



University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Architectural Engineering and Environmental Design

Form no. (12): Course Specification

1- Course Data

Course Code: AR 557	Course Title: Execution Design 3	Academic Year/Level: 5th year / 9th semester
Specialization: Architecture	No. of Instructional Units Credit 3 Lecture 2 Tutorial 4	Prerequisite AR456

2- Course Aim

This course masters execution documents for buildings' functional spaces and sophisticated structural, environmental, interior, and outdoor/landscape elements. Environmental awareness, sustainability and their applications are also addressed throughout different stages of the course. The course then concentrates on advanced architectural detailing and execution problem-solving concepts and on the coordination between passive and technical systems on one hand, and execution documents and drawings. Students learn the theories and principles of advanced structural systems, construction materials and technologies and solving execution design problems using various techniques. Developments of various and advanced execution design methods, tools, and techniques available for building's structural and environmental design elements are also covered thoroughly.

The course aims to:

- Emphasize the use of a wide-range of different building-elements and their execution design aspects; construction materials and fixation methods.
- Encourage the student to interact with a number of advanced execution design related topics, such as structural systems, construction materials and technologies, special interior furniture, indoor fittings and equipment, lighting and acoustic systems

3- Intended Learning Outcomes

a- Knowledge and Understanding	<p>Through knowledge and understanding, students will be able to:</p> <ul style="list-style-type: none"> • Define the role and responsibility of the architect in creating sustainable architecture, suitable for the natural environment and society's social, economical & cultural requirements. • Explain the impacts of professional architectural solutions on the society and both the natural and built environments, on a local, regional and global scale. • Describe the relationship between buildings and their surrounding contextual environments as well as the need to relate buildings and the surrounding spaces to human needs and scale.
b- Intellectual Skills	<p>Through intellectual skills, students will be able to:</p> <ul style="list-style-type: none"> • Criticize buildings with a high degree of scrutiny. Instead of observing a building as one solid architectural product, students should have the ability to visibly attach and detach the building into a variety of constituents or 'ingredients.' These 'ingredients' should be analysed to invariably high degrees of detail. At this point in of their architectural education, students (novice-architects) should have both the skill and ability to create innovative and swift design sketches, portraying how each one of these 'ingredients' will function, the materials of which it will be manufactured and implementation method. • Integrate their creative ideas into both legible and applicable drawings to be implemented. Convert their architectural and environmental design ideas, proposals, and concepts into equally innovative, detailed execution drawings.

c- Professional Skills	<p>Through professional and practical skills, students will be able to:</p> <ul style="list-style-type: none"> • Perform and explore different execution details undertaken to reach innovative design solutions. • Collect data to assist students in altering their theoretical knowledge of environmental design, gained in preceding terms of study, into detailed execution design formulas that can be applied in buildings. • Produce architectural products (e.g. structural elements, environmental design techniques, renewable energy technologies, furniture, fixtures and fittings) using different construction materials, giving insight into the possibility of transforming seemingly irrelevant products into practical products for human use.
d- General Skills	<p>Through general and transferable skills, students will be able to:</p> <ul style="list-style-type: none"> • Write structural reports or essay in accordance with the standard scientific guidelines. • Present reports in seminars, discuss results, defend his/her ideas, and communicate effectively in writing, verbally and through drawings and models. • Work coherently and successfully as a part of a team in projects, assignments, etc. • Independently seek knowledge, set aims, targets, objectives and plan to meet them with a deadline (time management). • Adopt an open-minded approach in the appraisal of design issues, requirements and opportunities. • Listen and critically respond to the views of others. • Transfer techniques and solutions from one field of architecture to another.

4- Course Content

Week No.1	Introductory Lecture (Groups' Themes & Principles) Scope of design-studio work + introduction to group-research topics & themes
Week No.2	Advanced Structural-Systems' Detailing and Technologies Preparing the basic execution drawings (term-project 1st phase) (Plans)
Week No.3	Advanced Construction-Materials' Detailing and Technologies Preparing the basic execution drawings (term-project 1st phase) (Sections & Elevations)
Week No.4	Environmental Design Strategies and Execution Design Techniques Development of the basic execution drawings (term-project 1st phase) (staircase design, structural systems, construction materials, and detailed-elements themes)
Week No.5	Environmental Design Techniques' Detailing and Technologies Preparing the basic execution drawings of the term-project 1st phase) (environmental design elements)
Week No.6	Advanced Interior Fittings' Detailing and Technologies Preparing the detailed-spaces and their execution design problems
Week No.7	Final submission of the term- project 1st Phase + Group Research Work Submission
Week No.8	Execution Design Detailing (Concepts & Methodologies) Group Research Work Submission & Presentation
Week No.9	Execution Design Detailing (Techniques) Preparing of the detailed-spaces execution drawings (term- project 2nd phase)
Week No.10	Execution Design Detailing (Techniques) Development of the detailed-spaces execution drawings (term- project 2nd phase)
Week No.11	Development of the detailed-spaces execution drawings (term- project 2nd phase)
Week No.12	introducing the individual-research topics and themes
Week No.13	Execution Design Documentation (Coordination, Final Submission Formats and Techniques) + One-day-project (6)

Week No.14 Final review of the execution drawings of the term-project 1st + 2nd phase

Week No.15 The Term-Project Final Submission, Jury, and Feedback
Individual Research Work Submission

5- Teaching and Learning Methods

The course comprises a combination of lectures, case study analysed, discussion sessions, class activities, feedback on presentations and project work.

6-Teaching and Learning Methods for Students with Special Needs

- Consulting with lecturer during office hours.
- Consulting with teaching assistant during office hours.
- Private sessions for redelivering the lecture contents.
- For handicapped accessibility, please refer to program specification.

7- Student Assessment

Asses No.	Procedures used		Start Week No.	Subm. Week No.	Weighting of Asses.
	Type	To assess			
1	Assignment	All skills	1	2	%
2	Collab. Project	All skills	2	7	%
3	Project	All skills	7	15	%
4	Research	Intellectual thinking skills -Knowledge and understanding	1	3	%
5	Drawing exam.	All skills	7	7	30%
6	Exam. of studio project work	Knowledge and intellectual skills Practical skills	12	12	20%
7	Workshop	All skills	13	15	10%
8	Drawing exam.	Knowledge and intellectual skills Practical skills	16	16	40%
Total					100%

8- List of References:

a- Course Notes	Notes are handed out to the students throughout the semester.
b- Required Books (Textbooks)	• DICKINSON-DUO, Expressive Details, Mc Graw-Hill Inc., 1997.
c- Recommended Books	<ul style="list-style-type: none"> • CHUDLEY R, <i>Construction Technology</i>, Longman, 1974-1987. • RAMSEY / SLEEPER, <i>Architectural Graphic Standards for Architectural Design Data</i>, Mc Graw Hill, 1983. • WILLIAM, Spence, <i>Architectural Working Drawings: Residential and Commercial Buildings</i>. N.Y, Wiley, 1993. • KEITH, Styles, <i>Working Drawings Handbook. 3rd Ed.</i>, Oxford: Butterworth, Heinemann, 1995. • OSAMU, Wakita A., <i>The Professional Practice of Architectural Working Drawings. 2nd Ed</i>, N.Y., Wiley, 1994.
d- Periodicals, Web Sites, etc.	N/A