8. PROPOSAL FOR NEW COURSES, TRANSNATIONAL COURSES AND MAJOR CHANGES TO EXISTING COURSES FOR 2009

C. MAJOR CHANGES

(c) Faculty of Engineering, Computing and Mathematics

School of Mechanical Engineering – Proposal to Restructure the Graduate Certificate in Oil And Gas Engineering, the Graduate Diploma in Oil And Gas Engineering and the Master of Oil And Gas Engineering – Ref: F353, F354, F5407

By its R36/08 the Faculty of Engineering, Computing and Mathematics has recommended amendments to the rules for the Graduate Certificate in Oil and Gas Engineering, the Graduate Diploma in Oil and Gas Engineering and the Master of Oil and Gas Engineering.

In so recommending the Faculty has explained that the proposed changes permit greater flexibility. They involve, amongst other things:

- increasing the point value of units in the courses so that all units now have a value of 6 points
- utilising specialist undergraduate units and units from other master’s programmes
- removing the Graduate Certificate in Oil and Gas Engineering as an admission point but retaining it as an exit option
- lectures being available during the day and late afternoon/evening
- permitting the Master of Oil and Gas Engineering to be completed by way of coursework alone or by way of coursework and dissertation.

Attached for members consideration are (Attachment Z)

- Extract of Noting of Decisions of the Faculty Board of Engineering, Computing and Mathematics taken by Circular dated 12 May 2008
- Restructure Proposal for Oil and Gas Engineering Postgraduate Courses and accompanying memorandum from the Head of the School of Mechanical Engineering
- Checklist for Major Changes to the Graduate Certificate in Oil and Gas Engineering, the Graduate Diploma in Oil and Gas Engineering and the Master of Oil and Gas Engineering
- Proposed amendments to the rules for the Graduate Certificate in Oil and Gas Engineering, the Graduate Diploma in Oil and Gas Engineering and the Master of Oil and Gas Engineering
Council is asked to consider

(i) approving the major changes to the Graduate Certificate in Oil and Gas Engineering, the Graduate Diploma in Oil and Gas Engineering and the Master of Oil and Gas Engineering as set out in the attachments;

(ii) approving the draft amendments to the Faculty of Engineering, Computing and Mathematics rules as set out in the attachments subject to final drafting by the Legislative Committee.

[Executive Officer’s note: The School of Mechanical Engineering is currently preparing the documentation for the new six point units and deletion of 4 point units, which will require Faculty Board approval.]

SYLVIA LANG
Acting Academic Secretary
8. SCHOOL OF MECHANICAL ENGINEERING – PROPOSAL TO RESTRUCTURE THE
GRADUATE CERTIFICATE IN OIL AND GAS ENGINEERING, THE GRADUATE
DIPLOMA IN OIL AND GAS ENGINEERING AND THE MASTER OF OIL AND GAS
ENGINEERING – REF: F353, F354, F5407

Attached to the agenda was a proposal to restructure the Graduate Certificate in Oil and Gas Engineering (GradCertOGE), the Graduate Diploma in Oil and Gas Engineering (GradDipOGE) and the Master of Oil and Gas Engineering (MOGE).

The proposal permits greater flexibility and has a number of features worth noting:

- Increasing unit value of units in the courses so that all units now have 6 points value.
- Utilising specialist undergraduate units and units from other Masters programmes.
- Removing the Graduate Certificate in Oil and Gas Engineering as an admission point but is retained as an exit option.
- Lectures being available during the day and late afternoon/evening.
- The MOGE may be completed by ‘coursework only’ or ‘coursework and dissertation’.

RESOLVED – 36/08

that the amendments to the rules for the Graduate Certificate in Oil and Gas Engineering, the Graduate Diploma in Oil and Gas Engineering and the Master of Oil and Gas Engineering be approved; and forward to Academic Council for approval and final drafting by the Legislative Committee.

[Executive Officer’s note: The School of Mechanical Engineering is currently preparing the documentation for the new six point units and deletion of 4 point units, which will require Faculty Board approval.]
Memo

To:      Ms Felicia Symonds, Senior Faculty Administrative Officer, Faculty of Engineering, Computing and Mathematics
From:    Prof. Brett Kirk, Head of School, School of Mechanical Engineering
Date:    May 7, 2008
Re:      Restructuring Oil and Gas Engineering postgraduate courses

Please find attached a restructure proposal for oil and gas engineering postgraduate programmes.

The current proposal has a number of features worth noting:
1. Removal of the Graduate Certificate in Oil and Gas Engineering as an admission point.
2. Increasing the unit value from 4 points to 6 points
3. Utilising the specialist undergraduate units and units from other Master programmes

A restructure proposal, checklist major change and draft set of rules are attached for consideration for approval at the next Faculty Board meeting.

Yours Faithfully,

[Signature]

Prof Brett Kirk
Head of School
School of Mechanical Engineering

Attachments - see separate files
a. Oil and Gas Engineering Postgraduate Courses: Restructure proposals
b. Checklist Major Changes
c. Rules for Grad Diploma and Masters of Oil and Gas Engineering
Oil and Gas Engineering Postgraduate Courses
Restructure proposal

6 May 2008

School of Mechanical Engineering.

