## School of Humanities Creative Industries SocialSci

# DESN3600: Experimental Interfaces and Tangible Interaction Design

Newcastle City Precinct

Semester 1 - 2024

*The School of Humanities, Creative Industries and Social Sciences is committed to providing an inclusive environment in which all cultures are accorded respect and all students and staff are expected to act with honesty, fairness, trustworthiness and accountability in dealings with others. The School recognises and respects the unique histories and cultures of Aboriginal and Torres Strait Islander peoples, their unbroken relationship with the lands and the waters of Australia over millennia, and the validity of Aboriginal ways of knowing. We are dedicated to reconciliation and to offering opportunities for Aboriginal and Torres Strait Islander peoples to access and succeed in higher education.*

# OVERVIEW

**Course Description**

This course explores the design potential of emerging technologies in the creation of interactive artefacts, students will be introduced to designing playful interactions that extend beyond screen-based interaction to encompass interaction with the physical world. Students will learn about and experiment with a range of tools, such as sensors and haptic interaction to engage with physical objects in the real world, through projects.

Student projects may involve work integrated or research integrated learning opportunities; projects that involve external stakeholders; group/collaborative projects; speculative or more theoretically oriented projects; professionally oriented projects; projects based on competition or award briefs.

**Academic Progress Requirements**

Nil

**Contact Hours**

**Newcastle City Precinct**

**Tutorial**
Face to Face On Campus
2 hour(s) per week(s) for 12 week(s) starting Week 1

**Unit Weighting**

10

**Workload**

Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

COURSE OUTLINE

# CONTACTS

**Course Coordinator**

**Newcastle City Precinct**
Dr Marilia Lyra Bergamo
Marilia.Lyrabergamo@newcastle.edu.au
Consultation: by appointment.

**Teaching Staff**

Other teaching staff will be advised on the course Canvas site.

**School Office**

**School of Humanities Creative Industries and Social Sciences**
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# SYLLABUS

**Course Content**

- Physical computing
- Solderless electronics
- Projection mapping
- Motion and light sensors
- Creative and playful uses of emerging technologies

**Course Learning Outcomes**

**On successful completion of this course, students will be able to:**

1. Demonstrate a strong understanding of new directions in non - screen based interaction design

2. Apply experimental methodology within an iterative design approach

3. Conceive and design an experimental user interface

4. Construct a prototype of a sensor-based interactive experience

5. Develop skills in simple physical computing

**Course Materials**

Lecture Materials:

- The Lecture material consists of PowerPoint presentations and framework description.

Other Resources:

- Online resources and additional information will be provided during tutorials.

Recommended Reading:

- Please see the required and optional reading list on Canvas.

# SCHEDULE

| Week | Week Begins | Topic | Learning Activity | Assessment Due |
|---|---|---|---|---|
| **1** | 26 Feb | Introduction to Physical Computing, Tangible Interaction and Screen Projection | 1h Lecture, 30minQ&A, 30min debate. | Technological skills research |
| **2** | 4 Mar | Maker Space Induction & Circuit Basics | 2h Tutorial - Paper circuit | A1: Paper Circuit<br>A2: Weekly blog post |
| **3** | 11 Mar | Create circuit inside an 3D object | 2h Tutorial - Circuit Building | A1: Circuit Building<br>A2: Weekly blog post |
| **4** | 18 Mar | Introduction to Physical Computing Principles | 2h Tutorial - Setting Up Your Arduino | A1: Setting Up Your Arduino<br>A2: Weekly blog post |
| **5** | 25 Mar | Transduction - Physical Computing (sensing the world) | 2h Tutorial - Reading from Sensors | A1: Reading from Sensors<br>A2: Weekly blog post |
| **6** | 1 Apr | Transduction - Viewing the interaction on the screen | 2h Tutorial - Working with Processing to read sensors data | A1: Working with Processing<br>A2: Weekly blog post |
| **7** | 8 Apr | Physical Behavior - Physical Computing (acting in the world) | 2h Tutorial - Using Servos | A1: Using Servos<br>A2: Weekly blog post |
| **Mid-Semester Recess** | | | | |
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| **8** | 29 Apr | Expanding perception - Creating Behavior | 2h Tutorial - Playing Sounds | A1: Playing Sounds<br>A2: Weekly blog post |
| **9** | 6 May | Expanding possibilities: TouchDesign, MaxMSP and Including other people's codes | 2h Tutorial - Adding Libraries | A1: TouchDesign and Adding Libraries to Arduino or Processing<br>A2: Weekly blog post |
| **10** | 13 May | Supported Project work for A3 Assessment | 2h Self-directive with tutor support | A1: Tutorial Activity Portfolio: due in class week 9 |
| **11** | 20 May | Supported Project work for A3 Assessment | 2h Self-directive with tutor support | Maker work |
| **12** | 27 May | Supported Project work for A3 Assessment | 2h Self-directive with tutor support | Maker work |
| **13** | 3 Jun | Self directed work for assessment | No tutorial | A3: PDF Delivery by Canvas, and Physical Project on Maker Space |
| **Examination Period** | | | | |
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# ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

