

**Faculty of Engineering & Technology**

**Building Construction & Materials 3**

**Information :**

**Course Code :** ARC 341

**Level :** Undergraduate

**Course Hours :** 4.00- Hours

**Department :** Department of Architectural Engineering

**Instructor Information :**

Title	Name	Office hours
Lecturer	Hala Ali Nabil Mohamed Ali	2
Lecturer	Nader Ibrahim Ismael Ibrahim	1
Assistant Lecturer	AMANY MEDHAT HUSSEIN KHALIL MOHAMED	
Assistant Lecturer	Aya Osama Ahmed Kamal Aly	3
Assistant Lecturer	Sameh Ibrahim Abdul Samie Ahmed Emam	
Teaching Assistant	Aliaa Mohamed Nabegh Mohamed	1
Teaching Assistant	Salma Mohamed Eltohamy Elgendy	1
Teaching Assistant	Kamal Abdeleziz Ali Selim	1

**Area Of Study :**

Develop the students' knowledge about the main types of advanced constructions with large spans and high rise structures.

Develop the students' knowledge of the theory of transferring loads in large spans and high rise structures.

Develop the students' knowledge of the different materials appropriate for executing large spans and high rise structures

Train the students to draw different working details for large spans and high rise structures

**Description :**

The main concern and focus of this course will be about the advanced construction systems and execution methods. The course will cover the basics of designing and executing buildings with large span and high rise buildings; mainly the steel and wood trusses and frames. Also the course will comprise the design and execution details of space trusses, geodesic domes, tents, tension and shell structures.

**Course outcomes :**

**a. Knowledge and Understanding :**

1 -	Listing the main types of advanced constructions with large spans.
2 -	Listing the main types of advanced constructions with high rise.
3 -	Illustrating how live/dead loads are transferred through different structure systems with large span.
4 -	Illustrating how live/dead loads are transferred through different structure systems with high rise.
5 -	Listing different materials appropriate for executing large spans constructions.
6 -	Listing different materials appropriate for executing high rise constructions.
7 -	Identify different ways of modelling and presenting structure systems.

**b. Intellectual Skills: :**

1 -	Differentiating between diverse types of large span structures considering optimum covered span and resulting form.
2 -	Differentiating between diverse types of high rise structures considering resulting form and plan, also the maximum rise.
3 -	Selecting proper structural system according to the building needs and function.
4 -	Deduce the structure system that is used in a given complete project.

**c. Professional and Practical Skills: :**

1 -	Designing appropriate structure system for various constructional cases that include large span or high rise structures.
2 -	Using freehand sketches and engineering drafting to draw building construction details
3 -	Designing appropriate details for various constructional cases that include large span or high rise structures.
4 -	Build architectural physical models for different construction ways for large spans and high rise constructions.

**d. General and Transferable Skills: :**

1 -	Manage tasks and resources
2 -	Search for information
3 -	Refer to relevant literatures.

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction	6	2	4
Linear structures (vector-active): steel trusses	6	2	4
Linear structures (Section-active): steel frames	6	2	4
Wooden trusses and frames	6	2	4
space structures(Surface-active): steel space trusses	6	2	4
space structures(Surface-active): Geodesic Domes	6	2	4
space structures(Form-active): Cable structures	6	2	4
space structures(Form-active): Tent structures	6	2	4
Shell structures(Form-active): Folded Roofs	6	2	4
Shell structures(Form-active): shell structures , double curvature	6	2	4
Hybrid Structures	6	2	4
High rise buildings systems (research submission & discussion)	6	0	6
High rise buildings systems (research submission & discussion) + sum up lecture	6	2	4
Revision	6	4	2

**Teaching And Learning Methodologies :**

Interactive lecture
Research (self-study)
Class Work

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Assignments/Studio work	30.00		
Final exam	40.00		
Midterm exam	10.00		
Participation	10.00		
Self-study	10.00		

**Recommended books :**

- a) Ching, Francis D. K.; Building Construction Illustration, 4th Ed- 2008
- b) Mckay's, W. B. et ell; Building Construction, v. I- 2012
- c) Ramsey, Sleeper; Architectural graphic standards - 201

**Periodicals :**

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**Web Sites :**

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