This is an important document containing a lot of information about the course. Please refer to this study guide before emailing your lecturer with course related questions, you may find that your questions are answered here.

Welcome: COMPSCI 225 "Discrete Structures in Mathematics and Computer Science" is a one semester, 15 point course. It is a challenging course about discrete structures relevant to computer science and mathematics. The content includes logic, set theory, arithmetic, relations, functions, mathematical induction, principles of counting, graphs and trees, and finite automata. You will learn to reason about discrete objects (e.g. programs) along with giving formal definitions of various concepts. An emphasis is placed on proving the correctness of algorithms.

Prerequisites: The prerequisites for this course are one or more of: MATHS 108, 150, 153, COMPSCI 101, PHIL 101.

Corequisites: None.

Preparation: The recommended preparation for this course is confidence with mathematics. This course requires a high degree of precision in thought and writing.

It is expected that students will spend approximately 10 hours per week on this course, throughout the semester.

Lecturers:

- Steven Galbraith

  Room 508 of building 303 Ext 88778 `s.galbraith@auckland.ac.nz`

  Office Hours: Tuesday 2-3, Thursday 10-11, Friday 11-12.

- Julie de Saedeleer

  Room 413 of building 303 Ext 82121 `j.desaedeleer@auckland.ac.nz`

  Office Hours: To be arranged.

Lectures: Lectures for this course are Wednesdays and Thursdays at 11, and Fridays at 3.

Please check Student Services Online (`www.studentservices.auckland.ac.nz`) for room details.

Course content and learning outcomes: List course details such as sections of course or list of lecture topics.

- Logic and proofs (3 lectures)
- Integers and Euclid's algorithm (3 lectures)
- Graph theory (4 lectures)

- Set theory (2 lectures)
- Relations (3 lectures)
- Induction (3 lectures)
- Trees (3 lectures)
- Functions (3 lectures)
- Principles of counting (5 lectures)
- Propositional logic and satisfiability (2 lectures)
- Deterministic finite automata (2 lectures)
- Coding theory and revision (3 lectures)

The learning outcomes of the course are:

- Use the basic notation and terminology of sets, relations, functions, trees, graphs, and strings.
- Translate problems stated in ordinary language (e.g. counting problems or graph problems) into the language of discrete structures.
- Apply proof methods (e.g. direct proof, proof by cases) to simple mathematical statements and analyse a simple format of the statements using logic (e.g. propositional logic).
- Apply propositional logic to find truth values of statements given in ordinary language.
- Apply induction and recursion principles to analysis of algorithms and proving simple mathematical statements (that involve integers).
- Know basic mathematical results about properties of graphs and trees (e.g. the number of nodes in a tree equals the number of edges plus 1).
- Know basics of finite automata (e.g. design automata recognizing the language of strings that contain a substring aba).

Learning resources: A full coursebook is available as a pdf on cecil. Printed and bound copies of the coursebook can be purchased from the Science Student Resource Centre for $ 10.

There is no compulsory textbook. The following books are recommended for further reading:

- Susanna S. Epp, "Discrete mathematics with applications", 510 E64
- Bakhadyr Khoussainov and Nodira Khoussainova, "Lectures on Discrete Mathematics for Computer Science", QA39.3 K46
- Kenneth A. Ross and Charles R. B. Wright, "Discrete mathematics", 511 R82
- Kenneth H. Rosen, "Discrete mathematics and its applications", 511 R81

Electronic Resources: Announcements will be made during lectures and through the course site on Cecil (`www.cecil.auckland.ac.nz`). You will also be able to download the assignments and other electronic resources from Cecil and use it to view your coursework marks.

Some lectures will be recorded for you to access later, but we cannot guarantee that recordings of all lectures will be available. These lecture recordings should be used as an additional resource, not as a replacement for lectures. Data shows that the more lectures you attend in person, the higher your final grade. Skipping lectures with the intention of watching the recordings is not a good idea.

Getting Help:

- Attend lectures and tutorials.
- Ask questions in lectures and tutorials.
- Visit your lecturers during their office hours.
- Get help and advice from the tutors in the Mathematics Assistance Room in G16 on the Ground Floor of Building 303.

Maori and Pacific students are encouraged to participate in the Maths Tuakana Programme. For information please visit the website:
`www.math.auckland.ac.nz/en/for/maori-and-pacific-students.html`

Students are urged to discuss privately any impairment-related requirements face-to-face and/or in written form with the course coordinator, lecturer or tutor.

Assessment: There is no plussage in this course. This means that all components of the assessment count towards your final grade. Attempt all assessments!

Assignments (5 in total)	25%	(5% each)
Test	25%	
Exam	50%	

Academic Integrity: The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting his or her learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the world-wide web. A student's assessed work may be reviewed against electronic source material using computerised detection mechanisms. Upon reasonable request, students may be required to provide an electronic version of their work for computerised review.

You are encouraged to discuss problems with one another and to work together on assignments, but you must not copy another person's assignment. On individual assessments it is important that the work submitted is your own and not the work of others. If you are unsure about whether your collaboration is OK please discuss it with your lecturer. If you think that your collaboration will be viewed as cheating, you are probably correct.

In order to educate students on the subject, there is a University online Academic Integrity Course (composed of 5 modules). This course can be found at `www.academicintegrity.auckland.ac.nz` and it is a requirement that all new students complete the course.

Tutorials: Tutorials take place once a week, starting in week 2 of semester. There will be 11 tutorials in total.

Assignments: There will be 5 assignments with the following due dates:

Assignment 1	Wednesday August 5 (week 3).
Assignment 2	Friday August 21 (week 5).
Assignment 3	Friday September 18 (week 7).
Assignment 4	Friday October 2 (week 9).
Assignment 5	Friday October 16 (week 11).

The assignments will be available on Cecil at least seven days before they are due. All assignments must be handed in by 4pm. Late assignments are not accepted unless an extension has been agreed upon ahead of time (note that extensions are given very rarely).

Mathematics department assignment cover sheets are required, assignments are to be submitted using the hand-in boxes and are returned to students using the return boxes, all of which are located in the Student Resource Centre, on the ground floor between Building 301 and Building 303, through the Atrium from the Science Student Centre and the Mathematics Assistance Room.

Test and Exam: The test is 1 hour long and covers material from the first 5 weeks of the course. It will be held on Wednesday August 26 some time between 6pm and 8pm. The rooms for the test will be announced on Cecil closer to the time.
The exam is 2 hours long and covers material from the entire course. The exact date of the exam is not available until around the middle of the semester. You must achieve at least 35% in the final exam in order to pass the course.

Calculators: In this course, the use of calculators is prohibited for the test and exam.

Feedback and Complaints: Complaints about marking should be taken to your lecturers who are in a position to do something immediately. Other requests and feedback should be given to the lecturer either in person or by email. More general complaints can be taken up by your class representative and communicated to the lecturer or the Staff Student Consultative Committee. You may also approach the Head of Department.

The University is committed to ensuring people are treated with dignity and respect. Staff members and students have a right to work and study in an environment that is harmonious and free from unacceptable conduct. Harassment on any grounds, such as racial, sexual, religious or academic is unacceptable.

Student feedback is valued to assist in the improvement of courses and teaching. There may be a course and/or lecturer evaluation near the end of the course.