M.S. Ramaiah University of Applied Sciences

New BEL Road, MSR Nagar, Bangalore – 560054

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

PO, PSO, PEO & CO

Programme: M.Des. in Product Design

Programme Code: 041

Programe Outcome (PO)

Programe Specific Outcome (PSO)

Program Educational Objectives (PEO)

Course Outcomes (CO)

Dean
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Bangalore-560058

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

Approved in 23rd ACM (Resolution 23.05) held on 15th July 2021

Faculty of Art and Design (FAD)

Programme Name: M. Des. In Product Design

Programme Outcomes (PO's)

M. Des. Graduates will be able to:

PO 1. Apply knowledge of art and Design fundamentals to solve complex problems in product development

PO 2. Identify design problems, interpret data and arrive at meaningful conclusions involving design inferences

PO 3. Design an artefact considering functionality, usability and safety, and the cultural, societal, and environmental considerations

PO 4. Ability to comprehend and solve complex design problems by interacting with the endusers

PO 5. Apply appropriate tools and techniques and comprehend utilization of resources appropriately to complex design activities

PO 6. Ability to comprehend the effect of design solutions on legal, cultural, social and functional and safety aspects

PO 7. Ability to develop sustainable solutions and comprehend their effect on society and environment

PO 8. Apply ethical principles to design practices and professional responsibilities

PO 9. Ability to work as a member of a team, to plan and to integrate knowledge of various design and engineering disciplines and to lead teams in multidisciplinary settings

PO 10. Ability to communicate effectively on complex design activities with the design community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11. Ability to demonstrate knowledge and understanding of the design and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Ability to adapt to the changes and advancements in technology and engage in independent and life-long learning

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Programme Specific Outcomes (PSOs)

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

PSO-1. Apply design methodologies and research to solve complex design problems and create innovative design solutions

PSO-2. Demonstrate advanced design skills, digital model making and physical prototyping skills to convey design ideas

PSO-3. Adapt to technological advancements in modern design tools to communicate designideas considering aesthetic, material and functional parameters for a wide spectrum of product design applications to solve design problems

PSO-4. Demonstrate an understanding of the importance of life-long learning through professional development, practical training, leadership qualities, specialized certifications and entrepreneurial skills for betterment of organization environmentand society

Program Educational Objectives (PEOs)

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

PEO-1. Inculcate in-depth research and design thinking methodology to generate design ideasfor new and innovative products

PEO-2. Induce effective usage of innovative and creative thinking techniques to develop unique products for the Design Industry and relevant societal requirements considering current design trends

PEO-3. Impart advanced design skills, manual and digital tools, advanced surface modeling techniques and complex manufacturing and assembly techniques to develop and communicate design ideas effectively

PEO-4. Advocate strong human values, social, interpersonal, leadership and entrepreneurial skills required for professional success in evolving global professional environments

Course Outcomes (COs)

Course Title & Code: Mechanisms and Modelling for Design (19PRD511B)

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

CO-1. Classify mechanisms and identify their applications
CO-2. Relate the motion of the component in a mechanism
CO-3. Create models of mechanisms and animate to study motion for functionality
CO-4. Propose mechanisms for products to achieve desired functionality
CO-5. Model product concepts incorporating mechanisms
CO-6. Create product models and digitally animate mechanisms

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Course Outcomes (COs)

Course Title & Code: Elements of Design (19PRD501B)

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

- **CO-1.** Discuss the application of basic design elements for visual literacy
- **CO-2.** Apply principles for 2D form generation
- **CO-3.** Adopt and explore form generation techniques for 3D objects
- **CO-4.** Demonstrate sketching and physical model making abilities
- **CO-5.** Evaluate classic and historical products and their significance
- **CO-6.** Prepare 2D and 3D display material for design presentations

Course Outcomes (COs)

Course Title & Code: Concept Sketching and Presentation (19PRD502B)

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

- **CO-1.** Draw three-dimensional product forms in perspective
- **CO-2.** Identify appropriate colour, media and finishes to render product forms
- **CO-3.** Generate design concepts inspired from visual theme boards and metaphors
- **CO-4.** Sketch and illustrate design ideas through manual media
- **CO-5.** Demonstrate the application manual and digital tool to visualize design concepts
- **CO-6.** Apply design principles to effectively present and communicate design ideas

Course Outcomes (COs)

Course Title & Code: Digital Sculpting and Rendering (19PRD503B)

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

- **CO-1.** Discuss the effectiveness of surface modeling for concept visualization and presentation
- **CO-2.** Create 3D curves digitally using curve editing tools and analyze the curve quality with the help of locators
- **CO-3.** Describe the quality of surfaces
- **CO-4.** Construct surfaces using curves and analyze the surface quality
- **CO-5.** Build 3D models by using surface alignment and transformation tools
- **CO-6.** Prepare and present renderings and animation of 3 D models

