

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**NAME OF DEPARTMENT/CENTRE/SCHOOL:** DEPARTMENT OF DESIGN**Subject Code:** DEC-101**Course Title:** Basic Programming for Designers**L-T-P:** 2-0-4**Credits:** 4**Subject Area:** PCC**Course Outlines:**

Introduction to programming; Basics of programming, conditions and selection statements, looping and control structures, compiling and linking; Programming through functional decomposition, functions, parameters passing, design of functions and their interfaces, function overloading; Data structures, arrays and structures, pointers and dynamic data; Object oriented programming, classes, operator overloading, inheritance and composition, polymorphism.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-102

Course Title: Engineering Drawing

L-T-P: 3-1-2/2

Credits: 4

Subject Area: PCC

Course Outlines: Introduction to engineering drawing; Lettering; Projection principle, types of projections, angle of projections; Projection of point, line, plane, solid, section; Development of surfaces; Isometric views, missing lines, missing views; Sectioning; Dimensioning.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-104

Course Title: Introduction to Design

L-T-P: 1-0-2

Credits: 2

Subject Area: PCC

Course Outlines: Overview of different design disciplines; Design principles and elements; Design thinking and process; Importance of visual communication in design; Fundamentals of typography; Principles of user-centered design; Basics of form and function; Fundamentals of ergonomics; Basics of interaction design; Introduction to prototyping.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-202

Course Title: Fundamental Ergonomics in Design

L-T-P: 1-0-4

Credits: 3

Subject Area: PCC

Course Outlines: Overview of types of data from humans at physical, physiological, cognitive and effective levels; Introduction to force, repetitive injury, stress - human physiological potential and limitations.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-203

Course Title: Elements and Principles of Design

L-T-P: 1-0-4

Credits: 3

Subject Area: PCC

Course Outlines: Study and exploration of visual elements and visual principles; Spatial and visual relationships in compositions; Gestalt laws of visual perception; Colour classification; Perspective drawing.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-204

Course Title: Design Methodology

L-T-P: 1-0-4

Credits: 3

Subject Area: PCC

Course Outlines: History of Design; Design and society; Methodology for problems solving; Description of design process; Problem definition and need identification; Team behaviour and tools; Concept generation and conceptual design; Embodiment design: Detail design; Material selection; Generating alternatives; Evaluating alternatives; Generation of plan and prototype development.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-205

Course Title: Product Form and Sketching

L-T-P: 1-0-4

Credits: 3

Subject Area: PCC

Course Outlines: Overview to Product Sketching; Understanding form and proportion; Advanced sketching techniques; Exploring materials and textures; Design ideation and concept development; Digital sketching tools; Case studies and real-world applications.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-206

Course Title: Design Thinking for Products and Systems

L-T-P: 2-0-2/2

Credits: 3

Subject Area: PCC

Course Outlines: Introduction to design and design thinking, Relevance and Application of Design Thinking Process; Case studies towards understanding and analysing products and systems through design thinking; Developing empathy and human centric approaches for design methods; Tools and techniques for various design thinking stages like problem definition, ideation, prototyping and testing; Hands on exercises and activities to learn design thinking.

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT/CENTRE/SCHOOL: Department of Design

Subject Code: DEC-207

Course Title: Visual Communication Design Studio

L-T-P: 1-0-4

Credits: 3

Subject Area: PCC

Course Outlines: Application of visual design principles; Components of visual composition; Understanding of varied visual design languages; Analysis of aesthetics in design; Building visual narratives through different media.