

PNGE 532

Reservoir Simulation & Modeling

Part One: Fundamentals

SYLLABUS OF COURSES

COLLEGE OF ENGINEERING AND MINERAL RESOURCES

PETROLEUM & NATURAL GAS ENGINEERING

Course Number:	PNGE 532	
Course Title:	Reservoir Simulation & Modeling – Part One: Fundamentals	
Instructor:	Shahab Mohaghegh, Ph.D.	
Semester:	Fall	
Prerequisites:	Reservoir Engineering or consent	
Text:	None Required Hand Outs are provided. Notes given during the course	
References:	<i>"Elements of Reservoir Modeling,"</i> S. M. Faruq Ali. <i>"Basic Applied Reservoir Simulation,"</i> Ertekin, Abou-Kassem, King. <i>"Petroleum Reservoir Simulation,"</i> Aziz, Settari.	
Course Content:	Partial differential equations for fluid flow in porous media and use of finite-difference equations in solving reservoir flow problems for various boundary conditions. Fundamentals of petroleum reservoir simulation and modeling.	
Approx. Test Date:	Midterm Exam, Second Week of October Final, Week of Finals	
Homework:	4 to 8 homework sets and quizzes, 2 computer projects.	
Grading Policy:	Homework	25%
	Projects	45%
	Midterm	15%
	Final	15%

On-Time attendance is absolutely required

	<i>Weeks</i>
<i>Chapter 1:</i> Introduction	1 & 2
<i>Chapter 2:</i> Finite Difference Calculus	3 & 4
<i>Chapter 3:</i> Grid Type and Boundary Conditions	5
<i>Chapter 4:</i> Solution Methods Direct Method, Iterative Method, Jacoby's Method, Gauss-Seidel Method, PSOR, LSOR	6, 7, 8, 9 & 10
<i>Chapter 5:</i> Solution of the Elliptic Partial Differential Equation Incompressible Flow	11, 12 & 13
Chapter 6: Solution of the Parabolic Partial Differential Equation Slightly Compressible & Compressible Flow	14 & 15

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