PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF ENGINEERING

1. Request to establish a **Minor in Energy** in the College of Engineering. The University Committee on Undergraduate Education (UCUE) recommended approval of this request at its September 24, 2015 meeting.

   a. **Background Information:**

      Providing energy to the world that is clean and affordable is one of the premier challenges of the 21st century. Energy is critical across all facets of human development and the impact of non-renewable and inefficient energy generation on the world around us is becoming clear. Michigan State University has a long history of developing unique solutions to our global energy dilemma spanning solutions for energy generation, energy utilization, and energy policy. It is estimated from Destination Surveys that roughly 20% of the graduating engineering students end up with an energy company or a company closely tied to the energy industry. To complement the strong research portfolio MSU has already established in the Energy Sciences, and in response to strong constituency demand, an energy minor is proposed that focuses on key topics of fundamental laws and principles guiding energy generation, utilization, conservation, engineering applications and the impact of energy within a societal and geological context. This minor provides students with a foundation and perspective in energy sciences that is applicable to many disciplines and builds off of the strength of each major. The minor, will 1) better recruit top students to MSU, 2) prepare students for greater success in careers in energy, 3) showcase the efforts of MSU as a preeminent institution for the study of energy sciences, 4) further address continuous program improvement and outcomes topics as required in ABET engineering criteria.

   b. **Academic Programs Catalog Text:**

      The Minor in Energy, administered by the College of Engineering, provides students with a foundation in energy science that focuses on topics of fundamental laws guiding energy generation, utilization, conservation, engineering applications and the impact of energy within a societal and geological context. Students gain a perspective in energy science that is applicable to many disciplines and highly interdisciplinary. It offers opportunities for students to prepare to work in industry, research, or government, as well as preparation for graduate studies in energy science.

      The minor is available as an elective to students who are enrolled in bachelor's degree programs in the College of Engineering. With the approval of the department and college that administer the student's degree program, the courses that are used to satisfy the minor may also be used to satisfy the requirements for the bachelor’s degree. At least 9 credits counted towards the requirements for this minor must be unique. Unique credits must not be used to fulfill another university, college, or major requirement in the student's program.

      Students who plan to complete the requirements of the minor should consult the undergraduate adviser in the College of Engineering. Students accepted into the minor must be admitted to the College of Engineering and have completed items 1. and 2. of the requirements stated below. Enrollment for some courses may not be available and may be limited. Application forms are available at [www.egr.msu.edu/academics/multi-disciplinary](http://www.egr.msu.edu/academics/multi-disciplinary).

      **Requirements for the Minor in Energy**

      Complete 21 credits from the following.

      1. One of the following course (3 credits):
         - BE 230 Engineering Analysis of Biological Systems  
         - CHE 201 Material and Energy Balances  
         - MSE 250 Materials Science and Engineering

