Course Outline

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Course Code	COMP6733
Course Title	IoT Design Studio
Units of Credit	6
Lecturer	Wen Hu
Admin	Wen Hu
Classes	Lectures: Mon 14:00-16:00 Hrs, Tue 09:00 -11:00 Hrs, On-line (Zoom Lectres (https://webcms3.cse.unsw.edu.au/COMP6733/21T3/resources/65060)) , (Campus Map (https://ibb.co/qrMb2F2)) Timetable (https://webcms3.cse.unsw.edu.au/COMP6733/21T3/timetable) for all classes.
Consultations	Tuesday: 11:00 -12:00 Venue: on-line (Zoom Consultations (https://webcms3.cse.unsw.edu.au/COMP6733/21T3/timetable))
Course Website	https://webcms3.cse.unsw.edu.au/COMP6733/21T3/ (https://webcms3.cse.unsw.edu.au/COMP6733/20T3/)
Course Contact Email	cs6733@cse.unsw.edu.au
Handbook Entry	https://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP6733 (https://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP6733)

Course Summary

The aim of the lectures is to facilitate learning and understanding of the important concepts within the course syllabus. Lecture notes will be available at the course web site for downloading before the lecture. In addition to attending the lectures (**mandatory**), students are also asked to study the recommended reading materials before and after the lecture. A number of study problems will be issued each week. These problems give the students a chance to test whether they have understood concepts that are introduced in the lecture. Time in the lecture, if available, may be used to discuss some of these study problems. Solutions to these problems will be available on the course web site.

This course will also provide practical training on programming Intenet of Things (IoT) devices. Each student will be loaned at least one IoT device during the duration of this course for them to work on the laboratory exercises and project.

Guided laboratory on IoT programming will take place from Weeks 2-5 and 7 for 4 hours per week. Laboratory worksheet in self-study style will be issued on the course web site. A laboratory demonstrator will be available to help students with their work. Each laboratory exercise comes with an assessment exercise. Students are expected to demonstrate the assessment to their laboratory demonstrators in the next lab session in order to receive the allotted marks for the exercise.

The aim of project is to give students an opportunity to work on an extended development IoT project. The project work will be done in teams of up to 3 students.

Course Timetable

There will be 4 hours of lectures every week:

(i) 2-hour lecture on Monday 14:00 - 16:00 and

(ii) 2-hour lecture on Tuesday 09:00 - 11:00

Both on-line (Zoom (https://webcms3.cse.unsw.edu.au/COMP6733/21T3/resources/65060)).

There will be 4-hour labs in Weeks 2-5 and 7. The detailed lab schedule will be posted on The detailed course timetable is available here (https://webcms3.cse.unsw.edu.au/COMP6733/21T3/timetable) (https://webcms3.cse.unsw.edu.au/COMP3331/19T2

(https://webcms3.cse.unsw.edu.au/COMP3331/19T2/timetable) (https://webcms3.cse.unsw.edu.au/COMP3331/19T2/timetable)

(https://webcms3.cse.unsw.edu.au/COMP3331/19T2/timetable) (https://webcms3.cse.unsw.edu.au/COMP3331/19T2/timetable)

(https://webcms3.cse.unsw.edu.au/COMP3331/19T2/timetable) (https://webcms3.cse.unsw.edu.au/COMP3331/19T2/timetable)

Scholarship: able to apply their knowledge and skills to solving problems	Labs, problem set, project
Scholarship: capable of effective communication	Lectures, labs, project
Scholarship: digitally literate	All aspects of the course
Scholarship: information literate	All aspects of the course
Leadership: collaborative team workers	Labs, project
Professionalism: capable of independent, self-directed practice	All aspects of the course
Professionalism: capable of lifelong learning	All aspects of the course
Professionalism: capable of operating within an agreed Code of Practice	Labs, assignment, project
Global citizens: culturally aware and capable of respecting diversity and acting in socially /responsible ways	Labs, course forums

Pre-requisites / Co-requisites

- **COMP9331 or COMP3331 (Computer Networks and Applications)**
- **65 WAM**

Teaching Rationale

The course consists of the following learning components:

- Lecture of 2 x 2 hours per week (S **tudents enrolled in COMP6733 are expected to attend all classes. Bonus points be be awarded for attendance. Please see the Lab page (https://webcms3.cse.unsw.edu.au/COMP6733/21T3/resources/65014) for more details**).
- Guided laboratory work for 4 hours per week in Weeks 2-5, and 7. (Special device, e.g., sensortags, for the labs will be posted to the students)
- Internet of Things project.

