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This course outline contains 12 pages
COURSE STAFF

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Consultation Time: tba

IMPORTANT NOTICE
This is a Web-based course (Moodle), so all communication outside of consultation times will be made through Moodle. It is strongly recommended that you check the course details on Moodle daily so as not to miss important announcements concerning lectures, assignments, marks, events and other related matters.
COURSE INFORMATION

Course Size
This course is 6 units of credit. Units of credits indicate the nominal workload for students. The normal workload expectations at UNSW are 25-30 hours per session for each unit of credit; including class contact hours, preparation and time spent on all assessable work. For this course, this means an average total workload of 6 hours per week.

Aims and Learning Outcomes
This course aims to (1) introduce the student to the background knowledge in enhanced oil and gas recovery (EOR/EGR) techniques which have been widely applied in petroleum industry and research and (2) guide the student to learn the professional use of numerical reservoir simulation through commercial simulators in order to manage EOR/EGR projects.

The learning outcomes are for the student to (1) gain knowledge and skills needed to solve reservoir engineering problems by means of numerical techniques, (2) apply integrated knowledge of math and basic sciences including geosciences to the solution of problems related to EOR/EGR performance predictions, and (3) understand the function of commercial reservoir simulators for improving oil and natural gas recovery from conventional and unconventional hydrocarbon reservoirs as well as for co-optimizing oil and gas recovery with carbon sequestration.

Learning and Teaching Strategies
Students are expected to become actively involved in the learning process. The learning strategy is for students to participate in lectures and tutorials through question and answers. In-class applications and discussions will stimulate student’s learning.

The teaching strategy in this course is composed of two main parts: (i) lectures and (ii) active learning in groups (e.g., 3-6 students per group). The benefit of the lectures is for students to build a fundamental understanding of reservoir engineering mathematics and techniques applied in designing EOR/EGR projects. The lectures will be weighed in the early period of the course (from week 1 to week 7). The material delivered through the lectures will be applied by students in large groups during tutorial times. In the group projects, the students will work with classmates to solve complex EOR/EGR problems that help develop their content knowledge as well as problem-solving, reasoning, communication, and self-assessment skills.

The groups will be formed in Week 1. Each group will then be assigned a project topic. The teams will meet once a week to discuss the topic as soon as the projects begin. At the first meeting, they will elect a team leader and a secretary. Minutes of all meetings must be written and will be assessed. The tutorial times will be allocated for students to discuss the topics with the lecturer and tutors. The assessment will be made based on teamwork dynamics, two technical reports of 10-15 pages and oral presentations of 10 minutes (Week 6 and Week 12).
Attendance at Classes

Students are expected to be regular and punctual in attendance at all lectures and tutorials. Students who attend less than 80% of their possible classes may be refused final assessment. In the case of illness or of absence for some other unavoidable cause students may be excused by the Registrar for non-attendance at classes for a period of not more than one month or, on the recommendation of the Dean for a longer period. The following link gives further guidance for attendance at or absence from classes:

https://my.unsw.edu.au/student/atoz/AttendanceAbsence.html

Prerequisite Courses

PTRL 3001 – Reservoir Engineering B
PTRL 3002 – Reservoir Characterization and Simulation

Students who do not have this background knowledge need to consult with the lecturer.
ASSESSMENT

