Course Title:	**Data Structures and Algorithms**
Course Code:	**COMP610**
Descriptor Start Date:	**31/01/2025**
POINTS:	**15.00**
LEVEL:	**6**
PREREQUISITE/S:	**COMP503 or ENSE602 (BE(Hons))**
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

Theoretical and practical skills for the utilisation of mathematical structures and algorithms for handling data that are essential in computational mathematics and computer science. Static and dynamic structures for data, cloning data, mathematical concepts of iteration and recursion, analysis of performance and complexity, data searching and data sorting algorithms, mathematical logic and formal grammars.

LEARNING OUTCOMES

1. Design and implement suitable linear data structures for set, stack, queue, and list collections of data. (a,b,c,d,e,i,j,l)
2. Implement effective multithreaded programs. (a,b,c,e,i,l)
3. Apply algorithms that parse and manipulate data structures. (a,b,c,e,i,l)
4. Explain and utilise tree data structures, hash tables and maps in software. (a,b,c,e,i,j,l)
5. Develop software that utilise effective data structures. (a,b,c,d,e,i,j,l)
6. Apply basic graph algorithms. (a,b,c,e,i,l)

CONTENT

- Software development,
- Set collections,
- Linear collections,
- Trees,
- Hashing and databases,

Key to Graduate Capabilities Profile
a. Engineering knowledge
b. Problem analysis
c. Design/development of solutions
d. Investigation
e. Modern tool usage
f. The engineer and society
g. Environment and sustainability
h. Ethics
i. Individual and team work
j. Communication
k. Project management and finance
l. Lifelong learning
- Graphs.

LEARNING & TEACHING STRATEGIES

- Lectures
- Computer laboratory sessions
- Blackboard collaboration

ASSESSMENT PLAN

Assessment Event	Weighting %	Learning Outcomes
Two software assignments	40.00	1-6
Lab work	10.00	1-6
Final Exam	50.00	1-6

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 attempt all summative assessments and achieve a minimum overall grade of C-.

LEARNING RESOURCES

AUT course manual.

Principal Programme:	**AK3697, Bachelor of Computer and Information Sciences**
Related Programme/s:	**AK1271** **AK1301** **AK1302** **AK2040** **AK3001** **AK3698** **AK3751** **AK3756** **HA1042** **HA1043** **ICE1** **INEXCH1** **SABRD1**