

COURSE CONTENT

| | |
|-----------------------|-------------------------|
| Course Code | DM5000 (DM3002) |
| Course Title | Creative Robotics |
| Pre-requisites | NIL |
| No of AUs | 3 |
| Contact Hours | 39 hours studio contact |

Course Aims

This intermediate level course will introduce you to the history, genres, aesthetics, practice and relevance of creative robotics. This course discusses the deep historical and contemporary issues surrounding the artificial double that is the robot, its epistemological role and its repercussions on society. You will gain exposure to basic technical skills of physics and mechatronics, making robotic bodies from simple physical assemblages, sensors and effectors. You will then apply your knowledge in the creation, development, presentation and documentation of an original creative robotics work. This learning forms a deeper understanding of embodied approaches for further studies in animation, performing arts, interactive media, interaction design and product design.

Intended Learning Outcomes (ILO)

By the end of the course, you should be able to:

1. Describe different methods and techniques required for creative robotics.
2. Develop embodied and creative robotic strategies to communicate with an audience.
3. Apply the concept of creative robotics to an original work.
4. Present, evaluate and reflect on the effectiveness of a robotic creative piece in regard to engagement, interaction and perception.
5. Constructively discuss and critique creative robotics concepts, formats, techniques and media employed by peers.

Course Content

Robotics in the Arts is more than two millennium old and its development has responded to contemporary understandings of the body, technology and society. This course examines the theoretical and practical aspects of creative robotics.

You will explore concepts surrounding the fundamental roles of a body, how it shapes our view of the world and how it interacts with its environment. This leads to a deeper understanding of animated objects, its apparent intentions and its observed behaviours. This course introduces perceptual mechanisms of movements and body morphologies that facilitate engagement and interaction with creative robotics which in turn, can be further extended to embodied media at large. The class will develop critical and artistic skills to frame creative robotics as a reference for their own practice.

Exercises and projects will introduce you to various ways in which embodied art can be realized. You will have a practice-based experience of creative robotics and become aware of the strengths and limits of the medium. You will have a familiarity with the many and different ways that an artist have contributed to the field of creative robotics.

You will work individually and in groups combining studio practice, research and analysis to

develop skills and knowledge that relate to develop creative animated embodied objects.

Robot as an epistemological double.

You will be exposed to the cultural and historical presence of machine throughout history.

You will receive an overview of the key concepts of creative robotics while you will be exposed to different genres of kinetic art, robotic artworks, installation and performances, real artificial life and generative systems.

You will become aware of the animate object and its role in engagement, communication and visualisation, and gain familiarity with a wide spectrum of artistic endeavours including social robotics, man-machine cooperation, activism and contemporary issues of machine ethics.

Embodiment: from ecological niches to psychology of perception.

You will become familiar with the various levels of embodiment. An ecological body that can operate within the physical world as much as a conceptual body operating under the codes of societies. The embodiment addresses the perceptual aspects of movement and behaviours in relation to neurobiology, psychology and anthropomorphism. The study looks at the role of body morphologies at both physical level and perceptual levels. The study of perception further looks into intentionality, animacy, the uncanny and non-verbal communication. The embodiment will also explore alternate anatomies and their applications in various domains such as performances, workplace and game design.

Making Bodies: Mechatronics and DIY/Makers' approaches.

You will receive a basic introduction on how to design animated physical objects.

The class will introduce and survey mechatronics systems and basic mechanics to help you sculpt an animate body for your creative project. You will examine the basic concepts and techniques of mechanical systems, transfer of energy and motion, study of materials, artificial intelligence and animatronics. You will get familiar with the contemporary cultural and artistic trends of the citizen science, "Do it Yourself", "Makers" and open source and design approaches, their impact on the growth of experimental creative robotics.