastics, thermosets, and elastomers<br>• Polymer processing techniques: injection molding, extrusion, and blow molding<br>• Design considerations for plastic materials: aesthetics, durability, and recyclability<br>• Innovative uses of plastics in contemporary design and sustainability challenges | • Understand: Understand manufacturing processes for plastics. (C2)<br>• Apply: Apply knowledge of plastic properties in product design. (C3)<br>• Analyse: Analyse environmental considerations in plastic usage. (C4)<br>• Create: Create prototypes using various plastic molding techniques. (C5) |
| 4 | **Unit 4: Wood and Natural Materials**<br><br>• Properties and characteristics of wood species used in design<br>• Woodworking techniques: joinery, veneering, and finishing methods | • Understand: Understand woodworking techniques and their applications. (C2)<br>• Apply: Apply sustainable practices in woodworking. (C3)<br>• Analyse: Analyse the lifecycle |

| | | |
|---|---|---|
| | • Sustainable forestry practices and certifications<br>• Incorporating natural materials like bamboo, cork, and stone in design applications | of wood products and sustainability issues. (C4) |
| 5 | **Unit 5: Textiles and Composites**<br><br>• Types of textiles: natural fibers (cotton, wool, silk) and synthetic fibers (polyester, nylon)<br>• Textile manufacturing processes: weaving, knitting, dyeing, and printing<br>• Composite materials: carbon fiber, fiberglass, and their applications in aerospace and automotive industries<br>• Integration of textiles and composites in fashion, interior design, and product development | • Understand: Understand textile manufacturing processes and composite materials. (C2)<br>• Apply: Apply textile knowledge in fashion and interior design contexts. (C3)<br>• Analyse: Analyse case studies of textile and composite applications. (C4)<br>• Create: Create textile-based prototypes and composite structures. (C5) |

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

**Learning Strategies and Contact Hours**

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

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

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

**Mapping of Assessment with COs**

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

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

**Text Books:**

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

**Reference Books:**

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