      2. One of the following courses (3 or 4 credits):
         - BE 351 Thermodynamics for Biological Engineering  
         - CHE 321 Thermodynamics for Chemical Engineering  
         - ME 201 Thermodynamics
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 310</td>
<td>Phase Equilibria in Materials</td>
<td>3</td>
</tr>
<tr>
<td>BE 456</td>
<td>Electric Power and Control</td>
<td>3</td>
</tr>
<tr>
<td>ECE 202</td>
<td>Circuits and Systems II</td>
<td>3</td>
</tr>
<tr>
<td>ECE 345</td>
<td>Electronic Instrumentation and Systems</td>
<td>3</td>
</tr>
<tr>
<td>ME 417</td>
<td>Design of Alternative Energy Systems</td>
<td>3</td>
</tr>
<tr>
<td>MSE 410</td>
<td>Materials Foundations for Energy Applications</td>
<td>3</td>
</tr>
<tr>
<td>AESC 310</td>
<td>Sustainable Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CSUS 200</td>
<td>Introduction to Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>EEP 255</td>
<td>Ecological Economics</td>
<td>3</td>
</tr>
<tr>
<td>AFRE 829</td>
<td>Economics of Environmental Resources</td>
<td>3</td>
</tr>
<tr>
<td>BE 469</td>
<td>Sustainable Bioenergy Systems</td>
<td>3</td>
</tr>
<tr>
<td>CHE 468</td>
<td>Biomass Conversion Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CSS 467</td>
<td>BioEnergy Feedstock Production</td>
<td>3</td>
</tr>
<tr>
<td>CSUS 200</td>
<td>Introduction Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>CSUS 491</td>
<td>Special Topics in Community Sustainability</td>
<td>1 to 3</td>
</tr>
<tr>
<td>ECE 305</td>
<td>Electromagnetic Fields and Waves I</td>
<td>4</td>
</tr>
<tr>
<td>ECE 320</td>
<td>Energy Conversion and Power Electronics</td>
<td>3</td>
</tr>
<tr>
<td>ECE 423</td>
<td>Power System Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECE 425</td>
<td>Solid State Power Conversion</td>
<td>3</td>
</tr>
<tr>
<td>ECE 475</td>
<td>Electro-Optics</td>
<td>4</td>
</tr>
<tr>
<td>ECE 821</td>
<td>Advanced Power Electronics and Applications</td>
<td>3</td>
</tr>
<tr>
<td>EEP 320</td>
<td>Environmental Economics</td>
<td>3</td>
</tr>
<tr>
<td>ENE 481</td>
<td>Environmental Chemistry: Equilibrium Concepts</td>
<td>3</td>
</tr>
<tr>
<td>ENE 489</td>
<td>Air Pollution: Science and Engineering</td>
<td>3</td>
</tr>
<tr>
<td>FOR 414</td>
<td>Renewable Wood Products</td>
<td>3</td>
</tr>
<tr>
<td>GLG 201</td>
<td>The Dynamic Earth</td>
<td>4</td>
</tr>
<tr>
<td>GLG 301</td>
<td>Geology of Continents and Oceans</td>
<td>3</td>
</tr>
<tr>
<td>GLG 471</td>
<td>Applied Geophysics</td>
<td>4</td>
</tr>
<tr>
<td>ISP 221</td>
<td>Earth Environment and Energy</td>
<td>3</td>
</tr>
<tr>
<td>MC 450</td>
<td>International Environmental Law and Policy</td>
<td>3</td>
</tr>
<tr>
<td>ME 417</td>
<td>Design of Alternative Energy Systems</td>
<td>3</td>
</tr>
<tr>
<td>ME 422</td>
<td>Introduction to Combustion</td>
<td>3</td>
</tr>
<tr>
<td>ME 442</td>
<td>Turbomachinery</td>
<td>3</td>
</tr>
<tr>
<td>ME 444</td>
<td>Automotive Engines</td>
<td>3</td>
</tr>
<tr>
<td>MSE 410</td>
<td>Materials Foundations for Energy Applications</td>
<td>3</td>
</tr>
<tr>
<td>MSE 460</td>
<td>Electronic Structure and Bonding in Materials and Devices</td>
<td>3</td>
</tr>
</tbody>
</table>

A course used to fulfill requirement 4. above may not be used to fulfill this requirement. Not all courses will be available to all majors and students must meet all course prerequisites and restrictions.

Effective Fall 2016.
2. Request to establish a Master of Science degree in Biomedical Engineering in the College of Engineering. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its September 21, 2015 meeting.

a. Background Information:

Biomedical engineering (BME) is the application of engineering principles and design concepts to advance healthcare practices, including medical diagnosis, treatment, and monitoring. This highly multidisciplinary field cuts across traditional disciplinary boundaries of engineering, biology, and medicine.

In an effort during fall 2013 and spring 2014, a BME Curriculum Committee consisting of representatives from all College of Engineering departments developed a curriculum plan for the new Department of Biomedical Engineering, established January 1, 2015 which will initially offer graduate degree programs. The Curriculum Committee evaluated leading BME programs that did not offer a Bachelor of Science degree. The Curriculum Committee also assessed MSU research strengths, departments, research and training programs, and infrastructure relevant to BME. Campus stakeholders were contacted to discuss possible interactions and ways to achieve synergy. Based on the information collected, three guiding principles for the new BME graduate programs emerged.

It was concluded that if the program were too focused, it would unduly limit participation, however, if the program were too broad in its scope, it would lose its disciplinary identity. Some Bioengineering programs focus on bioscience topics having little medical relevance. Because the National Institute of Health (NIH) is expected to be a major funding target for MSU’s BME-affiliated faculty members, it was deemed appropriate to align the curriculum with topics relevant to the NIH. One guiding principle was that that the BME curriculum should maintain flexibility for students to work on a broad range of projects and receive credit for a broad range of courses, provided the projects and courses were relevant to medicine.

