1. Course number and name	**Introduction to Finite Element Analysis**
2. Credits and contact hours	3 credits, 3-1 lecture hours per week
3. Instructor's or course coordinator's name	Mustafa Mahamid, PhD, SE, PE, P.Eng., F.SEI, F.ASCE **Prepared:** May, 2018
4. Textbook title, author, yr	*A First Course in the Finite Element Method (Activate Learning with these NEW titles from Engineering!) 6th Edition, 2016 by Daryl L. Logan*
a. Supplemental materials	Lecture notes and other instructor-designed handouts.
5. Specific course information	
a. Brief description of the content of the course (catalog description)	Covers the basic of solid and fluid mechanics topics of statics and kinematics.
b. Prerequisites or co-requisites	Strength of Materials or equivalent
6. Specific goals of the course	
a. Specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.	**Course Objectives:** 1) Understand the theory of finite elements for heat conduction and structural mechanics problems 2) Understand the fundamentals of using a finite element code to solve engineering problems, including choosing a model, meshing, refining, and checking for errors 3) Understand the common ways in which finite elements may fail to find a valid solution 4) Be familiar with how a commercial finite element code works **Educational Outcomes:** Students will be able to analyze bar, beams, frames, trusses, and continuum mechanical problems in the linear static regime using the finite element method. They will also be able to conduct analyses of steady-state heat conduction. They will understand the fundamentals of how to conduct these analyses within a commercial code. **Assessment criteria:** Class participation 10%; Homework 15%, 2 Midterm exams 30%; Project 15% Final 30%;
7. Brief list of topics covered	Bar, Truss, and Beam Elements; Heat Conduction Equation; Linear Elasticity; 2D Elements for Heat Conduction and Linear Elasticity; Compatibility and Convergence; Meshing, Refinement, and Checking a Finite Element Solution; 3D Elements; Symmetry and Axisymmetry; Mesh Locking and Other Issues with Finite Elements; Intro to Dynamic and Nonlinear Finite Elements