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Created: 08-Jun-2017, Updated: 08-Jun-2017

Module Code	CS4211
Module Title	FORMAL METHODS FOR SOFTWARE ENGINEERING
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	A collection of all readings to Live Sequence Charts http://wiki.weizmann.ac.il/playgo/index.php/Live_sequence_charts A definitive paper on Live Sequence Charts, as representation of requirements http://www.wisdom.weizmann.ac.il/~harel/SCANNED.PAPERS/LSCs.pdf SPIN model checker website http://spinroot.com/spin/whatispin.html Sections 4 and 5 only http://www.cs.cmu.edu/~emc/papers/Invited%20Conference%20Articles/Verification%20Tools%20for%20Finite-State%20Concurrent%20Systems.pdf http://www.cs.cmu.edu/~emc/papers/Conference%20Papers/Grand%20Challenge%20Model%20Check%20Software.pdf
Tags	--

Learning Outcomes | Prerequisites | Teaching Modes | Syllabus | Workload

Learning Outcomes

Top

The students will learn the differentiation between requirements, models and code. Specification languages for describing desirable properties of software will be discussed. Formally verifying such properties for both models and code, will be discussed in depth.

Prerequisites

Top

CS2103 or its equivalent

Teaching Modes

Top

Lectures, Revision, Hands-on Project, Tests

Syllabus

Top

1. State-based and scenario-based models
2. Temporal Logics
3. Model Checking Algorithms
4. Software Model Checking (using Abstraction Refinement)
5. Software verification and validation using symbolic execution and constraint solving
6. Theorem proving via Hoare-style program verification.

Workload

Top

2-1-0-3-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week
C: no. of lab hours per week
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Created: 18-Jul-2017, Updated: 18-Jul-2017

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Module Code	CS4212
Module Title	COMPILER DESIGN
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Learning Outcomes

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The objective of this module is to introduce the principal ideas behind program compilation, and discusses various techniques for program parsing, program analysis, program optimisation, and run-time organisation required for program execution. Topics covered include regular expressions, context-free grammars, lexical analysis, syntax analysis; different algorithms for parsing codes, such as top-down parsing, bottom-up parsing; translation to abstract syntax using modern parser generator technology, intermediate representation, semantics analysis, type system, un-optimised code generation, code optimisation, data-flow analysis, instruction scheduling.

By the end of the course, student will have built a compiler for a simple programming language, called mOOL, and have it run on devices (or device simulators).

Note: All programming assignments done in this course will be written in OCaml.

Prerequisites

Top

CS2104 Programming Language

NOTE: **Programming Exercises will be done in OCaml. Some elementary programming exercises will be provided to help students in picking up OCaml. Students are required to use OCaml throughout the entire course. If one has problem using OCaml, one will not be able to build the compiler in the course, and will be severely disadvantaged.**

Teaching Modes

Top

Classroom teaching + tutorials (during class) + possibly some help sessions.

Use of IVLE discussion forum is highly encouraged, and **students' contributions to the sharing of knowledge at the forum will be graded!**

Schedule

Top

Please refer to the lesson plan.

Syllabus

Top

Please refer to the lesson plan

Assessment Top

CA: 60%

- **One written assignments,10%**
- **Three programming assignments, totaling 40%**
  - The three assignments combined will build a compiler for a small object-based language called **mOOL**.
  - The implementing programming language (the language used to build mOOL Compiler) is **Ocaml**.
  - Some project assignment help sessions will be conducted on specific Saturdays; attendance is not compulsory.
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Exam: 40%

- **Mid-term Test: 15%**
  - This will be conducted during lecture hour around middle of the semester.
- **Final exam: 25%**

Workload Top

Some additional sessions might be conducted to help students with the assignments. Depending on availability, it will be conducted either on Saturday or on weekday (day times).

By default, tutorial and lectures are held at the same night to accommodate the availability of part-time students.

Usual workload: 2-1-0-3-3

Workload Components : A-B-C-D-E
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Text & Readings Top

*If LINC does not return any results, please try alternative searches (e.g title). Any errors encountered, please report to the lecturer and the library.

Total 2 items

Compilers Principles, Techniques & Tools **Author: Aho, Lam, Sethi, Ullman**	2ed / -	-	Pearson	Compulsory This book will be available by end of this week in NUS Co-op. It will cost around S$75. The earlier version is available in Central Library with call #: QA76.76 Com.A
OCaml for scientists **Author: Harrop, Jon D.**	- / -	-	-	Compulsory Library call # QA76.73 OCa.H 2005

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Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
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Weblinks	A collection of all readings to Live Sequence Charts http://wiki.weizmann.ac.il/playgo/index.php/Live_sequence_charts A definitive paper on Live Sequence Charts, as representation of requirements http://www.wisdom.weizmann.ac.il/~harel/SCANNED.PAPERS/LSCs.pdf SPIN model checker website http://spinroot.com/spin/whatispin.html Sections 4 and 5 only http://www.cs.cmu.edu/~emc/papers/Invited%20Conference%20Articles/Verification%20Tools%20for%20Finite-State%20Concurrent%20Systems.pdf http://www.cs.cmu.edu/~emc/papers/Conference%20Papers/Grand%20Challenge%20Model%20Check%20Software.pdf
Tags	--

Learning Outcomes | Prerequisites | Teaching Modes | Syllabus | Workload

Learning Outcomes

Top

The students will learn the differentiation between requirements, models and code. Specification languages for describing desirable properties of software will be discussed. Formally verifying such properties for both models and code, will be discussed in depth.

Prerequisites

Top

CS2103 or its equivalent

Teaching Modes

Top

Lectures, Revision, Hands-on Project, Tests

Syllabus

Top

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Created: 18-Jul-2017, Updated: 18-Jul-2017

Module Code	CS4212
Module Title	COMPILER DESIGN
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Learning Outcomes

Top

The objective of this module is to introduce the principal ideas behind program compilation, and discusses various techniques for program parsing, program analysis, program optimisation, and run-time organisation required for program execution. Topics covered include regular expressions, context-free grammars, lexical analysis, syntax analysis; different algorithms for parsing codes, such as top-down parsing, bottom-up parsing; translation to abstract syntax using modern parser generator technology, intermediate representation, semantics analysis, type system, un-optimised code generation, code optimisation, data-flow analysis, instruction scheduling.

By the end of the course, student will have built a compiler for a simple programming language, called mOOL, and have it run on devices (or device simulators).

Note: All programming assignments done in this course will be written in OCaml.

Prerequisites

Top

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Teaching Modes

Top

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Schedule

Top

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Syllabus

Top

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Assessment Top

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Created: 18-Jul-2017, Updated: 18-Jul-2017

Module Code	CS4212
Module Title	COMPILER DESIGN
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Learning Outcomes

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Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Created: 18-Jul-2017, Updated: 18-Jul-2017

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Module Code	CS4212
Module Title	COMPILER DESIGN
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)

Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

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Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Created: 18-Jul-2017, Updated: 18-Jul-2017

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Module Code	CS4212
Module Title	COMPILER DESIGN
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

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Syllabus

Top

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Assessment

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Text & Readings

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Learning Outcomes | Prerequisites | Teaching Modes | Schedule | Syllabus | Assessment | Workload | Text & Readings

Created: 23-Jun-2015, Updated: 11-Jul-2017

Prerequisites | Workload | Text & Readings

Module Code	CS4232
Module Title	THEORY OF COMPUTATION
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	Webpage of this course, will contain all relevant information; on the webpage there is also a link to the lecture notes and slides on which this course is based. http://www.comp.nus.edu.sg/~fstephan/theoryofcomputation.html
Tags	--

Prerequisites | Workload | Text & Readings

Prerequisites

Top

CS1231 or CS1231S or any level-2 MA module

Workload

Top

2-1-0-3-3

Workload Components : A-B-C-D-E
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Text & Readings Top

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Total 1 items

Introduction to Automata Theory, Languages and Computation **Author: John Hopcroft, Rajeev Motwani and Jeffrey D. Ullman**	Third / 2013	Search LINC/Librari	Pearson	Compulsory Companion Website

Prerequisites | Workload | Text & Readings

Print Friendly Pag

Created: 10-Jul-2017, Updated: 10-Jul-2017

CS4234 uses Steven's Private IVLE | Prerequisites | Workload

Module Code	CS4234
Module Title	OPTIMISATION ALGORITHMS
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

CS4234 uses Steven's Private IVLE | Prerequisites | Workload

CS4234 uses Steven's Private IVLE Top

Please visit and bookmark http://www.comp.nus.edu.sg/~stevenha/cs4234.html

Prerequisites Top

MA1101R Linear Algebra I and CS3230 Design and Analysis of Algorithms

Workload Top

2-1-0-4-3

Workload Components : A-B-C-D-E
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CS4234 uses Steven's Private IVLE | Prerequisites | Workload

Print Friendly Pag

Created: 16-Jun-2017, Updated: 16-Jun-2017

Prerequisites | Preclusions | Workload

Module Code	CS4236
Module Title	CRYPTOGRAPHY THEORY AND PRACTICE
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Preclusions | Workload

Prerequisites

Top

CS1231 and CS2107 and (CS2010 or CS2020 or CS2040 or CS2040C)

Preclusions

Top

Nil

Workload

Top

2-1-0-3-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week
C: no. of lab hours per week
D: no. of hours for projects, assignments, fieldwork etc per week
E: no. of hours for preparatory work by a student per week

Prerequisites | Preclusions | Workload

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Created: 16-Jun-2017, Updated: 16-Jun-2017

Prerequisites | Preclusions | Workload

Module Code	CS4236
Module Title	CRYPTOGRAPHY THEORY AND PRACTICE
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.

Weblinks	
Tags	--

Prerequisites | Preclusions | Workload

Prerequisites Top

CS1231 and CS2107 and (CS2010 or CS2020 or CS2040 or CS2040C)

Preclusions Top

Nil

Workload Top

2-1-0-3-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
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Prerequisites | Preclusions | Workload

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Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
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Prerequisites | Preclusions | Workload

Prerequisites Top

CS1231 and CS2107 and (CS2010 or CS2020 or CS2040 or CS2040C)

Preclusions Top

Nil

Workload Top

2-1-0-3-4

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Prerequisites | Preclusions | Workload

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Created: 18-Jun-2017, Updated: 18-Jun-2017

Prerequisites | Preclusions | Workload

Module Code	CS4243
Module Title	COMPUTER VISION AND PATTERN RECOGNITION
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Preclusions | Workload

Prerequisites

Top

(CS1020 or CS1020E or CS2020 or ((CS2030 or CS2113/T) and (CS2040 or CS2040C))) and (MA1101R or MA1506) and (MA1102R or MA1505C or MA1505 or MA1521), and (ST1232 or ST2131 or ST2334)

Preclusions

Top

Nil

Workload

Top

3-0-0-3-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
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Prerequisites | Preclusions | Workload

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Created: 18-Jun-2017, Updated: 18-Jun-2017

Prerequisites | Preclusions | Workload

Module Code	CS4243
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Prerequisites | Preclusions | Workload

Prerequisites

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Preclusions

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Prerequisites | Preclusions | Workload

Prerequisites Top

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Preclusions Top

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Workload Top

3-0-0-3-4

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Prerequisites | Preclusions | Workload

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Prerequisites | Preclusions | Workload

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Prerequisites | Preclusions | Workload

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Prerequisites | Preclusions | Workload

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Prerequisites | Preclusions | Workload

Prerequisites Top

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Preclusions Top

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Workload Top

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Prerequisites | Preclusions | Workload

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Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Preclusions | Workload

Prerequisites

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Preclusions

Top

Nil

Workload

Top

3-0-0-3-4

Workload Components : A-B-C-D-E
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B: no. of tutorial hours per week
C: no. of lab hours per week
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Prerequisites | Preclusions | Workload

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Created: 19-Jul-2017, Updated: 19-Jul-2017

Prerequisites | Workload

Module Code	CS5231
Module Title	SYSTEMS SECURITY

Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Workload

Prerequisites Top

CS3235 Computer Security

Workload Top

2-0-0-4-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week
C: no. of lab hours per week
D: no. of hours for projects, assignments, fieldwork etc per week
E: no. of hours for preparatory work by a student per week

Prerequisites | Workload

Print Friendly Pag

Created: 19-Jul-2017, Updated: 19-Jul-2017

Prerequisites | Workload

Module Code	CS5231
Module Title	SYSTEMS SECURITY
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Workload

Prerequisites Top

CS3235 Computer Security

Workload Top

2-0-0-4-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week

C: no. of lab hours per week
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Prerequisites | Workload

Created: 19-Jul-2017, Updated: 19-Jul-2017

Prerequisites | Workload

Module Code	CS5231
Module Title	SYSTEMS SECURITY
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Workload

Prerequisites

Top

CS3235 Computer Security

Workload

Top

2-0-0-4-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week
C: no. of lab hours per week
D: no. of hours for projects, assignments, fieldwork etc per week
E: no. of hours for preparatory work by a student per week

Prerequisites | Workload

Created: 27-Jun-2017, Updated: 27-Jun-2017

Prerequisites | Workload

Module Code	CS5242
Module Title	NEURAL NETWORKS AND DEEP LEARNING
Semester	Semester 1, 2017/2018

Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Workload

Prerequisites Top

CS3244 Machine Learning

Workload Top

2-0-0-5-3

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week
C: no. of lab hours per week
D: no. of hours for projects, assignments, fieldwork etc per week
E: no. of hours for preparatory work by a student per week

Prerequisites | Workload

Created: 16-Jun-2017, Updated: 16-Jun-2017

Prerequisites | Workload

Module Code	CS5248
Module Title	SYSTEMS SUPPORT FOR CONTINUOUS MEDIA
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Workload

Prerequisites Top

CS2106 Introduction to Operating Systems and CS4226 Internet Architecture

Workload Top

2-0-0-6-2

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week
C: no. of lab hours per week

D: no. of hours for projects, assignments, fieldwork etc per week
E: no. of hours for preparatory work by a student per week

Prerequisites | Workload

Created: 19-Jul-2017, Updated: 19-Jul-2017

Learning Outcomes | Prerequisites | Workload

Module Code	CS5340
Module Title	UNCERTAINTY MODELLING IN AI
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Workload

Learning Outcomes

Top

The module covers modelling methods that are suitable for reasoning with uncertainty. The main focus will be on probabilistic models including Bayesian networks and Markov networks. Topics include representing conditional independence, building graphical models, inference using graphical models and learning from data. Selected applications in various domains such as speech, vision, natural language processing, medical informatics, bioinformatics, data mining and others will be discussed.

Prerequisites

Top

(ST1232 Statistics for Life Sciences or ST2131 Probability or ST2334 Probability and Statistics) and CS3243 Introduction to Artificial Intelligence

Workload

Top

3-0-0-3-4

Workload Components : A-B-C-D-E
A: no. of lecture hours per week
B: no. of tutorial hours per week
C: no. of lab hours per week
D: no. of hours for projects, assignments, fieldwork etc per week
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Learning Outcomes | Prerequisites | Workload

Module Code	CS5340
Module Title	UNCERTAINTY MODELLING IN AI
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Workload

Learning Outcomes

Top

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Prerequisites

Top

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Workload

Top

3-0-0-3-4

Workload Components : A-B-C-D-E
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Learning Outcomes | Prerequisites | Workload

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Created: 19-Jul-2017, Updated: 19-Jul-2017

Learning Outcomes | Prerequisites | Workload

Module Code	CS5340
Module Title	UNCERTAINTY MODELLING IN AI
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes

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Learning Outcomes | Prerequisites | Workload

Created: 19-Jul-2017, Updated: 19-Jul-2017

Learning Outcomes | Prerequisites | Workload

Module Code	CS5340
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Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
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Learning Outcomes | Prerequisites | Workload

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Learning Outcomes | Prerequisites | Workload

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Created: 16-Jun-2017, Updated: 16-Jun-2017

Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

Module Code	CS6234
Module Title	ADVANCED ALGORITHMS
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

Learning Outcomes

Top

This module is aimed at graduate students who are doing or intend to do advanced research in algorithms design and analysis in all areas of computer science. The module covers advanced material on combinatorial algorithms, with emphasis on efficient algorithms, and explores their use in a variety of application areas. Topics covered include, but are not restricted to, linear programming, graph matching and network congestion, approximation algorithms, randomized algorithms, online algorithms, and learning algorithms. The module will be a seminar-based module that will expose students to current research in these areas.

