UNSW Course Outline

CODE1231 Urban Computing - 2024

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General Course Information

Course Code : CODE1231
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Arts, Design and Architecture
Academic Unit : School of Built Environment
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

<u>Useful Links</u>

<u>Handbook</u> <u>Class Timetable</u>

Course Details & Outcomes

Course Description

In this course, you will be introduced to urban computing, critique, and discourses through case examples of data and data collection. Your knowledge development will inform the application of computational thinking and methods to urban and spatial analysis. In addition, it will support the creation of design projects that adopt principles of physical computing, interaction design,

human-machine interaction, and data collection. The course culminates in the creation, construction, and presentation of data collection proposals and working prototypes that engage sensing and actuating technologies.

Relationship to Other Courses

CODE1161 Design Computing is a prerequisite or demonstrated evidence of equal Python programming experience.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Apply computational thinking and methods to urban and spatial analysis.
CLO2 : Apply principles of physical computing, interaction design and human-machine interaction to your design projects.
CLO3 : Construct interaction-design working prototypes that engage sensing and actuating technologies.

Course Learning Outcomes	Assessment Item
CLO1 : Apply computational thinking and methods to urban and spatial analysis.	• Individual Project • Presentation Assessment
CLO2 : Apply principles of physical computing, interaction design and human-machine interaction to your design projects.	• Individual Project • Presentation Assessment
CLO3 : Construct interaction-design working prototypes that engage sensing and actuating technologies.	• Individual Project • Presentation Assessment

Learning and Teaching Technologies

Moodle - Learning Management System | Zoom | Echo 360 | Microsoft Teams

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Individual Project Assessment Format: Individual	40%	Start Date: Not Applicable Due Date: Week 5: 07 October - 13 October
Presentation Assessment Assessment Format: Individual	60%	Due Date: Week 12: 25 November - 01 December

Assessment Details
Individual Project

Assessment Overview

You will design projects that adopt principles of physical computing, interaction design, human-machine interaction, and data collection. Marking will be done using a rubric with students receiving individual written feedback. Class-wide feedback will also be provided.

Course Learning Outcomes

- CLO1 : Apply computational thinking and methods to urban and spatial analysis.
- CLO2 : Apply principles of physical computing, interaction design and human-machine interaction to your design projects.
- CLO3 : Construct interaction-design working prototypes that engage sensing and actuating technologies.

Detailed Assessment Description

In this assessment you will undertake design research of a given design site and create an Urban Precinct Analysis report. The report will include design site analysis, user/stakeholder personas, urban technology design precedent analysis to inform the creation of a design problem definition framework that will shape your design brief for Assessment 2.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.

If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

For more information on Generative AI and permitted use please see here.

Presentation Assessment

Assessment Overview

You will develop a presentation that will demonstrate computational design skills and knowledge of text-based programming language for physical computing. Marking will be done using a rubric with students receiving an individual mark. Verbal feedback will occur through the development of the projects both to individuals and broadly to the class.

Course Learning Outcomes

- CLO1 : Apply computational thinking and methods to urban and spatial analysis.
- CLO2 : Apply principles of physical computing, interaction design and human-machine interaction to your design projects.
- CLO3 : Construct interaction-design working prototypes that engage sensing and actuating technologies.

Detailed Assessment Description

Extending from the site-based design research undertaken in Assignment 1 and the identified design problems, goals and opportunities, you will adopt a context-centred approach and computational methods to design and physically prototype an urban technology project. The prototype will demonstrate the key sensing and actuating features of the urban technology design project and your applied skills in programming a physical computing system.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.

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General Assessment Information

<u>Grading Basis</u>

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 0 : 2 September - 8 September	Reading	Read: Saudi Arabia's Neom development wants to be an 'accelerator for human progress'. Will it happen? What kinds of urban technologies are proposed for this 'smart-from-the-start' city? What are the different positions that people have taken in support, and opposition of this project? Where do you stand, and why?
Week 1 : 9 September - 15 September	Lecture	Introduction to urban computing and urban technology
	Tutorial	In-class activity: Desktop research on urban computing/technology initiatives and examples and creating cyber-physical system diagrams Introduction to Assignment (site allocations)
Week 2 : 16 September - 22 September	Lecture	Introduction to responsive urban environments
	Tutorial	In-class activity: Human and non-human stakeholder/user personas Introduction to sensor-based technologies and physical computing
Week 3 : 23 September - 29 September	Lecture	Guest Lecture: Urban technology in the North Sydney Smart City
	Tutorial	In-class activity: Physical Computing Workshop 1
	Online Activity	Submit work-in-progress Assignment 1 site research and stakeholder/user personas for feedback
Week 4 : 30 September - 6 October	Lecture	Guest Lecture: Introduction to urban interaction design
	Tutorial	In-class activity: Physical computing workshop 2 Design consultations (Assignment 1)
Week 5 : 7 October - 13 October	Lecture	Guest Lecture: Urban-Robot Interaction
	Assessment	Assignment 1 Urban Precinct Report PRESENTATION DUE IN CLASS
Week 6 : 14 October - 20 October	Tutorial	FLEXI WEEK NO LECTURE / NO TUTORIALS
Week 7 : 21 October - 27 October	Lecture	Media Architecture, Media Facades & Digital Placemaking
	Tutorial	In-class activity: Design Mash-up Introduction to Assingment 2: Urban Technology Design
Week 8 : 28 October - 3 November	Lecture	Guest Lecture: Urban Technology & Drones
	Tutorial	In-class activity: User experience journey / storyboarding Design Consultations: Prototype scale
Week 9 : 4 November - 10 November	Lecture	Guest Lecture: Urban Technology Prototyping
	Tutorial	Design consultations
Week 10 : 11 November - 17 November	Lecture	Guest Lecture: Designing Sound in Space, Composing Music in Architecture
	Tutorial	Design consultations
Week 12 : 25 November - 1 December	Assessment	Assignment 2: Urban Technology Design LIVE PRESENTATIONS

Attendance Requirements

You are expected to be regular and punctual in attendance at all classes for the School of Built Environment courses in which you are enrolled. If and where individual courses have specific attendance requirements, these will be stated in the course outline.