Rationale for restructure
The Master of Oil and Gas Engineering has been a highly successful graduate programme for many years. It attracts approximately 50 students per year level and has appeal to both local and international students. Its primary success has been due to its industry relevance, and the ability of the program to provide a broad understanding of the technical and business environment particular to the Oil and Gas industry. These characteristic must be preserved. Over recent time, there have been significant changes to the student cohort, the oil and gas industry, and the University structure and operations. These factors have all contributed to an environment where revision of the programme is essential to its ongoing relevance and viability. The measures proposed are:

1. Introducing 6 point units. 6 point units are almost universal in the university, with the MOGE programme, with 4 point units, being one of the very few exceptions. This unit structure limits the cross fertilisation between programmes and has lead to the development of the MOGE as a very insular programme. This, in turn, has lead to the development of an unsustainable number of units being offered specifically for the MOGE, with 32 units currently being offered, 24 of these being run in any given year. Restructuring the programme to 6 point units for 2009 is an absolute priority.

2. Introducing greater flexibility. The current regulations are proving to be overly restrictive with the tightly defined core/elective structure not allowing students to adequately pursue their own interests and needs.

3. Accommodating both full time and part time cohorts. The full time cohort is typically composed of graduates with a technical Bachelors degree qualification with little or no industry experience. The part time cohort typically has similar degree qualifications but with some years of industry experience or has no undergraduate degree but with extensive industry experience. This dual cohort is a driving force for revising the current programme so that the needs of both cohorts can be accommodated without compromising the quality of the programme.

4. Accommodating the full time cohort (graduate participants): A far greater proportion of the cohort is now composed of full time students, usually international. The need to ensure completion in a timely manner for full time students, particularly with visa restrictions, is also further restricting the flexibility in programme and unit delivery. The needs of this full time cohort must be better accommodated, including the availability of some daytime classes.

5. Accommodating the part time cohort (industry participants). The part time cohort, mostly local students, may have difficulty accessing daytime classes. Therefore, a completion pathway must be provided for the traditional cohort of part time students, either through evening/late afternoon classes,
through use of the blended learning mode of delivery, and through provision of tutorials in the late afternoon/evening. Flexible delivery is therefore central to the ability of the programme to satisfy the needs of the both cohorts.

6 **Utilising specialist undergraduate units.** The full time cohort provides the opportunity to capitalise on the potential to use some common content between specialist units within the relevant undergraduate programmes and the graduate programmes. This will not only allow delivery of many units in daytime teaching, but also provide a broad based and fundamental education to the Oil and Gas industry. It should be noted that the MOGE is a broadening programme rather than drilling down to significantly greater technical depth than a Bachelors programme. Therefore significant synergies between the specialist units at undergraduate level exist and the postgraduate units it is important for the School not to duplicate teaching.

7 **Collaborating between academics and industry stakeholders.** The programme has traditionally relied heavily on industry lecturers to teach the majority of units. This exceptional level of industry engagement is a major feature of the programme. However, the growth in student numbers over the years, along with the restructure to larger units, is likely to place too great a demand on industry based staff to lecture full units. In addition, the full time cohort has demonstrated a need for greater pastoral care and interaction, which is placing additional demand on industry lecturers. The demands of the University have also grown over the years in terms of quality control, documentation, procedure and generally providing a more restrictive timeline. The program therefore needs to structure unit delivery in a manner that still capitalises on the level of industry engagement that has been built up over the years, but relieves the admin and external load placed on industry lecturers. It is therefore proposed to have academic staff and industry lecturers working in partnership on units wherever possible. Given the class sizes, support of units with casual tutorial staff will also be put in place. Normally, the unit co-ordinator will be an academic staff member.

8 **Introducing a 1 + 1 structure for full-time students:** A new “1+1” structure will be put in place. The initial year of the programme will draw heavily on the specialist units from undergraduate programmes either in their current format or restructured to a form more compatible with the Masters programme. The initial year, viewed as a “Graduate Diploma level”, will be compulsory for all students without significant prior study or industry experience. Those with experience or prior study may apply for partial or full credit for the “Graduate Diploma year” and be assessed on a case by case basis. The second “Masters year” will build on the depth and breadth of the programme with a broad range of units relevant to the Oil and Gas industry.
The Graduate Diploma Year
The aim of the Diploma year is to provide a broad based and fundamental education relevant to the Energy industry, and to ensure that students are uniformly well prepared to embark on the second year of the Masters programme, regardless of their prior qualifications and experience (presuming appropriate entry requirements).

For students enrolled in the Masters programme, completion of the Graduate Diploma requirements would be strongly recommended before embarking higher level units, though access to higher level units may be approved for students with appropriate qualifications and experience. Candidates for the Graduate Diploma and Masters may choose to exit with a lesser qualification (i.e Graduate Certificate) once they have completed the relevant course requirements.

The programme is also designed to allow ready implementation of the structure and principles outlined in the recommendations of the Plowman report of the working party on postgraduate coursework programs as endorsed by Academic Council in 2008. It is therefore anticipated that the proposed restructure of the MOGE programme will allow for long term growth aligned with the proposed direction of the University’s programmes in the long term.

The Graduate Diploma would require 48 points of units as recommended by the School. The appropriate units will be determined based on a student’s prior experience and education, with some units being subject to pre-requisite knowledge restrictions. A study guide for the Diploma year will be discussed and issued upon commencement. Please refer to the proposed Graduate Diploma rules.