It was acknowledged that several major future assets for the BME program are still emerging, including the Institute for Engineering, Science, and Health (IESH), the new Bioengineering Building, and a new IESH faculty cohort. The research foci that will eventually be represented by these emerging assets are presently unknown. In order to ensure future flexibility to align the BME department’s focus areas and course requirements with these emerging assets, a second guiding principle was to maintain a high degree of flexibility in the program’s initial curriculum requirements. This flexibility is reflected in the deliberate decision not to recommend departmental research focus areas and not to specify many required courses at this time.

However, the Curriculum Committee identified a cross-cutting topic, translational research, as being of primary importance to all BME students. Translational research is defined as engineering research that makes findings from basic science useful for practical applications that improve human health. The NIH has emphasized the importance of translational research by requiring all NIH-funded research to target a significant condition or disease and have the potential to improve medical practice. Thus, a third guiding principle was that the curriculum should incorporate mandatory training on translational research.

Based on the information collected and three guiding principles, it recommended master’s and doctoral degree requirements that (1) allow BME students to participate in a broad range of courses and research topics, (2) include few required courses to provide flexibility for departmental focus areas and course requirements may be established once the IESH and BME faculty pool are more fully developed, and (3) recommend development of a novel Translational Innovations laboratory course that would be required by all BME doctoral students. It is expected that these degree programs and their requirements will be reviewed in three years after the BME department and its faculty and administration are in place.

b. Academic Programs Catalog Text:

The Master of Science Degree in Biomedical Engineering prepares graduates to review technical literature related to a biomedical engineering research problem and communicate those results through oral presentations and written publications.
**Master of Science**

In addition to meeting the requirements of the university, and of the College of Engineering, students must meet the requirements specified below.

**Admission**

For admission to the master’s degree in biomedical engineering on regular status, the student must:

1. have a bachelor’s degree in biomedical engineering or related field; and
2. have a grade-point average that would indicate success in graduate study.

Applicants who are admitted without a bachelor’s degree in biomedical engineering may be required to complete collateral course work to make up deficiencies. Collateral course work will not count towards the fulfillment of degree requirements.

International applicants are required to submit their scores on the Graduate Record Examination (GRE).

**Requirements for the Master of Science Degree in Biomedical Engineering**

The master’s degree program in biomedical engineering is available under either Plan A (with thesis) or Plan B (without thesis). A total of 30 credits is required for the degree. The student’s program of study is selected in consultation with a faculty advisor and the graduate program director. No more than 6 credits of 400-level courses may be counted towards the degree requirements.

Student’s must complete the following core course:

BME 803 Research Methods 3

**Additional Requirements for Plan A**

1. Completion of the following course:
   BME 892 Biomedical Engineering Seminar 1
2. Complete of at least 4, but not more than 8, credits of BME 899 Master’s Thesis Research.
3. Pass a final oral examination in defense of the thesis.

**Additional Requirements for Plan B**

1. Pass a final examination or evaluation.

Effective Fall 2016

3. Request to establish a **Doctor of Philosophy** degree in **Biomedical Engineering** in the College of Engineering. The University Committee on Graduate Studies (UCGS) recommended approval of this request at its September 21, 2015 meeting.

   a. **Background Information:**

   Biomedical engineering (BME) is the application of engineering principles and design concepts to advance healthcare practices, including medical diagnosis, treatment, and monitoring. This highly multidisciplinary field cuts across traditional disciplinary boundaries of engineering, biology, and medicine.

   In an effort during fall 2013 and spring 2014, a BME Curriculum Committee consisting of representatives from all College of Engineering departments developed a curriculum plan for the new Department of Biomedical Engineering, established January 1, 2015 which will initially offer graduate degree programs. The Curriculum Committee evaluated leading BME/Bioengineering departments to identify focus areas, course offerings, and degree requirements. Emphasis was placed on benchmarking BME programs that did not offer a Bachelor of Science degree. The Curriculum Committee also assessed MSU research strengths, departments, research and training programs, and infrastructure relevant to BME. Campus stakeholders were contacted to discuss
possible interactions and ways to achieve synergy. Based on the information collected, three
guiding principles for the new BME graduate programs emerged.

