EP.20.91-104
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UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN SENATE
COMMITTEE ON EDUCATIONAL POLICY
(Final; Information)

EP.20.91-104 Revisions to undergraduate degree program listings in the Grainger College of Engineering for the 2020-2021 Academic Catalog.

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The Grainger College of Engineering proposes to revise all undergraduate program listings to more concisely list the table of general education requirements and to update course lists to remove deactivated courses, replacing them with current courses where appropriate. None of these revisions result in a change to the total number of hours required for any degree program nor, where applicable, to any concentration within a degree program.

Additional information on course list updates for each degree program is summarized below and details for each are attached.

- **EP.20.91 BS in Civil Engineering** – in the list of Construction Materials Engineering requirements, add MSE 201, Phases and Phase Relations (3 hours); remove MSE 440, Mechanical Behavior of Metals (3 hours); and remove MSE 445, Corrosion of Metals (3 hours). In the list of Advanced Technical Courses from which students must select one course in each of three areas and one course from a recommended list, remove CEE 498, Special Topics Section HRP (1-4 hours) and CEE 498 Special Topics Section HRM (1-4 hours). In the list of General Civil Engineering Recommended Science Electives from which students are to choose one course, add GEOL 107, Physical Geology (4 hours) and remove ME 200, Thermodynamics (3 hours). In the list of Secondary Field Advanced Technical Electives from which students are to select 6 hours to complement the primary area, in the Construction Materials Engineering area, Recommended Advanced Technical Courses, remove MSE 406, Thermal Mech Behavior of Matis (3 hours). In the list of Secondary Field Advanced Technical Electives for the Geotechnical Engineering area, Required Advanced Technical Courses, remove CEE 484, Applied Soil Mechanics, 3 hours. In the Transportation Engineering area, remove CEE 412, High-Speed Rail Engineering (3 hours). In the Sustainable and Resilient Infrastructure Systems area, recommended Advanced Technical Courses list, add CEE 406, Pavement Design I (3 hours). In the Atmospheric Science, Primary Field: Environmental Engineering area, recommended Advanced Technical Courses list, add CEE 445, Air Quality Modeling (4 hours). Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.92 BS in Computer Engineering** – in the list of Technical Electives from which students are to select 27 hours, remove ECE 484, Princ Adv Microelec Processing (3 hours). This course has been deactivated. Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.

- **EP.20.93 BSAG in Agricultural and Biological Engineering** – in the list of Biological Sciences Coursework, from which students are to choose 4 hours, remove PLPA 401, Plant Pathogenic Fungi (4 hours); PLPA 402, Phytoparasitic Nematodes (2 hours); PLPA 404, Plant Virology (2 hours); and PLPA 406, Phytobacteriology (2 hours). These courses have been deactivated. Update footnote 2 to clarify that CHEM 232 and MCB 150 are required for the Biological Sciences Concentration. Update the footnotes to clarify when specific courses are required for a certain concentration and the number of free electives required to reach the minimum total required for the degree.
- **EP.20.94 BS in Agricultural and Biological Engineering** -- Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.95 BS in Agricultural and Biological Engineering, Agricultural Engineering Concentration** – in the list of Biological and Natural Science electives from which students are to choose 6 hours, remove PLPA 401, Plant Pathogenic Fungi (4 hours); PLPA 402, Phytoparasitic Nematodes (2 hours); PLPA 404, Plant Virology (2 hours); and PLPA 406, Phytobacteriology (2 hours). These courses have been deactivated.
- **EP.20.96 BS in Agricultural and Biological Engineering, Biological Engineering Concentration** – in the list of Biological and Natural Science electives from which students are to choose 6 hours, add CHEM 233, Elementary Organic Chem Lab I (2 hours). Remove PLPA 401, Plant Pathogenic Fungi (4 hours); PLPA 402, Phytoparasitic Nematodes (2 hours); PLPA 404, Plant Virology (2 hours); and PLPA 406, Phytobacteriology (2 hours). These courses have been deactivated.
- **EP.20.97 BS in Computer Science** – in the list of CS courses from which students are to choose three in a single area, from the Software Foundations area, clarify the specific sections of CS 498, Special Topics (1-4 hours) that students can consider; remove CS 426, Compiler Construction (3 hours); and add CS 526, Advanced Compiler Construction (4 hours). Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.98 BS in Electrical Engineering** –in the list of Technical Electives from which students are to select 32 hours, remove ECE 484, Princ Adv Microelec Processing (3 hours). This course has been deactivated. Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.99 BS in Engineering Mechanics** – in the list of Secondary Field Option Electives, Engineering Science and Applied Mathematics area, update the row that read "MATH 448 Complex Variables (Or Any 400 level MATH course, excluding MATH 415, MATH 441, and MATH 442) (3 or 4 hours)" to read "Any 400 level MATH course, excluding MATH 415, MATH 441, and MATH 442 (3 or 4 hours)." In the Mechanics of Materials area's required courses list, remove TAM 428, Mechanics of Composites (3 hours) as a specifically required course, changing the requirement to be TAM 417, Mechanics of Polymers (3 hours) OR TAM 428, Mechanics of Composites (3 hours). Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.100 BS in Engineering Physics** – update the table for Electives and related footnotes to clarify the total number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.101 BS in Systems Engineering & Design** – in the Digital Prototyping area, add SE 410, Component Design (3 hours); SE 413, Engineering Design Optimization (3 hours); and SE 423, Mechatronics (3 hours) to the list of courses from which students may choose. Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.102 BS in Nuclear, Plasma, and Radiological Engineering** – in the Professional Concentration Area Electives, specify that students are to choose a total of 25 hours from one Professional Concentration Area. In the Power, Safety, and the Environment area, Technical electives sub-area from which students are to select a minimum of 6 hours, add NPRE 398, Special Topics (1-4 hours) and NPRE 461, Probabilistic Risk Assessment (3 hours). In the Common Engineering and Technical Electives area, add STAT 400, Statistics and

Probability I (4 hours). Add an area called Plasma Fusion Science and Engineering, with course requirements as detailed in the proposal's Program of Study grid text. Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.

- **EP.20.103 BS in Mechanical Engineering** -- in the list of Technical Electives, departmentally-approved courses, from which students are to select 6 hours, add AE 483, Unmanned Aerial Vehicle (UAV) Navigation and Control (3 hours); add ECE 467, Biophotonics (3 hours); remove ECE 484, Princ Adv Microelec Processing (3 hours) and SE 462, Leading Sustainable Change (3 hours). These courses have been deactivated. Update the row that previously read "All 400 level ME courses, except 470," to read "All 400 level ME courses, except 470 and potentially 497, 498," with corresponding footnotes indicating "a maximum of 3 hours of independent/individual study courses may be used to satisfy the MechSE Elective or Technical Elective requirements" and "Depending on technical content, some Special Topics courses may not be approved for Technical Elective credit. Please provide a syllabus of the course to the Mechanical Science and Engineering Undergraduate Programs Office to request use of the course for Technical Elective credit prior to registering for the course." Update the row that previously read "All 400 level TAM courses except 499" to read "All 400 level TAM courses, except 499 and potentially 497 and 498" with the same corresponding footnotes. Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.
- **EP.20.104 BS in Materials Science and Engineering** – in the list of Technical Electives, add sub-headers with area titles for the Biomaterials Area which specifies the requirements in this category for this particular area. Consolidate the listings for other areas to read "For All Other Areas" as a sub-header, with requirements listed as 12 hours of topical lectures selected from the list of courses established by the department (detailed below). No more than 6 hours may be from introductory topical lectures; MSE 404, Laboratory Studies in Materials Science and Engineering, each section of MSE 404 is 1/5 hours, students take four unique sections of MSE 404 for a total of 6 hours; and 6 hours of Technical elective courses selected from the list (detailed below) for a total of 24 hours required For All Other Areas. Update the Topical Lectures courses list (referenced above) to detail all courses acceptable for the Introductory sub-header, Biomaterials sub-header, Biomaterials Science sub-header, All Other Areas sub-header, and Science sub-header. In the list of Technical electives from which students are to select 6 hours, remove ECE 484, Princ Adv Microelec Processing (3 hours). This course has been deactivated. Update the row that previously read "Materials Science and Engineering – Any otherwise not required courses," to specify the following list of courses: MSE 396, Introduction to Research (1-3 hours); MSE 403, Synthesis of Materials (3 hours); MSE 421, Ceramic Processing (3 hours); MSE 422, Electrical Ceramics (3 hours); MSE 440, Mechanical Behavior of Metals (3 hours); MSE 441, Metals Processing, 3 hours); MSE 443, Design of Engineering Alloys (3 hours); MSE 445, Corrosion of Metals (3 hours); MSE 450, Polymer Science & Engineering (3 hours); MSE 452, Plastics Engineering (3 hours); MSE 454, Mechanics of Polymers (3 hours); MSE 455, Macromolecular Solids (3 hours); MSE 456, Mechanics of Composites (3 hours); MSE 457, Polymer Chemistry (3 hours); MSE 458, Polymer Physics (3 hours); MSE 460, Electronic Materials I (3 hours); MSE 461, Electronic Materials II (3 hours); MSE 466, Materials in Electrochem Syst (3 hours); MSE 470, Design and Use of Biomaterials (3 hours); MSE 473, Biomolecular Materials Science (3 hours); MSE 474, Biomaterials and Nanomedicine (3 hours); MSE 480, Surfaces and Colloids (3 hours); MSE 481, Electron Microscopy (3 hours); MSE 484, Composite Materials (3 hours); MSE 485, Atomic Scale Simulations (3 hours); MSE 487, Materials for Nanotechnology (3 hours); MSE 488, Optical Materials (3 hours); MSE 489, Matl Select for Sustainability (3 hours); and MSE 499, Senior Thesis (3 hours). Remove SE 462, Leading Sustainable Change (3 hours). This course has been deactivated. Add a table for Electives with related footnotes to clarify the number of free electives required to reach the minimum total hours required for the degree.