



Course Code OGEE-300	Course Title Computational Methods	ECTS Credits 6
Department Engineering	Semester Fall, Spring	Prerequisites MATH-191
Type of Course Required	Field Oil & Gas Engineering	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 3 rd	Lecturer(s) Dr Ioannis Kyriakides
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisite None

Objectives of the Course:

The main objectives of the course are to:

- Analyze numerical methods for solving oil and gas energy engineering problems
- Introduce numerical simulation methods
- Provide the framework for computer applications

Learning Outcomes:

After completion of the course students are expected to be able to:

- Identify the method for a numerical solution of an oil and gas energy engineering problem
- Compare and contrast the various numerical solution techniques
- Recite mathematical models for analyzing oil and gas energy engineering problems
- Use a computer software to model and solve oil and gas energy engineering problems

Course Contents:

- Introduction to basic problems of numerical methods
- Characterization and analysis of errors
- Root finding
- Numerical differentiation and integration
- Interpolation and curve fitting
- Matrix decomposition
- Numerical solution of ODEs and PDEs

Learning Activities and Teaching Methods:

Lectures, in-class examples, discussion

Assessment Methods:

Homework, Projects, Mid-Terms, Final Exam

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Amos Gilat and Vish Subramaniam	Numerical Methods: An introduction with applications using MATLAB	John Wiley & Sons	2011	9780470873748

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Steven C. Chapra and Raymond P. Canale	Numerical Methods for Engineers	McGraw Hill	2011	0131111426