# Minutes of IT Curriculum Committee Meeting
# January 28, 2008

**Present:**  Present: A. McCormick (ChEn & Chair), T. Shield (AEM), R. Humphreys (Astro),
B. He (BME), K Mann (Chem), T. LaPara (CivE), G. Nadathur (CSE), L. Francis (CEMS), W. Durfee
(ME), Ann R. Kapuscienski, FWCB, kapus001@umn.edu, P. Strykowski (ITSS), D. Frank (Math), J.
Kakalios (Phys), A. Pineles (ITSS), J. Anderegg (IT Honors), J. Walstedt (ITSS).

1) Minutes from November 26, 2007 were APPROVED.
2) Actions on courses were taken; see chart below.

## Agenda for January 28, 2008 IT Curriculum Committee Meeting

(shaded items for information only)
In red – comments from a previous meeting or provisional approval
CD = Catalog Description
CP = Catalog Prerequisite
EP = Enforced Prerequisite

| COURSE | TITLE | CURRENT | PROPOSED | Approved/ Comments |
|---|---|---|---|---|
| BMEn 4xxx | Co-op Program | | 3 credits See Attachment #1. | Approve when executed. |

| Course | Title | Current | Proposed | Approved/ Comments |
|---|---|---|---|---|
| BMEn 5411 | Neural Engineering | **New Course**. Max-Min Cr: 3.0 – 3.0 credits,; A-F or Aud;<br>CD: This course will explore the current state of the art of neural engineering.  We will start with an overview of neurophysiology, anatomy and development to lay the foundations for understanding how to develop devices to interface with neural tissue.  We will then cover some neural modeling, ranging from the physiology based models to the abstract and systems level models.  We will also cover electrode design.<br>Then we will cover classical neural engineering applications such as the cochlear implant and deep brain stimulation for Parkinson's disease.  We will then move to the more exploratory, brain machine interfaces, neural driven prosthetics, micturation control, peripheral nerve replacement, prosthetic vision, seizure identification, prediction and prevention.  Then we will finish with the experimental, place cell measurement, neural guided robotics, and prosthetic memory devices.<br>APU: Not allowed to bypass limits. 3.0 credit(s)<br>FAPU: Not allowed to bypass limits. 3.0 credit(s)<br>CP: [BMEn 3401 recommended]<br>EP: 001186 - Exclude fr or soph 5000 level courses<br>Course Equiv: No course equivalencies<br>Yr most freq. offered: Every academic year<br>Term most freq. offered:  Fall | | Approved. |
| | | | | Approved. |
| CE 5581 | Water Resources: Individual and Institutions | Effec.Date:  Spring 2005<br>Course Prereq:  <no text><br>Career: UGRD | Effec.Date: Spring 2008<br>Course Prereq: #<br>Career: GRAD | Approved. |
| | | | | |
| Chem 2121 | Process Analytical Chemistry | Effec.Date:  Fall 2004<br>CHEM 4121<br>CP: 2302, 2311, 3501, chemical engineering major | Effec.Date:  Summer 2008<br>CHEM 2121<br>CP: 2302 or &, 3501 or &, chemical engineering major | Alon modified after talking to Chuck<br>Approved. |

| Course | Title | Current | Proposed | Approved/ Comments |
|---|---|---|---|---|
| Chem 3501 | Introduction to Thermodynamics, Kinetics, and Statistical Mechanics | Effec.Date: Fall 2006 CP: [1022 or 1032H], [MATH 2263 or MATH 2374], [PHYS 1302 or PHYS 1402V] | Effec.Date: Summer 2007 CP: [1022 or 1032H], [MATH 2263 or & or MATH 2374 or &], [PHYS 1302 or PHYS 1402V]<br><br>Proposal Changes (for entry staff): 5/10/07: change to make MATH 2263 or MATH 2374 both co-req courses, instead of pre-req. This was approved by CHEM DUGS Chris Cramer at an ASSA meeting. | Tabled 9/17/07 Tabled 11/26/07 Alon modified after talking to Chuck Approved. |
| Chem 3502 | Introduction to Quantum Mechanics and Spectroscopy | CP: : [1022 or 1032H], [MATH 2263 or MATH 2374], [PHYS 1302 or PHYS 1402V] | Effec. Term: Summer 2007 CP: [1022 or 1032H], [MATH 2263 or & or MATH 2374 or &], [PHYS 1302 or PHYS 1402V]<br><br>Proposal Changes: 5/10/07: change to make MATH 2263 or MATH 2374 both co-req courses, instead of pre-req. | Tabled 9/17/07 Tabled 11/26/07 Alon modified after talking to Chuck Approved. |
| Chem 5501 | Introduction to Thermodynamics, Kinetics, and Statistical Mechanics | Effec. Term: Fall 2006 CP: [1022 or 1032H], [Math 2263 or Math 2374], [Phys 1302 or Phys 1402V] | Effec. Term: Summer 2007 CP: [1022 or 1032H], [Math 2263 or & or Math 2374 or &], [Phys 1302 or Phys 1402V]<br><br>Proposal Changes: 5/10/07: change to make MATH 2263 or MATH 2374 both co-req courses, instead of pre-req. This was approved by CHEM DUGS Chris Cramer at an ASSA meeting. | Tabled 9/17/07 Tabled 11/26/07 Alon modified after talking to Chuck Approved. |
| Chem 5502 | Introduction to Quantum Mechanics and Spectroscopy | Effec. Term: CP: : [1022 or 1032H], [MATH 2263 or MATH 2374], [PHYS 1302 or PHYS 1402V] | Effec. Term: Summer 2007 CP: [1022 or 1032H], [MATH 2263 or & or MATH 2374 or &], [PHYS 1302 or PHYS 1402V]<br><br>Proposal Changes 5/10/07: change to make MATH 2263 or MATH 2374 both co-req courses, instead of pre-req. | Tabled 9/17/07 Tabled 11/26/07 Alon modified after talking to Chuck Approved. |

