



**UNIVERSITI TEKNOLOGI MARA**

**BCM543: BUILDING SERVICES ENGINEERING II**

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| <b>Course Name (English)</b>  | BUILDING SERVICES ENGINEERING II <b>APPROVED</b>  |
| <b>Course Code</b>  | BCM543  |
| <b>MQF Credit</b>   | 3   |
| <b>Course Description</b>   | To create an understanding of the design and installation of the services commonly provided in habitable buildings. The learning process includes a study on specific characteristics of each type of service, the safety requirements for both installation and operation and the relationship between services systems and the building envelope.   |
| <b>Transferable Skills</b>  | M&E drawing interpretation skill<br>Cable/ducting installation skill<br>Teamwork and leadership skill<br>Presentation skill   |
| <b>Teaching Methodologies</b>   | Lectures, Case Study, Tutorial, Presentation  |
| <b>CLO</b>  | CLO1 Distinguish suitable heating, ventilation, air-conditioning system (HVAC) for building.<br>CLO2 Apply principles of installation, operations of heating, ventilation, air-conditioning system (HVAC) and the concepts, dimension of and intelligent building smart homes system<br>CLO3 Work collectively in delivering ideas and information for HVAC system in intelligent building.<br>CLO4 Discuss the provision, installation and operation of heating ventilation, air-conditioning system (HVAC) and intelligent building/smart homes system. |
| <b>Pre-Requisite Courses</b>  | No course recommendations   |
| <b>Topics</b>   |   |
| <b>1. Introduction to Heating, Ventilation and Air-conditioning (HVAC) system and green/intelligent building system</b><br>1.1) Introduction to Mechanical Ventilation System<br>1.2) Natural and mechanical ventilation system<br>1.3) overview on green/intelligent building, smart homes |   |
| <b>2. Air-conditioning System: Introduction</b><br>2.1) Air-conditioning system fundamentals materials<br>2.2) Air-conditioning relevant building legislative   |   |
| <b>3. Air-conditioning System: Application</b><br>3.1) Air-conditioning system types and application  |   |
| <b>4. Mechanical and Air-conditioning System Design</b><br>4.1) Interpretation of M&E drawing<br>4.2) Exercising (fan and duct sizing) of mechanical ventilation and air-conditioning system  |   |
| <b>5. Communication System: Design &amp; Installation</b><br>5.1) Public Supply and internal installation<br>5.2) Design of fixed telephone System and Internal cable distribution  |   |
| <b>6. Communication System: Network</b><br>6.1) Integration of computer network infrastructure in building  |   |
| <b>7. Intelligent Buildings: Theory</b><br>7.1) Intelligent Building: Definition, Design Concept and Dimensions   |   |

**8. Intelligent Buildings: System**

8.1) Building Automation System/ Building Management System: Office Automation and Advance Telecommunication System

**9. Intelligent Buildings: Planning**

9.1) Responsive to changes: Environmental Planning, Renewable Energy/ Energy Efficiency

**10. Intelligent Buildings: Green Technology**

10.1) Green Building: Introduction; Concept & Design features  
10.2) Smart Homes/Smart Schools: Intelligent Features

| Assessment Breakdown  | %      |
|-----------------------|--------|
| Continuous Assessment | 40.00% |
| Final Assessment      | 60.00% |

| Details of Continuous Assessment | Assessment Type | Assessment Description       | % of Total Mark | CLO  |
|----------------------------------|-----------------|------------------------------|-----------------|------|
|                                  | Case Study      | Assignment to address CLO4   | 30%             | CLO4 |
|                                  | Presentation    | Presentation to address CLO3 | 5%              | CLO3 |
|                                  | Test            | Assessment to address CLO2   | 5%              | CLO2 |

| Reading List | Recommended Text   |
|--------------|--|
|              | <ul style="list-style-type: none"> <li>• Fred Hall and Roger Greeno 2007, <i>Building Services Handbook</i>, 4th edition Ed., Butterworth-Heinemann Amsterdam</li> <li>• David V Chadderton 2007, <i>Building Services Engineering</i>, 5th Edition Ed., Taylor &amp; Francis London</li> <li>• Roger Greeno 2000, <i>Building Services, Technology and Design</i>, Pearson Education Limited England</li> </ul> |

| Article/Paper List |   |
|--------------------|---|
|                    | This Course does not have any article/paper resources |

| Other References |   |
|------------------|---|
|                  | This Course does not have any other resources |