

3.3.2 Bachelor of Technology (Cybersecurity)

The BTech (Cybersecurity) programme is offered in partnership with the School of Computing. The BTech (Cybersecurity) programme enables students to attain the following learning outcomes by the time of graduation:

1. Strong knowledge of computer science foundations and fundamentals, including:
 - a. familiarity with common computer science themes and principles,
 - b. high-level understanding of systems as a whole, and
 - c. understanding of the theoretical underpinnings of computer science and their influences in practice.
2. An ability to function effectively in teams to accomplish a common goal.
3. An understanding of professional, ethical, legal, security, and social issues and responsibilities.
4. An ability to analyse the local and global impact of computing on individuals, organisations, and society.
5. Clear recognition of the need for and an ability to engage in continuing professional development.
6. An ability to design, implement, and evaluate a computer-based system, process, components, or programme to meet the security needs.
7. An understanding of the processes and challenges that support the delivery and management of information security in an organisation.
8. An ability to use the current techniques, skills, and tools necessary for information security practice.

Degree Requirements

Candidates must satisfy the following requirements to be conferred the degree of BTech (Cybersecurity):

- Complete a minimum of **160 MCs** with a minimum CAP of 2.0 by taking modules as listed below;
- Comply with the requirement that the limit on the number of Level-1000 modules to be counted towards fulfillment of graduation requirements being 60 MCs (including exemption of 20 MCs for polytechnic diploma holders); and
- Satisfy any other additional requirements that may be prescribed by SCALE, the School of Computing, or the University.

List of modules - BTech (Cybersecurity), comprise:

All modules are 4MCs, except when otherwise stated.

A. University Level Requirements (20MCs)

- Human Cultures (module with prefix GEH)
- Asking Questions (module with prefix GEQ)
- Quantitative Reasoning (module with prefix GER)
- Singapore Studies (module with prefix GES)
- Thinking and Expression (module with prefix GET)

B. Programme Requirements (104MCs), comprising

1. Major Requirements - Essential Modules (92MCs)

Computing Foundations

- TIC1001 Introduction to Computing and Programming I
- TIC1002 Introduction to Computing and Programming II
- TIC1101 Professional, Ethical, and Social Issues in Computing
- TIC1201 Discrete Structures
- TIC2001 Data Structures and Algorithms
- TIC2002 Introduction to Software Engineering
- TIC2301 Introduction to Information Security
- TIC2401 Introduction to Computer Systems
- TIC2501 Computer Networks and Applications
- TIC2601 Database and Web Applications
- TIC2901 Communication for Computing Professionals
- TIC3901 Industrial Practice (12 MCs)

Cybersecurity Requirements

- TIC2101 Information Systems and Organisations
- TIC3301 Information Security Management
- TIC3302 Computer Systems Security
- TIC4301 Information Security Practicum I
- TIC4302 Information Security Practicum II

Mathematics Requirements

- TMA1001 Introductory Mathematics
- TMA2101 Calculus for Computing
- TMA2102 Linear Algebra
- TMA2103 Probability and Statistics

2. Major Requirements - Elective Modules (12MCs, selected from the list below)

Not all elective modules may be offered in any semester/year. An elective module may not be offered if there is insufficient number of students opting for that module at any particular time.

- TIC4303 Software Security
- TIC4304 Web Security
- TIC4305 Network Security
- TIC4306 Information Security Governance and Audit

C. Unrestricted Elective Modules (36MCs)

Note: 20 MCs will normally be given as Advanced Placement Credits to holders of diploma or higher qualifications.

Study Schedule

There is only one intake per academic year in Semester 1 (i.e. August). One sample study schedule for a four-year candidature is shown below. This assumes the students' work and other commitments allow them sufficient time to properly cope with their studies. Students are strongly advised to slow down if necessary so that they progress at their own comfortable pace.

A. Sample Study Schedule (4-year candidature beginning in Semester 1 of an AY):

1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.
2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.

1st Year of studies	
Sem 1:	TIC1001 Introduction to Computing and Programming I (4) TIC1101 Professional, Ethical, and Social Issues in Computing (4) TMA1001 Introductory Mathematics (4)
Sem 2:	TIC1002 Introduction to Computing and Programming II (4) TIC1201 Discrete Structures (4) TMA2101 Calculus for Computing (4)
SpTerm:	General Education Module 1 (4) TMA2102 Linear Algebra (4)
2nd Year of studies	
Sem 1:	TIC2001 Data Structures and Algorithms (4) TIC2301 Introduction to Information Security (4) TIC2601 Database and Web Applications (4)
Sem 2:	TIC2101 Information Systems and Organisations (4) TIC2401 Introduction to Computer Systems (4) TIC2501 Computer Networks and Applications (4)
SpTerm:	General Education Module 2 (4) General Education Module 3 (4)
3rd Year of studies	
Sem 1:	TIC2002 Introduction to Software Engineering (4) TIC2901 Communication for Computing Professionals (4) TMA2103 Probability and Statistics (4) *TIC3901 Industrial Practice
Sem 2:	TIC3301 Information Security Management (4) TIC3302 Computer Systems Security (4) *TIC3901 Industrial Practice (12) Unrestricted Elective Module 1 (4)
SpTerm:	General Education Module 4 (4) General Education Module 5 (4)

4th Year of studies

Sem 1:	TIC4301 Information Security Practicum I (4) Elective Module 1 (4) Unrestricted Elective Module 2 (4)
Sem 2:	TIC4302 Information Security Practicum II (4) Elective Module 2 (4) Elective Module 3 (4)
SpTerm:	Unrestricted Elective Module 3 (4) Unrestricted Elective Module 4 (4)