THE STEERING COMMITTEE
MINUTES
December 3, 2013
Board Room, Administration Building


Absent: President Simon, W. Davidson, S. Fletcher, D. Moriarty

Professor Carter called the meeting to order at 3:16 p.m. with a quorum being present.

The Agenda was amended moving item President’s remarks to end of agenda and adding item re information Fund Distributions of International Travel Funds. The amended agenda was approved.

The Minutes for November 5, 2013 were approved as distributed.

Acting Provost’s Remarks:
Acting Provost Youatt reported the last BOT meeting for the semester will be next Friday and they will act on amendment to the Bylaws to create a Consultative Committee on a Faculty Health Care Council. There were updates on leadership issues. Dean Whitten of Communication Arts and Sciences is resigning to go to Georg serve as Provost. Dean Brown of Veterinary Medicine will step down from the position having served 8 year ISP Dean’s position is still in the consultation phase.

Professor Youatt congratulated Professor Cynthia Taggart, who will be receiving the Distinguished Outstanding Faculty Award in February.

Professor Curry reported the Provost Search is on schedule and will be conducting airport interviews soon. Candidates for the Provost position will be coming to campus the end of January.

The Steering Committee Chairperson’s Remarks:
Professor Carter thanked the members for their hard work this semester. Professor Carter noted that this has been a productive semester from the perspective of Academic Governance. The Faculty Health Care Council was presented and passed and the Ad Hoc Committee on Social Media and Pedagogy is concluding their work.

The following governance activities for Spring were identified:

- The At-Large members will continue visits with College and Faculty Advisory Committees.
- The Academic Governance Office will gather questions from faculty for the Provost candidates coming to campus.
- Reports on the Mid-Semester Formative Feedback Proposal to the Steering Committee are due from UCFA, UCUE, UCC UCSA.
- UCFA will report on the annual recommendations for Faculty Merit and Market Pool Increase.

Professor Carter reported that invitations will be extended to unit leaders from campus to join us for informal conversation.

**Establishment of a New Department – Biomedical Engineering in the College of Engineering:**
Professor Youatt presented the Proposal for a Request to Establish a New Academic Department: The Department of Biomedical Engineering. Professor Youatt asked for advice from relevant Standing Committees. A **motion was passed to refer to UCFA and UCGS asking for feedback Spring Semester.**

**Change in Academic Policy:**
Professor Youatt presented a document on the Option to Declare a Major at 28 credits. The revised policy was as follows:

- Allow admission to limited enrollment programs to students when ready – admission when all prerequisites were fulfilled
- Allow admission to other majors (other than limited enrollment majors) by students who have earned a total of 28 credits
- Retain the current admissions practices for the College of Music and the residential colleges
- Not require declaration of a major by the student until 56 credits
- Not require a unit which currently has a limit on enrollment to the major to admit before 56 credits

A **motion was passed to refer to UCUE for feedback Spring Semester.**

**Presentation on Student Athletic Support Services (SASS)**
James Pignataro, Director II SASS, presented an informative overview of the many functions and activities of the Student Athletic Support Services unit.

President’s Remarks:
President Simon indicated that she was cautiously optimistic that we will have real budgets but will have significant reductions for the next two years. The President encouraged faculty to actively submit grants and to be more aggressive, which is hard to do.

At the State level, the Governor feels the bankruptcy in Detroit is a solution to a 60 year old problem not the cause of the problems. In certain parts of Detroit you see a renaissance of Detroit with housing occupancy very high, new businesses moving into the downtown area by companies making a commitment to Detroit. The challenge for Detroit is that it is more than mid and downtown. The President indicated the University will try to do something to help downtown that would provide a more urban experience for our students.

The Governor will take great pride in balanced budgets that have been acted upon. The question is whether or not there will be a reinvestment in higher education. The University will be having discussions with the Governor to see if the University has absorbed already a significant shift in students higher cost programs and bear the costs of the infrastructure needs. The business leaders from Michigan are advocating a return of a billion dollars to higher education over a period of ten years. The Governor did support agriculture last year and MSU is hopeful the trend will continue.

At the National level, the President has a bigger push on performance outcomes tied to financial aid and a de-emphasis on graduate education and the financial aid program. The Federal budget is highly fluid.

Fund Distributions of International Travel Funds:
Secretary Wright presented a request for information on the Fund Distributions of International Travel Funds. A faculty member felt a policy needed to be developed and asked what governance committee should address it. Professor Youatt will take up the matter to get more information.