Graduate Diploma level units will be selected from a range of specialist units relevant to the Energy industry, including (but not exclusively) the following units from:
- the Petroleum Engineering programme,
- the Chemical and Process Engineering programme,
- the Civil Engineering programme (Offshore Engineering major),
- the Environmental Engineering programme,
- the Earth Science programme,
- the Mechanical Engineering programme (Oil and Gas major), and
- the Master of Energy Systems Engineering programme

Masters Year Units
The Masters year units will build upon the fundamental knowledge built up during the initial year of the programme. The units retain the full scope of relevance from the 4 point units previously offered in the Master of Oil and Gas Engineering, but the use of 6 point units capitalise on synergies with other programmes and units around the University. This will result in a dramatic reduction in the duplication of teaching within the University without compromising the integrity and relevance of the programme. A variety of teaching and learning modes (e.g. evening/late afternoon classes, distance delivery and utilisation of the other programmes) will be used to ensure accessibility to all cohorts of students whether they are local to or remote from the University, or whether they are part or full time students. Regulations will need to initially provide for a range of 96-100 points for completion to allow students to undertake units in the Business School. It should be noted that not all units will be available to all students as pre-requisite policies may apply. Students will be advised
to plan for their full programme upon entry to the initial year of the programme. Please refer to the proposed Masters rules

**Units availability**
Units for Graduate Diploma in Oil and Gas Engineering and Master of Oil & Gas Engineering would typically be selected from the following list:

<table>
<thead>
<tr>
<th>Programme</th>
<th>Units</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Engineering</td>
<td>PETR4512/PETR8XXX Reservoir and Well Performance</td>
<td>S1</td>
</tr>
<tr>
<td></td>
<td>PETR3512/PETR8XXX Reservoir Characterisation</td>
<td>S2</td>
</tr>
<tr>
<td></td>
<td>PETR4511/PETR8522 Reservoir Simulation</td>
<td></td>
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<tr>
<td></td>
<td>EART3352/PETR8510 Petroleum Geology</td>
<td>Evening</td>
</tr>
<tr>
<td></td>
<td>PETR3511/PETR8XXX Reservoir Engineering</td>
<td></td>
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<tr>
<td></td>
<td>PETR3510/PETR8XXX Drilling and Completion Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PETR4510/PETR8XXX Production Optimisation</td>
<td></td>
</tr>
<tr>
<td>Chemical and Process Engineering</td>
<td>CHPR3530/CHPR8XXX Process Modules</td>
<td>S1</td>
</tr>
<tr>
<td></td>
<td>CHPR3432 Chemical Kinetics and Reactor Design</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHPR3531/CHPR8XXX Process Modelling (alternates with CHPR4531)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHPR4531/CHPR8XXX Advanced Prediction of Fluid Properties (alternates with CHPR3531)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHPR8XXX/CHPR4530 Process Systems</td>
<td>S2</td>
</tr>
<tr>
<td></td>
<td>CHPR4431 Advanced Reaction Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHPR8531 Petroleum Fluids</td>
<td>Evening</td>
</tr>
<tr>
<td>Marine Engineering</td>
<td>MINE4151 Reliability Engineering</td>
<td>S1</td>
</tr>
<tr>
<td></td>
<td>CIVL4130 Offshore and Coastal Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENVE4615 Physical Oceanography</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CIVL3170 Introduction to Offshore Engineering</td>
<td>S2</td>
</tr>
<tr>
<td></td>
<td>CIVL4122 Offshore Geomechanics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENVE4614 Oceanography Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CIVL4170 Design of Offshore Systems</td>
<td>TBC</td>
</tr>
<tr>
<td></td>
<td>CIVL4171 Platform, Pipeline and Subsea Technology</td>
<td></td>
</tr>
<tr>
<td>Asset Engineering</td>
<td>MINE4151 Reliability Engineering</td>
<td>S1</td>
</tr>
<tr>
<td></td>
<td>ENVE3602 Environmental Engineering Design and Management</td>
<td>S2</td>
</tr>
<tr>
<td></td>
<td>ASST8XXX Health, Risk and Safety</td>
<td>Evening</td>
</tr>
<tr>
<td></td>
<td>OEG8XXX Future Energy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASST8572 Oil and Gas Economics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASST8576 Investment Management</td>
<td></td>
</tr>
</tbody>
</table>
| Mechanical Engineering | MECH4400 Engineering for Sustainable Development  
| MECH4405 Design Tools: Finite Element Modelling  
| MECH4406 Computational and Experimental Fluid Dynamics  
| MECH3405 Structural Integrity  
| MCTX3421 Control and Mechatronics  
| MECH4432 Advanced Control Engineering | S1 |
| Energy Systems Engineering Units (distance delivery) | ASST8434 BL Health, Risk and Safety  
| ASST8432 BL Project Management  
| ASST8435 BL Investment Management  
| CHPR8431 BL Measurement and Control  
| PETR8430 BL Petroleum Geology  
| OENA8433 BL Oil and Gas History, Economics and Geopolitics  
| ASST8433 BL Oil and Gas Economics  
| OENA8430 BL Ocean Engineering  
| OENA8432 BL Marine Systems Dynamics  
| ASST8430 BL Strategic Asset Management | Trimester |
| Special Topics Units (evening classes) | PETR8XXX Petroleum Engineering Special Unit 1  
| ASST8XXX Asset Engineering Special Unit 1  
| CHPR8XXX Process Engineering Special Unit 1  
| OENA8XXX Marine Engineering Special Unit 1  
| OEGG8XXX Energy Systems Engineering Special Unit 1  
| PETR8XXX Petroleum Engineering Special Unit 2  
| ASST8XXX Asset Engineering Special Unit 2  
| CHPR8XXX Process Engineering Special Unit 2  
| OENA8XXX Marine Engineering Special Unit 2  
| OEGG8XXX Energy Systems Engineering Special Unit 2 | TBC |
| Business and Engineering Asset Management | MGMT8665 Project Management  
| MGMT8632 Investments  
| ASST8402 Engineering Asset Management and Risk  
| ASST8403 Reliability Engineering  
| ASST8401 Systems Reliability Modelling | Trimester |
| Dissertation | OEGG8XXX Oil and Gas Engineering Dissertation, Part 1 (6 points)  
| OEGG8XXX Oil and Gas Engineering Dissertation, Part 2 (6 points)  
| OEGG8XXX Oil and Gas Engineering Dissertation, Part 3 (6 points) | Semester |