| Course | Title | Current | Proposed | Approved/ Comments |
|---|---|---|---|---|
| | | | | |
| EE 3990 | Curricular Practical Training | Effec. Date:  Fall 2006<br>3.0 – 1.0 credits<br>GB: OPT No Aud<br>Reps: Allow up to 2 repetition(s) totaling up to 3.0 credit(s). | Effec. Date:  Summer 2008<br>1.0 – 1.0 credits<br>GB: S-N only<br>Reps: Allow up to 2 repetition(s) totaling up to 2.0 credit(s). | Approved. |
| | | | | |
| Geo 1081 | Conspiracies, Fraud, and Deception in Earth History | Faculty Sponsor: <none named> | Faculty Sponsor: Staff | Tabled 9/17/07 Approved. |
| | | | | |
| Math 1001 | Excursions in Mathematics | Effec.Date: Fall 2004<br>Max.Cr: 3.0, Min.Cr: 3.0, Instr. Contact Hrs: 4.0<br>APU: Bypass: No, Cr: 3.0<br>FPU: Bypass: No, Cr: 3.0<br>Rep: Repetition now allowed<br>Faculty Sponsor:  no text | Effec.Date: Fall 2006<br>Max.Cr: 4.0, Min.Cr: 4.0, Instr. Contact Hrs: 5.0<br>APU: Bypass: No, Cr:4.0<br>FPU: Bypass: No, Cr:4.0<br>Repetitions: Max Course Completion: 1; Max Comb.Cr: 4.0<br>Faculty Sponsor: Staff | Tabled 9/17/07 Tabled 11/26/07 D.F. says **withdrawn** |
| Math 1031 | College Algebra and Probability | Effec.Date: Fall 2004<br>Max.Cr: 3.0, Min.Cr: 3.0,<br>Instr. Contact Hrs: 4.0<br>APU: Bypass: No, Cr:3.0<br>FPU: Bypass: No, Cr:3.0<br>Repetitions: Repetitions now allowed. | Effec.Date: Fall 2006<br>Max.Cr: 4.0, Min.Cr: 4.0, Instr. Contact Hrs: 5.0<br>APU: Bypass: No, Cr:4.0<br>FPU: Bypass: No, Cr:4.0<br>Repetitions: Max Course Completion: 1; Max Comb.Cr: 4.0 | Tabled 9/17/07 Tabled 11/26/07 D.F. says **withdrawn** |

| Course | Title | Current | Proposed | Approved/ Comments |
|--------|-------|---------|----------|--------------------|
| Math 1051 | Pre-calculus I | Effec.Date: Fall 2004<br>Max.Cr: 3.0, Min.Cr: 3.0,<br>Instr. Contact Hrs: 4.0<br>APU: Bypass: No, Cr:3.0<br>FPU: Bypass: No, Cr:3.0<br>Repetitions: Repetitions now allowed | Effec.Date: Fall 2006<br>Max.Cr: 4.0, Min.Cr: 4.0, Instr. Contact Hrs: 5.0<br>APU: Bypass: No, Units/Cr:4.0<br>FPU: Bypass: No, Units/Cr:4.0<br>Repetitions: Max Course Completion: 1; Max Comb.Cr: 4.0 | Tabled 9/17/07<br>Tabled 11/26/07<br>D.F. says **withdrawn** |
| Math 1151 | Pre-calculus II | Effec.Date: Fall 2004<br>Max.Cr: 3.0, Min.Cr: 3.0,<br>Instr. Contact Hrs: 4.0<br>APU: Bypass: No, Cr:3.0<br>FPU: Bypass: No, Cr:3.0<br>Repetitions: Repetitions now allowed | Effec.Date:  Fall 2006<br>Max.Cr: 4.0, Min.Cr: 4.0, Instr. Contact Hrs: 5.0<br>APU: Bypass: No, Units/Cr:4.0<br>FPU: Bypass: No, Units/Cr:4.0<br>Repetitions: Max Course Completion: 1; Max Comb.Cr: 4.0 | Tabled 9/17/07<br>Tabled 11/26/07<br>D.F. says **withdrawn** |
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## Additional Items

