Course Title:	**Theory of Computation**
Course Code:	**COMP711**
Descriptor Start Date:	**31/01/2025**

POINTS:	**15.00**
LEVEL:	**7**
PREREQUISITE/S:	**COMP610 or COM613**
COREQUISITE/S:	**None**
RESTRICTION/S:	**None**

LEARNING HOURS

Hours may include lectures, tutorials, online forums, laboratories. Refer to your timetable and course information in Canvas for detailed information.

Total learning hours: 150

PRESCRIPTOR

A mathematically rigorous exploration of the Theory of Computation, including formal languages, models of computation, and an introduction to computational complexity.

LEARNING OUTCOMES

1. Describe languages using finite automata and grammars
2. Express algorithms in terms of computational models
3. Prove the undecidability of computational problems
4. Analyse time complexity of computational problems

CONTENT

The course covers the following topics:
- Automata and Languages
- Computability Theory
- Decidability
- Complexity Theory

LEARNING & TEACHING STRATEGIES

Lectures – lecturers will introduce and emphasise key concepts for each of the topics listed in the textbook, using slides and demonstrations.

Problem classes (lab tutorials) – students will work together to generate solutions to problems, test and discuss their solutions.

ASSESSMENT PLAN

Assessment Event	Weighting %	Learning Outcomes
Weekly Labs Exercises	30.00	1,2,3,4
Software assignment	35.00	1,2
Written assignment	35.00	2,3,4

Grade Map **MAP1**

A+ A A- Pass with Distinction
B+ B B- Pass with Merit
C+ C C- Pass
D Fail

Overall requirement/s to pass the course:

To pass this course, students must achieve a minimum overall grade of C-.

LEARNING RESOURCES

Sipser, M (2013) Introduction to the Theory of Computation, 3rd International Edition, Cengage Learning.

For further information, contact: Te Ara Auaha - Faculty of Design & Creative Technologies

Principal Programme:	**DJ1041, Bachelor of Science**
Related Programme/s:	**AK3698** **AK1041** **AK3001** **AK3003** **AK3756** **AK3706**