**Summary**
The outlined changes reflect a growing need to broaden the appeal of the Master of Oil and Gas Engineering and related certificate and diploma programmes. The proposed programme takes advantage of synergies with other programmes within the University, many of which did not exist when the MOGE was first implemented. Where some other programmes were
pre-existing (e.g., UWA Business School), there is now a growing atmosphere of collaboration and a movement toward a common framework that will allow cross fertilisation which was previously impractical.

Given that the new structure will be introducing significantly greater flexibility, there should be no difficulty in allowing current students to complete under the new regulations. Some allowance will need to be made for these students in allowing a range of 48-52 points values for completion Graduate Diploma and 96-100 points values for completion Masters degree, and ensuring that the fees per point remain reasonably consistent with the particular student’s expectations.

Details of new units to the MOGE

PETR8XXX Reservoir Engineering: This unit will share significant content with PETR3512 Reservoir Engineering to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

PETR8XXX Drilling and Completion Engineering: This unit will share significant content with PETR3510 Drilling and Completion Engineering to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

PETR8XXX Reservoir Characterisation: This unit will share significant content with PETR3512 Reservoir Characterisation to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

PETR8XXX Reservoir Simulation: This unit will share significant content with PETR4511 Reservoir Simulation to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

PETR8XXX Reservoir and Well Performance: This unit will share significant content with PETR4512 Reservoir and Well Performance to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

PETR8XXX Production Optimisation: This unit will share significant content with PETR4510 Production Optimisation to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

CHPR8XX Process Modules: This unit will share significant content with CHPR 3530 Process Modules to eliminate duplication of teaching, but allow an industry presenter to
provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

**CHPR8XXX Process Modelling:** This unit will share significant content with CHPR3531 Process Modelling to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

**CHPR8XXX Advanced Prediction of Fluid Properties:** This unit will share significant content with CHPR3531 Advanced Prediction of Fluid Properties to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

**CHPR8XXX Process Systems:** This unit will share significant content with CHPR4530 Process Systems to eliminate duplication of teaching, but allow an industry presenter to provide industrially relevant material. Provision will also be made for alternative assessment mechanisms where necessary. Late afternoon or evening delivery is anticipated.

**ASSTXXXX Health, Risk and Safety:** This unit will be presented in two modules: Health and Safety (potentially Tim McGrath), and Risk (potentially Simon Schubach). This unit has similar content with ASST8434 BL Health, Risk and Safety, however the delivery mode will be on-campus. The unit merges two former 4 point units and will be presented in modular mode to allow industry short course participation in both or one of the modules.

**Special Units in Petroleum, Asset, Process, Marine and Energy Systems Engineering:** On occasion, visiting staff or industry experts are able to present units on topics of current interest and importance on an ad-hoc basis. These units will allow students to benefit from such opportunities. These units are discipline aligned so that they will reflect the field of study in academic records.

**OGE8XXX Oil and Gas Engineering Project, Parts 1, 2 and 3:** To allow students the maximum flexibility in their programme, a research or industry design project may be undertaken. The regulations will allow 6 points per semester to be devoted to a supervised project. The project may run over 1 semester or 2 sequential semesters and be of 6-18 points value in total. Progression between semesters will be subject to satisfactory performance, and the scope of the project will reflect the duration and points value of the project. This is consistent with the School’s undergraduate project structure.
PROPOSALS FOR MAJOR CHANGES TO EXISTING COURSES

Major changes to existing courses include: the introduction of new majors or streams within existing courses; the introduction of new honours programmes within existing honours degree courses; and major restructuring of existing courses.

CORE QUESTIONS FOR CHECKLISTS USED BY FACULTIES

All faculties should use the questions below in their checklists for proposals for major alterations to existing courses. Faculties may add other questions as they see fit.

1. **Details of the proposed changes**

Please provide the following information:

(a) the name of the existing course to which changes are proposed;

GRADUATE CERTIFICATE IN OIL AND GAS ENGINEERING
GRADUATE DIPLOMA IN OIL AND GAS ENGINEERING
MASTERS OF OIL AND GAS ENGINEERING

(b) the nature of the proposed changes;

There have been significant changes to the student cohort, the oil and gas industry, and the University structure and operations. Due to these factors, revision of the programme is essential to its ongoing relevance and viability of the programme.

(c) the rationale for the proposed changes, including reference to any review which may have given rise to the proposal;

- The increased number of international/full-time students who have visa limitations to complete their studies
- The change in oil and gas/energy industry
- The change in the University Structure and operations
- Review of Course Structures: Recommendations of Working Party on Postgraduate Coursework Programs

(d) any change to the total number of points required for completion of the course;

NO

(e) any change to expected time for full-time student taking standard load;

NO

(f) Any change to

(i) the delivery model (ie, Internal, external, multi-mode, online only). On-campus and online delivery are available

(ii) Units should that there is any introduction of non face-to-face instruction?

Utilising EnergySysE units that are available via online.

