هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title: Buildings Services (خدمات المباني)
Course Code: IND 566
Program: Interior Design Program
Department: Architecture Department
College: College of Engineering and Information Technology
Institution: Onaizah Private Colleges
Version: Third Version
Last Revision Date: 2025-05-20

Previous Course Specification
https://drive.google.com/file/d/1eTyB36cv2yPEGZKMlZ2ps9XkyqwKG_cl/view

Table of Contents:

Content	Page
A. General Information about the course	3
1. Teaching mode	3
2. Contact Hours (based on the academic semester)	3
Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	5
C. Course Content	7
D. Student Assessment Activities	9
E. Learning Resources and Facilities	10
1. References and Learning Resources	10
2. Required Facilities and Equipment	10
F. Assessment of Course Qualit	11
G. Specification Approval Data	12

A. General information about the course:

Course Identification	
1. Credit hours:	2 Credit Hours [Theoretical]
2. Course type a. University ☐ College ☐ Department ☒ Track ☐ Others ☐ b. Required ☒ Elective ☐	
3. Level/year at which this course is offered:	Fifth Level / Third Year
4. Course general Description This course introduces students to the fundamental building systems that support functionality, safety, comfort, and sustainability in interior environments. It covers key services including lighting, electrical distribution, HVAC (heating, ventilation, and air conditioning), plumbing, fire protection systems, and vertical transportation. Emphasis is placed on the integration of these systems into interior design planning—through spatial layout, ceiling design, and detailing—to enhance user experience while ensuring compliance with building codes and performance standards. Students will learn to interpret service drawings, coordinate their design proposals with engineering requirements, and apply contemporary strategies such as smart systems and energy-efficient technologies. By the end of the course, students will be equipped to develop interior design solutions that are both technically sound and aesthetically cohesive.	
5. Pre-requirements for this course (if any): DES 462	
6. Co- requirements for this course (if any): None	
7. Course Main Objective(s) This course aims to develop students' understanding of key building service systems that influence the planning, performance, and comfort of interior spaces. It introduces foundational knowledge of electrical systems, lighting design, HVAC, plumbing, fire protection, and vertical transportation. Students will explore how these systems operate, how they impact spatial and functional layouts, and how to integrate them into interior design proposals in accordance with safety codes and technical standards. The course emphasizes interdisciplinary coordination between design and engineering and promotes sustainable thinking through the exploration of smart and energy-efficient building technologies. By the end of the course, students will be able to interpret service drawings and make informed design decisions that effectively incorporate building services with aesthetic and technical integrity.	

1. Teaching mode

No.	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		

No.	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

2. Contact Hours (based on the academic semester)

No.	Activity	Contact Hours
1	Lectures	30
2	Laboratory/Studio	
3	Field	
4	Tutorial	
5	Others (specify)	
Total		**30**

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
IND 566.C LO.K.1	Identify the fundamental characteristics and safety-related standards of building services relevant to interior environments and user comfort	K.4(التصميم برنامج الداخلى Interior Design)	Primary: Lecture Additional: Independent Study	Formative: Research Summary (Rubric) Summative: Quiz (Online or F2F)
2.0	**Skills**			
IND 566.C LO.S.1	Communicate building service requirements and integration strategies through case study analysis, demonstrating clarity and relevance to interior design solutions	S.6(التصميم برنامج الداخلى Interior Design)	Primary: Case Study (Individual or Group) Additional: Discussion (or similar active learning strategies)	Formative: Case Study (Individual or Group)(Rubric) Summative: Presentation (Individual or Group) (Rubric)
IND 566.C LO.S.2	Evaluate the requirements and integration of electrical, plumbing, fire safety, and HVAC systems in relation to interior design codes,	S.1(التصميم برنامج الداخلى Interior Design)	Primary: Presentations (Individual or Group) Additional: Extracurricular Activity	Formative: Quiz (Online or F2F) Summative: Written Exam (MCQ or Essay / F2F or Online)

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	sustainability, and indoor environmental quality			
3.0	**Values, Autonomy, and Responsibility**			
IND 566.CLO.V.1	Demonstrate ethical responsibility and adherence to safety provisions, Saudi Building Code, and professional standards in the design and coordination of building services	V.2(التصميم برنامج الداخلى Interior Design)	Primary: Group Project or Research Additional: Discussion (or similar active learning strategies)	Formative: Case Study (Individual or Group) Summative: Student Portfolio