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Course Outcomes (COs)

Course Title & Code: Research Methodology (19HST501B)

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

- **CO-1.** Describe the value, scope, relevance and mandatory steps of research as well as principles of effective research

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CO-2. Discuss the application and utility of the Systematic approach and out of boxthinking concepts for research to be effective

CO-3. Discuss the procedures outlined for a systematic Literature Review

CO-4. Analyze and prepare well-structured research proposal and research paper invoking clearly outlined principles

CO-5. Identify and apply the essential skills desirable for an effective technicalpresentation

Course Outcomes (COs)

Course Title & Code: Design Methodology and Research (19PRD505B)

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

CO-1. Identify appropriate design methods and techniques to be used to gain insights intoneeds/ wants of the consumer

CO-2. Reconstruct a design problem in an insightful way

CO-3. Analyze data for insights into behavior and needs of the consumer

CO-4. Translate consumer voices to technical voices and develop the House of Quality (QFD)

CO-5. Develop Product Design Specification based on the data analyzedPropose product design ideas based on design specification

Course Outcomes (COs)

Course Title & Code: Virtual and Physical Product Modelling (19PRD504B)

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

CO-1. Describe virtual modelling techniques and its applications

CO-2. Describe physical modelling techniques and its applications

CO-3. Choose materials and processes for physical models to achieve the design intent

CO-4. Propose appropriate materials and processes for product development

CO-5. Apply reverse engineering and rapid prototyping techniques to design a product

Course Outcomes (COs)

Course Title & Code: Creativity and Systematic Innovation (19PRD506A)

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

CO-1. Identify appropriate creativity and systematic innovation approaches to solve design problems

CO-2. Apply knowledge of Intellectual Property Rights related to Product Design andInnovation

CO-3. Analyze trends in product design to predict design futures

CO-4. Discuss ideas for a design problem to achieve ideal final result

CO-5. Propose design solutions using creativity and systematic innovation tools and techniques

Course Outcomes (COs)

Course Title & Code: Skill Enhancement Course-1 (19SEM501B)

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

CO-1. Synthesize the challenges and objectives of the chosen task

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CO-2. Discuss the effectiveness of the task performed
CO-3. Prepare effective presentations to communicate ideas / concepts / new learnings

Course Outcomes (COs)

Course Title & Code: Ergonomics in Product Design (19PRD507B)

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

CO-1. Apply a systematic approach to evaluate ergonomic factors in products / systems
CO-2. Analyze and identify deficiencies relating to ergonomic factors in products / systems
CO-3. Develop solutions to eliminate the deficiencies identified
CO-4. Evaluate and select the final solution to meet the desired ergonomic objectives
CO-5. Develop and validate the selected final solution to meet the desired ergonomicSolution

Course Outcomes (COs)

Course Title & Code: Design for Manufacturing and Assembly (19PRD521B)

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

CO-1. Discuss use of appropriate materials and manufacturing process for a selected product
CO-2. Evaluate designs using DFMA guidelines
CO-3. Identify DFMA guidelines for manufacture and assembly
CO-4. Modify Design changes for improvement in assembly
CO-5. Compare the changes in Design
CO-6. Evaluate the Design changes in final assembly

Course Outcomes (COs)

Course Title & Code: Dissertation and Publication (19PRD600B)

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

CO-1. Critically review scholarly literature collected from various sources for the project purpose and formulate a research problem
CO-2. Prepare and present a research proposal
CO-3. Conduct research to achieve research objectives
CO-4. Propose new ideas/methodologies or procedures for further improvement of the research undertaken
CO-5. Create research document and write research papers for publications
CO-6. Defend the research findings in front of scholarly audience

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Course Outcomes (COs)

Course Title & Code: Skill Enhancement Course-2 (19SEM501B)

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

CO-1. Synthesize the challenges and objectives of the chosen task

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CO-2. Discuss the effectiveness of the task performed
CO-3. Prepare effective presentations to communicate ideas / concepts / new learnings

Course Outcomes (COs)

Course Title & Code: Portfolio Design and Presentation (19PRD531B)

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

CO-1. Describe the process required to develop a portfolio
CO-2. Explain the importance of portfolio
CO-3. Design and develop mood, color, swatch and inspiration boards for developed designs and products
CO-4. Develop effective and cogent information graphics using digital tools
CO-5. Create visual representations and finished designs for presentation work

Course Outcomes (COs)

Course Title & Code: Interactive Design and Technology (19PRD512B)

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

CO-1. Determine different technological advances, their applications and influences in alternativedesign of products and systems
CO-2. Evaluate and Identify technological and product deficiencies in products and systems
CO-3. Analyze and Apply solutions to technological and product deficiencies in products and systems
CO-4. Evaluate and Develop new design scenarios to meet interactive design objectives
CO-5. Develop and validate the selected final solution to meet the desired interactive design and technology solutions

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