Update on the Ad Hoc Committee on Social Media and Pedagogy:
Professor Donohue, Chairperson of the Ad Hoc Committee, reported the Committee met three times and are developing recommendations. A report will be given in January.

Draft Agenda for Faculty Senate January 14, 2014:
The agenda for the Faculty Senate meeting scheduled for January 14, 2014 is as follows:

- UCC Report
- New Business
Draft Agenda for University Council January 21, 2014:
The agenda for the University Council Meeting scheduled for January 21, 2014 is as follows:

- New Business

New Business:
There being no further business, the meeting was adjourned at 4:40 p.m.

Respectfully Submitted,

Jacqueline Wright
Secretary for Academic Governance
2013-14:4

MICHIGAN STATE UNIVERSITY

THE STEERING COMMITTEE

AGENDA

Tuesday, December 3, 2013

3:15-5:00 p.m.

Board Room, Administration Building

ITEMS:

1. Approval of Agenda for December 3, 2013

2. Approval of Draft Minutes for November 5, 2013 *(Attachment #1)*

3. President's Remarks - Lou Anna K. Simon

4. Acting Provost's Remarks - Dr. June Youatt

5. Executive Committee Chairperson's Remarks - Professor Sue Carter

6. Establishment of a New Department - Biomedical Engineering in the College of Engineering - Acting Provost Dr. June Youatt *(Attachment #2)*

7. Change in Academic Policy - Acceptance by a Degree Granting College After 28 Credits - Acting Provost Dr. June Youatt *(Attachment #3)*

8. Presentation on SASS - James Pignataro, Director II, Student Athletic Support Services

9. Draft Agenda for Faculty Senate for January 14, 2014 *(Attachment #4)*

10. Draft Agenda for University Council for January 21, 2014 *(Attachment #5)*

11. New Business

Attachments:
1. Draft Minutes for November 5, 2013
2. Establishment of a New Department
3. Change in Academic Policy
4. Draft Agenda for Faculty Senate for January 14, 2014
November 25, 2013

MEMORANDUM

TO: The Steering Committee

FROM: June Pierce Youatt, Acting Provost

RE: Request to Establish a New Academic Department: Department of Biomedical Engineering

I seek the advice of Academic Governance on the request to establish a Department of Biomedical Engineering. The proposed department would provide an identity for the biomedical research which is being conducted across numerous departments, within various colleges, and provide a possible academic home to faculty recruited to Michigan State University as part of the Institute for Engineering, Science and Health (IESH). Please note that faculty recruited to the IESH may choose to be housed in any number of academic departments; this simply provides an additional, relevant option.

In addition to increasing the visibility of the research in this area, “a BME department may have a positive impact on recruiting women to engineering at MSU. According to the American Society for Engineering Education (ASEE), women earned 21.8% of the doctoral degrees awarded in engineering in 2011. Biomedical Engineering had the greatest percentage of women earning doctoral degrees with 36.7%.”

Michigan State University’s lack of a BME department marks us as an exception with respect to our aspirational peers. Each of the top 50 engineering programs, according to US News and World Report, have a biomedical engineering program, department, or school. Of the twenty (20) “Big Ten Plus” engineering colleges, only the University of Nebraska and Michigan State University lack a BME department.

I would appreciate the advice of relevant standing committees – particularly the University Committee on Faculty Affairs and the University Committee on Graduate Studies.

Thank you.
Opportunities Attributed to a Department of Biomedical Engineering on the Faculty and Students
22 November 2013

Background: The College of Engineering at Michigan State University is requesting the establishment of a Department of Biomedical Engineering (BME) within the college. This document describes the challenges associated with the lack of such a department and its anticipated impact. It should be noted that the majority of the Big Ten universities have such a department, or similar; many have had such units for over 20 years.

Challenges: Currently, we have research active faculty spread throughout the college who are engaged in biomedical engineering research. Their work is primarily supported by the National Institutes of Health (NIH) – see Appendix A regarding current biomedical research activities by Engineering faculty. In addition, they enjoy support from the National Science Foundation and other federal and private sponsors. The Department of Biomedical Engineering will grow from strong research programs and make the university as a whole stronger in this important area of scholarship while also maximizing the impact of their work on the community.