It was concluded that if the program were too focused, it would unduly limit participation, however,
if the program were too broad in its scope, it would lose its disciplinary identity. Some
Bioengineering programs focus on bioscience topics having little medical relevance. Because the
National Institute of Health (NIH) is expected to be a major funding target for MSU's BME-affiliated
faculty members, it was deemed appropriate to align the curriculum with topics relevant to the NIH.
One guiding principle was that the BME curriculum should maintain flexibility for students to work
on a broad range of projects and receive credit for a broad range of courses, provided the projects
and courses were relevant to medicine.

It was acknowledged that several major future assets for the BME program are still emerging,
including the Institute for Engineering, Science, and Health (IESH), the new Bioengineering
Building, and a new IESH faculty cohort. The research foci that will eventually be represented by
these emerging assets are presently unknown. In order to ensure future flexibility to align the BME
department's focus areas and course requirements with these emerging assets, a second guiding
principle was to maintain a high degree of flexibility in the program’s initial curriculum requirements.
This flexibility is reflected in the deliberate decision not to recommend departmental research focus
areas and not to specify many required courses at this time.

However, the Curriculum Committee identified a cross-cutting topic, translational research, as
being of primary importance to all BME students. Translational research is defined as engineering
research that makes findings from basic science useful for practical applications that improve
human health. The NIH has emphasized the importance of translational research by requiring all
NIH-funded research to target a significant condition or disease and have the potential to improve
medical practice. Thus, a third guiding principle was that the curriculum should incorporate
mandatory training on translational research.

Based on the information collected and three guiding principles, it recommended master’s and
doctoral degree requirements that (1) allow BME students to participate in a broad range of
courses and research topics, (2) include few required courses to provide flexibility for departmental
focus areas and course requirements may be established once the IESH and BME faculty pool are
more fully developed, and (3) recommend development of a novel Translational Innovations
laboratory course that would be required by all BME doctoral students. It is expected that these
degree programs and their requirements will be reviewed in three years after the BME department
and its faculty and administration are in place.

b. **Academic Programs Catalog Text:**

The Doctor of Philosophy degree in Biomedical Engineering prepares graduates to review technical
literature related to a biomedical engineering research problem and communicate those results
through oral presentations and written publications.

**Doctor of Philosophy**

In addition to meeting the requirements of the university, and of the College of Engineering,
students must meet the requirements specified below.

**Admission**

For admission to the doctoral degree in biomedical engineering on regular status, the student must:

3. have a bachelor’s degree in biomedical engineering or related field; and
4. have a grade-point average that would indicate success in graduate study.

Applicants who are admitted without a bachelor’s degree in biomedical engineering may be
required to complete collateral course work to make up deficiencies. Collateral course work will not
count towards the fulfillment of degree requirements.

International applicants are required to submit their scores on the Graduate Record Examination
(GRE).
Requirements for the Doctor of Philosophy Degree in Biomedical Engineering

The doctoral degree program in biomedical engineering program of study is selected in consultation with a faculty advisor and the graduate program director. A minimum of 22 credits of course work beyond the bachelor’s degree is required in addition to doctoral dissertation research. No more than 6 credits of 400-level courses may be counted towards the degree requirements.

Student’s must complete the following:
1. All of the following core courses:
   - BME 803 Research Methods 3
   - BME 841 Translational Innovations Laboratory 3
   - BME 892 Biomedical Engineering Seminar 1

Effective Fall 2016

4. Request to change the requirements in the Bachelor of Science degree in Mechanical Engineering in the Department of Mechanical Engineering.

The concentrations in the Bachelor of Science degree in Mechanical Engineering are noted on the student’s academic record when the requirements for the degree have been completed.

a. Under the heading Requirements for the Bachelor of Science Degree in Mechanical Engineering make the following changes:

(1) In item 1., replace paragraph two with the following:

The University’s Tier II writing requirement for the Mechanical Engineering major is met by completing Mechanical Engineering 332, 412, and 481. Those courses are referenced in item 3. b. (1) below.

(2) In item 3. a. add the following course and change the total credits from ‘13’ to ‘17’:
   - CSE 231 Introduction to Programming I 4

(3) In item 3. b. add the following course and change the total credits from ‘39’ to ‘40’:
   - ME 300 Professional Issues in Mechanical Engineering 1

(4) In item 3. c. add the following courses:
   - ME 433 Introduction to Computational Fluid Dynamics 3
   - ME 497 Biomechanical Design in Product Development 3

(5) Add the following three concentrations:

Concentration in Automotive Powertrain
A concentration in Automotive Powertrain is available to, but not required of, any student enrolled in the Bachelor of Science degree in Mechanical Engineering. Completing the Bachelor of Science degree in Mechanical Engineering with a concentration in automotive powertrain may require more than 128 credits. The concentration will be noted on the student’s transcript.

Automotive Powertrain
To earn a Bachelor of Science degree in Mechanical Engineering with an automotive powertrain concentration, students must complete requirements 1., 2., 3.a., 3.b., and 3.d. above and the following:

All of the following courses (9 credits):
   - ME 422 Introduction to Combustion 3
   - ME 444 Automotive Engines 3
ME 445 Automotive Powertrain Design 3
One of the following courses (3 credits):
ME 433 Introduction to Computational Fluid Dynamics 3
ME 442 Turbomachinery 3

**Concentration in Computational Design**
A concentration in Computational Design is available to, but not required of, any student enrolled in the Bachelor of Science degree in Mechanical Engineering. Completing the Bachelor of Science degree in Mechanical Engineering with a concentration in computational design may require more than 128 credits. The concentration will be noted on the student's transcript.

**Computational Design**
To earn a Bachelor of Science degree in Mechanical Engineering with a computational design concentration, students must complete requirements 1., 2., 3.a., 3.b., and 3.d. above and the following:

ME 416 Computer Assisted Design of Thermal Systems 3
ME 433 Introduction to Computational Fluid Dynamics 3
ME 465 Computer Aided Optimal Design 3
ME 475 Computer Aided Design of Structures 3

**Concentration in Energy**
A concentration in Energy is available to, but not required of, any student enrolled in the Bachelor of Science degree in Mechanical Engineering. Completing the Bachelor of Science degree in Mechanical Engineering with a concentration in energy may require more than 128 credits. The concentration will be noted on the student's transcript.

**Energy**
To earn a Bachelor of Science degree in Mechanical Engineering with an energy concentration, students must complete requirements 1., 2., 3.a., 3.b., and 3.d. above and the following:

All of the following courses (9 credits):
ME 416 Computer Assisted Design of Thermal Systems 3
ME 417 Design of Alternative Energy Systems 3
ME 422 Introduction to Combustion 3
One of the following courses (3 credits):
ME 440 Aerospace Engineering Fundamentals 3
ME 442 Turbomachinery 3
ME 444 Automotive Engines 3

Effective Fall 2016.
COLLEGE OF HUMAN MEDICINE

1. Request to change the requirements for the Graduate Certificate in Counterfeit Pharmaceuticals in the College of Human Medicine. The University Committee on Graduate Studies (UCGS) will consider this request at its November 9, 2015 meeting.

   The Graduate Certificate in Counterfeit Pharmaceuticals is a Type 2 graduate certificate and will appear on the transcript as “Graduate Certificate Program in Counterfeit Pharmaceuticals”.

   a. Under the heading Requirements for the Graduate Certificate in Counterfeit Pharmaceuticals make the following changes:

      (1) Change the total credits from ‘15’ to ‘12’.

      (2) Delete the following courses:

      | Course Code | Course Name                                      | Credits |
      |-------------|--------------------------------------------------|---------|
      | HM 875      | Applications of Open Source Information in Public Health Intelligence | 3       |
      | VM 813      | Special Studies in Food Safety                   | 3       |

      Add the following course:

      | Course Code | Course Name                                      | Credits |
      |-------------|--------------------------------------------------|---------|
      | VM 840      | Anti-Counterfeit Strategy and Product Protection | 3       |

   Effective Summer 2016.

2. Request to establish a Graduate Certificate in Medical Partners in Public Health in the College of Human Medicine. The University Committee on Graduate Studies (UCGS) will consider this request at its November 9, 2015 meeting.

   a. Background Information:

   The Medical Partners in Public Health graduate certificate is aimed at College of Human Medicine medical students who are interested in complementing their clinical medicine training with a rigorous population and community-focused approach to improving public health, but who do not yet have a public health degree. This certificate is designed to help fulfill the Center for Disease Control (CDC’s) vision of training physicians with a population health perspective:

   “Physicians who practice integrated public health and medicine will see the patient as residing in a larger context of broad determinants of health. They will consider the influences of home, work and environment to the patient’s health. Because such physicians view health issues with a systems perspective, and thus see solutions from a similar vantage point, they will not be limited to the illness care system, but will identify and work with community resources on behalf of patients. These physicians will also have better insight into the healthcare industry. They will know how to think about the myriad health plans, insurers, hospital systems and healthcare purchasers and how they might affect clinicians’ opportunities to emphasize prevention and promote health in their practices. In fact, such physicians believe health is a human right, and actively use their analytic skills to assess the health of their community (regardless of whether they are all their patients). These physicians work with the public health system to practice prevention, health promotion, and health protection for individuals and populations.” CDC Experience Applied Epidemiology Fellowship - From Maeshiro R et al. Integration of Public Health into Medical Education – An Introduction to the Supplement, Am J Prev Med 2011;41(4S3):S145–S148

The Council on Linkages Between Academia and Public Health Practice – 20 professional organizations convened by the CDC – published the Core Competencies for Public Health Professionals in 2014 - (attachment 2). All are appropriate for medical school graduates at the most basic level (Tier 1) and many would be desirable at higher levels (Tiers 2 and 3). The MSU College of Human Medicine program in public health has mapped all of its learning objectives (the core of which constitute this certificate) onto these core public health competencies.

The College of Human Medicine has a longstanding commitment to patient-centered care and the biopsychosocial model. It has also been a leader in using evidence based medicine to make that care effective.

Medicine and public health have overlapping goals with distinct, but complementary perspectives.

While the College of Human Medicine has long sought to incorporate prevention and advocacy, there has not always been the opportunity to provide the public health context and evidence base to do this most effectively. This certificate is designed to provide graduates the knowledge of public health theory and structure to effectively expand the focus of this biopsychosocially-informed practice from the boundaries of single person care to that of communities and populations.

The College of Human Medicine program in public health has designed and operated diverse flexible course structures incorporating online, face-to-face, synchronous, asynchronous, and flipped educational methods to provide effective options for learners in diverse circumstances. This flexibility is key to creating an educational program that can effectively run concurrently with the standard human medicine curriculum. It affords the opportunity for public health and individual clinical medicine to interact and augment medical education from both perspectives without imposing time and place requirements that might interfere with the standard medical school curriculum.

Basing this certificate in the Flint Campus will allow students to learn in the broader public health milieu that accompanies top level public health research aimed to provide evidence-based interventions for the real world public health problems in the Greater Flint Community. By restricting it to this campus, it also affords students the opportunity to work together to become familiar with the particular institutions of one community, while learning the general structure of public health in the U.S. and also globally. Additionally, students will be able to work together to effectively work change on larger projects than would not be possible if they worked separately. This will help to design group capstone projects that synthesize the major competencies that they will learn in this certificate.

Students who wish to extend their learning about public health will be able to use these credits towards a Master of Public Health degree at MSU.

b. Academic Programs Catalog Text:

The Graduate Certificate in Medical Partners in Public Health is designed for College of Human Medicine medical students who are interested in complementing their clinical medicine training with a rigorous population and community-focused approach to improving public health. The certificate helps fulfill the Center for Disease Control’s vision of training physicians who do not yet have a public health degree.

Admission

Students must be in good academic standing to participate in the program. Students must apply for and be selected for the program by completing the application process which consists of essays and interviews. Students are not eligible for the certificate if they already possess master’s in public health degree or certificate.

Requirements for the Graduate Certificate in Medical Partners in Public Health

Students must complete all of the following courses (18 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM 622</td>
<td>Practical Applications of Public Health Principles-Planning a Community Project</td>
<td>6</td>
</tr>
<tr>
<td>HM 623</td>
<td>Practical Applications of Public Health Principles-Implementing a Community Project</td>
<td>6</td>
</tr>
<tr>
<td>HM 822</td>
<td>Introduction to Core Disciplines of Public Health for Medical Students</td>
<td>3</td>
</tr>
</tbody>
</table>
HM 823 Medical Partners in Public Health: Special Seminars 3

Students will also participate in community service and in quarterly journal club/seminars around public health topics.

Effective Summer 2016

3. Request to change the requirements for the **Master of Science** degree in **Biostatistics** in the Department of Epidemiology and Biostatistics. The University Committee on Graduate Studies (UCGS) will review this request at its November 9, 2015 meeting.

   a. Under the heading **Requirements for the Master of Science** degree in **Biostatistics** make the following changes:

   (1) In the entry paragraph, replace the first sentence with the following:

   The program is available under either Plan A (with thesis) or Plan B (without thesis).

