**University of Management and Technology**

**School of Architecture & Planning**

**Department of Architecture**

Course code: **AR-619** Course title: **Building services and systems**

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| Program | **M-Arch** |
| Credit Hours | (3+0) |
| Duration | 1 semester(16 weeks) |
| Prerequisites | None |
| Resource Person | **As per timetable** |
| Counseling Timing | **Kindly see office window** |
| Contact: | - |

# Resource Person Signature …………..................................

**Chairman/Director signature………………………………….**

**Dean’s signature…………………………… Date………………………………………….**

**Learning Objective:**

The course aim to equip the student with basic principle of the building services systems, the technique of integration amongst the building services systems, the building and the structure. The course will also highlight the systems of special interest, the key issues, benefits and limitations and the local practice in the building services field.

# Objectives:

The Main Objective of the Course is to develop the students’ intellectual and creative skills and abilities. The course attempts to provide the students with the following attributes:

1. An ability to apply the basic physical and engineering sciences and technology underlying the major building services systems in all kinds of applications.
2. A good understanding of the major building services systems and their integration and coordination into the architecture and structures.
3. An appreciation of the consequences of alternative systems taking account of the technical performances, economics, energy usages and environmental effects.
4. An understanding of the current Building Regulation in energy efficiency, or COP in fire services installation, etc.
5. An understanding of the working relationship between the architects and the building services engineers in professional practice.

# Course Outcome:

Upon the completion of the course, students will have demonstrated an ability to apply the basic physical and engineering sciences and technology underlying the major building services systems in different kinds of applications. They will possess a good understanding of the major building services systems and their integration into the architecture and structures, current building regulations on energy efficiency, green building rating tools and working relationship between architects and building services engineers in professional practice. The student will be able to appreciate the impacts of alternative system selection on technical performances, economics, energy usages, environmental consequences as well as spatial requirements and structural implications.

# Grade Evaluation Criteria

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| I. Assignments | (10%) |
| II. Quizzes(10%) |  |
| III. Mid Term | (20%) |
| IV. Final exam | (60%) |

*\*. No. of Quizzes & Assignments : 03*

# Recommended Text Books:

* 1. Advanced construction of Buildings by Stephen Emmit, Christopher A.Gorse
  2. European Building Construction Illustrated by Francis DK Ching, Mark Mulville
  3. Advanced Building Systems: A Technical Guide for Architects & Engineers by Klaus Daniels
  4. The Architects Handbook of Professional Practice, Fifth Edition, Wiley

# Reference Books:

* + 1. The Project Resource Manual: CSI Manual of Practice, Firth Edition, (The Construction Specifications Institute).
    2. International Building code Illustrated.

**Calendar of Course contents to be covered during semester**

Course code**: AR-619,** Course title**: Building Services and Systems**

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| --- | --- | --- |
| **Week** | **Course Contents** | **Reference Chapter(s)** |
| 1 – 3 | Building systems and components   * Introduction * Conventional system * Prefabrication system * Functions and Performance of Buildings—Scaffolding types |  |
| 4 | Technological and organizational aspects of buildings |  |
| 5 | Study of industrialized Buildings ,materials and components and finishes |  |
| 6-7 | Space for Services   * Coordination of Building Services Space during project planning stage (E&M plant room, pipe duct, E&M spaces inside false ceiling and raised floor) |  |
| 8 | **MID-Term Exam** |  |
| 9 | Fire Safety Engineering and Fire Services Systems   * Principle of Fire Safety Engineering * Fire Suppression Systems * Fire Detection Systems |  |

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| 10 - 11 | Human Comfort and Indoor Environmental Quality   * Psychrometry and Thermal Comfort * Ventilation requirements and Indoor Environmental Quality * Natural Ventilation (wind, stack & combined wind and stack effects) |  |
| 12 | Intelligent Building   * Building Management System and Security System |  |
| 13 | Sustainable Development /Green Buildings |  |
| 14 | Energy Conservation & Environmental Consideration   * Building Energy Regulation * Energy Efficient System * Local Environmental Consideration |  |
| 15 | Future Trends and High Tech Buildings |  |
| 16 | **Final Exam** |  |