- Program Changes

   APPROVED.  Astronomy – See Attachment #2. - [Department will enter in PCAS and send on for approval.]

   APPROVED.  Math -  See Attachment #3  - APPROVED.

   APPROVED.  Sustainability Minor – See Attachment #4.

   APPROVED.  Physics – See Attachment #5 - Make Phys 2201 a required Physics course.  [Department will enter in PCAS and send on for approval.]

- TABLED.  Biol 1011, Tech Writing, Intro. to Engineering: Post-ABET plans?  [For the next meeting].

## ATTACHMENT #1 - BMEn Co-op Program (submitted by Prof. Bin He)

**\*\* DRAFT \*\***

**Proposal for Co-Op Program in the B.Bm.E. Program**

The Department of Biomedical Engineering has determined that implementing a co-op program is in the interests of its students, because it will provide valuable industrial/professional experience that co-op programs are widely known to provide.  A co-op experience may also provide a springboard to full-time employment for the student upon graduation.

The elements of the program will be as follows:

The co-op period will consist of full-time employment with a company related to biomedical engineering products or services during a contiguous fall and spring semester sequence, to start following in the fall following completion of the junior year.  (Companies will be encouraged to hire the student as an intern the summer before and after the co-op period, but the co-op period itself consists of the fall and spring semesters.)

Students will register for 3-credits (BMEn 4xxx) in both the fall and spring semesters.  The student must submit a report at the end of each semester and give a presentation at the end of the spring semester describing their co-op project; the grades for BMEn 4xxx are determined entirely by these requirements.

Important Points:

The student is committing to work full-time for the same company for the fall and spring semesters.

The co-op project must be set forth in writing by the company and approved by the faculty co-op coordinator (FCOC) in the Department prior to commencing a co-op experience, and any substantive change in the nature of the project must be approved by the FCOC.

By registering for 3-credits of BMEn 4xxx, the student will maintain part-time student status; students are responsible for assessing the implications of part-time status for scholarships and other forms of financial support.

The student is responsible for the cost of these credits (offset by an expected average salary of ~$20,000 during the co-op period).

Because of the requirement that students take the BME senior design sequence in the same academic year, participation in the co-op program will generally require 5 years to complete all degree requirements.

The 6 co-op credits will count toward the B.Bm.E. ESE requirement of engineering electives (n.b. credit for directed research will not be counted toward the ESE requirement if credit for co-op is awarded). This will reduce the course load in the senior (5th) year; graduating seniors may only need to take less than 13 credits per semester in their senior year to graduate and should file a Request for Reduced Credit Load accordingly.

The reports will be 10 pages and 15 pages in length for the fall and spring semesters, respectively, and the presentation will be 15 min long (including 5 min for questions), being made to a faculty member in the Department of Biomedical Engineering during finals week of spring semester. The report must be pre-approved by the immediate company supervisor of the student. It must summarize the technical work accomplished (i.e. the non-proprietary component) and describe its relation to technical coursework already completed by the student, and it must summarize the non-technical professional development experiences that resulted from the co-op experience. The presentation must focus on the technical work accomplished.

The University's Career Center for Science and Engineering will facilitate placement of students (e.g. provide for scheduling of on-campus interviews for companies seeking co-op students) and students are expected to register with the Center by January 1st preceding the fall the co-op would start; however, there is no guarantee that a student seeking a co-op position will obtain one.

## ATTACHMENT #2 – PROPOSED PROGRAM CHANGES IN ASTRONOMY

Dr. McCormick and Dr. Strykowski:

I'm writing to you on behalf of the Astronomy Department with regard to a new course we plan to enter into PCAS. I only learned this morning that Physics 2201 has been approved as a new course for the Physics program. This course is now to be a required course for the Astronomy B.S. and B.A. degrees and needs to be submitted through PCAS. I had hoped to get the information entered into PCAS today (in time for the Curriculum Committee meeting next Monday, 1/28) but I'm afraid that may not be possible.

Nominations for Graduate School Fellowships for new graduate students beginning Fall 2008 are due tomorrow, Friday, January 25th, at 12:00pm. Because of this and the steps involved in putting together the nomination packets, my time right now must be focused on these nominations in order to meet the deadline.

My hope is to begin working on the course entry into PCAS tomorrow afternoon but I may not be able to complete it by the end of the day. This will be my first time needing to make any type of entry into the fairly new PCAS system.(except for a few random entries during the training session last July) so I'm not very familiar with it.

I'd like to request that adding Physics 2201 to the Astronomy degree programs be put on the agenda for next Monday's Curriculum Committee meeting in the hopes of it being discussed and given interim approval. (We want this new program requirement to be effective for students who will be sophomores as of their Fall 2008 registration.) I will follow-up by getting the course submitted through PCAS next week.

Thank you for your consideration and if there's any further information you need before next Monday's meeting, please let me know. I appreciate your time and effort on this request.

Best regards,

Terry Thibeault
Department of Astronomy


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Terry L. Thibeault, Executive Assistant
University of Minnesota
Department of Astronomy

## ATTACHMENT #3 - PROPOSED PROGRAM CHANGES IN MATH FOR ITCC 1/28/08

1.    Current math major requirements state that Math 4512 (Differential Equations with Applications) may not be used as one of the eight (in IT) or six (in CLA) upper division math courses, although it can be used as technical elective.

In the future ,we would like to treat Math 4512 in the same way we treat other 4xxx-5xxx math classes; that is, it can count as an upper division math class in the major.

2.  The School of Mathematics currently has specializations in actuarial math and secondary Ed which are recognized on the student's transcript.  We would like to add a specialization in Mathematical Biology, which is described on the next sheet.

### Mathematical Biology Track

These are the additional requirements for an emphasis in Mathematical Biology.

- **Lower Division Requirements:**
Either Biology 1001 and 1002, or Biol 1009.  IT students with this emphasis are not required to take the third semester of Physics.

- **Upper Division requirements**
All students seeking a degree in math biology must complete the following requirements:

o        Senior Seminar (1 credit)

o        Math 4242 (Applied Linear Algebra).

o        Math 4428 (Mathematical Modeling)

o        Math 5651 (Basic Theory of Probability and Statistics) or Stat 5101

o        Research internship (4 credits; recommended but not required). Selected sites may include

o        university departments, companies, or national laboratories

o        Math 5525 (Intro to Ordinary Differential Equations)

o          Math 5535 (Dynamical Systems and Chaos)

Note that by completing the above courses, the student will have satisfied the analysis requirement and half of the algebra requirement. In addition, students must complete the list of requirements specific to one of the two options described below:

**Requirements for the Genomics Option**

Students must take the following courses:

- Chemistry 1021-1022 (Chemical Principles I and II)

- GCD 3022 (Genetics) or Biol 4003 (Genetics) and at least two courses from the following list:

- Pbio/PlPa 5301 (Plant Genomics)

- EEB 5221 (Molecular and Genetic Evolution

- CSci 5481 (Computational Techniques for Genomics)

- BioC 5361 (Microbial Genomics and Bioinformatics) or Phcl 5111 (Pharmacogenomics)

- Math 5445 Mathematical Analysis of Biological Networks

**Requirements for the Physiology Option**
Students must take:
- Chemistry 1021-1022 (Chem Principles I and II)

- Physiology 3061 (Principles of Physiology)

- Neuroscience 5201 (Computational Neuroscience I: Membranes and Channels)

- Either Neuroscience 5202 (Computational Neuroscience II: Neural Systems and Information Processing) or    Math 5447 Mathematical Neuroscience

**ATTACHMENT #4 – PCAS  Approval Request**

> **Sustainability Studies Minor – hard copy distributed at the meeting.**

**ATTACHMENT #5 – Physics**

> **From ECAS Submission Phys 2201:**  It appears that Physics will now <u>require</u> the existing course Phys 2201.

**Catalog Abbreviations**

**,**  In prerequisite listings, a comma means "and".

**=**  Credit will not be granted if credit has been received for the course(s) listed in brackets after this symbol.

**&**  Concurrent registration is required (or allowed) in the course(s) listed after this symbol.

**!**  Work for this course will extend past the end of the term. A grade of K will be assigned to indicate that the course is still in progress.

**#**  Approval of the instructor is required for registration.

**%**  Approval of the department offering the course is required for registration.

**@**  Approval of the college offering the course is required for registration.