Agenda of the meeting of April 12, 2012
Room 112 Bascom Hall, 1:15 p.m.

Course Proposals

Bohnhoff will review the 1 BME course:

1. **Biomedical Engineering 201**: Biomedical Engineering Design
   
   *Type of proposal: Change in title, credits, course description, prerequisites*
   
   *Current:* Biomedical Engineering Design. 1 credit. Students will work in a team on a client-centered biomedical engineering design project to learn concept generation, product analysis, specifications, evaluation, clinical trials, regulation, liability, and ethics. Prerequisites > So standing in biomedical engineering, BME 310 or con reg.
   
   *Proposed:* Biomedical Engineering Fundamentals and Design. 2 credits. Fundamentals of biomedical engineering and principles of design. Hands-on skills including computer-aided design, machining, and fabrication of a physical medical device prototype. Prerequisites > So standing in biomedical engineering.

Palecek will review the following 4 Chemistry courses:

2. **Chemistry 622**: Organic Analysis
   
   *Type of proposal: Change in course description*
   
   *Current:* Methods and underlying theory of functional group analysis
   
   *Proposed:* Biological Mass Spectrometry: Fundamentals and Applications

3. **Chemistry 626**: Genomic Science
   
   *Type of proposal: New Course*

4. **Chemistry 627**: Methods and Technologies for Protein Characterization
   
   *Type of proposal: New Course*

5. **Chemistry 635**: Topics in Computational Chemistry
   
   *Type of proposal: New Course*

Seppalainen will review the 1 Comp Sci course:

6. **Computer Sciences 578**: Contest-Level Programming
   
   *Type of proposal: New Course*

Cai will review the following 12 Materials Science and Engineering Courses:

7. **Materials Science and Engineering 330**: Thermodynamics of Materials
   
   *Type of proposal: Change in course description*
Current: Introduction to metallurgical thermodynamics, equilibrium constants, solutions, heterogeneous equilibria and electrochemistry.

Proposed: Introduction to thermodynamics of materials, equilibrium constants, solutions, heterogeneous equilibria and electrochemistry.

8. Materials Science and Engineering 332: Macroprocessing of Materials
   Type of proposal: Change in course description
   Current: Basic concepts such as stoichiometry, mass and energy balances are reviewed and extended to complex metallurgical processes such as mineral processing, roasting, oxidation-reduction, smelting and converting, refining, leaching, and electrolysis.
   Proposed: Topics include: ironmaking and steelmaking; production of Cu, Zn, Al and Mg by electrolysis; solidification processing of alloys by ingot casting, continuous casting and directional solidification; growth of bulk single crystals of semiconductors and ceramics from melts.

   Type of proposal: Change in course description
   Proposed: Introduction to: atomic, electronic, and defect structures in materials; diffusional, mechanical and electrical properties of materials; and the role of structure and defects in diffusional, mechanical, and electrical properties.

    Type of proposal: Change in course description
    Current: The basic factors that determine phase equilibria and structural characteristics of solids. Phase transformations, nucleation, recrystallization, precipitation, corrosion, and oxidation.

11. Materials Science and Engineering 360: Materials Laboratory I
    Type of proposal: Change in course description
    Current: A laboratory demonstrating the principles involved in sample preparation and optical microscopy, followed by relating microstructures observed to mechanical properties.
Proposed: Laboratory instruction in sample preparation for and applications of quantitative microscopy, x-ray diffraction, and properties measurement in the context of structure-property relationships in materials.

12. **Materials Science and Engineering 361**: Materials Laboratory II

*Type of proposal: Change in course description*

*Current:* Principles and experiments in metallography, thermal analysis, diffusion and deformation. Mechanical property determination.

*Proposed:* Experimental principles of materials science. Thermal, kinetic, structural, and materials synthesis experiments and associated concepts, data analysis, and presentation.

13. **Materials Science and Engineering 362**: Materials Laboratory III

*Type of proposal: Change in course description*

*Current:* Experiments in the study of structure, phase transformation and precipitation using current experimental analytical techniques and equipment.

