

SYLLABUSES FOR THE DEGREE OF MASTER OF SCIENCE IN INTEGRATED PROJECT DELIVERY

These syllabuses apply to all current students in the 2022-23 academic year.

(See also General Regulations and the Regulations for Taught Postgraduate Curricula)

Candidates entering the Master of Science in Integrated Project Delivery curriculum are required to complete 72 credits of core courses.

CORE COURSES

Mode of Assessment

All courses will be assessed by examinations and/or continuous coursework assessment, unless otherwise specified. Assessment methods and criteria will be specified for each course in the course description and be approved by the course director in consultation with teachers delivering the course.

RECO7601. Innovation and Processes (6 credits)

This course covers innovation management and the concepts of business process engineering and reengineering. It introduces the principles of business models, business processes analysis and design, workflow management, techniques and supporting tools, innovation and innovation management, technology management and product development, informative management. Case studies of innovations and the innovation process are explored and the impact of these on business models and business processes is explored.

Assessment: 100% coursework

RECO7602. Procurement in Integrated Project Delivery (6 credits)

This course examines the strategic and emergent issues in construction procurement: a definition of procurement systems; organising the project procurement process; culture; conventionally orientated to developmentally orientated procurement systems; Early contractor involvement (ECI); Integrated project delivery (IPD); virtual design and construction (VDC); DfMA; MIC and modular construction; use of digital technologies and procurement process implications; multiple performance criteria for evaluating construction contractors; applying relational contracting in the supply chain; selection criteria; the impact of culture on project performance.

Assessment: 65% coursework and 35% examination

RECO7603. Management Theory and Collaborative Project Management (6 credits)

This course examines fundamental knowledge and innovations in management theory and its application in construction procurement: the project organisation, company organisation, management theory and schools of thought, the project life cycle, organisation structure, team roles, change management.

Assessment: 100% coursework

RECO7604. Project Execution Planning (6 credits)

This course overviews the process of developing project specific BIM Execution Plans to support interdisciplinary information sharing and integrated design. The subjects include an overview of BIM uses to support project objectives, development of process models to plan model development and handoffs, documenting and measuring modelling competencies, planning the needed IT infrastructure for project needs.

Assessment: 50% coursework and 50% case study presentation

RECO7605. Information Management (6 credits)

This course examines fundamental knowledge in information management and its application to the project management in construction. This includes an introduction to information management, information management theories, through-life information management, common information management tools and techniques (e.g. the use of Common Data Environment – CDE), and digital information management (based on ISO 19650) and its effect on collaboration, coordination and integration, commercial and contractual aspects of construction (e.g. Employer Information Requirements (EIR)).

Assessment: 60% coursework and 40% examination

RECO7607. Understanding Industry Practice (6 credits)

This introductory course introduces the industry practice to the students. Students reviews the performance of the industry, the pain points and its effect on the industry. Key areas include productivity, safety, technology adoption and other emergent issues. Through group discussion and presentation, students are expected to learn in a collaborative way and to get a deeper understanding to the industry practice.

Assessment: 100% coursework

RECO7608. Future Industry Directions (6 credits)

This course is designed to enable the student to develop and evaluate advanced technologies (e.g. ConTech, GreenTech, PropTech). Student will then examine the specific emergent issue and to conduct research in company industry or in a global context with a view to presenting a case for change, review or further research within the company or domain. The project can take the form of action research, secondment to another company or department or in-house workshops and seminars. The outcome of the research will be a report that presents a range of plans and options to resolve the issues identified in the first case study.

Assessment: 100% coursework

RECO7609. Technologies and Innovation (6 credits)

This course is designed for students to explore the application of emerging digital technologies to promote innovation and improved integrated project delivery within the construction industry. Through

hands-on demonstrations of leading and latest digital technology applications, students will develop a direct appreciation for innovative digital technology applications. Guided case studies will build confidence in how individuals can access, evaluate and promote innovative technologies within their construction organisations.

Assessment: 100% coursework

RECO7610. Virtual Facilities Management (6 credits)

The construction of a facility generally amounts to less than 20% of the whole-life costs of operating and maintaining the facility. Yet, the operational phase is under-emphasised in early design decision-making. This can lead to reduced functionality and poor operational performance in use. The involvement of facility owners and operators in this decision-making is crucial if facilities are to be safe, efficient and cost-effective, as well as sustainable well into the future. This course examines the key concept of “design, manufacture and construction for operability” based on rigorous briefing and performance evaluation to ensure that the required functionality and operational performance of the facility is achieved in operation and use. It includes consideration of the impact of BIM, smart systems, AI, automation and robotics on IPD, as part of a digital way of working. The relevance of Big Data to day-to-day facilities management, associated FM and BIM standards, building performance evaluation and the Soft Landings Framework are discussed.

Assessment: 50% coursework and 50% examination

RECO7612. Capstone: Understanding Integrated Project Delivery (6 credits)

This Capstone allows students to experience working in an IPD team by way of a real-life case study. The case is provided and moderated by local professionals based upon their own experiences. Students form teams and play the various roles determined in the project case study. Participants get the chance to employ the principles and practices that have been taught throughout the programme. Outcomes are exhibited in terms of relational behaviour, project execution planning, appropriate technology adoption, stakeholder engagement and other performance indicators presented during the programme.

Assessment: 100% coursework

RECO7613. Information Technology in Design and Construction (6 credits)

The course will provide an understanding of a range of novel information technology (IT) approaches in design, construction, and operational contexts. The course will include the concepts, theories, methodology, and comparative studies of IT innovations in construction from the early planning stage to the operational facility management stage. Both established IT solutions and emerging digital technologies will be introduced, while the evaluation and acceptance of new IT solutions and processes are emphasised. The course will incorporate hands-on practices and case studies to demonstrate and analyse the digital technologies for current construction processes as well as long term innovation purposes.

Assessment: 100% coursework

RECO7614. Innovation: Gaming and VDC (6 credits)

Students will be introduced to serious gaming technologies in use in different sectors and understand their effect. A few gaming technologies used by construction industry will then be introduced to the

students in lecture. Students will also be provided hands-on experience in these tools enabled by gaming technology. They will be invited to appraise and assess the effectiveness of gaming that could be potentially employed to improve construction industry.

Assessment: 100% coursework

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