The aim of the lectures is to facilitate learning and understanding of the important concepts within the course syllabus. Lecture notes will be available at the course web site for downloading before the lecture. In addition to attending the lectures (**mandatory**), students are also asked to study the recommended reading materials before and after the lecture. A number of study problems will be issued each week. These problems give the students a chance to test whether they have understood concepts that are introduced in the lecture. Time in the lecture, if available, may be used to discuss some of these study problems. Solutions to these problems will be available on the course web site.

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The aim of project is to give students an opportunity to work on an extended development IoT project. The project work will be done in teams of up to 3 students.

Teaching Strategies

- **Lectures:** introduce theory demonstrate how they apply in practice
- **Lab Work:** reinforce concepts taught in lectures by conducting hands-on experiments and network performance
- **Proble set:** allow students to solve problems based on content from lectures, develop problem-solving skills, assist with exam preparation
- **Project:** allow students to design and implement IoT systems and evaluate their performance
- **Consultations, Tutorials and Course Forum:** allow students an opportunity to ask questions and seek help.

Assessment

There will be four assessment components as listed below:

Component	Weight
Lab Exercises	30%
Problem Set	10%
Project plan and preliminary founding class presentation	15%
Project milestone class presentation	15%
Project final report (10%) and demo (20%)	30%

The following assessment rules apply:

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You must attempt all assessment components.
Your raw score is computed as the weighted sum (with the weightings listed above) of the score for each assessment com
ponent.
Your final score will be computed according to the following rules:
If you obtain 40% or more for all three assessment components, your final score equals to your raw score.
If you obtain less than 40% for any one of the three assessment components, your final score is the smaller of your ra
w score and 64. For example,
If at least one of your assessment components is less than 40% and your raw score is 70, your final score will be 64.
If at least one of your assessment components is less than 40% and your raw score is 50, your final score will be 50.
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Late submission of any form of assessments: Assessments submitted late are subject to the following penalty: the maximum mark obtainable reduces by 10% per day late. Thus if the assessment is marked out of 10, and students A and B hand in assessments worth 9 and 7, both two days late, then the maximum mark obtainable is 8, so A gets min(9, 8) = 8 and B gets min(7,8) = 7. Assessments handed in over 5 days late will receive no marks.

Plagiarism is defined as (https://student.unsw.edu.au/what-plagiarism) *using the words or ideas of others and presenting them as your own* UNSW and CSE treat plagiarism as academic misconduct, which means that it carries penalties as severe as being excluded from further study at UNSW. There are several sources to help you understand what plagiarism is and how it is dealt with at UNSW:

- Plagiarism and Academic Integrity (https://student.unsw.edu.au/plagiarism)
- Student Code Policy (https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf)
- Student Misconduct Procedure (https://www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf)
- Plagiarism Policy (https://www.gs.unsw.edu.au/policy/documents/plagiarismpolicy.pdf)
- UNSW Plagiarism Procedure (https://www.gs.unsw.edu.au/policy/documents/plagiarismprocedure.pdf)
- Essential Advice for CSE students (https://www.engineering.unsw.edu.au/computer-science-engineering/about-us/organisational-structure/student-services/policies/essential-advice-for-cse-students)

Make sure that you read and understand these. Ignorance is not accepted as an excuse for plagiarism. In particular, you are responsible for the of your assignment files such that they are not accessible by anyone but you by setting proper permissions on your CSE home directory and/or on online code repositories. Note also that plagiarism includes paying or asking another person to do a piece of work for you and then submitting it as your own work.

Course Schedule

The following table lists the **tentative** weekly schedule. Students will be informed of any changes during the lecture and by announcements on the notices page.

Week	Lecture Dates	Lecturer	Lecture Topics	Labs	Remarks
1	13 & 14 Sep 2021	Wen	• Course organisation • Introduction to Internet of Things (IoT) and • Foundation topics on IoT		• Sensortags will be posted to you. • List of projects posted.
2	20 & 21 Sep 2021	Wen, Hao Ni	• Low Power Communications: IEEE 802.15.4, Bluetooth Low Energy • RPL	Getting started and Contiki fundamentals (Assessment to be demonstrated in the next lab)	
3	27 & 28 Sep 2021	Wen,	• LPWAN, CoAP, Web Services for Internet of Things • Time synchronisation	Networking (Assessment to be demonstrated in the next lab)	Project teams and topics finalised
4	4 & 5 Oct 2021	Wen,	• **Public holiday (04/10)** • Localisation	CoAP, Web services, and sensors (Assessment to be demonstrated in the next lab)	
5	11 & 12 Oct 2021	Wen	Project presentation (I)	RF Ranging/Localisation	Project Plan Due

				(Assessment to be demonstrated in Week 7)	
6	18 & 19 Oct 2021		Break		
7	25 & 26 Oct 2021	Wen, Brano Kusy (CSIRO)	• Light-weight machine learning and Signal Processing • Environmental monitoring IoT	(Machine Learning (**Self study, not accessible**).	
8	1 & 2 Nov 2021	Wen	Project presentation (II)		**Project Progress Report Due**
9	8 & 9 Nov 2020	James Woods (WiseTech), Christopher Sampson (Tiliter)	• Supply chain IoT • Smart retail IoT		Problem Set Due
10	15 &16 Nov 2020	Wen	Project work		Final Project Report due on 17:00, 21 Nov, Sunday.
11	22 Nov 2021	Wen	Project demo and interview		Return all equipment at the end of project demo and interview.

