

**The Hashemite University**

**Faculty of Engineering**

**Department of Civil Engineering**

**Study Plan for MSc degree in  
Structural Engineering  
(Comprehensive)**

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**Introduction:**

The structural engineering is that science that deals with the application of the basics of the civil engineering in the design and supervision of different structures, such as concrete and steel buildings, bridges, hydraulic structures, and dams.

**First: Program Goals**

1. Supply the industry sector with qualified engineers who are specified in structural engineering and its different applications to design and supervise different structures and to be capable of applying research and improvements in this field.
2. Help in finding solutions for problems in construction and economical solutions for the high prices of the residential buildings in the kingdom by elaborating and conducting research and studies to train engineers on the advance programs that are connected to structures.

**Second: Program Justifications**

1. The ministry of public works and housings requires designing and analyzing the structures for earthquake loads. Based on that, this program will attain the chances for the engineers to design and analyze the structures to resist the earthquake loads.
2. The kingdom suffers from many failures in the structures due to excessive loading. Many steel structures had failed due to unexpected environmental and weathering issues such as snow and etc.
3. Help the industry especially the housing sector by introducing training course, providing engineering consultations, studies, research, and providing them with qualified people.
4. Performing research in different fields of structural engineering.
5. The availability of research tools in the Civil Engineering Department in the Hashemite University by having the Structural Systems Laboratory that is considered number one in the Kingdom also the region and it can be compared to the top universities in the USA. This Laboratory has all the needed instruments that will help the community to find the updated Structural Solutions.

**Third: General Condition:**

1. This plan is prepared according to the instructions and requirements of the Faculty of Graduate Studies at the Hashemite University.
2. Applicants must hold a BSc. in Civil Engineering.

**Fourth: Special Requirements:**

All students applying for admission to the MSc. degree must pass the English Proficiency test prepared by the Ministry of Higher Education. The student can take the exam during or before enrollment into the program.

**Fifth: Prerequisite course:**

Are determined on individual student basis and in accordance with article (6) of the MSc. degree instructions, No. (2), 1998.

**Sixth: The Degree Plan Consist of:**

**1- Compulsory Courses Fifteen (16) credit hours as follows: -**

| Course Number | Course Title                                    | Credit Hours | Prerequisite |
|---------------|---|--------------|--------------|
| 190401701     | Finite Element Method in Structural Engineering | 3            | -            |
| 190401702     | Plastic Behavior and Design of Steel Structures | 3            | -            |
| 190401703     | Advanced Structural Dynamics                    | 3            | -            |
| 190401704     | Advanced Theory of Concrete Structures          | 3            | -            |
| 190401705     | Earthquake Structural Engineering               | 3            | 190401703    |
| 190401797     | Seminar   | 1            |              |

**2- Elective Courses: Eighteen (18) credit hours selected from the following list:**

| Course Number | Course Title                                   | Credit Hours | Prerequisite |
|---------------|--|--------------|--------------|
| 190401706     | Advanced Numerical Analysis                    | 3            | -            |
| 190401707     | Theory of Plates and Shells                    | 3            | -            |
| 190401708     | Theory of Elasticity                           | 3            | -            |
| 190401709     | Geotechnical Aspects of Earthquake Engineering | 3            | -            |
| 190401710     | Structural Stability                           | 3            | -            |
| 190401711     | Bridge Engineering                             | 3            | -            |
| 190401712     | Advanced Foundation Engineering                | 3            | -            |
| 190401713     | Composite Structures                           | 3            | -            |
| 190401714     | Advanced Concrete Technology and Materials     | 3            | -            |
| 190401715     | Advanced Special Topics in Civil Engineering   | 3            | -            |

**3. A Comprehensive Exam (190401798).**