(Note: Where a course is delivered less than 75% face-to-face (ie more than 25% by distance learning or similar), there may be implications for international student visas. Please contact the International Centre for more information.)

(iii) where the course is taught (ie any move away from the Crawley campus?

Crawley

(iv) Arrangements for the course – is it to be taught in collaboration with another organisation. If yes, please state the name and address of the other organisation.

No at this moment, probably in the future

2. **Demand**

If you are proposing a new major/stream/ honours programme:

(a) what is the estimated new annual intake?

50 students
(b) how has the estimated new annual intake figure been arrived at?
   According to the number of new students in the past few years

(c) which existing majors_streams/honours programmes are likely to lose enrolments to the new major/stream/honours programme.
   None

3. Employment Outcomes

If you are proposing a new major/stream/honours programme, what do you believe will be the principal employment destinations for graduates and on what basis have you estimated this?
N/A

4. Consultation

(1) Please provide details of consultations you have had with various groups and individuals during the development of this proposal, including the following:

   (a) Other schools within the University who may have an interest in the proposal, including relevant academic staff;
      David Haig – School of Earth and Geographical Sciences
      David Plowman – School of Business
      Keith Smettem – School of Environmental Engineering
      Andrew Deeks – School of Civil Engineering

   (b) students and graduates;
      Current enrolled MOGE international & domestic students via survey in April 2008 (10 responses)

   (c) employers and/or employer groups and professional bodies;
      Will meet with Shell, Woodside and Chevron

   (d) other universities in WA which offer courses in similar fields;
      Curtin University

   (e) leading universities in Australia and overseas which offer courses in similar fields.
      N/A

(2) If the proposal is similar to offerings in other institutions in WA, have you considered whether there is scope for a co-operative/collaborative approach?
Yes, with Department of Petroleum Engineering, Curtin University.

5. Explanation of how the proposed changes enhance how the course fits with the University's and the Faculty’s Strategic and Operational Priorities Plans

An explanation as to how the proposed changes enhance how the course fits with the University's and the Faculty’s Strategic and Operational Priorities Plans must be attached to this checklist. The maximum length of the explanation is one A4 page.
Master of Oil and Gas Engineering: Restructure Proposal is attached.

6. Information Flow

(1) Please confirm by ticking the boxes and entering the date of action, that you have forwarded a copy of this proposal, either in hard copy, or electronically, to:

   External to the Faculty

   • The Deans of all faculties involved, including that of the faculty in which the course concerned is offered, that of any faculties which offer units in the course, and that of any faculties which offer this course as a component of a combined course.

   School of Business (to David Plowman) □ Date 28th of April 2008
   Faculty of Engineering, Computing and Mathematics □ Date 14th of April 2008
• The Head and relevant academic staff of any school which will be teaching in the new major/stream/honours programme/revised courses (specify below):

School of Earth and Geographical Sciences  • Date 30th of April 2008

School of Business  • Date 28th of April 2008

• The Head and relevant academic staff of any school which is not involved in the new major/stream/honours programme/revised course, but which teaches in a cognate area (specify below):
N/A

• The Librarian  • Date 6th of May 2008

• Where the course involves indigenous issues, the Dean of the School of Indigenous Studies  • Date _________________

• Where the course is postgraduate and includes 66.6% or more research, the Pro Vice-Chancellor (Research and Research Training)  • Date _________________

• Where changes to admissions requirements are proposed, the Executive Officer, Admissions Committee (for undergraduate courses)  • Date _________________

Internal to the Faculty

• The Head and relevant academic staff of any school which will be teaching in the course/programme:

School of Environmental Engineering  • Date 2nd of May 2008 (email)

School of Civil Engineering  • Date 2nd of May 2008 (email)

• The Head and relevant academic staff of any school which is not involved in the course/programme, but which teaches in a cognate area.
N/A

(2) Please confirm, by ticking the box, that you have completed a Faculty Checklist for each new unit introduced as a result of this proposal.  •

(3) Please confirm, by ticking the box that proposed changes to the course rules are attached.  X

(4) Please confirm, by ticking the box, that you have sent an amended course overview to Publications if this is needed.  □

7. Changes to combined courses only

Where the proposal concerns the introduction of a new combined course, the relevant minute extract from both faculties must be attached as set out below:

Faculty of ____________________ Date of meeting ____________ Extract attached  •

Faculty of ____________________ Date of meeting ____________ Extract attached  •

If the other Faculty’s minute extract is not yet available, the Dean of the other Faculty is asked to sign below to indicate that his/her Faculty is satisfied with the proposal.
8. **All courses – confirmation by Dean of originating faculty**

I confirm that the process leading to the proposed changes to the following course/programme:

**Name of course/programme**: Oil and Gas Engineering postgraduate courses

has included appropriate consultation with all other faculties with a potential interest in the proposed changes and that –

1. the proposed changes will not result in a significant overlap with an existing course; and
2. any implications for combined courses caused by changes to a single degree course have been discussed with the other faculties concerned and have been/will be addressed in a way acceptable to all faculties concerned.

Have any objections to this proposal been raised during the consultation process?  
- Yes  
- No

(if yes, please attach details of objection and response)

Signature of Dean

Faculty of

9. **Confirmation by Dean of the School of Indigenous Studies**

Where the course involves indigenous issues, the Dean of the School of Indigenous Studies must confirm the School's support for the changes.

I confirm that the indigenous issues involved in the proposal for the following course/programme:

**Name of course/programme**: 

have been discussed with me and I confirm the support of the School of Indigenous Studies for the changes.

