

Module Synopses

Semester One

Construction Project Management (75 hrs)

Students will learn the local construction legal and industry best practices / requirements such as building control act, security of payment act, environmental protection and management act, WSH act as well as productivity and quality measurement. Accessibility requirements, buildable and constructively scores, lean construction will also be covered. In addition, basic project management skills such as project initiation, project estimate and budgeting, project planning, scheduling, site organization and management system, project risk management and personal management skills will be taught. Upon completion of this module, students should be able to apply basic local construction management techniques at their workplace.

Building Information Modelling for Projects (75 hrs)

Students will gain general knowledge of framework of Building Information Modelling (BIM) and BIM Execution Plan as well as fundamental skills on BIM application in Civil & Structural Engineering discipline and construction Modelling. Computer aided practical sessions will be introduced to support the project-based learning to achieve these goals. Students will learn about BIM work flow, BIM Execution Plan, Modelling skills in Civil & Structural Engineering discipline, BIM applications in visualization, project coordination, documentation, specialized analysis, basic quantity taking-off and simulations of construction sequences. Prior knowledge of CAD drafting and structural modelling using BIM software will be useful.

Semester Two

Advanced Construction Technology (60 hrs)

Students will gain the latest knowledge in construction trends, processes and technologies. Topics covered will include selection of suitable construction plant, bridge construction and erection techniques, trenchless technology and fast-track construction techniques, operation aspect of tunnelling, underground and viaduct construction, slip-form technique, precast and prefabricated construction techniques covering hybrid precast-steel structural systems and self-compacting concrete. It will also include the emerging game-changing technologies such as Prefabricated Pre-finished Volumetric Construction (PPVC) and Cross Laminated Timber (CLT) manufacturing process and construction technique.

Measurement of CE & Building Works (45 hrs)

Students will learn different approaches in the measurements of civil engineering works based on Civil Engineering Standard of Measurement (CESMM) and building works based on Construction Electronic Measurement Standards (SS CP97 CEMS Part 1). A project-based assignment and tutorial exercises will be given to enhance the understanding of concepts taught in the classrooms.

Precast & Prestressed Concrete Technology (45 hrs)

Students will gain the knowledge and skills to apply precast and prestressed concrete technology in construction projects. The precast concrete technology includes the basic understanding of precast manufacturing process such as automated precast production, precast components erection & site management, precast connections and Buildable Design Appraisal System. The pre-stressed concrete technology covers the principles of design concepts, pre and post-tensioning and erection procedures, and prestressed precast applications in construction.

Semester Three

Reinforced Concrete Design (60 hrs)

Students will learn the concepts and principles in the design and detailing of reinforced concrete members to EC2. Students will be guided through the practical aspect of design and detailing of structural elements like beams, slabs, columns, footings and water retaining structures etc. with emphasis on good curtailment and detailing practices for reinforced concrete members. Classroom teaching is supplemented with assignments and e-learning.

Structural Steel Design (45 hrs)

Students will learn the concepts and principles of the design and detailing of steel structural members and connections in welded and bolted construction to EC3. A real world steel project will be used to guide students to learn to design and sketch structural steelwork drawings with emphasis placed on standard detailing practice in steel construction industry. Students will also learn the good construction practice for structural steelwork. Classroom teaching is supplemented with individual assignments such as tutorials and a group mini project.

Ground Engineering (45 hrs)

Students will gain understanding and practical knowledge to solve various geotechnical engineering problems. Topics will include design of footings, piles and retaining walls using EC7, soil improvement methods and geotechnical instrumentation. Classroom instructions will be supplemented by tutorials sessions and e-learning.