In this course, your work will be assessed based on your performance in individual exams (60 marks) and team project (40 marks). The table below gives details of each assignment task and its subcomponents, whether it is individual or teamwork, the submission due dates, and the assessment criteria. Feedback will be given for each submission. Late submissions up to one week will be graded; however, the grade will be reduced by 50%. In team assignments, the contribution of each member must be clearly stated. Any problem that arises within teamwork must be directed to your team mentor. Teamwork performance will be assessed by the interviews of teams.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Week Due</th>
<th>Marks</th>
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<tbody>
<tr>
<td>Midterm Exam</td>
<td>individual</td>
<td>6</td>
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<tr>
<td>Teamwork Project</td>
<td></td>
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<tr>
<td>1. Technical reports (50%)</td>
<td>team</td>
<td>7 and 13</td>
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<td>2. Oral presentations (40%)</td>
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<td>3. Teamwork dynamics (10%)</td>
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<tr>
<td>Final Exam</td>
<td>individual</td>
<td>Exam period</td>
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</tbody>
</table>
# COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture – Wednesday (3-5pm)</th>
<th>Tutorial - Thursday (4-6pm)</th>
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<tbody>
<tr>
<td></td>
<td>Location: TETB - LG05</td>
<td>Location: TETB - G16</td>
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<tr>
<td>1</td>
<td>6 March</td>
<td></td>
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<tr>
<td></td>
<td>Introduction and overview</td>
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<tr>
<td>2</td>
<td>13 March</td>
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<td></td>
<td>Displacement Efficiency</td>
<td>14 March</td>
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<td></td>
<td>20 March</td>
<td>Introduction to Teamwork Projects</td>
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<td></td>
<td>Residual Oil Saturation and Wettability</td>
<td>21 March</td>
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<td></td>
<td>27 March</td>
<td>Teamwork (meetings, discussion)</td>
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<tr>
<td></td>
<td>Screening and Selecting EOR Methods</td>
<td>APESMA Presentation</td>
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<tr>
<td>4</td>
<td>27 March</td>
<td>28 March</td>
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<tr>
<td></td>
<td>Screening and Selecting EOR Methods</td>
<td>Teamwork + Simulation Tutorial</td>
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<tr>
<td>5</td>
<td>10 April</td>
<td>11 April</td>
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<tr>
<td></td>
<td>Screening and Selecting EOR Methods</td>
<td>Teamwork (meetings, discussion)</td>
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<tr>
<td>6</td>
<td>17 April</td>
<td>18 April</td>
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<tr>
<td></td>
<td><strong>Midterm Exam</strong></td>
<td>EOR by Solvent Injection</td>
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<td>Recess</td>
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<tr>
<td>7</td>
<td>24 April</td>
<td>25 April</td>
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<tr>
<td></td>
<td><strong>Teamwork Presentations 1</strong></td>
<td>Anzac Day</td>
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<tr>
<td>8</td>
<td>1 May</td>
<td>2 May</td>
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<td></td>
<td>EOR by Chemical Flooding</td>
<td>Teamwork (meetings, discussion)</td>
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<tr>
<td>9</td>
<td>8 May</td>
<td>9 May</td>
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<tr>
<td></td>
<td>EOR by Thermal Methods</td>
<td>Teamwork (meetings, discussion)</td>
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<tr>
<td>10</td>
<td>15 May</td>
<td>16 May</td>
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<tr>
<td></td>
<td>Co-optimization of EOR/EGR with CO₂ Seq.</td>
<td>Teamwork (meetings, discussion)</td>
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<tr>
<td>11</td>
<td>22 May</td>
<td>23 May</td>
</tr>
<tr>
<td></td>
<td>Co-optimization of ECBM with CO₂ Seq.</td>
<td>Teamwork (meetings, discussion)</td>
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<tr>
<td>12</td>
<td>29 May</td>
<td>30 May</td>
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<tr>
<td></td>
<td>Course wrap-up &amp; feedback</td>
<td>Teamwork (meetings, discussion)</td>
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<tr>
<td></td>
<td>Preparation for the final exam</td>
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<tr>
<td>13</td>
<td></td>
<td>6 June</td>
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<tr>
<td></td>
<td><strong>Teamwork Presentations 2</strong></td>
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</table>
RESOURCES FOR STUDENTS

The e-copy of the course notes© will be made available in the Web-Moodle.
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Recommended Textbooks:


Discipline-specific WWW Resources:


www.spe.org (Society of Petroleum Engineers)

www.api.org (American Petroleum Institute – For Petroleum Standards)

Students seeking resources can also obtain assistance from the UNSW Library. One starting point for assistance is:

info.library.unsw.edu.au/web/services/services.html
ACADEMIC HONESTY AND PLAGIARISM

According to the UNSW website www.lc.unsw.edu.au/plagiarism

Plagiarism is taking the ideas or words of others and passing them off as your own. Plagiarism is a type of intellectual theft.