Resources for Students

IoT is a young, emerging and rapdily evolving field. Thus, the course materials will draw from books, professional journals and conference papers.

You will find the following books in the library to be of interest:

- Bahga and Madisetti, Internet of Things: A Hands-On Approach
- McEwen and Cassimally, Designing the Internet of Things

We will be using a number of journal or conference papers in this course. These will be provided on the course web site and you can access them using your zpass.

Guided laboratory and laboratory assessment:

Students are required to attend a guided laboratory from Weeks 2-5 where they will learn programming IoT devices. Laboratory worksheets will be available on the course website. There will be a lab demonstrator assisting in the laboratory.

The equipment to be used is the SensorTag. Each student will be loaned one SensorTag for doing the laboratory and the project. The students will need to sign a loan form and undertake to return these motes in good condition. The motes will be handed out in the laboratory session in the first lab. You must return them at the end of your project demo and interview.

The first lab will provide a basic overview of Contiki and SensorTag. Each lab has an assessment exercise that comes with it. You are given a week to complete these exercises and you will need to demonstrate this to the lab demonstrator in the next laboratory session. Although there is no laboratory exercise for Week 7, you will still need to attend the laboratory to do the demonstration. Apart from the demonstration, you are **NOT** required to attend the full lab sessions.

Projects:

The aim of the project is to give the students an opportunity to do a small research and development project in IoT. The project work is to be performed in teams of up to 3 students.

The *modus operandi* is:

- A list of projects will be made available in Week 1 of the course.
- Students can form teams to bid to do one of these projects or propose their own. Future details on this will be available when the list of project is posted.
- Project teams and topics must be finalised by Week 3.
- Each project team should submit their preliminary research finding and proposed project plan in a preliminary report in Week 5. The proposed project plan must include the milestones to be achieved by Week 8 and final deliverables. The LiC reserves the right to add or remove tasks from the proposed project.

- Each project team is to present their preliminary research finding to the class during the lecture in Week 5.
- Each project team to present their intermediate finding (demonstrating milestones achieved as per preliminary plan) in Week 8.
- The final project report and code is to be submitted by 17:00 Sunday 21 Nov 2021 via give.
- A final demonstration and interview will be held in Week 11.

Note that there is no formal examination for COMP6733.

Course Evaluation and Development

Student feedback on this course, and on the effectiveness of lectures in this course, is obtained via electronic survey at the end of each term. Student feedback is taken seriously. Continual improvements are made to the course based in part on this feedback, and **will be discussed in the Week 1's lecture** . Students are strongly encouraged to let the lecturer in charge know of any problems as soon as they arise. Suggestions and criticisms will be listened to openly, and every action will be taken to correct any issue or improve the students' learning experience.

Special Consideration

You can view the Special Consideration policy at the link here (https://student.unsw.edu.au/special-consideration)
(https://student.unsw.edu.au/special-consideration)

UNSW handles special centrally (in the Student Lifecycle division), so all special must be submitted via the UNSW Special Consideration (https://iaro.online.unsw.edu.au/special_consideration/home.login) website. If your work in this course is affected by unforeseen adverse circumstances, you should apply for Special Consideration. Special must be accompanied by documentation on how you have been affected, which will be verified by Student Lifecycle. Do not email the course directly about special consideration. If your request is reasonable and your work has clearly been impacted, then

- a lab, you may be granted an extension
- problem set, you may be granted an extension
- a project report, you may be granted an extension

Note the use of the word "may". None of the above is guaranteed. It depends on you making a convincing case that the circumstances have clearly impacted your ability to work. Note that UNSW expects you to be available to sit Supplementary Exams, if required. If you are awarded a supplementary exam and do not attend, then your exam mark will be zero.

If you are registered with Disability Services, please forward your documentation to your Lecturer within the first two weeks of term.

Contacting LiC and Course Admin: No personal emails please.

Safe Return to Campus

- https://www.covid-19.unsw.edu.au/safe-return-campu... (https://www.covid-19.unsw.edu.au/safe-return-campus-faqs)

9 months ago , last modified 8 months ago .

Resource created 3 months ago (Tuesday 24 August 2021, 02:37:11 PM), last modified 2 months ago (Friday 17 September 2021, 02:52:10 PM).