*Proposed:* Experiments in the mechanical and electronic properties of matter in bulk and thin films; computer instrument control; and data analysis.

14. **Materials Science and Engineering 451**: Introduction to Ceramic Materials

*Type of proposal: Change in course description*

*Current:* Structure of ceramics and glasses; point defect thermodynamics; atomic/ionic mobility; phase equilibria; solid state reactions; ceramics processing; physical properties of ceramics.

*Proposed:* Primary objectives are to: 1) analyze how atoms and ions combine to form 3D crystals and glasses; 2) examine phase equilibria to understand the driving forces for the formation of particular ceramic phases; 3) introduce and discuss the nature of defects in ceramics; 4) discuss the migration of matter and of charge in ceramics; and 5) discuss properties and processing technologies of ceramics.

15. **Materials Science and Engineering 463**: Materials for Elevated Temperature Service

*Type of proposal: Change in course description*

*Current:* Mechanical behavior of metals, cermets, and other nonmetallic materials considering composition, structure, environment, and service conditions; structural stability; creep and stress-rupture.

*Proposed:* The design, properties, processing and selection of high temperature materials for structural applications. The fundamentals of diffusion, phase transformations, dislocation motion and oxidation governing the high temperature mechanical properties and structural performance of metallic and ceramic materials.
*Type of proposal:* Change in course description  
*Current:* Principles of transformations, heat transfer, heat treatment, and mechanical properties as applied to ferrous metallurgical design  
*Proposed:* Principles of phase transformations, heat transfer and mechanical properties as applied to heat treatment practice. The design, modeling and analysis of heat treatment processes.

17. **Materials Science and Engineering 748**: Structural Analysis of Materials  
*Type of proposal:* Change in course description  
*Current:* Introduction to electron microscopy techniques for applications in research of structure and structural imperfections in solids.  
*Proposed:* Introduction to transmission electron microscopy of materials, including imaging, diffraction, and microanalysis.

18. **Materials Science and Engineering 752**: Advanced Materials Science – Phase Transformations  
*Type of proposal:* Change in course description  
*Current:* Phase transformations, nucleation theory and the role of structural imperfections.  
*Proposed:* Phase transformations, nucleation theory and the role of structural imperfections, alloy phase equilibria, interface reactions and growth kinetics, continuous transformations.

Linderoth will review the following 3 Math courses:

19. **Mathematics 113**: Trigonometry  
*Type of proposal:* Change in credits, course description. *(Although the proposal indicates a requested change in prerequisites, the divisional committee approved the proposed changes to prereqs earlier in the semester. The divisional committee should now consider the change in credits and course description.)*  
*Current:* 2 credits. Course description > Graphs, properties and geometric significance of trigonometric functions of a real variable, trigonometric equations and identities, applications, trigonometric form of complex numbers, DeMoivre’s theorem.  
*Proposed:* 3 credits. Course description > This course covers the graphs, properties and geometric significance of trigonometric functions of a real variable. Other topics include trigonometric equations and identities, applications, trigonometric form of complex numbers, DeMoivre’s theorem, and polar and parametric equations. The course also has a significant number of applications, especially related to other disciplines.

20. **Mathematics 222**: Calculus and Analytic Geometry 2  
*Type of proposal:* Change in credits  
*Current:* 5 credits
Proposed: 4 credits

21. **Mathematics 234**: Calculus – Functions of Several Variables
   Type of proposal: Change in credits
   Current: 3 credits
   Proposed: 4 credits

Coon will review the following 2 Pharmacy courses:

22. **Pharmacy Practice 611**: Medical Imaging for Pharmacists
    Type of proposal: New Course

23. **Pharmacy Practice 612**: Radiopharmaceuticals
    Type of proposal: Change in course prerequisites
    Current: Prereq > PH-3 or DPM-1 st, or cons inst
    Proposed: Prereq > Pharmacy Practice 611