Course Directive
IN711 Algorithms and Data Structures
Semester Two, 2015

Description

Computer programming is a problem-solving discipline independent of the constructs of a particular programming language. An efficient programming solution requires development of both a correct, efficient algorithm, and the selection of appropriate date structures. This course intends to acquaint students with the wide variety of tools and constructs available for this development, and to train them to analyse the efficiency and correctness of their chosen solution. Students will apply the theoretical material presented in the course in a variety of computer programming assignments that will emphasise the ubiquitousness of the programming discipline in Information Technology.

Course Information

- 15 Credits
- Prerequisites: IN710 and instructor permission

Lecturer

Tom Clark

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Course Dates

Term 1 (10 weeks)	20 July - 25 September
Mid semester break	26 September - 11 October
Term 2 (6 weeks)	12 October - 20 November

Resources

The required text for this paper is *Data Structures and Algorithms in Python* by Goodrich, Tamassia, and Goldwasser. The book is available online at `http://www.it-ebooks.info/book/2467/`.

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

Course Content and Schedule

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

Week	Week Start	Topics	Chapter
1	20 Jul	Introduction, Algorithm Analysis	3
2	27 Jul	Recursion	4
3	3 Aug	Array Based Structures	5
4	10 Aug	Stacks and Queues	6
5	17 Aug	Linked Lists	7
6	24 Aug	Trees	8
7	31 Aug	Priority Queues	9
8	7 Sep	Maps, Hash Tables	10
9	14 Sep	Project Work	11
10	21 Sep	Search Trees	11
H1	28 Sep	Holiday	
H2	5 Oct	Holiday	
11	12 Oct	Search Trees	12
12	19 Oct	Sorting and Searching	14
13	26 Oct	Graphs	
14	2 Nov	Project Intro and work	
15	9 Nov	Project Work	
16	16 Nov	Revision and Exam	

Assessment

Assessments are weighted as follows:

Assessment	Weighting
Weekly Labs	10%
Project Work	80%
Theory Exam	10%

Criteria for Passing

You must receive and 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. Attendence 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.
A private channel, `networks-admin`, is set up on the op-bit Slack at `https://op-bit.slack.com/`. The channel is intended for general class discussion. Important announcements may also be posted there, so you should join and monitor the channel.
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 may should refer to the guide on impaired performance on 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.