If you do not attend, engage, or participate in scheduled class activities, including lectures,

tutorials, studios, labs, etc, you run the risk of failing a course.

If illness or unexpected and beyond your control circumstances prevent you from completing a task on time, or substantially disturb your assessment performance, you should apply for Special Consideration, as soon as practicable, accompanied by appropriate documentation.

No special consideration will be provided if you miss out on essential course information and materials, or if you miss assessment tasks and deadlines due to unexplained absences or an unapproved lack of attendance.

You may be advised by the Course Convenor to withdraw from the course if significant learning activities are missed.

Course Resources

Recommended Resources

Gardner, N 2024, *Scaling the Smart City: The Design and Ethics of Urban Technology*, Elsevier, Netherlands.

Additional Costs

In this course you are required to design and make a working urban technology prototype. You will each be provided with a microcontroller board to learn and test physical computng concepts during the course. The purchase of additional electronics hardware, model making materials and digital fabrication costs will otherwise be incurred by the student.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	M. Hank Haeusler		Level 4, Arch Manu Centre, Anita B. Lawrence Centre		Drop-in sessions weekly, Tuesdays 130pm-2pm	No	No
Tutor	Hareem Nadeem		n/a	n/a	Email	No	Yes
Program director	Nicole Gardner		Room 4015, Level 4, Anita B. Lawrence Centre	02 9065 2185	Thursdays 10-12pm by email appointment contact School Administrator, Tassa Williams: tassa.williams@unsw.edu.au	Yes	No

Other Useful Information

Academic Information

For essential student information relating to:

- UNSW and Faculty policies and procedures;
- Student Support Services;
- Student equity and disability;
- Special Consideration in the event of illness or misadventure;
- Examination information;
- Review of results;

Please see: https://www.unsw.edu.au/arts-design-architecture/student-life/resources-support/protocols-guidelines

Academic Honesty and Plagarism

Plagiarism is using the words or ideas of others and presenting them as your own. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement.

UNSW groups plagiarism into the following categories:

- Copying: Using the same or very similar words to the original text or idea without acknowledging the source or using quotation marks. This includes copying materials, ideas or concepts from a book, article, report or other written document, presentation, composition, artwork, design, drawing, circuitry, computer program or software, website, internet, other electronic resource, or another person's assignment without appropriate acknowledgement.
- Inappropriate paraphrasing: Changing a few words and phrases while mostly retaining the original information, structure and/or progression of ideas of the original without acknowledgement. This also applies in presentations where someone paraphrases another's ideas or words without credit and to piecing together quotes and paraphrases into a new whole, without appropriate referencing.
- Collusion: Working with others but passing off the work as a person's individual work. Collusion also includes providing your work to another student for the purpose of them plagiarising, paying another person to perform an academic task, stealing or acquiring another person's academic work and copying it, offering to complete another person's work or seeking payment for completing academic work.
- Inappropriate citation: Citing sources which have not been read, without acknowledging the "secondary" source from which knowledge of them has been obtained.
- Duplication ("self-plagiarism"): Submitting your own work, in whole or in part, where it has previously been prepared or submitted for another assessment or course at UNSW or another

university.

The UNSW Academic Skills support offers resources and individual consultations. Students are also reminded that careful time management is an important part of study. One of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and proper referencing of sources in preparing all assessment items. UNSW Library has the ELISE tool available to assist you with your study at UNSW. ELISE is designed to introduce new students to studying at UNSW, but it can also be a great refresher during your study.

Completing the ELISE tutorial and quiz will enable you to:

- analyse topics, plan responses and organise research for academic writing and other assessment tasks
- effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- use and manage information effectively to accomplish a specific purpose
- better manage your time
- understand your rights and responsibilities as a student at UNSW
- be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of UNSW ICT Resources Policy
- be aware of the standards of behaviour expected of everyone in the UNSW community
- locate services and information about UNSW and UNSW Library

Use of AI for assessments

As AI applications continue to develop, and technology rapidly progresses around us, we remain committed to our values around academic integrity at UNSW. Where the use of AI tools, such as ChatGPT, has been permitted by your course convener, they must be properly credited and your submissions must be substantially your own work.

In cases where the use of AI has been prohibited, please respect this and be aware that where unauthorised use is detected, penalties will apply.

[Use of AI for assessments | UNSW Current Students](#)

Submission of Assessment Tasks

Assessment tasks must be submitted electronically via either Turnitin or a Moodle assignment. In instances where this is not possible, alternative submission details will be stated on your course's Moodle site. For information on how to submit assignments online via Moodle: [https://](#)

student.unsw.edu.au/how-submit-assignment-moodle

Late Submission Penalty

UNSW has a standard late submission penalty of:

- 5% per calendar day,
- for all assessments where a penalty applies,
- capped at five calendar days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request Special Consideration as early as possible before the deadline. Support with Time Management is available here.

Important note: UNSW has a "fit to sit/submit" rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

School Contact Information

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