



# Course Directive

## IN722 Hardware

### Semester Two, 2017

## Description

Modern networked systems require a broad set of skills, ranging from fundamental principles of electronics, networking, software development, as well as being able to tackle coordination challenges to integrate individual components in a coherent system.

The course introduces students to contemporary developments in the context of the 'Internet of Things' and highlights future emerging fields. Topics include the construction and programming of embedded devices as well as coordination software that facilitates Machine-to-Machine (M2M) communication. Beyond the purely technical perspective the course discusses conceptual challenges, such as the notion of 'context', system coordination on a global scale as well as raising sensitivity for implications on security and privacy.

The students integrate these different perspectives in a comprehensive project that fosters the students' capability to systematically develop, secure and maintain a context-sensitive distributed system for a specific application context.

## Course Information

- 15 Credits
- Prerequisites: IN621 and instructor permission

## Lecturers

Nathan Rountree

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## Course Dates

Term 1 (11 weeks) 17 July – 29 September

Mid semester break 2 October – 13 October

Term 2 (5 weeks) 16 October – 17 November

## Resources

Lab documents, slides, and other material is available on Github at <https://github.com/ncrountree/op-papers>.

## Course Content and Schedule

This schedule is tentative and subject to change based on needs of the class.

Week	Week Start	Topics
1	17 Jul	Overview of the Internet of Things
2	24 Jul	Devices
3	31 Jul	Devices, Network Communication
4	7 Aug	Network Communication, Protocol Stacks
5	14 Aug	M2M Communication
6	21 Aug	IoT Infrastructure
7	28 Aug	Coordination Protocols
8	4 Sep	Security
9	11 Sep	Project Work
10	18 Sep	Project Review
H1	25 Sep	Reviewing Existing IoT Solutions
H2	2 Oct	Holiday
11	9 Oct	Holiday
12	16 Oct	Project Work (Infrastructure Revision)
13	23 Oct	Project Work
14	30 Oct	Project Refinement (Functionality)
15	6 Nov	Project Refinement (Security, Hardening)
16	13 Nov	Project Evaluation

## Assessment

Assessment	Weighting
Project Work	100%

## Criteria for Passing

You must receive an overall average mark of 50% or higher to pass this paper.

## Course Requirements and Expectations

### Attendance

This paper is composed of a mix of lectures and self-paced project work. Attendance is at your discretion. However, you are responsible for keeping up with events that take place in class and completing work on schedule.

### Communication

Important announcements and discussions about the course, assessments, and scheduling may take place during class sessions. It is your responsibility to be informed about them. If you cannot attend a class session, be sure

to check with another student.

Your student email is an official communication channel. It is your responsibility to regularly check your student email for important course related material, including changes to class scheduling or assessment details. Not checking will not be accepted as an excuse.

You can manage your email at the Student Hub and download the instructions for forwarding your email at <http://www.op.ac.nz/students/student-hub/>

## **Polytechnic Closure**

In the event that the Polytechnic is closed or has a delayed opening because of snow or bad weather, you should not attempt to attend class if it is unsafe to do so. It is possible that your instructor will not be able to attend either, so classes will not physically be meeting. However, this does not become a holiday. Rather, material will be available on the Cisco Academy web site covering the material for classes affected by the closure. You are responsible for any material presented in this manner. Information about closure will be posted on the Otago Polytechnic facebook page <https://www.facebook.com/OtagoPoly>.

## **Group Work and Originality**

Students in the Bachelor of Information Technology degree are expected to hand in original work. Students are encouraged to discuss assignments with their fellow students. However, all assignments are to be completed as individual works unless group work is explicitly involved. Failure to submit your own unique work will be treated as plagiarism.

## **Referencing**

Appropriate referencing is required for all work. Referencing standards will be specified by your instructor.

## **Plagiarism**

Plagiarism is submitting someone else's work as your own. Plagiarism offences are taken seriously and an assessment that has been plagiarised may be awarded a zero mark. A definition of plagiarism is in the Student Handbook, available online or at the school office.

## **Submission Requirements**

All assignments are to be submitted by the time, date, and method given when the assignment is issued.

## **Extensions**

Extensions are only available for unusual circumstances. These must be applied for, and approved, prior to the submission deadline.

## **Impairment**

In case of sickness contact your lecturer or year co-ordinator as soon as possible, preferably before the test or assignment is due. The policy regarding the granting of a mark that considers impaired performance requires a medical certificate and a medical practitioners signature on a form. You should refer to the guide on impaired performance in the student handbook.

## **Appeals**

If you are concerned about any aspect of your assessment, please approach the lecturer in the first instance. We support an open door policy and aim to resolve issues promptly. Further support is available from the Programme Manager and Head of School. Otago Polytechnic has a formal process for academic appeals if necessary.

## **Other Documents**

Regulatory documents relating this course can be found on the Polytechnic website.

## **Special Resources and Requirements**

If you have any special needs, whether they relate to the course material, the exercises, the assessment, or anything in the course - then *please* let your instructor know as soon as possible.