Bachelor of Science Program in Digital Science and Technology

(Thai Program)

Academic Year 2026 – 2030

Faculty of Information and Communication Technology, Mahidol University

Course Description

(4) Software Engineering Courses

Number of credits (Theory – Practice – Self Study)

ITDS 360 Software Requirement Analysis and Specification 3 (3 – 0 – 6)

Prerequisite: ITDS 263 Introduction to Software Engineering
Co-requisite: None

Domain engineering; techniques for discovering and eliciting requirements; languages and models for representing requirements; analysis and validation techniques including needs, goals, and the use case analysis; requirements in the context of system engineering; specifying and measuring external qualities: performance, reliability, availability, safety and security; specifying and analyzing requirements for various types of systems: embedded systems, consumer systems, web-based systems, business systems, systems for science and engineering; resolving feature interactions; requirements documentation standards; traceability; human factors; requirements in the context of agile processes; requirements management; hands-on experience using requirement engineering tools

ITDS 364 Software Project Management 3 (3 – 0 – 6)

Prerequisite: ITDS 263 Introduction to Software Engineering
Co-requisite: None

Project planning; project management tools; managing the system life cycle; the cost estimation and project scheduling; the human resource management; factors influencing productivity and success; productivity metrics; the key performance index for the project efficiency and effectiveness; project evaluations determining skill requirements and staffing of the projects; cost-effectiveness analysis; reporting and presentation techniques; the effective management in both behavioral and technical aspects; change management and planning; the option analysis and risks; the release and configuration management; the development of software projects; software contracts and the intellectual property; case studies of real industrial projects

ITDS 365 Agile Software Development 3 (3 – 0 – 6)

Prerequisite: ITDS 263 Introduction to Software Engineering
Co-requisite: None

Agile values, principles and practices; managing an agile team: roles and responsibilities; the product discovery; the agile planning for software products; the agile development process; testing with agile; agile metrics; practice of the agile development to a real-world software development project

ITDS 366 Practical Software Engineering 3 (0 – 6 – 3)

Prerequisite: ITDS 263 Introduction to Software Engineering
Co-requisite: None

Practices on the software development using a standard process of software engineering: requirement analysis, software design, software construction, software testing,

software quality assurance, software project planning and management

ITDS 367 Software Design and Development 3 (3 – 0 – 6)

Prerequisite: ITDS 263 Introduction to Software Engineering
Co-requisite: None

Principles of the software design and software architecture; methodologies and techniques of designing the software system architecture; the requirement analysis of the software design; design patterns; the efficiency factor analysis of the software design; the software evolution

ITDS 368 Software Quality Assurance and Testing 3 (3 – 0 – 6)

Prerequisite: ITDS 263 Introduction to Software Engineering
Co-requisite: None

The software quality assurance process; avoiding errors and other quality problems; inspections and reviews; testing, verification and validation techniques; the process assurance versus the product assurance; quality process standards; the product and process assurance; the problem analysis and reporting; statistical approaches to the quality control

ITDS 369 Special Topic in Software Engineering 3 (3 – 0 – 6)

Prerequisite: ITDS 263 Introduction to Software Engineering
Co-requisite: None

Recent advanced knowledge and techniques in software engineering; practical deployment of software engineering; other related topics that can be varied depending on the interests of faculties and students