PTRL5019

Fundamentals of Reservoir Engineering A

Term Three // 2020

School of Minerals & Energy Resources Engineering // UNSW Engineering

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Peyman Mostaghimi	peyman@unsw.edu.au			0293855122

Demonstrators

Name	Email	Availability	Location	Phone
Traiwit Chung	traiwit.chung@unsw.edu.au			

School Contact Information

School of Minerals and Energy Resources
Old Main Building, Level 1, 159 (K15)
UNSW SYDNEY NSW 2052 AUSTRALIA

T: +61 (2) 9385 5006
E: mere.teaching@unsw.edu.au
W: www.engineering.unsw.edu.au/minerals-energy-resources

Course Details

Credit Points 6

Summary of the Course

Fundamentals of Reservoir Engineering. Reservoir Description. Hydrostatic pressure and geothermal gradients. Porosity-permeability relationships and rock microstructures. Volumetric and initial hydrocarbon volume. Fluid Statics. Fluid flows, laminar and turbulent flows. Boundary layers. Flow in pipes, friction in pipe, Euler and Bernoulli's equation. Angular momentum equation. Steady flow energy equation. Minor losses. Flow over surfaces. Steady state inclined flow and pressure potential. Steady-state radial flow. Flow in series and in parallel. Vertical well model and skin effect.

Course Aims

The aim of this course is to give student an insight in to petroleum reservoirs; to introduce student to important rock and fluid characteristics; and to assist student to answer key questions to reservoir engineers. The course also aims to develop fundamental research skills for postgraduate coursework students in Petroleum Engineering.

Course Learning Outcomes

1. Apply fundamental theories and concepts to solve many reservoir engineering problems, e.g. initial hydrocarbon in place, basic rock and fluid properties, hydrostatic pressure distribution, water influx and single phase fluid flow.
2. Critically analyse the underlying theories, concepts, assumptions and arguments concerning fluid flow under different reservoir conditions.
3. Develop research and communication skills and strategies that would support the Research Project component of the program.

Teaching Strategies

The teaching approach to be employed will involve lectures and tutorials. Lecture presentations cover

Assessment

Assessment Tasks

Assessment task	Weight	Due Date	Student Learning Outcomes Assessed
Final Exam	50%	During the exam period	1, 2
Mid Term Quiz 1	4%	06/10/2020 05:00 PM	1, 2
Research Project	20%	06/11/2020 11:00 PM	1, 2, 3
Mid Term Quiz 2	8%	27/10/2020 05:00 PM	1, 2
Mid-Term Quiz 3	8%	11/11/2020 05:00 PM	1, 2
Assignment	10%	Not Applicable	1, 2

Assessment Details

Assessment 1: Final Exam

Start date: Not Applicable

Details:

Final exam during exam period

Assessment 2: Mid Term Quiz 1

Start date: Not Applicable

Details:

Mid term quiz 1 after week 4

Assessment 3: Research Project

Start date: Not Applicable

Details:

A research project on several topics suggested to students followed by oral presentation, Assignments during the course

Assessment 4: Mid Term Quiz 2

Start date: Not Applicable

Details:

Mid term quiz 2

Assessment 5: Mid-Term Quiz 3

Start date: Not Applicable

Details:Midterm quiz 3

Assessment 6: Assignment

Start date: Not Applicable

Details:Weekly discussion

Resources

Prescribed Resources

Support material for this course including, whenever available, copies of lecture notes, recommended readings, etc. can be found on Moodle.

The lecture note may be viewed and downloaded from the UNSW-Moodle http://moodle.telt.unsw.edu.au/.

Recommended Resources

Followings are the reccomended books for this course.

- *Dslb_kclr_jq md Pcqcptmgp Cleglccpgle*, Dake (1978).

Submission of Assessment Tasks

The School has developed a guideline to help you when submitting a course assignment.

We encourage you to retain a copy of every assignment submitted for assessment for your own record either in hardcopy or electronic form.

All assessments must have an assessment cover sheet attached.

Late Submission of an Assignment

Full marks for an assignment are only possible when an assignment is received by the due date.

We understand that at times you may not be able to submit an assignment on time, and the School will accommodate any fair and reasonable extension. We would recommend you review the UNSW Special Consideration guidelines – see section below.

Late submission will not be accepted and will be considered as no submission.

Special Consideration

You can apply for special consideration through The Nucleus Student Hub when illness or other circumstances interfere with your assessment performance. Sickness, misadventure or other circumstances beyond your control may:

- Prevent you from completing a course requirement
- Keep you from attending an assessable activity
- Stop you submitting assessable work for a course
- Significantly affect your performance in assessable work, be it a formal end-of-semester examination, a class test, a laboratory test, a seminar presentation or any other form of assessment

We ask that you please contact the Course Convenor immediately once you have completed the special consideration application, no later than one week from submission.

More details on special consideration can be found at: www.student.unsw.edu.au/special-consideration

Student Support

The University and the Faculty provide a wide range of support services for students, including:

Academic Honesty and Plagiarism

Your lecturer and the University will expect your submitted assignments are truly your own work. UNSW has very clear guidelines on what plagiarism is and how to avoid it. Plagiarism is using the words or ideas of others and presenting them as your own. Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. The University has adopted an educative approach to plagiarism and has developed a range of resources to support students. All the details on plagiarism, including some useful resources, can be found at www.student.unsw.edu.au/plagiarism.

All Mining Engineering students are required to complete a student declaration for academic integrity which is outlined in the assignment cover sheets. By signing this declaration, you agree that your work is your own original work.

If you need some additional support with your writing skills, please contact the Learning Centre or view some of the resources on their website: www.lc.unsw.edu.au. The Learning Centre is designed to help you improve your academic writing and communication skills. Some students use the Centre services because they are finding their assignments a challenge, others because they want to improve an already successful academic performance.

Academic Information

Course Results

For details on UNSW assessment policy, please visit: www.student.unsw.edu.au/assessment

In some instances your final course result may be withheld and not released on the UNSW planned date. This is indicated by a course grade result of either:

- LE – indicates you have not completed one or more items of assessment; or
- WD – indicates there is an issue with one or more assignment; or
- WC – which indicates you have applied for Special Consideration due to illness or misadventure and the course results have not been finalised.

In either event it would be your responsibility to contact the Course Convener as soon as practicable but no later than five (5) days after release of the course result. If you don’t contact the convener on time, you may be required to re-submit an assignment or re-sit the final exam and may result in you failing the

CRICOS Provider Code: 00098G

Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.