Although there are Institutes dedicated to translational research such as the Clinical and Translational Sciences Institute (CTSI) and the Institute for International Health (IIH) led by the College of Osteopathic Medicine, none provides an academic home for faculty and students. A planned Institute for Engineering, Science and Health (IESH) will provide a research venue for faculty with interests aligned with the IESH foci; however, the number of foci will be limited to provide maximum research impact through its programs. The proposed Biomedical Engineering department will provide a venue for academic programs related to IESH and neuroengineering, among others, in addition to serving as a venue for collaboration distinct from the various institutes.

Challenges in growing the research enterprise for biomedical discovery within the College of Engineering include:

1. Graduate students interested in studying biomedical engineering have no “home” at Michigan State University. None of the existing departments has MS or PhD degree programs in biomedical engineering. Such degree programs are typically much different from other engineering programs (such as mechanical engineering, electrical engineering, computer science and so on). Biomedical engineering degrees have significantly greater biology and physiology content compared to other programs in the college. Graduate student recruiting is a major bottleneck for faculty without a formal biomedical engineering graduate program. A companion request for establishing such programs is following the academic governance process.
2. Faculty research opportunities have been hindered by the lack of a formal biomedical engineering presence. Proposers to programs at NIH, such as some of those in the National Institute of Biomedical Imaging and Bioengineering, have a competitive advantage if the engineering faculty member has an affiliation with a focused biomedical (or bioengineering) department. Some mid-career faculty have reported that they had difficulty in securing support from NIH prior to having an affiliation with one of the medical colleges.

3. Faculty recruiting with biomedical engineering research interests is significantly hampered by lack of a department. Michigan State University is expanding the research enterprise for translational health care. The institution needs to be able to attract the best and brightest new faculty at all levels to compete with more established biomedical research institutions. Top faculty recruits will not come to MSU if they cannot have a reasonable assurance that they can recruit top graduate students. Having a department that provides an "academic and intellectual home" for faculty with similar and complementary scholarly interests will facilitate such recruiting.

**Opportunities**: Planned faculty hiring related to translational health care includes addition of engineering faculty with complementary scholarly interests. The addition of a Department of Biomedical Engineering will foster an environment to attract top faculty who will in turn attract top-quality students. It will allow MSU to expand its course offering in the area of scholarship (see Appendix B for a current list of BME-related courses offered in the College of Engineering). The end result will be strengthening the College of Engineering's academic programs and research enterprise, strengthening of collaboration of the college with other colleges on campus, and a strengthening of Michigan State University as a whole.
Appendix A: Select Current Biomedical Research in the College of Engineering

Research experience is the core element of graduate education in STEM fields, and Biomedical Engineering is no exception. Many of the faculty members of the College of Engineering are involved in BME research, some as their main focus and some as part of a collaborative project.

Because BME brings an engineering outlook (e.g., design, analysis, quantification, invention) to solving biomedical challenges and uncovering basic phenomena, talent in computational and laboratory research methods are both needed and complementary between research groups. These research efforts are developing understanding of basic biological, physiological, evolutionary, and biochemical phenomena and developing innovations in diagnostic techniques, tissue engineering, and clinical interventions. Some groups combine computation and experimentation within one laboratory, such as in systems biology.

Promising therapeutic innovations range from development of tissue-engineered patches for spinal cord injuries (a collaborative effort of Sakamoto and Chan, ChEMS and Baek, ME), to robotics for telemedicine (Mukherjee, ME), to administration of poloxamer to prevent the pathogenesis of osteoarthritis following blunt force trauma to the knee. Other innovations include enhancements of highly focused ultrasound (HIFU) for adjuvants to chemo and radiotherapies (McGough, ECE) and novel pharmaceuticals and drug delivery based on nanomedicine (Worden, ChEMS) and nucleic acids (e.g., siRNA) (Walton and Chan, ChEMS) and antibodies (Whitehead BSE/ChEMS, and Chan, ChEMS).

Biosensors (Alocilja, BSE and Mason, ECE) are important for diagnosis, but also for public health and safety for rapid detection of communicable diseases and dangerous pathogens. Recent faculty hires have broadened CoE's efforts with lab-on-a-chip devices for diagnosis (Lillehoj and Yeom, ME). Other biosensors complement these efforts with allied environmental efforts to invent unique proteomic chips for screening of potential pathogens in ground water sources (Hashsham, CEE). Self-powered implantable biosensors may offer real-time monitoring of surgical interventions and implants (Chakrabarty, ECE). Others are developing protocols for wireless body area sensor networks (Biswa, ECE) related to autism.