Plagiarism happens for a number of reasons—one is because some students decide consciously to gain credit for the work of others. However, most incidents of plagiarism are the product not of deliberate cheating, but of underdeveloped academic skills. This course will be an important opportunity for you to develop skills in writing and referencing your sources so that you avoid plagiarism. Look at the website above for help, or see the resources available through The Learning Centre.

A standard UNSW statement on plagiarism is given below.

What is Plagiarism?
Plagiarism is the presentation of the thoughts or work of another as one’s own.* Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person’s assignment without appropriate acknowledgement;
- paraphrasing another person’s work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does not amount to plagiarism.
The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle

† Adapted with kind permission from the University of Melbourne.

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**COURSE EVALUATION AND DEVELOPMENT**

This course will be presented for the second time in the School, so your feedback is highly appreciated. We want your suggestions of what is good and should be retained, and what is not so good and should be improved (with ideas on how to do it). In addition to the standard UNSW Course and Teaching Evaluation and Improvement (CATEI) surveys we will be asking for your feedback in other ways during your studies.

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**ADMINISTRATIVE MATTERS**

Take time to review the documentation on processes and procedures that you will have received at enrolment and from your School. If School documentation is not available, the WebCT Vista site has Administrative Matters documentation for this course.

**Expectations of students**

UNSW expects regular attendance at lectures and tutorials/laboratory classes/seminars. Although exceptions may be made for special circumstances, we do expect University commitments to take precedence over regular work activities, holidays etc.
UNSW has rules for computer use, for example, for email and online discussion forums. You will have to agree to them when you first access the UNSW network.

We expect everyone – staff and students – to treat each other with respect.

**Occupational Health and Safety**
Like the wider community, UNSW has strict policies and expectations on Occupational Health and Safety and you should read these. They may be accessed on:

www.riskman.unsw.edu.au/ohs/ohs.shtml

**Examination procedures and advice concerning illness or misadventure**
If you believe that your performance in one of the assessment components for the course has been significantly affected by illness or other unexpected circumstance, then you should make an application for **special consideration** as soon as possible after the event by visiting **UNSW Student Central**.

Applying for special consideration does not mean that you will be granted additional assessment or that you will be awarded an amended result. The latter will be granted at the discretion of teaching staff and will be considered only in exceptional circumstances. The timing of any additional assessment is entirely at the discretion of teaching staff.

For additional clarification -

1. Students who do not attend a written examination will fail unless they have a valid doctor’s certificate proving that they are ill at the time of the examination.
2. Students who attend a written examination, but who fall ill during the examination will be assessed on the examination paper they submit unless they have a valid doctor’s certificate proving that they are ill at the time of that examination.
3. In the case of illness, the doctor’s certificate must be handed to the Student Centre and copied to the course authority no later than 3 days after the date of the written examination.
4. If a student can prove illness with a doctor’s certificate, in extreme cases only the course authority might give special consideration and arrange another examination before the following UNSW semester. In such cases, the course authority either will arrange another written examination or alternatively will arrange an oral examination attended by 2 or 3 academics. Whether or not the course authority arranges another examination and the form and timing of such an arrangement are entirely at the discretion of the course authority, whose decision is final.
5. The School keeps a register of special consideration applications. The history of a student’s previous applications for special consideration is taken into account when considering each case.
6. If special consideration is granted, the course authority will assess a student based on the final examination and not any previous examination paper that the student might have submitted (see 2 above).

**Equity and diversity**
Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit (9385 4734 or www.equity.unsw.edu.au/disabil.html). Issues
to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.