New Course Proposal

AEM 3100 – Software Applications in AEM

Credits: 1 credit Topics course (may be repeated), S/N grading

Prerequisites: CSCI 1113 or equiv. and BAEM Upper Division

Offered: Fall and Spring at faculty convenience, meets once a week (50 mins).

Description: Topics covering software applications for problems of interest to AEM majors. See http://www.aem.umn.edu/~aem3100/ for topics.

Motivation:

Feedback from students and alumni repeatedly has pointed to software skills as being an area in which they feel we could provide more instruction.

Implementation:

Because a single course that covered many software packages would make for a course that very few faculty members could teach, the idea is to offer multiple one credit courses on separate topics that leverage individual faculty member's knowledge.

This one credit course would not count toward any degree requirements other than total number of credits.

I would organize the collection from faculty of useful computer topics for all the courses they teach and maintain a list that could be used by instructors of this course as relevant examples to cover.

Incentive:

Faculty teaching this course three times will receive relief from one regular course (to be determined in consultation with the Dept. Head). This is subject to a minimum enrollment size (to be determined). Topics that do not attract enough students may be cancelled or offered without counting toward teaching credit.

Example Topics:

MatLab:

- Graphing (Error bars, Multiple curves per plot, etc)
- Reading and Writing files (data reduction, etc)
- Solving ODE's

- Image processing

CAD Program Usage (possibly with a cross platform open source package like QCad)

FEM Programs:

- ANSYS Usage

Programming:

- with open source tools
- C/C++
- FORTRAN
- PERL
- GUI programming with Qt

Linux/Unix usage (LaTeX, compiling, editing files, etc)

Mathematica – has many separate topics just like MatLab.

MPI (parallel computer programming)

Image manipulation tools (ImageMagic, GIMP, etc)