   (2) Change item 5. read ‘Elective courses selected from the following (Plan A, 16 credits) or (Plan B, 20 credits):’

   (3) Change item 5. a. to read ‘At least 13 credits (Plan A) or 17 credits (Plan B) from the following biostatistics, statistics, and econometrics courses’.

   (4) Replace item 6. with the following:

   **Additional Requirements for Plan A**
   1. The following course (4 credits):
   EPI 899 Master’s Thesis Research 4

   **Additional Requirements for Plan B**
   1. Completion of a final oral examination or evaluation.

Effective Summer 2016.

4. Request to change the requirements for the **Master of Science** degree in **Epidemiology** in the Department of Epidemiology and Biostatistics. The University Committee on Graduate Studies (UCGS) will review this request at its November 9, 2015 meeting.

   a. Under the heading **Requirements for the Master of Science** degree in **Epidemiology** make the following changes:

   (1) In item 1. change delete the following course:
   EPI 813 Investigation of Disease Outbreaks 3

   Add the following course:
   EPI 836 Practicum in Epidemiological Methods 3

Effective Summer 2016.
COLLEGE OF OSTEOPATHIC MEDICINE

1. Request to change the requirements for the Master of Science degree in Pharmacology and Toxicology in the Department of Pharmacology and Toxicology. The University Committee on Graduate Studies (UCGS) will consider this request at its November 9, 2015 meeting.

a. Under the heading Requirements for the Master of Science Degree in Pharmacology and Toxicology make the following changes:

   (1) In the Pharmacology concentration move PHM 813 from item 2. to item 1.

Effective Summer 2016.
PART II - NEW COURSES AND CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

HRT 102  Plants for Food, Fun, and Profit
Fall of every year. Summer of every year. 2(2-0)
Introduction to the science and art of horticulture including plant breeding, ornamental plant and food production (organic and traditional), postharvest handling, horticultural industries and landscaping. Educate consumers about horticultural plants, products, and their relationship to environment.
Effective Fall 2014 Effective Summer 2016

HRT 475  International Studies in Horticulture
Spring of odd years. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: HRT 203 and HRT 204 R: Approval of department; application required.
REINSTATEMENT Study and travel experience emphasizing contemporary problems, issues, and trends in horticulture.
Effective Spring 2016

COLLEGE OF ENGINEERING

BME 803  Research Methods
Fall of every year. 3(3-0)
NEW Skills required for graduate research. Critically reviewing the literature, defining a fundamental research problem, effective oral and written technical presentations, ethics and statistics.
Request the use of ET-Extension to postpone grading.
The work for the course must be completed and the final grade reported within 1 semester after the end of the semester of enrollment.
Effective Fall 2016

BME 841  Translational Innovations Laboratory
Spring of every year. 3(1-4) R: Open to doctoral students in the College of Engineering or in the College of Natural Science or in the Department of Biomedical Engineering.
NEW Mentored research conducted in multidisciplinary team. Translational research.
Development of biomedical technologies. Teamwork skills.
Effective Fall 2016

BME 892  Biomedical Engineering Seminar
Fall of every year. Spring of every year. 1(1-0) R: Open to graduate students.
NEW Presentations of detailed studies of one or more specialized aspects of biomedical engineering
Request the use of the Pass-No Grade (P-N) system.
Effective Fall 2016

BME 899  Master's Thesis Research
Fall of every year. Spring of every year. 1 to 8 credits. A student may earn a maximum of 24 credits in all enrollments for this course.
NEW Master's Thesis Research
Effective Fall 2016

BME 999  Doctoral Dissertation research
Fall of every year. Spring of every year. 1 to 36 credits. A student may earn a maximum of 36 credits in all enrollments for this course.
NEW Doctoral dissertation research
Request the use of the Pass-No Grade (P-N) system.
Effective Fall 2016
ME 280  Graphic Communications
Fall of every year. Spring of every year. 2(2-0) P: (EGR 100 and (EGR 102 or concurrently)) and
((MTH 116 or concurrently) or (LB 118 or concurrently) or (MTH 132 or concurrently) or (MTH 152H
or concurrently) or (MTH 114 or concurrently)) P: (EGR 100) and ((LB 118 or concurrently) or (MTH
132 or concurrently) or (MTH 152H or concurrently)) and ((EGR 102 or concurrently) or (CSE 231
or concurrently))
  Computer-aided three-dimensional design. Freehand sketching. Two-and-three-
dimensional visualization. Blueprint reading.
SA: ME 180
Effective Fall 2015 Effective Fall 2016

