

SYLLABUSES FOR THE DEGREE OF MASTER OF SCIENCE IN DIGITAL MANAGEMENT OF BUILT ASSETS (MSc[DMBA])

These syllabuses are applicable to students admitted in the 2024-25 academic year and thereafter.

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

Candidates entering the Master of Science in Digital Management of Built Assets [MSc(DMBA)] curriculum are required to complete 60 credits of core courses and to select two elective courses (6 credits each) from MSc(DMBA) or other MSc programmes subject to approval by the Programme Director.

CORE COURSES

- RECO7601. Innovation and Processes (6 credits)
- RECO7615. International Construction Procurement (6 credits)
- RECO7603. Management Theory and Collaborative Project Management (6 credits)
- RECO7616. BIM Execution Planning (6 credits)
- RECO7605. Information Management (6 credits)
- RECO7609. Technologies and Innovation (6 credits)
- RECO7610. Virtual Facilities Management (6 credits)
- RECO7617. Capstone: Understanding Digital Management of Built Assets (6 credits)
- RECO7613. Information Technology in Design and Construction (6 credits)
- RECO7618. Built Assets of the Metaverse: Gaming and VDC (6 credits)

ELECTIVE COURSES

- RECO7607. Understanding Industry Practice (6 credits)
- RECO7608. Future Industry Directions (6 credits)

Elective courses from other designated MSc programmes offered by the Department of Real Estate and Construction will be announced by the Programme Director at the beginning of the year.

Mode of Assessment

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

RECO7601. Innovation and Processes (6 credits)

This course covers innovation and the concepts of business process engineering and reengineering for built assets. 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, and 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: 50% coursework and 50% examination

RECO7615. International Construction Procurement (6 credits)

This course examines the strategic and emergent issues in built assets procurement: a definition of procurement systems; organising the project procurement process; culture; conventionally orientated to developmentally orientated procurement systems, for example, 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 digital management theory and its application in Built Assets: the project organisation, company organisation, management theory and schools of thought, the project life cycle, organisation structure, team roles, and change management.

Assessment: 100% coursework

RECO7616. BIM Execution Planning (6 credits)

This course overviews the process of developing project specific BIM Execution Plans (BEP) 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, and planning the needed IT infrastructure for project needs.

Assessment: 100% coursework

RECO7605. Information Management (6 credits)

This course examines fundamental knowledge in information management and its application to 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 review the industry's performance, the pain points and their effect on the industry. Key areas include productivity, safety, digital management of built assets, technology adoption and other emergent issues. Through group discussion and presentation, students are expected to learn collaboratively and get a deeper understanding of the industry practice. Special focus on GBA is one of the key elements of this course.

Assessment: 100% coursework

RECO7608. Future Industry Directions (6 credits)

This course is designed to enable the student to develop and evaluate advanced technologies with a Tech Hunt exercise (e.g. ConTech, GreenTech, PropTech) on managing built assets digitally at HKSTP and also some incubation centres around GBA. Students will then examine the specific emergent issue and conduct research in the company industry or in a global context to present 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 research outcome will be a report presenting a range of plans and options to resolve the issues identified in the first case study.

Assessment: 100% coursework

Pre-requisite: RECO7607. Understanding Industry Practice

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 and asset 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 and entrepreneurship training 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 a 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, cost-effective, and 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 facility’s required functionality and operational performance are achieved in operation and use. It includes considering the impact of BIM, smart systems, AI automation, and robotics, 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 examined.

Assessment: 50% coursework and 50% examination

RECO7617. Capstone: Understanding Digital Management of Built Assets (6 credits)

This Capstone allows students to experience working in a team through a real-life case study. The case is provided and moderated by local professionals based on their experiences. Students form teams and play the various roles determined in the project case study. Participants can employ the principles and practices taught throughout the programme. Outcomes are exhibited regarding relational behaviour, project execution planning, appropriate technology adoption, stakeholder engagement and other performance indicators presented during the programme.

Assessment: 100% coursework

Pre-requisite: RECO7605. Information Management; RECO7610. Virtual Facilities Management; and

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

The course will provide an understanding of various 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 early planning to operational facility management. Established IT solutions and emerging digital technologies will be introduced, while the evaluation and acceptance of new IT solutions and processes will be emphasised. The course will incorporate hands-on practices and case studies to demonstrate and analyse digital technologies for current construction processes and long-term innovation purposes.

Assessment: 100% coursework

Pre-requisite: RECO7609. Technologies and Innovation

RECO7618. Built Assets of the Metaverse: Gaming and VDC (6 credits)

Students will be introduced to Metaverse and profound gaming technologies in different sectors and understand their effect on built assets and virtual design and construction (VDC). A few gaming technologies used by the construction industry will then be introduced to the students in the lecture. Students will also be provided hands-on experience in these tools enabled by Metaverse, gaming technology, and VDC. They will be invited to appraise and assess the effectiveness of tools could be potentially employed to improve the built assets.

Assessment: 100% coursework

Nov 2023