# AI/ML for Designers

## Proposal for a New Course

**1.Course Number:** DESxxxx

**2.Course Title:** AI/ML for Designers

**3.Credit system:** 3-0-0 Total Credits: 9

**4.Duration of Course:** Full Semester

**5.Proposing Department/IDP:** DES

**Other Departments/IDPs which may be interested in the proposed course:** Not Applicable

**6.Proposing Instructor(s):** Amar Kumar Behera

**Other faculty members interested in teaching the proposed course:** None

**7.Course Description:**

**(A) Objectives**: In this course, students will explore the impact of artificial intelligence (AI) on design. They will learn to use AI to enhance their workflow, tackle real world challenges and use AI as a participant in the design thinking process. It will enable students to position themselves at the forefront of design innovation.

**(B) Pre-requisites:** None

**(C) Contents:**

| S. No. | Topic | Details | Lectures |
|---|---|---|---|
| 1 | Introduction to AI | • Key terminologies such as Machine Learning, Deep Learning, Generative AI, etc., Impact of AI on design (<br>• Why design and AI should join forces | **4** |
| 2 | Role for AI in the design process | • Collaborative intelligence<br>• AI as creativity enhancement<br>• AI in idea development<br>• AI in research phase of design<br>• Data mining applications | **8** |

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| | | • AI for concept generation (Image generation, Sketching assistant, Model generator, Facilitator, Concept evaluator) | |
| 3 | Enhancing design workflow | • AI tools for UX research, Problem solving with AI<br>• AI for market analysis<br>• Persona interviews and data processing | **6** |
| 4 | Designer's role in AI-driven solutions | • Addressing challenges<br>• Analyzing concerns<br>• Delivering ethical solutions for real-world design applications | **8** |
| 5 | Working on AI-driven design projects | • Students to explore topics of specific interest to them and as specified in class. An early list of topics is given below -<br>• AI-Powered Generative Design for Sustainable Architecture<br>• Smart Urban Planning: AI-Driven Solutions for Future Cities<br>• Artificial Intelligence in Fashion Design: Trends and Applications<br>• Automated UX/UI Design Optimization Using Machine Learning<br>• AI-Enhanced Product Design: From Concept to Prototype<br>• Neural Networks for Creative Art Generation<br>• AI-Based Landscape Design for Climate Resilience<br>• Deep Learning Models for Interior Design Personalization<br>• AI-Driven Ergonomics: Enhancing Human-Centered Design<br>• Intelligent Design Assistants: Enhancing Creativity in Graphic Design<br>• AI in Game Design: Procedural Content Generation and Beyond<br>• AI-Powered Visual Storytelling: Creating Immersive Experiences<br>• Reinforcement Learning for Autonomous Vehicle Design<br>• AI-Driven Industrial Design: Optimizing Efficiency and Aesthetics<br>• Smart Fabrication: AI in 3D Printing and Additive Manufacturing<br>• Generative Adversarial Networks | **12** |

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| | | for Music Composition and Sound Design<br>• AI-Based Animation and Visual Effects Production<br>• AI-Enhanced Architectural Restoration and Conservation<br>• Designing AI-Powered Assistive Technologies for Disabilities<br>• AI-Driven Design Strategies for Circular Economy Products | |
| | | **Total contact hours** | **38** |

**Recommended books:**


1. Fabio Antoni Figoli, Francesca Mattioli, Lucia Rampino, Artificial intelligence in the design process, FrancoAngeli s.r.l., Milano, Italy
2. Md Haseen Akhtar, Janakarajan Ramkumar, AI for Designers
3. Artificial Intelligence a Modern Approach, 3rd E., by Stuart Russell and Peter Norvig


**8. Any other remarks:** None

Proposer: A. K. Behera — DPGC Convener

Dated: 25/6/2024 — Date:

**The course is approved / not approved**

Chairperson, SPGC

Dated: