From: Fatima Paul [mailto:fpaul@ucmerced.edu]
Sent: Monday, March 08, 2010 2:56 PM
To: Tammy Johnson; samussen@ucmerced.edu
Subject: NS Catalog Changes - UGC recommendations

Hi Tammy,

Here are UGC recommendations for the NS Catalog changes. Susan, please let me know if you disagree with this summary.

Thank you,

Fatima.

Catalog changes requested by the School of Natural Sciences:

1- Page 75 of the Catalog (School of Natural Sciences Requirements):

"All courses required for completion of a major (or minor) in Natural Sciences must be passed with a grade of C- or better, not to include general education courses taken outside of Natural Sciences and Engineering. **Students must maintain a minimum 2.0 GPA in all major coursework**."

UGC comments: What is meant by "all major coursework"? Does this mean that overall

gpa for all the classes from the major needs to be above 2.0?

This could become an issue if students get C- in major requirements.

UGC recommendation: UGC would like to discuss this further at its March 10 meeting.

2- Addition of MATH 11 as an option in the Preparatory Curricula section where it currently lists MATH 21 only. (MATH 21 approved at today's meeting)

Action: UGC recommends approval.

3- Applied Math Major: MATH 125, Intermediate Differential Equations needs to replace MATH 121 in the Math major requirements and in all sample plans. Math 121 is being discontinued. (Math 125 and 121 were approved today).

Action: UGC recommends approval

4- Page 82: Math 12-Calculus II to replace Math 30 in the Biology Major Requirements and in the Biology sample plans. (Math 12 was approved at today's meeting).

Action: UGC recommends approval

5- Changes to the Earth System Science BS Degree:

a) Delete ESS 70 as a lower division requirement

UGC recommends the use of the term "conjoined" instead of "co-convened"

b) Change lower division requirement to one lower division ESS (e.g., ESS 1, ESS 10, ESS 34, ESS 50) course and two other lower division Science and Engineering courses (e.g., ESS 1, ESS 10, ESS 34, ESS 50, BIO 1, BIO 34, BIO 43, BIO 46, ENVE 10, ENVE 20)

Action: UGC recommends approval

c) Add ECON 120 as an option for the ECON requirement and to list of electives.

Action: UGC recommends approval

6- New Minor in Environmental Science and Sustainability

UGC is concerned about the minor's Program Learning Outcomes specifically:

Graduates with a minor in Environmental Science and Sustainability will be able to:

1. *Understand* major concepts and principles in Environmental Science and Sustainability, including the interdependence of elements of the Earth system, the carrying capacity of natural systems, and the role of policy and economics in both perpetuating and solving environmental problems.

UGC comment: In terms of assessment of a program, the use of the verb "understand" is too weak. What is meant by "understanding?"

2. Develop upper division *expertise* in three to four central areas of Environmental Science and Sustainability – Earth and Atmospheric Sciences, Environmental Biology, Society and Environment, and Research, Communication, and Design Skills.

UGC comment: Expertise implies a very high level of knowledge. Measuring expertise is very subtle.

3. Apply and analyze appropriate solutions to a variety of environmental problems

4. Select appropriate measurement tolls and gather environmental data using common instrumentation

5. Effectively analyze environmental data and communicate environmental science issues to a wider community of stakeholders.

UGC recommendation:

PLOs 3, 4, and 5 would emerge from taking the courses and would be examples of upper division expertise. They would also demonstrate understanding major concepts. If these could be clarified, it would alleviate the faculty workload when the time for assessment comes.

NSED Catalog Changes

UGC recommendation:

- Remove "comprehensively" (first learning outcome)

- Add some language about student reflection on the appropriateness of teaching as a future profession.

Physics Major Catalog Changes

Comments:

- The learning outcomes presented in the Physics major could be used as a model for other programs. There is a clear parallel in the structure and a clear differentiation among those learning outcomes. The learning outcomes can be measured in a very efficient fashion.

- Emphasis tracks – Biophysics: UGC recommends the addition of biochemistry courses BIO 101 and BIO 161

Applied Math Catalog Changes

1. Math 125 replaces former Math 121

2. Math 126 replaces Math 142 in the curriculum. Math 142 will remain in the catalog as an upper division elective course but anywhere Math 142 was formerly a requirement, Math 126 will be the requirement beginning in Fall 2010.

3. Addition of the following language prohibiting enrollment in lower level courses after the completion of more advanced courses:

   No credit is allowed for completing a less advanced course after successful completion (C- or better) of an equally or more advanced course in Applied Mathematics.

   In the Calculus sequence, the order of courses is 5, 11, 21, 12, 22, 23, with Math 24 on par with Math 23. In the probability and statistics sequence, the order is 18, 32.

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4. Math 11 and 12 to replace Math 21 and 22 in the Biology catalog and sample plans.

5. Math 11 and 12 to be included in the ESS catalog as options along with Math 21 and 22

Recommendation:

In order to avoid confusion, UGC recommends the deletion of "Mechanics" in the "Additional requirements for Engineering Mechanics Emphasis Track" as this is not a mechanical engineering emphasis. Discussions on the AMS requests will continue at the March 10 meeting.