Department: Civil & Environmental Engineering **Division: Civil engineering**
Level and Major: Graduate - Structure Engineering

Course Title: Dynamics of structures **Number of Credits: 3**
Prerequisite (Corequisite): Structural analysis (I)**,** Concrete Technology **Lecturer:** -

Course Topics

- The difference between static and dynamic analysis
- Types of dynamic loads
- Degrees of freedom and how to model structures
- Equations of motion in Systems of One-degree freedom
- free vibration Systems of one degree freedom
- Dynamic analysis of systems of one degree freedom against types of loads (harmonic, impact, etc.)
- Duhamel integral and analysis of systems in the above method
- Nonlinear Dynamic Analysis of one degree freedom Systems
- Numerical methods in linear and nonlinear dynamic analysis of one degree freedom systems
- Determine the equations of multi-degree freedom Systems
- free vibration of multi degree freedom systems and determination of specific amounts and vibration modes
- Modal analysis method for analyzing multi- degree freedom Systems
- Direct integration method for analyzing one and multi-degree freedom Systems
- Frequency method for dynamic analysis of multi-degree freedom Systems
- Equilibrium equations and dynamic analysis of multi-degree freedom Systems by matrix method
- Dynamic analysis of simple continuous systems
- Getting acquainted with computer programs Dynamic analysis

Course Description:
Reading Sources:
Course Goals and objectives:
Evaluation:
Course topics:
The course aims to: