

Creative and Applied Computation

Vision

Creative processes have always manipulated materials to make artefacts useful, engaging and beautiful. Extending the notion of material to include intangible things such as computation leads to very different types of objects – those that have behaviour and interact in new ways. While the underlying computational principles remain constant, the form that objects that are built using computation as an ingredient covers a wide spectrum including installations that interact, toys that intrigue and puzzle, apps that react based on the user, health products that talk to an expert system and narratives that evolve.

As machine learning and artificial intelligence appears in an increasing number of situations, there is an urgent need to have professionals who understand both the human and the technological - Creative practitioners who build digital and physical objects that satisfy human needs in ways that are both ethical and meaningful.

Building such objects requires both design as well as algorithmic thinking. It requires working with technologies that are still evolving, often experimental and which require tinkering to learn and develop with. It requires the ability to deal with a knowledge landscape that is dynamic and changes fast. A recent example of this is the blockchain which began as a niche technology, but is now being used to sign “digital artefacts” of various kinds; these artefacts range from those with financial and security implications to digital artworks.

Practitioners can seek to position themselves in spaces that range from functional and useful to whimsical or enlightened.

Core Values Beginner’s mind-set: curious, speculative, experiment and explore
Exploratory: learn, repurpose and adapt tools and techniques Hands-on: building to learn Playful: work with uncertainty and learn from failure Open Source: collaborative, community Iterative: build, test, modify cyclically to converge

Course Structure

The curriculum comprises of different ways of learning as follows:

Foundation introduces students to basic principles and tools of Art, Design and Technology as methods, tools and processes. Disciplinary Studios are learning spaces where students develop core disciplinary capabilities, while navigating a trans-disciplinary environment General Studies is a common and compulsory programme of study that integrates Humanities, Sciences, Maths, business and finance. Development and Policy Studies and also offers Languages (Spanish, French and German) Interim is an immersive introduction to practice in new and emerging areas of art and design and environmental exposure Electives are of three kinds - this program allows students to expand their skills, develop the interests as well as provide opportunities for travel exchange. Internship/Apprenticeship is compulsory work experience done over the summer-break

between the 6th and 7th semester. Project based learning involves the application and synthesis of capabilities acquired. Two projects, pre-thesis and thesis, is culmination of the 4-year undergraduate program, which allows for demonstration of an integration of values, positions, capabilities and practice.

Learning Approach

Learning at the Bachelor of Design in Creative and Applied Computation involves

Hands-on and experiential learning through making and exploring. Mathematical and algorithmic methods will be overtly engaged with. Understanding contexts where data arises and ways in which it can be used meaningfully. Interdisciplinary both in terms of tools and applications. Self-driven to learn new technologies, languages and libraries.

Capability Sets

Upon successful completion of this course graduates will have developed the following capabilities:

Identify ways in which processes can be represented using parameters and manipulate these algorithmically using computational tools. Learn emerging technologies and frameworks using online resources and documentation, and use them to build applications. Manipulate and represent media and data to gain insights into their structure. Build, customize or extend tools to execute specialized tasks. Combine the physical and digital using hardware and code to make objects capable of communicating and behaving in new ways. Apply computation in diverse contexts to add insight and value. Verify by testing that applications work as intended and find cases that they may fail in.

Opportunities

Graduates of the Bachelors of Design in Creative and Applied Computation will be equipped to work in the following areas:

Build interactive and dynamic communication into visual materials. Design and build exhibits / installations which incorporate interactivity in the education / exhibition sector. Integrate products with systems to build smart objects in companies working in IoT in various sectors. Manipulate data in data-rich situations to make visualisations that could be real-time and interactive. Work computationally with media of various kinds in gaming and entertainment based enterprises.

FAQs

What is it like to do the program in Creative and Applied Computation?

The program is delivered using a combination of studios, workshops, classroom sessions, seminars, and group projects to enable deep and experiential learning. You will be working in collaborative, dedicated studio spaces throughout the

program to gain practical skills, learn design process and theories to craft computation for future products and services. The program is transdisciplinary, allowing students to navigate through the curriculum choosing (with mentorship) learning units that are interesting to them. They learn to implement ideas and concepts using experimental and established tools, and develop visualisations that are engaging and meaningful for the end-user.

How does the Creative and Applied Computation specialisation differ from a B.Tech in Computer Science?

While Engineering courses often centre on the technical ideas of Computer Science, this course looks at the point where technology and people meet. While engineers optimise algorithms and build novel data structures to hold information, students in this course would use these algorithms in areas where they are meaningful, whether in healthcare and education or in art and media.

How does the Creative and Applied Computation specialisation differ from a BCA?

The Creative and Applied Computation specialisation looks at technology from the perspective of Art and Design. It looks at using algorithmic thinking in areas as diverse as business or theatre. Speculating about scenarios and looking for opportunities in contexts are part of the practice of Creative and Applied Computation.

What sort of profession or job can I pursue after specialising in Creative and Applied Computation?

The Creative and Applied Computation specialisation provides students with capabilities to work in a number of fields – it could be applying computation to well established areas such as graphic design to make visuals that are interactive and dynamic, or to product design to build objects that are intelligent and communicate; it could also be to new areas that are being explored such as applications of computer vision or augmented reality.