By the end of the course students will be able to:
1. Independently explore and understand advanced topics in algorithms.
2. Unsderstand and write formal mathematical proofs.
3. Employ fundamental concepts from theoretical computer science in their own research.

Prerequisites

Top

Students are encouraged to take CS5234 as a prerequisite. If a student has not taken CS5234 but still wishes to attend the course, please email Prof. Yair Zick.

Assessment

Top

Guidelines

Students will be assessed on their group presentation (two presentations during the course), and based on ongoing classroom activity.

Points weightage:
Presentation 1 20%
Presentation 2 30%

Class activities 50%

Presentation

Each group will be given 40 minutes (+15 minutes Q&A) to present their topic. You are encouraged to send me a copy of your slides and discuss any potential issues ahead of time.

Please send me a copy of the presentation (in ppt/pdf format) before class.

Grading Guidelines:

Slides

- are clear and easy to follow
- state the key elements of the topic
- present at least one fundamental concept in depth.
- are well-designed, and have no spelling/grammar issues

Speakers

- are clear and articulate
- are able to answer questions knowledgeably and confidently
- manage their time well (neither over nor under the time limit).
- present well: maintain eye contact, maintain interest, and engage the audience

Class Activity
The second half of each class will be devoted to solving an assignment. Students will be given the assignment a week in advance, so that they have time to sit with their grou/p and discuss it.
We will have a one hour classroom activity on the assignment. At the end of each presentation, each group will be asked to write their solution to a randomly assigned problem from the assignment (you'll be given 15 minutes to do so). After this – a student from each group will be randomly selected to present the solution (or by written solution if no student is selected to present). Final grade to all members is determined by **presentation quality, or whiteboard solution quality if group did not present**. If the student presenting does not know the answer, another may come to replace them but suffer a grade deduction.

Teaching Modes Top

Students will present in class on course topics, and will conduct in-class activities to facilitate understanding of course material. The course has no midterm or final examination.

Preclusions Top

Nil

Workload Top

2-0-0-5-3

Workload Components : A-B-C-D-E
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C: no. of lab hours per week
D: no. of hours for projects, assignments, fieldwork etc per week
E: no. of hours for preparatory work by a student per week

Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

Module Code	CS6234
Module Title	ADVANCED ALGORITHMS
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

Learning Outcomes

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Preclusions Top

Nil

Workload Top

2-0-0-5-3

Workload Components : A-B-C-D-E
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E: no. of hours for preparatory work by a student per week

Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

Created: 16-Jun-2017, Updated: 16-Jun-2017

Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

Module Code	CS6234
Module Title	ADVANCED ALGORITHMS
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Computer Science)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

Learning Outcomes Top

This module is aimed at graduate students who are doing or intend to do advanced research in algorithms design and analysis in all areas of computer science. The module covers advanced material on combinatorial algorithms, with emphasis on efficient algorithms, and explores their use in a variety of application areas. Topics covered include, but are not restricted to, linear programming, graph

matching and network congestion, approximation algorithms, randomized algorithms, online algorithms, and learning algorithms. The module will be a seminar-based module that will expose students to current research in these areas.

By the end of the course students will be able to:
1. Independently explore and understand advanced topics in algorithms.
2. Unsderstand and write formal mathematical proofs.
3. Employ fundamental concepts from theoretical computer science in their own research.

Prerequisites

Top

Students are encouraged to take CS5234 as a prerequisite. If a student has not taken CS5234 but still wishes to attend the course, please email Prof. Yair Zick.

Assessment

Top

Guidelines

Students will be assessed on their group presentation (two presentations during the course), and based on ongoing classroom activity.