Signature of Dean of the School of Indigenous Studies:

10. **Certification that the changes are acceptable to the International Centre**

Where the course is offered to international students, or offshore, the Director, International Centre (or delegate) must confirm the changes are acceptable to the International Centre.

I confirm that the International Centre has been consulted on the changes to this course/programme, and supports the changes.

**Name of course/programme**: Oil and Gas Engineering postgraduate courses

Signature of Director, International Centre (or delegate):

April 2007
Checklist_Major_Change
6.4.10 Graduate Certificate in Oil and Gas Engineering (60250)

Applicability of the University General Rules for Academic Courses

6.4.10.1 The rules in 1.1 and 1.2 of the University General Rules for Academic Courses in this handbook apply to the course for the Graduate Certificate in Oil and Gas Engineering.

Applicability of Faculty General Rules and Provisions

6.4.10.2 The Faculty General Rules in 6.1 and the Faculty General Provisions for Graduate Certificates in 6.4.1 apply to the course.

Articulation

6.4.10.3 The course articulates with the Graduate Diploma in Oil and Gas Engineering.

Rescinded

Admission

6.4.10.4 Subject to University General Rule 1.1.1.2(5), the admission requirements are—

(a) a bachelor's degree offered by the Faculty of Engineering, Computing and Mathematics of this University, or equivalent as recognised by the Faculty;

or

(b) a bachelor's degree of this University or of another recognised institution which, in the opinion of the Faculty, provides appropriate preparation for the proposed course of study;

or

(c) a level of education and a duration and level of professional experience which, in the opinion of the Faculty, is sufficient to enable the applicant to complete the course satisfactorily.

Rescinded

Course Structure

6.4.10.5 The course comprises units to a total value of 24 points selected from Table 6.6.12a (Master of Oil and Gas Engineering Core Units). The course comprises units to a total value of 24 points as approved by the School selected from the Table 6.6.X (Master of Oil and Gas Engineering options).

Progress Status

6.4.10.6 Unless the Postgraduate Board of Examiners determines otherwise in
light of exceptional circumstances, the Faculty will assign a progress status of 'Excluded' to a student who does not make satisfactory progress.

Rescinded

6.5.12 Graduate Diploma in Oil and Gas Engineering (60340)

Applicability of the University General Rules for Academic Courses

6.5.12.1 The rules in 1.1 and 1.2 of the University General Rules for Academic Courses in this handbook apply to the course for the Graduate Diploma in Oil and Gas Engineering except as set out in the rules which follow.

Applicability of the Faculty General Rules and Provisions

6.5.12.2 The Faculty General Rules in 6.1 and the Faculty General Provisions for Graduate Diplomas in 6.5.1 apply to the course.

Articulation

6.5.12.3(1) The Graduate Certificate in Oil and Gas Engineering articulates with the course.

(2) The course articulates with the Master of Oil and Gas Engineering.

Rescinded

Admission

6.5.12.4 Subject to University General Rule 1.1.1.2(5), the admission requirements are—

(a) a bachelor's degree offered by the Faculty of Engineering, Computing and Mathematics of this University, or equivalent as recognised by the Faculty;

or

(b) a bachelor's degree of this University or another recognised institution which, in the opinion of the Faculty, provides appropriate preparation for the proposed course of study.

(a) a bachelor's of Engineering degree of this University in a relevant discipline completed with a weighted average mark of 55% or better, or equivalent as recognised by the Faculty,

or

(b) a bachelor's degree of this University or another recognised institution in a relevant discipline which in the opinion of the Faculty provides adequate preparation for the proposed course of study and demonstrated experience in the Oil and Gas industry.
or

(c) a level of education and a duration and level of professional experience in oil and gas industry that, in the view of the Faculty, would permit the applicant to complete the course satisfactorily.

Course Structure

6.5.12.5 The course comprises units to a total value of 48 points selected from those listed in Table 6.6.12a (Master of Oil and Gas Engineering Core Units), plus any two units from the Table 6.6.12b (Master of Oil and Gas Engineering Options). The course comprises units to a total value of 48-52 points as approved by the School selected from the Table 6.6.X (Master of Oil and Gas Engineering Options) provided that no more than 24 points come from Level 4 or below.

Substitution

6.5.12.6 The Head of School may recommend that a student be permitted to substitute units in a cognate discipline of master’s level or equivalent for the units described in Rule 6.6.12.5 in consideration of the student’s previous studies and experience.

[Approved exception and addition to University General Rule 1.2.1.14(a)]

Award of the Graduate Certificate in Oil and Gas Engineering

6.5.12.7 A student who withdraws from the course before completing the course requirements but after completing the requirements of the Graduate Certificate in Oil and Gas Engineering may apply to the Faculty to be awarded the Graduate Certificate in Oil and Gas Engineering.

6.6.12 Master of Oil and Gas Engineering (60550)

Applicability of the University General Rules for Academic Courses

6.6.12.1 The rules in 1.1 and 1.2 of the University General Rules for Academic Courses in this handbook apply to the course for the degree of Master of Oil and Gas Engineering except as set out in the rules which follow.

Applicability of the Faculty General Rules and Provisions

6.6.12.2 The Faculty General Rules in 6.1 and the Faculty General Provisions for Master’s Degrees in 6.6.1 apply to the course.