Computational efforts include novel advances in digital evolution (Cheng, McKinley, Ofria, Brown, Pennock, and Torg, CSE) and in CoE contributions to BEACON (Goodman, ECE). Biomedical signal processing yields understanding of cardiovascular function (Mukkamala, ECE), central nervous system (Oweiss, ECE) and brain function (Aviyente, ECE), speech (Deller, ECE and Chai, CSE) and control of spinal posture (Choi, ME). Computational efforts extend further, including leading edge efforts in biometrics (Jain and Ross, CSE), development of image processing techniques for automated analysis of biomedical images (Udpa, ECE) and use of large data base searches for protein homology classification or ncRNA identification (Sun, CSE). Many of the CoE faculty members actively contribute to the Quantitative Biology (QB) Graduate program.
Some researchers combine computational expertise with fundamental biochemical and cell biology laboratory work in systems biology and determination of stem cell fate decisions for Alzheimer's and Parkinson's diseases (Chan, ChEMS) or to uncover the basic function of genomics and development (Brown, CSE). Other researchers use experiments combined with analysis to uncover the electrophysiology of the heart (Mukkamala, ECE), the central nervous system (Oweis, ECE), the response of proteins and cells to high temperature (Wright, ME) or the thermomechanical paths to developing decubitus ulcers (Reid-Bush, ME) or abdominal aortic aneurysms (Baek, ME).

The most recent faculty recruit in the TRIFECTA (College of Communication Arts and Sciences, College of Nursing, and College of Engineering) initiative (Zhang, ECE) is developing intelligent embedded sensing and ubiquitous computing technologies with a special focus on healthcare applications in the fast-evolving research field referred to as Mobile Health (mHealth) and patient-centric personalized healthcare.

Appendix B: Current BME-related Courses in Engineering

Our faculty members have already developed a number of biomedical-related courses to meet demand by students. While it is noted that almost all are at the 400-level, this has occurred because 1) this is the only level of course that can be counted in both undergraduate and graduate programs, and 2) our undergraduates who wish to pursue graduate study in BME (here or elsewhere) need such a foundation for acceptance to graduate school. Developing a department and a graduate program should quickly open doors of opportunity that will retain our most qualified BS graduates and lead to an increasing number of 800 level courses.

Some courses currently existing in the College that can support a graduate program in Biomedical Engineering include:

**Mechanical Engineering courses**
ME 494  Biofluid Mechanics and Heat Transfer (Fall every year)
ME 495  Tissue Mechanics (Spring every year)
ME 497  Biomechanical Design in Product Development (Spring of every year)
ME 8XX  Cardiovascular Mechanics – to be planned 2014 Fall

**Chemical Engineering and Material Science courses**
MSE425  Biomaterials and Biocompatibility (Spring of every year)
CHE883  Multidisciplinary Bioprocessing Laboratory (Spring even-numbered years)
CHE891/CMB800/GEN891  Systems Biology Resources (Kris Chan developed and taught in Spring 2012)
CHE891/CMB800  Recent Topics in Biological Networks, Systems Biology and Modeling (Kris Chan co-taught in Spring 2009, 2010)
BMB960/CHE891  From Analysis of Metabolism to Systems Biology (Kris Chan taught w/ faculty from other depts in Spring 2006, 2007)
CHE 8XX  Tim Whitehead is developing a new Synthetic Biology Laboratory course to
be taught Spring 2015 (as part of his CAREER Grant)

**Electrical and Computer Engineering courses**
Credits/Course #/Name
ECE 445 Biomed Instrumentation
ECE 446 Biomed Signal processing
ECE 447 Intro Biomed Imaging
ECE 448 Model & Analysis Bio Systems
ECE 802 (S14) Brain Machine Interface, offered previously
ECE 802 (F13) Therapeutic and Diagnostic Ultrasound, offered multiple times
ECE 802 (S13) BioMEMS and Microfluidics
ECE 802 (S13) Neural Engineering
ECE 802 (S13) Biomedical Signal Processing offered multiple times

Note: ECE offers a BME undergraduate concentration based on 4 regular courses (ECE445-448). We do not have any official BME grad course, but 3 of our ECE 802 (special topics) courses have been offered multiple times and could (even should) be submitted as new courses for periodic offering.

**Biosystems and Agricultural Engineering courses**
BE 445 - Biosensors for medical diagnostics
BE 845 - Biosensor principles and applications