C. Course Content

No.	List of Topics	Contact Hours
1	Introduction: - Syllabus Handout & brief introduction to the course.	2
2	Interior Environmental Systems: - IAQ. - Thermal Comfort. - HVAC: Heating systems. - HVAC: Cooling systems. Activity: Class Discussion of different building services.	2
3	Interior Environmental Systems: - HVAC Case Study. - Water Supply & Sanitary Case Study. - Electrical & Lighting Case Study. Activity: In-Class Observation: Identify and highlight different parts of plumbing systems on college.	2
4	Water Supply: Plumbing Systems - Overview. - Water Supply. - Plumbing Fixtures. Activity: Class Discussion about the different categories of water system.	2
5	Sanitary: - Sanitary Piping. - Storm Water Drainage.	2
6	Fire Protection: - Detection & Alarm Systems. - Exits: Means of Egress. - Compartmentation.	2
7	Fire Protection: - Smoke control. - Fire suppression. Activity: Group work: differentiate between active & passive fire protection system.	2
8	Gas Supply: - Definition. - History & uses. - Types.	2

	- Advantages / Disadvantages. Activity: Case Study: Local Building System analysis.	
9	Midterm.	2
10	Electrical Systems: Lighting - Principles of Illumination. - Electrical lighting. - Daylighting. - Emergency Lighting. - Outdoor lighting. Activity: Class Discussion about electrical systems.	2
11	Electrical Systems: - Interior distribution. - Battery Power supply. - Utility demand Management. Activity: Group work: Compare and analyze and existing building system.	2
12	Electrical Systems: - Signal Systems. - Security CCTV. - Conveying Systems.	2
13	Active HVAC Systems: Heating - Central Heat Source. - Central Cooling. - Distribution Media. - Delivery Devices. - Localized Exhaust Systems.	2
14	Active HVAC Systems: Cooling - Heat recovery. - Thermal Storage. - Automatic Controls. - Noise and Vibrations. - District Heating and Cooling. - IAQ. - Ventilation.	2
15	Project Application and Discussion.	2
Total		**30**

D. Students Assessment Activities

No.	Assessment Activities*	Assessment Timing (in Week No.)	Percentage of Total Assessment Score
1	Quiz (Online or F2F)	6th & 12th	10%
2	Written Exam (Midterm Exam) (MCQ or Essay / F2F or Online)	9th	25%
3	Assignment 1- Research Presentation (Individual or Group) (Rubric)	3rd	10%
4	Assignment 2 - Case Study (Individual or Group) + Student Portfolio	15th	10%
5	Written Exam (Final Exam) (MCQ or Essay / F2F or Online)	18th	45%
			100%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	- Mechanical and Electrical Equipment for Buildings by Walter T. Grondzik and Alison G. Kwok, 12th Edition 2014. - Building Services Handbook, Roger Greeno, Fred Hall ,Routledge,9th Edition. 2017. - Illustrated Encyclopedia of Building Services, David Kut, 1st Edition, 2013.
Supportive References	None.
Electronic Materials	None.
Other Learning Materials	None.

2. Required Facilities and Equipment

Items	Resources
Facilities (Classrooms, Laboratories, Exhibition Rooms, Simulation Rooms, etc.)	Classrooms.
Technology Equipment (Projector, Smart Board, Software)	Data Show or Projector System.
Other Equipment (Depending on the nature of the specialty)	None.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Peer Reviewer	Direct (peer classroom observation according to the approved Rubric)
Effectiveness of students' assessment	Faculty/Instructor	Direct (analysis of CLOs assessment results and grade distributions)
Quality of learning resources	Students	Indirect (course evaluation survey)
The extent to which CLOs have been achieved	Faculty/Instructor	Direct (CLOs assessment and analysis of results according to CLOs targets)
	Students	Indirect (Students through course evaluation survey)
Commitment to learning and teaching strategies and assessment methods included in the program and course specifications	Peer Reviewer	Direct (Peer- classroom observation according to the approved Rubric in OC-QMS)
	Department Chair through Students Focus Groups	Indirect (Chair – survey questions to a focus group of students according to OC QMS)
Action Plan Continuity (Closing the Loop)	QAC (Quality Assurance Committee)	Direct (periodic review of course reports and submitting comments to course instructor/coordinator)
Instructor's Support to Students	Students	Indirect (course evaluation survey)

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Department of Architecture Council
REFERENCE NO.	11
DATE	2023-05-09

Learning outcomes of this course, as well as CLOs/Teaching Strategies/Assessment Methods matrix have been evaluated and reviewed by multiple OC parties according to OC-QMS. You can access results of these final reviews by scanning the QR code on the right, which contains a link to the reviews on OC-E-QMS.

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