NANYANG INSTITUTE OF MANAGEMENT 南洋管理学院

Module Synopses

Advanced Diploma in Construction Engineering

Awarded by Nanyang Institute of Management

Total numbers of Modules - 17

Module & Description	Hours
1. Construction Safety To familiarize students with the safety and health hazards in the construction industry and be able to implement and audit the Safety Management System. It also provides students with knowledge of how to supervise the construction, erection, alteration or dismantling of any formwork structure within a worksite setting. **Assessment Weightage: 30% Group Presentation(s) | 30% Field Work | 40% Exam**	45
2. Building Services This module covers broad fundamentals of building services design and the function of services in commercial buildings and their importance to the core business in areas of electrical services, lighting, heating, ventilation and air conditioning, lifts and water. **Assessment Weightage: 20 % Individual Assessment/tutorial | 20% Field Work | 60% Exam**	45
3. Civil and Construction Engineering Materials To provide an introductory overview of the various materials used in civil and construction engineering and their fundamental principles of structural, physical and long-term performance. At the end of the course, students able to understand various civil and construction engineering material applications and detailing in structural and non-structural building components. Students will gain a comparative knowledge of material properties and possible applications in construction and architecture. **Assessment Weightage: 20% Group Presentation(s) | 20% Field Work I 60% Exam**	45
4. Earth Systems This module introduces the nature of Earth science, its processes and its relationship to other scientific fields. Earth science utilizes a systems approach to the dynamic nature of Earth while at the same time retaining a uniqueness unlike other sciences. The formation of the universe, solar system, and planet are key to understanding the processes that shape planet Earth. Earth as a sphere and a subset of four interacting spheres also plays a key role in understanding our plant. **Assessment Weightage: 20 % Individual Assessment/tutorial | 20% Group Presentation I 60% Exam**	45

Module & Description	Hours
5. Construction Management Systems To provide students with knowledge of the various forms of project delivery methods (Design- BidBuild, Design-Build, and Construction Management) and the underlying principles for choosing the appropriate system. Students will learn to recognize the complexity of the pre- construction process including conceptual estimating and scheduling, life cycle costing, constructability Page 2 of 4 reviews, value engineering, risk management and special contract requirements. **Assessment Weightage: 20 % Individual Assessment/tutorial | 20% Group Presentation I 60% Exam**	45
6. Construction Project Management To provide students with the knowledge of principles of project management and their applications in construction projects. Techniques in managing construction projects will be taught including project planning, cash flow analysis, Gantt chart, and critical path methods using network diagrams. **Assessment Weightage: 30% Group Presentation(s) | 30% Business Report/ Case Studies | 40% Exam**	45
7. Technical Drawings & Structural Detailing Students will learn the basics of technical drawing (sketching/scaling, basic CAD/computer skills, lettering and line work, math as it relates to drawing, architecture, orthographic projection, dimensioning, pictorial drawings, advanced CAD skills, etc.) through a series of projects / assignments. **Assessment weighting: Coursework assignments - 100%**	45

Module & Description	Hours
8. Structural Analysis To provide students with an introduction to structural systems and basic analysis methods for beams, frames, and trusses. Topics covered include the analysis of statically determinate and indeterminate structures, deflection calculations, influence lines, and an introduction to the stiffness method. **Assessment Weightage: 20 % Individual Assessment/tutorial | 20% Group Presentation | 60% Exam**	45
9. Structural Mechanics To provide student with knowledge of structural forms and their characteristics, including axial and bending action in resisting external forces, develop models and solve straightforward problems in structures, including simple trusses, beams and frames, and determine the internal forces in statically determinate structures, the stresses within simple elements and cross- sections, deflections in simple beams. **Assessment Weightage: 20 % Individual Assessment/tutorial | 20% Group Presentation | 60% Exam**	45
10. Technopreneurship This course provides an overview of technopreneurial activity, including evaluation and planning of a new business, financing, team building, product development, marketing and operational management issues, intellectual property protection, alternative models for revenue and growth, and exit strategies. **Assessment Weightage: 60 % Individual Assessment/tutorial | 40% Group Presentation**	45
11. Reinforced Concrete Design To provide students with an understanding of the structural design process, the mechanics of reinforced concrete, and the ability to design and proportion structural concrete members including slabs, beams, and columns for strength, serviceability, and economy. Design procedures are based on Eurocode 2 standards. **Assessment Weightage: 20 % Individual Assessment/tutorial | 20% Group Presentation | 60% Exam**	45

Module & Description	Hours
12. Engineering Mathematics 1 To provide students with the knowledge of limits, continuity, differentiation, applications, definition of the integral, and fundamental theorem of integral calculus. **Assessment Weightage: 20 % Individual Assessment/tutorial | 40% Class Test I 40% Exam**	45
13. Engineering Mathematics 2 To provide students with the knowledge to apply integration, differentiation, and integration of transcendental functions and methods of integration, L'Hopital's rule, conic sections, parametric equations, polar coordinates, infinite series. **Assessment Weightage: 20 % Individual Assessment/tutorial | 40% Class Test I 40% Exam**	45
14. Transportation Engineering and Design This course introduces students to methods and underlying principles for the design and control of the elements of road and railway infrastructure. Students also become familiar with transportation system terminology, flow analysis, driver, vehicle and road characteristics, and aspects of road geometrics, road construction, drainage, pavements and maintenance. **Assessment Weightage: 20 % Individual Assessment/tutorial | 20% Group Presentation | 60% Exam**	45
15. Sustainable Engineering Practice The aim of the industrial attachment is to foster professionalism in student development by placing them in a real-world working environment within the context of the industry to further develop their practical skills. This is to bring out the some theoretical underpinnings of the classroom context to a demonstration of their understanding and applications to the dynamic industry. Students are Page 4 of 4 expected to be placed in Construction Engineering traineeship positions in establishments in the industry to meet the internship criteria for a period of six months. **Assessment weighting: Coursework assignments - 100%**	45

Module & Description	Hours
16. Data Analysis for Built Environment This module comprises several mini-projects on programming and data analysis. It is designed to develop students' interest, confidence and ability to read and write computer programmes. Students will also be able to conduct basic data analysis on given sets of data. Students will be competent in incorporating programming components, such as data types, arrays, functions, loops, and decision-making structures, into their programmes. They will make use of these programming skills to organize data and present statistics in a meaningful way for subsequent correlation analysis and regression analysis. **Assessment Weightage: 20 % Individual Assessment/tutorial | 40% Class Test | 40% Exam**	45
17. Industrial Attachment*/Integrated Project The aim of the industrial attachment is to foster professionalism in student development by placing them in a real-world working environment within the context of the industry to further develop their practical skills. This is to bring out the some theoretical underpinnings of the classroom context to a demonstration of their understanding and applications to the dynamic industry. Students are expected to be placed in engineering traineeship positions in establishments in the industry to meet the internship criteria for a period of six months.	6-months

***Industrial Attachment (IA)**

- Student is entitled to only one Industrial Attachment posting; and
- No further IA posting will be arranged if the student withdraws or is terminated by the IA training partner.
- In the event where a student could not be placed as traineeship (IA); due to various reasons, he/she will do an integrated project with guidance from NIM IA Lecturer or an appointed member of the academic staff.