BACHELOR OF COMPUTER SCIENCE (HONS.) (R2/481/6/0531) 02/25 (A5830)

This three-year programme equips students with fundamental computing knowledge and the latest technology. In year 1, all students learn common subjects before specialising in one of the following areas – Software Engineering, Game Development, Data Science or Cybersecurity - in the second year. Each designed specialisation prepares students with specific skills. Students will also complete a final year project and undergo industrial training to acquire practical industry experience.

Career Prospects: Researcher, Programmer, Software Development, Project Manager, System Analyst, Database Administrator, IS/SE Consultant, Game Producer, Game Artist & Visualiser, Data Analyst, Data Scientist, Data Engineer, Cyber Risk Analyst, Security Penetration Tester, Incident Responder, Digital Forensic Specialist, Security Architect, Security Engineer.

PROGRAMME STRUCTURE

Year 1	Year 2	Year 3
CORE		
▪ Calculus ▪ Programming Fundamentals ▪ Discrete Structures & Probability ▪ Professional Development ▪ Computational Methods ▪ Object Oriented Programming & Data Structures ▪ Computer Architecture & Organisations ▪ Database Fundamentals ▪ Research Methodology in Computer Science ▪ U2 ▪ U4	▪ Software Engineering Fundamentals ▪ Operating Systems ▪ Computer Networks ▪ Object Oriented Analysis & Design ▪ Algorithm Design & Analysis ▪ Elective 1 ▪ Industrial Training ▪ U3 **Specialisation: Software Engineering** ▪ Software Requirements Engineering ▪ Software Design **Specialisation: Game Development** ▪ Computer Graphics Fundamentals ▪ Game Design Fundamentals **Specialisation: Data Science** ▪ Introduction to Data Science ▪ Statistical Data Analysis **Specialisation: Cybersecurity** ▪ Cybersecurity Fundamentals ▪ Network Security	▪ Final Year Project ▪ Elective 2 ▪ Elective 3 ▪ U1 ▪ U1 ▪ Workplace Communication **Specialisation: Software Engineering** ▪ Software Reliability & Quality Assurance ▪ Software Verification & Validation ▪ Specialisation Elective 1 ▪ Specialisation Elective 2 **Specialisation: Game Development** ▪ Game Algorithms ▪ 3D Game Programming ▪ Specialisation Elective 1 ▪ Specialisation Elective 2 **Specialisation: Data Science** ▪ Data Mining ▪ Data Visualisation ▪ Specialisation Elective 1 ▪ Specialisation Elective 2 **Specialisation: Cybersecurity** ▪ Cryptography and Data Security ▪ Ethical Hacking and Penetration Testing ▪ Specialisation Elective 1 ▪ Specialisation Elective 2

Note: The above programme structure serves as a guide. Courses may differ according to intakes.

Specialisations:

- **Software Engineering:** Focuses on designing and developing software systems with innovative methodologies and sophisticated tools. Students are exposed to various techniques of analysing user requirements and specifications, as well as the design, implementation and verification of software systems.
- **Game Development:** Integrates fundamental concepts of software engineering with both technical and creative aspects of game design and development. Students are exposed to various types of game production - from 2D to 3D, and from virtual to augmented reality game projects.
- **Data Science:** Focuses on designing and developing solutions to draw useful insights from the availability of large volumes of data, known as Big Data. Students will receive fundamental training in computer science theories and learn techniques on the processing of Big Data for analytics that can be impactful to business.
- **Cybersecurity:** Built on the technical foundation of computer science, the specialization focuses on the array of sophisticated techniques and innovative approaches used to protect data and information systems. Students are exposed to both offensive and defensive security methodologies such as ethical hacking, digital forensics and network security, as well as policies and ethical issues of cybersecurity.

SPECIALISATION ELECTIVE MODULES

Two (2) subjects should be taken from the following based on specialisation:

Software Engineering
- Theory of Computation
- Programming Language Translation
- Introduction to Formal Methods
- Software Evolution & Maintenance

Game Development
- Game Production
- Game Physics

Data Science
- Data Management
- Visual Information Processing
- Social Media Computing

Cybersecurity
- Digital and Computer Forensic
- Database and Cloud Security
- Blockchain and Smart Contracts

ELECTIVE MODULES

Three (3) subjects should be taken from the following:

- Systems Analysis & Design
- Concepts of Programming Languages
- Programming Language Translation
- Theory of Computation
- Artificial Intelligence
- Parallel Processing
- Web Application Development
- Computer Security
- Introduction to Formal Methods
- Software Evolution & Maintenance
- Game Physics
- Game Design Fundamentals
- Introduction to Data Science
- Visual Information Processing
- Data Management
- Data Mining
- Social Media Computing
- Advanced Database
- Cybersecurity Fundamentals
- Cryptography and Data Security
- Ethical Hacking and Penetration Testing
- Blockchain and Smart Contracts

UNIVERSITY SUBJECTS

U1 – TITAS (Local) or Pengajian Malaysia III (International)
U2 – Bahasa Kebangsaan or Foreign Language Beginners
U4 – Co-Curriculum
U1 – Hubungan Etnik (Local) or BM Komunikasi II (International)
U3 – Business and Entrepreneurship in Malaysia

Note: The above programme structure serves as a guide. Courses may differ according to intakes.