UNIVERSITI TEKNOLOGI MARA

BCT463: BUILDING SERVICES TECHNOLOGY

Course Name (English)	BUILDING SERVICES TECHNOLOGY APPROVED
Course Code	BCT463
MQF Credit	3
Course Description	The general aim of the course is to provide sufficient knowledge and understanding of the air conditioning and mechanical ventilation (ACMV) systems, conveyance system, waste technology and fire protection systems. The students will be exposed to the principle of the systems in a building or structure.
Transferable Skills	Upon the completion of the course, student will be able to describe the principles of building services in relation to air conditioning and mechanical ventilation system, mechanical transport system in building, waste technology and fire protection. Student will also able to distinguish various method and operation of the system.
Teaching Methodologies	Lectures, Blended Learning, Case Study, Discussion
CLO	CLO1 Describe the fundamental principles of building services systems in construction industry. CLO2 Distinguish various method and operational of related building services systems in constructional industry. CLO3 Report verbally and in writing by interpreting the basic schematic drawing of related building services systems in the construction industry.
Pre-Requisite Courses	No course recommendations

Topics
1. Mechanical Ventilation 1.1) Definition, supply, extract and combined systems; fans; filter – types and usage; turbine ventilators – types and usage for factory buildings.
2. Air Conditioning System 2.1) Definition, basic design consideration, heat transfer cycles, treatment of air conditions, vapor compression refrigeration, direct absorption refrigeration, control techniques and distribution system. 2.2) Unitary system – window units, split units, packaged units. 2.3) Central plant system – refrigeration; cooling tower; all-air and air-water systems at high and low velocities; control techniques, positioning inlets and exhausts. 2.4) Regional plant air conditioning system. 2.5) Relevant building legislative and ASHRAE requirements.
3. Mechanical Transportation 3.1) Overview 3.2) Lifts 3.3) Types: passenger, goods, services, fireman's and hospital bed lift; dumb waiter; paternoster. 3.4) Lift operations control systems; power systems: electrical, hydraulic; lift safety measures and devices. 3.5) Lift shaft and pit; motor room; builder's work; fire precautions. 3.6) Escalators: constructional and operational aspects; user safety measures and fire precautions; builder's work. 3.7) Other mechanical handling equipment: cranes, pneumatic systems, belt and basket conveyors.
4. Waste Disposal Technology 4.1) Method of collection and storage: rubbish bins, paladin, refuse chute, Garchey system, sink grinder, technocuum, etc. 4.2) General overview of disposal and on-site treatments; sanitary landfills; recycling techniques; incinerators; industrial waste centers; fuel pellet process; composting; dumping at sea; pulverizing; etc. 4.3) Local Authorities' regulations.

5. Fire Protection and Prevention
5.1) Overview of fire safety in buildings; fire safety strategy.
5.2) Elements of combustion (fire safety triangle), fire ignition and growth, fire extinguishing methods; extinguishing media.
5.3) Structural fire protection (passive approach): compartmentation, building materials and their fire resistance.
5.4) Mean of escape (escapes routes): travel distance, fire exits, protected corridors and stairways; illuminated sign.
5.5) Smoke control: smoke venting; pressurization of escapes routes.
5.6) Fire detection, alarm and extinguishing (active approach): 'first aid' fire fighting appliances, automatic fire extinguishing equipment; equipment used by firemen; automatic fire detectors and alarms.
5.7) Fireman's lift.
5.8) Legislation and regulations.

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Presentation	Group presentation of findings regarding the building services	20%	CLO3
Test	Written test on the fundamental principles of building services	10%	CLO1
Written Report	Group written report of findings regarding the building services	20%	CLO3

Reading List

Reference Book Resources

- **Stephens, A., & Fuller, M. 2009, *Sewage Treatment: Uses, Processes and Impact*, Nova Science Pub Inc. Boca Raton**
- **Chadderton, D., V. 2007, *Building Services engineering*, 5th Edition Ed., EF Spon. London.**
- **Roger, G. 2000, *Building Services, Technology and Design*, Longman Harlow, England**
- **Walter, T., G., Allison, G., K., Benjamin, S., & John, S., R. 2010, *Mechanical & Electrical Equipment for Building*, 11th Edition Ed., John Wiley. New York, USA**
- **Hall. F., & Greeno, R. 2009, *Building Services Handbook*, 5th Edition Ed., Butterworth- Heinemann. London, England**
- **Pitchel, J. 2005, *Waste Management Practices*, Second Edition Ed., Taylor Boca Raton**
- **Robertson, J., C. 2009, *Introduction to Fire Prevention*, 7th Edition Ed., Prentice Hall Englewood Cliffs, NJ., USA**

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

Other References: This Course does not have any other resources