Points weightage:
Presentation 1 20%
Presentation 2 30%
Class activities 50%

Presentation

Each group will be given 40 minutes (+15 minutes Q&A) to present their topic. You are encouraged to send me a copy of your slides and discuss any potential issues ahead of time.

Please send me a copy of the presentation (in ppt/pdf format) before class.

Grading Guidelines:

Slides

- are clear and easy to follow
- state the key elements of the topic
- present at least one fundamental concept in depth.
- are well-designed, and have no spelling/grammar issues

Speakers

- are clear and articulate
- are able to answer questions knowledgeably and confidently
- manage their time well (neither over nor under the time limit).
- present well: maintain eye contact, maintain interest, and engage the audience

Class Activity

The second half of each class will be devoted to solving an assignment. Students will be given the assignment a week in advance, so that they have time to sit with their grou/p and discuss it.
We will have a one hour classroom activity on the assignment. At the end of each presentation, each group will be asked to write their solution to a randomly assigned problem from the assignment (you'll be given 15 minutes to do so). After this – a student from each group will be randomly selected to present the solution (or by written solution if no student is selected to present). Final grade to all members is determined by **presentation quality, or whiteboard solution quality if group did not present**. If the student presenting does not know the answer, another may come to replace them but suffer a grade deduction.

Teaching Modes

Top

Students will present in class on course topics, and will conduct in-class activities to facilitate understanding of course material. The course has no midterm or final examination.

Preclusions

Top

Nil

Workload

Top

2-0-0-5-3

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Learning Outcomes | Prerequisites | Assessment | Teaching Modes | Preclusions | Workload

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Created: 07-Jul-2017, Updated: 07-Jul-2017

Prerequisites | Workload | Text & Readings

Module Code	IS4204
Module Title	IT GOVERNANCE
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Prerequisites | Workload | Text & Readings

Prerequisites

Top

Completed 80 MCs

Workload

Top

2-1-0-3-4

Workload Components : A-B-C-D-E
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Text & Readings

Top

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Total 1 items

Managing the Information Technology Resource **Author: Jerry N. Luftman**	- / 2004	Search LINC/Librari	Pearson	References

Prerequisites | Workload | Text & Readings

Print Friendly Pag

Created: 07-Jul-2017, Updated: 07-Jul-2017

Prerequisites | Workload | Text & Readings

Module Code	IS4204
Module Title	IT GOVERNANCE
Semester	Semester 1, 2017/2018
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Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
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Prerequisites | Workload | Text & Readings

Prerequisites

Top

Completed 80 MCs

Workload

Top

2-1-0-3-4

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Prerequisites | Workload | Text & Readings

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Prerequisites | Workload | Text & Readings

Prerequisites Top

Completed 80 MCs

Workload Top

2-1-0-3-4

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Prerequisites | Workload | Text & Readings

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Prerequisites | Workload | Text & Readings

Prerequisites Top

Completed 80 MCs

Workload [Top]

2-1-0-3-4

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Text & Readings [Top]

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Prerequisites | Workload | Text & Readings

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Prerequisites | Workload | Text & Readings

Prerequisites [Top]

Completed 80 MCs

Workload [Top]

2-1-0-3-4

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Prerequisites | Workload | Text & Readings

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Created: 18-Jul-2017, Updated: 18-Jul-2017

Teaching Modes | Schedule | Synopsis | Workload

Module Code	IS5002
Module Title	CONTEMPORARY IS MANAGEMENT
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
Weblinks	
Tags	--

Teaching Modes | Schedule | Synopsis | Workload

Teaching Modes Top

2 hours weekly seminar.

