Unit Executives Committee
February 18, 2016
9:00 a.m. – 10:00 a.m.

Meeting Minutes

Attendees: Raj Acharya, Chimay Anumba, Anthony Atchley, Kultegin Aydin, Sven Bilen, Peter Butler, Amr Elnashai, Pat Fox, Paul Heinemann, George Lesieutre, Theresa Mayer, Phil Savage, Janis Terpenny, Judy Todd, Karen Thole, Pat Kin Wong (for Cheng Dong)

Absent: Cheng Dong

Dean's Update | Lead: Amr
--- | ---
**Summary of Discussions:**

**Current Financial Challenges**
(a) Action required by April 1 and July 1, 2016.
(b) Expectations for faculty and staff hiring.
(c) Options for responding to PSU requirements. Discussion will not be recorded.

**Balancing of Faculty Work Opportunities**
Amr advised that the Provost has asked that we address issues of low research productivity of some faculty in the College. The Provost inquired as to why the College has 10-12% of your tenure system faculty who have low research expenditures and how do we balance this with teaching opportunities. Amr would like to improve the situation by insuring that those who have little or no research activities are contributing significantly to other aspects of the academic portfolio. We will charge a committee to look into simple guidelines to balance teaching, research and service efforts, and to recommend equivalences that will improve the distribution of faculty contributions. There are many models used at Penn State and elsewhere that lead to establishing a more equitable working environment for all. The committee will be seeking to study such models and tailor them to our needs. Nominations for membership are invited.

**Recommendations:**
- Post-meeting note: PSU leadership sent out an email on the financial impasse in the Commonwealth and its potential impact on us.
- Amr is asking department heads to recommend a member from their department for the Workload Review Committee.

Associate Dean for Education Update | Lead: Peter
--- | ---
**Summary of Discussions:**

**Overview of Proposal for Revisions of M Eng (now in Grad Council)**
Peter provided an update to revisions to language that defines Masters of Science degrees and Masters of Engineering degrees. This comes, in part, because the Graduate School is hoping to refine this language. The Master of Engineering degree programs provide training for advanced professional competence in several fields of engineering. This professional Master's degree emphasizes practical application of knowledge for solving problems and should be distinguished carefully from the research-oriented programs that lead to the academic degree of Master of Science. A minimum of 30 graduate credits is required, of which 20 must be earned at the campus/center where the degree program is offered. At least 18 credits must be earned in 500- or 800-level courses; a minimum of 6 of these 18 credits must be earned in 500-level courses.

Culminating Experience--All M.Eng. Programs require a significant culminating or "capstone" experience. Each program has established the specific manner for meeting the requirement, which may take the form of a paper, project, internship, or other similar experience serving to demonstrate comprehensive and in-depth knowledge of the practice of the field of study. The nature and extent of this work and when it is to be undertaken within the program of study shall be determined by the major program.
Work for this degree is not required to be done specifically at the University Park campus. A complete program of study can be pursued at Penn State Harrisburg, Penn State Great Valley, Penn State Erie, or through the World Campus.

The Leonhard Center Advisory Board was asked to review all of our one-year masters. They indicated that the language on our websites is very unclear on what the meaning of an MS and MEng degree is. In consultation with the Brad Sottile and Tom Litzinger, Peter compiled the attached document that helps define our own language. He does not feel that any of this will require program changes, but we might ask for the language on our website to be refined. As a result of discussions from department heads at the meeting, the document has been revised to reflect their recommendations.

The idea that a Master’s of Science at the Graduate School is typically considered a research degree. That is difficult to do for a one-year program and certainly on-line. In this document, we focus that an MS is an academic degree and the language of the Graduate School is strongly oriented toward research and the creation of new knowledge—could be studying about research methods and not the student actually engaging in research.

**Recommendations:** N/A
M.S. and M.Eng. Degree Requirements

This document is intended to assist programs in designing master’s programs. It is informed by new guidelines coming from the graduate school pertaining to who can be graduate faculty, the nature of research/science degrees and professional degrees, and the reality that many departments, and the college wish to create non-thesis masters that can be completed in one year. It is likely that as we undergo conversations with the graduate school, some of these guidelines may change.

**Fundamental Distinction between M.S. and M.Eng.**

- The Master of Science (M.S.) degree is an *academic degree*, which is “strongly oriented towards research and the creation of new knowledge.” [1]
- The Master of Engineering (M.Eng.) degree is a *professional degree*, which “emphasizes practical application of knowledge for solving problems.” [1]

**Requirements for M.S.**

- Minimum of 30 credits at 400-level of higher [2]
- At least 18 credits of 500- or 600-level courses [1]
- Significant culminating or “capstone” experience that must include submission of a thesis or suitable essay or paper [1]. *Typically the culminating experience is fulfilled with 6 credits of thesis research.* The graduate program determines if a thesis is required is not at the time the program was proposed; if any change to the culminating experience is desired (e.g. to add a non-thesis option), a program change proposal must be submitted.
- Time limit: all requirements, including acceptance of thesis, paper, or project report, must be completed within eight years of admission [1]
- Additional requirements [2]
  - At least 20 credits must be earned at the graduate campus/center of the University where the degree is offered.
  - A minimum of 12 credits in course work (400, 500, and 800), as contrasted with research, must be completed in the major. 800-level courses can be used towards the degree, but cannot be used to count towards the minimum of 18 credits of 500- or 600-level courses.
  - If a student writes a thesis, at least 6 credits in thesis research (SUBJ 600 or 610) must be included in the program.

**Sample MS with thesis**

- Two 400-level courses
- Six 500-level courses
- Six credits (600 level) of research
- Thesis

**Requirements for One-year M.S. (Non-Thesis)**

- Requirements are identical to the Traditional MS. The difference lies in how the requirement for a significant culminating or “capstone” experience is met.
- The culminating experience is required to be an extended research experience of more than one semester. In order for a 1 year MS to be approved by the central curriculum committee, there would need to be evidence of engagement with the research topic throughout the program of study; this might include, in a typical program, the student completing some research or research-related credits each semester.
- Additional guidance that is coming from the Graduate Council:
Students must be required to take at least one credit of research for each of the three semesters (Fall, Spring, and Summer). [This language presupposes a 3 semester plan; none of the approved 1 year MS’s have been shorter than FA-SP-SU.]

A research adviser must be assigned to students in their first semester, as selection and discussion of the student’s research topic must begin as soon as possible.

Students who need more time to complete the final paper must be allowed to complete the paper, and have it reviewed and approved after the third semester (Summer) has ended. Students are not required to remain in residence while they complete the final paper.

Master of Science degree candidates who are not required to write a thesis must instead present a scholarly essay or paper.

**Sample Non-Thesis Master’s**
- Two 400-level courses
- Seven 500-level courses
- Three credits (1 credit each semester) research engagement (500 level designation)
- Paper

**Current M.Eng. Requirements**
- Minimum of 30 credits [1]
- A significant culminating experience (“capstone”).
- Time limit: all requirements, including acceptance of thesis or paper, must be completed within eight years of admission [1]
- Additional specific requirements [3]
  - At least 18 credits must be earned in 500-level courses
  - At least 20 credits must be earned at the graduate campus/center of the University where the degree is offered.
  - The significant culminating experience (“capstone”) may take many forms, including but not limited to a scholarly paper, writing portfolio, or other similar experience serving to demonstrate comprehensive and in-depth knowledge of the field of study.

**Proposed M.Eng. Additional Specific Requirements**
- Minimum of 30 credits [1]
- A significant culminating experience (“capstone”) that may take many forms, including but not limited to a scholarly paper, project, internship, or other similar experience serving to demonstrate comprehensive and in-depth knowledge of the practice of the field of study.
- At least 18 credits must be earned in 500- or 800-level courses; a minimum of 6 of these 18 credits must be earned in 500-level courses
- At least 20 credits must be earned at the graduate campus/center of the University where the degree is offered.

**Sample M. Eng.**
- Two 400-level courses
- Four 500-level courses
- Three 800-level courses
- Capstone course (500 or 800 level, 3 credit)
Possible revisions on nature of MS versus M.Eng.

The college is working on language that will fit into grad school requirements but that shifts the focus of and MS degree from research, to a deep academic exploration of a research topic. The grad school language currently states that an MS must be “strongly oriented towards research and the creation of new knowledge.” One way to accomplish this without requiring a thesis would be to have 1 three credit course on research methods, and 1 three credit course on an advanced topic in which a faculty member taught their research topic in a very deep way. The culminating experience would be a research proposal developed in the special topics class.

For an M. Eng degree, the structure could be very similar, but the 6 credits mentioned above could be substituted with 800 level courses and with 1, three-credit course on advanced professional topics such as writing a business plan, leadership, advanced writing, finance, etc. The culminating experience would be a business plan or some other significant professional experience developed in the advanced professional topics class.

Summary of sample Master’s degrees in engineering.

<table>
<thead>
<tr>
<th>Course Level: Program Type</th>
<th>400*</th>
<th>500*</th>
<th>600*</th>
<th>800**</th>
<th>Culminating Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS w/thesis</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>Thesis (as part of 600 level courses)</td>
</tr>
<tr>
<td>MS non-thesis</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>Distributed Culminating Exp + paper</td>
</tr>
<tr>
<td>M. Eng.</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>Capstone Course (500 or 800 level)</td>
</tr>
<tr>
<td>MS Rev.</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>Research Prop. (part of 500 course)</td>
</tr>
<tr>
<td>M. Eng. Rev.</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>Paper (as part of 800 level course)</td>
</tr>
</tbody>
</table>

*assumes a course is 3 credits; could also be comprised of 1-credit courses (e.g. colloquium, ethics, etc.)

** MS could sub 500 level courses with 800 as long as there are at least 12 credits at the 500 level

Rev. refers to the “possible revisions” mentioned above.

References

1. University Bulletin “Graduate Degree Programs: Master’s Degrees” (http://bulletins.psu.edu/graduate/degreerequirements/masters)
2. University Bulletin “M.A. and M.S. – Additional Specific Requirements” (http://bulletins.psu.edu/graduate/degreerequirements/masters1)

University Bulletin: “M.Eng. – Additional Specific Requirements” (http://bulletins.psu.edu/graduate/degreerequirements/