ME 300  Prof Issues Mech Engineering
Fall of every year. Spring of every year. 1(1-0) A student may earn a maximum of 1 credit in all
enrollments for this course. P: Completion of Tier I Writing Requirement R: Open to undergraduate
students in the Mechanical Engineering Major.
NEW
  This course is a colloquium on professional issues in Mechanical Engineering practice.
  Professional conduct and ethical behavior in the workplace. Practice in professional
  writing and oral presentation. Global, economic, environmental and societal context of
  engineering. Contemporary issues in engineering. Group dynamics and working in teams.
  Intellectual property.
  Effective Spring 2016

ME 391  Mechanical Engineering Analysis
Fall of every year. Spring of every year. 3(3-0) P: MTH 235 or MTH 255H or MTH 340 or MTH
347H P: (MTH 235 or MTH 340 or MTH 347H) and CSE 231 R: Open to juniors or seniors in the
Biosystems Engineering Major or in the Mechanical Engineering Major.
  Analytical and numerical methods for the modeling and analysis of mechanical
  engineering systems. Applications to vibrating elements, heat transfer, linear springs, and
  coupled spring-mass systems.
Effective Fall 2014 Effective Fall 2016

ME 433  Introduction to Computational Fluid Dynamics
Spring of every year. 3(3-0) A student may earn a maximum of 3 credits in all enrollments for this
course. P: ME 410 or concurrently R: Open to juniors or seniors in the Department of Mechanical
Engineering.
NEW
  Theory and application of finite difference and finite volume methods to selected fluid
  mechanics and heat transfer problems, including potential flow, Euler and Navier-Stokes
  equations. Application with commercial codes.
  Effective Fall 2016

HM 622  Practical Application of Public Health Principles–Planning a Community Project
Fall of every year. Spring of every year. Summer of every year. 6(6-0) P: HM 823 R: approval of
college.
NEW
  Research and planning for a group community project. Practical application of public
  health principles including epidemiology, biostatistics, health and public policy, public
  health administration structure and function, health behavior, health education,
  environmental health and community assessment.
  Request the use of the Pass-No Grade (P-N) system.
  Request the use of ET-Extension to postpone grading.
  The work for the course must be completed and the final grade reported within 2
  semesters after the end of the semester of enrollment.
  Effective Summer 2015
HM 623  Practical Application of Public Health Principles–Implementing a Community Project
Fall of every year. Spring of every year. Summer of every year. 6(6-0) P: HM 622 R: approval of college.
NEW  Implementation, analysis, and documentation of group community project planned in HM 622.
Request the use of the Pass-No Grade (P-N) system.
Request the use of ET-Extension to postpone grading.
The work for the course must be completed and the final grade reported within 2 semesters after the end of the semester of enrollment.
Effective Summer 2015

HM 822  Introduction to Core Disciplines of Public Health for Medical Students
Fall of every year. Spring of every year. Summer of every year. 3(3-0) RB: Medical students with interest in public health R: Open to students in the College of Human Medicine or approval of college.
NEW  Introduction to philosophy and concepts of discipline of public health and its relationship to clinical medicine. History and development of the profession; ethical, legal and political considerations.
Request the use of ET-Extension to postpone grading.
The work for the course must be completed and the final grade reported within 2 semesters after the end of the semester of enrollment.
Effective Summer 2015

HM 823  Medical Partners in Public Health: Special Seminars
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: HM 822 RB: Medical students with interest in public health R: Open to students in the College of Human Medicine or approval of college.
NEW  Analysis, discussion, and application of key public health competencies in the community setting.
Request the use of ET-Extension to postpone grading.
The work for the course must be completed and the final grade reported within 2 semesters after the end of the semester of enrollment.
Effective Summer 2015

HM 824  SAS Programming for Population Health Analytics
Spring of even years. 3(3-0) P: HM 817 RB: Background in public health, healthcare or other health related fields. R: Open to students in the Public Health Major or approval of college.
NEW  This online course provides SAS programming skills for the access and management of administrative healthcare data; delivers data management training in health strategies for leaders in the growing field of unstructured information processing.
Effective Summer 2015