Articulation

6.6.12.3 The Graduate Diploma in Oil and Gas Engineering articulates with the course. Rescinded
Admission

6.6.12.4(1) Subject to University General Rule 1.1.2(5), the admission requirements are—

(a) a bachelor’s degree of this University with honours in a relevant discipline, or equivalent as recognised by the Faculty;

or

(b)(i) a bachelor’s pass degree of this University in a relevant discipline, or equivalent as recognised by the Faculty;

and

(ii) demonstrated experience in an occupation in the oil and gas industry.

(2) An applicant may apply for admission to the course with credit for the units required under Rule 6.6.11.5 up to a value of 48 points if they have—

(a) completed the Graduate Diploma in Oil and Gas Engineering with an average mark of 65 per cent or better, or equivalent as recognised by the Faculty;

or

(b) completed units of study, which in the opinion of the Faculty are similar in content to those required.

{Approved addition to University General Rule 1.2.1.12(7)}

(a) a Bachelor of Engineering or an honours bachelor degree of this University in a relevant discipline completed with a weighted average mark of 65 per cent or better, or equivalent as recognised by the Faculty;

or

(b) a Graduate Diploma of Oil and Gas Engineering passed with an average mark of 65 per cent or better, or equivalent as recognised by the Faculty.

Course Structure

6.6.12.5 The course consists of units to a total value of 96 points comprising—

(a) all units in Table 6.6.12a (Master of Oil and Gas Engineering Core Units)—40 points

and

(b)(i) a dissertation to the value of 16 points;

or

(b) a dissertation approved by the Head of the School of Mechanical Engineering to a value of 32 points;
(e) units to make up the remaining points required for the course from those listed in Table 6.6.12b (Master of Oil and Gas Engineering Options).

The course consists of units to a total value of 96-100 points comprising all units to the value of 96 points from Table 6.6.X (Master of Oil and Gas Engineering Options) provided that no more than 48 points come from Level 4 or below.

Variations to Enrolment

6.6.12.6 Rescinded

Credit

6.6.12.7 The Faculty may grant credit up to a value of 24 points towards the coursework component of the degree for completed units of study which, in the view of the relevant head of school, are similar in content to those required, and have been awarded a mark of at least 65 per cent or better.

Substitution

6.6.12.7(1) With the approval of the Head of the School of Mechanical Engineering, a student may substitute OGE8590 Oil and Gas Special Topic 1 (4 points) or OGE8591 Oil and Gas Special Topic 2 (4 points) for a unit listed in Table 6.6.12a (Master of Oil and Gas Engineering Core Units).

[Approved addition to University General Rule 1.2.1.14(a)]

(2) With the approval of the Head of the School of Mechanical Engineering, a student may substitute OGE8592 Oil and Gas Special Topic 3 (4 points) or OGE8593 Oil and Gas Special Topic 4 (4 points) for a unit listed for one of the specialisations in Table 6.6.12b (Master of Oil and Gas Engineering Options).

[Approved addition to University General Rule 1.2.1.14(a)]

(3) The Faculty may approve the substitution of coursework units from this University or, in exceptional circumstances, from other recognised institutions, for units to a maximum total value of 16 points.

The Head of School may recommend that a student be permitted to substitute units in a cognate discipline of master's level or equivalent for the units described in Rule 6.6.X.5 in consideration of the student's previous studies and experience.

[Approved exception and addition to University General Rule 1.2.1.14(a)]

Examination of Dissertation

6.6.12.8(1) The dissertation is examined by a committee of no more than three members chaired by the project supervisor.

(2) The committee recommends to the Postgraduate Board of Examiners the classification to be awarded to the dissertation which will
be either 'Pass' or 'Fail'.

Rescinded

Award of Graduate Certificate or Graduate Diploma in Oil and Gas Engineering

6.6.12.9 A student who withdraws from the course before qualifying for the degree, but after completing the requirements for the Graduate Certificate in Oil and Gas Engineering or the Graduate Diploma in Oil and Gas Engineering, may apply to the Faculty to be awarded the appropriate qualification.

(a) A student who withdraws from the course before completing the course requirements but after completing the requirements of the Graduate Certificate in Oil and Gas Engineering may apply to the Faculty to be awarded the Graduate Certificate in Oil and Gas Engineering.

(b) A student who withdraws from the course before completing the course requirements but after completing the requirements of the Graduate Diploma in Oil and Gas Engineering may apply to the Faculty to be awarded the Graduate Diploma in Oil and Gas Engineering.

Table 6.6.12a—Master of Oil and Gas Engineering Core Units

All units have a value of four points unless otherwise stated.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASST8570</td>
<td>Environmental Engineering</td>
</tr>
<tr>
<td>ASST8572</td>
<td>Oil and Gas Economics</td>
</tr>
<tr>
<td>ASST8573</td>
<td>Health and Safety</td>
</tr>
<tr>
<td>CHPR8530</td>
<td>Process Engineering</td>
</tr>
<tr>
<td>CHPR8531</td>
<td>Petroleum Fluids</td>
</tr>
<tr>
<td>OENA8550</td>
<td>Ocean Engineering</td>
</tr>
<tr>
<td>OENA8551</td>
<td>Offshore Structures</td>
</tr>
<tr>
<td>PETR8510</td>
<td>Petroleum Geology</td>
</tr>
<tr>
<td>PETR8511</td>
<td>Fundamentals of Reservoir Engineering</td>
</tr>
<tr>
<td>PETR8514</td>
<td>Drilling Engineering</td>
</tr>
</tbody>
</table>

Table 6.6.12b—Master of Oil and Gas Engineering Options

All units have a value of four points unless otherwise stated.