| | Assessment Name | Due Date | Involvement | Weighting | Learning Outcomes |
|---|---|---|---|---|---|
| **1** | Tutorial/Laboratory Exercises | Tutorials must be delivered one week after being presented by the tutor and posted on an online platform to be indicated by the course coordinator.<br>Online upload – Tuesday 7 May 11.59pm | Individual | 35% | 1, 2, 5 |
| **2** | Online Learning Activity | Tuesday 14 May 11:59pm<br>Online self-development must conclude before the group project starts. | Individual | 25% | 1, 2, 3 |
| **3** | Project | In class - Tuesday 6 June 4pm<br>Online PDF document - Tuesday 3 June 11:59pm | Group | 40% | 2, 3, 4 |

**Late Submissions** The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

## Assessment 1 - Tutorial/Laboratory Exercises

**Assessment Type** Tutorial / Laboratory Exercises
**Purpose** The tutorials aim to teach students essential skills for developing non-graphical interfaces and basic programming knowledge for reading interface input and interaction feedback.
**Description** During eight weeks, students will be exposed to techniques of non-graphic interaction design and input feedback. Five compulsory tutorials and three additional advanced ones will be available for students.
**Weighting** 35%
**Length** 5 - 10 pages including photos, diagrams and sketch
**Due Date** Tutorials must be delivered one week after being presented by the tutor and posted on an online platform to be indicated by the course coordinator. Online upload due by 7 May 11.59pm
**Submission Method** Online
**Assessment Criteria** Check the rubrics for this activity on Canvas
**Return Method** Online
**Feedback Provided** In Class - Feedback will be provided a week after the delivery, before the following tutorial..

## Assessment 2 - Online Learning Activity

**Assessment Type** Online Learning Activity
**Purpose** Online studies will be required for the student to complete the aims of his interest in the course. Students must consult the tutor to find out which tutorials they must follow to complete their group activity. These tutorials are necessary so that the student can complete the prototype to be presented in Assessment 3.
**Description** At the end of week 7, students will map their development choices, and the course coordinator will map the necessary resources to conclude the individual study.
**Weighting** 25%
**Length** 1600-3200 words (8 x 200 - 400 word blog posts)
**Due Date** Tuesday 14 May 11:59pm
Online self-development must conclude before the group project starts.
**Submission Method** Online - a PDF file describing activities and results
**Assessment Criteria** Check the rubrics for this activity on Canvas
**Return Method** Online
**Feedback Provided** Online - Two weeks. The tutor will verify the knowledge acquired by the student through an

evaluation of the material delivered.

## Assessment 3 - Project

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| **Assessment Type** | Project |
| **Purpose** | The main objective of project development is for students to be able to plan and produce an experimental interface prototype. |
| **Description** | The project must be delivered in groups, consisting of developing a non-graphic interface. It should include a physical prototype and graphic or physical input feedback. |
| **Weighting** | 40% |
| **Length** | 1 x physical prototype + PDF description per group |
| **Due Date** | In class - Tuesday 6 June 4pm<br>Online PDF document - Tuesday 3 June 11:59pm |
| **Submission Method** | In Class<br>Online<br>The final work must be presented in class by the group to the other students. |
| **Assessment Criteria** | Check the rubrics for this activity on Canvas |
| **Return Method** | In Person |
| **Feedback Provided** | Returned Work - A week before the delivery.. Will be presented by writing review. |

# ADDITIONAL INFORMATION

**Grading Scheme**

This course is graded as follows:

| Range of Marks | Grade | Description |
|---|---|---|
| 85-100 | High Distinction (HD) | Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives. |
| 75-84 | Distinction (D) | Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives. |
| 65-74 | Credit (C) | Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes. |
| 50-64 | Pass (P) | Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes. |
| 0-49 | Fail (FF) | Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action. |

*Skills are those identified for the purposes of assessment task(s).

**Communication Methods**

Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.
- Face to Face: Communication will be provided via face to face meetings or supervision.

**Course Evaluation**

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

**Oral Interviews (Vivas)**

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of

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| | the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the Oral Examination (viva) Procedure. In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the Student Conduct Rule. |
| **Academic Misconduct** | All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35 . |
| **Adverse Circumstances** | The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:<br>1. the assessment item is a major assessment item; or<br>2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;<br>3. you are requesting a change of placement; or<br>4. the course has a compulsory attendance requirement.<br>Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:<br>https://policies.newcastle.edu.au/document/view-current.php?id=236 |
| **Important Policy Information** | The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University. |

*This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.*