Schedule Top

Week	Topic	Deliverable
01	Module introduction • Module overview • Module assessment and expectation Digital Transformation I • Fundamentals of digital transformation • Organizational IT restructuring	
Part 1: Digital Transformation		
02	Digital Transformation II • Legacy systems and reengineering	
03	Digital Transformation III • Software migration	
04	Digital Transformation III • Systems integration and patterns	Report 1 due

Part II: Enterprise IT Governance and Management		
05	IT Stakeholder Analysis and Management	
06	Enterprise IT Governance I • challenges of enterprise IT governance • objectives, approaches and key successful factors of enterprise IT governance • how can maturity of enterprise IT governance be improved?	Report 2 due
Recess week		
07	In-class project discussion and consultation	
08	Enterprise IT Governance II • evaluation of maturity of enterprise IT governance	Individual research assignment due
Part III: Team-based Innovation Management		
09	Agile Software Development and DevOps	
10	Standards and Compliance	
Part IV: Digitalization		
11	Digitalization I • Digital Media management • Cross-platform integration	Report 3 due
12	Digitalization II • Digitalization in SME	
13	Module summary and revision	Final project report due

* Subjected to changes

Synopsis Top

The deployment, management and utilization of digital technology in its various forms denote the continuous and rapid development of information systems in enterprises. Often, large volume of data and content is created, generated and stored on a daily basis and the information technology (IT) employees in an enterprise are also required to go beyond merely providing technological supports to an enterprise (or connected enterprises) but to value add and lead technological innovation. Given the continuous emergence of technologies and the touted benefits they can bring to the enterprise, careful and proper, yet up-to date, management IT portfolio is required. What steps should enterprises take so as to manage and capitalize on them? Is it possible to continuously transform enterprises with the latest technologies without wreaking havoc to the business operations? What kind of actionable and effectual plans and governance should be in place? Even more importantly, how can enterprises prepare themselves for the future in the face of burgeoning and exponential growth in business complexity and emerging platform economy? This module takes a highly interactive mode of learning where the foundational concepts of digital transformation and related topics are taught. Using these concepts, students then extrapolate on existing technological and business trends and needs for an enterprise (real or fictional), eventually producing both short and long term plans of some duration (say, three to five years) for the enterprise's management and utilization of information systems.

Workload Top

2-0-0-4-4

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Created: 18-Jul-2017, Updated: 18-Jul-2017

Teaching Modes | Schedule | Synopsis | Workload

Module Code	IS5002
Module Title	CONTEMPORARY IS MANAGEMENT
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
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Teaching Modes | Schedule | Synopsis | Workload

Teaching Modes

Top

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Teaching Modes | Schedule | Synopsis | Workload

Teaching Modes Top

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Workload Top

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Teaching Modes | Schedule | Synopsis | Workload

Created: 18-Jul-2017, Updated: 18-Jul-2017

Prerequisites | Workload

Module Code	IS5117
Module Title	ELECTRONIC GOVERNMENT
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
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Tags	--

Prerequisites Top

CS3251 or IS3243

Workload Top

2-0-0-2-6

Workload Components : A-B-C-D-E
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Prerequisites | Workload

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Created: 18-Jul-2017, Updated: 18-Jul-2017

Prerequisites | Workload

Module Code	IS5117
Module Title	ELECTRONIC GOVERNMENT
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
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Tags	--

Prerequisites | Workload

Prerequisites Top

CS3251 or IS3243

Workload Top

2-0-0-2-6

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Prerequisites | Workload

Module Code	IS5117
Module Title	ELECTRONIC GOVERNMENT
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
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Tags	--

Prerequisites | Workload

Prerequisites Top

CS3251 or IS3243

Workload Top

2-0-0-2-6

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Prerequisites | Workload

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Prerequisites Top

CS3251 or IS3243

Workload Top

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Prerequisites | Workload

Prerequisites Top

CS3251 or IS3243

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Prerequisites | Workload

Prerequisites

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CS3251 or IS3243

Workload

Top

2-0-0-2-6

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Prerequisites | Workload

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Created: 15-Jun-2017, Updated: 15-Jun-2017

Workload

Module Code	IS6004
Module Title	ECONOMETRICS FOR IS RESEARCH
Semester	Semester 1, 2017/2018
Modular Credits	4
Faculty	School of Computing (Information Systems & Analytics)
Timetable	Timetable
Module Facilitators	Click to view who is teaching the module.
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Tags	--

Workload

Workload

Top

3-0-0-3-4

Workload Components : A-B-C-D-E
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Workload