Asset Specialisation
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASST8522</td>
<td>Safeguarding Systems Management</td>
</tr>
<tr>
<td>ASST8571</td>
<td>Project Management</td>
</tr>
<tr>
<td>ASST8576</td>
<td>Investment Management</td>
</tr>
<tr>
<td>ASST8577</td>
<td>Terotechnology</td>
</tr>
<tr>
<td>ASST8580</td>
<td>Oil and Gas Legal Frameworks</td>
</tr>
<tr>
<td>OEGG8574</td>
<td>Introduction to Oil and Gas Engineering</td>
</tr>
<tr>
<td>OEGG8575</td>
<td>Oil and Gas History, Economics and Geopolitics</td>
</tr>
<tr>
<td>OENA8552</td>
<td>Materials and Corrosion Engineering</td>
</tr>
<tr>
<td>OENA8553</td>
<td>Qualitative Risk Analysis</td>
</tr>
<tr>
<td>OENA8554</td>
<td>Subsea Technology</td>
</tr>
<tr>
<td>OENA8555</td>
<td>Oil and Gas Transmission</td>
</tr>
<tr>
<td>OENA8560</td>
<td>Offshore Geomechanics</td>
</tr>
<tr>
<td>OENA8561</td>
<td>Fixed Offshore Platforms</td>
</tr>
<tr>
<td>OENA8562</td>
<td>Floating Production Systems</td>
</tr>
<tr>
<td>PETR8513</td>
<td>Completions Engineering</td>
</tr>
<tr>
<td>PETR8520</td>
<td>Advanced Reservoir Engineering</td>
</tr>
<tr>
<td>PETR8522</td>
<td>Reservoir Simulation</td>
</tr>
<tr>
<td>PETR8571</td>
<td>Production Operations</td>
</tr>
<tr>
<td>CHPR8540</td>
<td>Measurement and Control</td>
</tr>
<tr>
<td>CHPR8541</td>
<td>Facilities Design</td>
</tr>
<tr>
<td>CHPR8542</td>
<td>LNG and GTL Technology</td>
</tr>
</tbody>
</table>
Table 6.6.X – Master of Oil and Gas Engineering Options
All units have a value of six points unless otherwise stated

**Dissertation**

OGEGXXXX Oil and Gas Engineering Dissertation, Part 1
OGEGXXXX Oil and Gas Engineering Dissertation, Part 2
OGEGXXXX Oil and Gas Engineering Dissertation, Part 3

**Petroleum Engineering**

PETR8XXX Reservoir and Well Performance
PETR8XXX Reservoir Characterisation
PETR8522 Reservoir Simulation
PETR8510 Petroleum Geology
PETR8XXX Reservoir Engineering
PETR8XXX Drilling and Completion Engineering
PETR8XXX Production Optimisation

**Chemical and Process Engineering**

CHPR3432 Chemical Kinetics and Reactor Design
CHPR4431 Advanced Reaction Engineering
CHPR4530 Process Systems
CHPR8XXX Process Modules
CHPR8XXX Process Modelling
CHPR8XXX Advanced Prediction of Fluid Properties
CHPR8531 Petroleum Fluids

**Marine Engineering**

CIVL4130 Offshore and Coastal Engineering
CIVL3170 Introduction to Offshore Engineering
CIVL4122 Offshore Geomechanics
CIVL4170 Design of Offshore Systems
CIVL4171 Platform, Pipeline and Subsea Technology
ENVE4615 Physical Oceanography
ENVE4614 Oceanography Engineering

**Asset Engineering**

ENVE3602 Environmental Engineering Design and Management
MINE4151 Reliability Engineering
ASST8XXX Health, Risk and Safety
OGEGXXXX Future Energy
ASST8572 Oil and Gas Economics
ASST8576 Investment Management

**Business and Engineering Asset Management**

MGMT8665 Project Management (Business)
MGMT8632 Investments (Business)
ASST8402 Engineering Asset Management and Risk
ASST8403 Reliability Engineering
ASST8401 Systems Reliability Modelling

**Mechanical Engineering**

MECH4400 Engineering for Sustainable Development
MECH4405 Design Tools: Finite Element Modelling
MECH4406 Computational and Experimental Fluid Dynamics
MECH3405 Structural Integrity
MCTX3421 Control and Mechatronics
MECH4432 Advanced Control Engineering

**Distance-based Learning**
ASST8434 BL Health, Risk and Safety
ASST8432 BL Project Management
ASST8435 BL Investment Management
CHPR8431 BL Measurement and Control
PETR8430 BL Petroleum Geology
OENA8433 BL Oil and Gas History, Economics and Geopolitics
ASST8433 BL Oil and Gas Economics
OENA8430 BL Ocean Engineering
OENA8432 BL Marine Systems Dynamics
ASST8430 BL Strategic Asset Management

**Special Units**
PETR8XXX Petroleum Engineering Special Unit 1
ASST8XXX Asset Engineering Special Unit 1
CHPR8XXX Process Engineering Special Unit 1
OENAHXXX Marine Engineering Special Unit 1
OEGEG8XXX Energy Systems Engineering Special Unit 1
PETR8XXX Petroleum Engineering Special Unit 2
ASST8XXX Asset Engineering Special Unit 2
CHPR8XXX Process Engineering Special Unit 2
OENAHXXX Marine Engineering Special Unit 2
OEGEG8XXX Energy Systems Engineering Special Unit 2

1*Only available with permission from the Head of School and with agreement of prospective supervisor.*

2*Only available with permission from the Head of School and the Unit Coordinator. Course and/or unit prerequisites are applied.*