



Category I Proposal Transmittal Sheet

Submit proposals to: Office of Academic Programs and Academic Assessment
110 Kerr Admin -- Oregon State University

For instructions, see <http://oregonstate.edu/ap/curriculum/cati.html>. Please attach Proposal, Library Evaluation (performed by the library), Liaison Correspondence, Faculty Curriculum Vitae, and Budget Sheets, as appropriate.

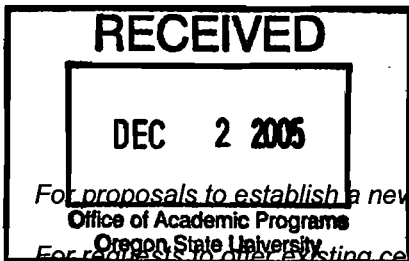
Check one: Abbreviated Category I not listed below

Full Proposal

- New degree program
- New certificate program or administrative unit
- Major change in existing program
- Establishment of a new College or Department

Abbreviated Proposal

- Rename of an academic program or unit
- Reorganization -- moving responsibility for an academic program from one unit to another
- Merging or splitting an academic unit
- Termination of an academic program or unit
- Suspension or reactivation an academic program or unit



For proposals to establish a new center or institute, contact the Research Office (737-3437).

For requests to offer existing certificate and degree programs at new locations, use the New Location Request Form available on the Web: <http://www.ous.edu/aca/aca-forms.html>

Title of Proposal:

Effective Date:

Reduction in Graduation Requirements for Selected College of Engineering Programs

Fall 2006

Department/Program:

College:

College of Engineering

I certify that the above proposal has been reviewed and approved by the appropriate Department and College committees:

See Appendix B for signatures

Sign (Dept Chair/Head; Director) Date

Sign (Dean of College) Date

Print (Department Chair/Head; Director)

Print (Dean of College)

Category I - Abbreviated

Proposal Title:

Reduction in Graduation Requirements for Selected College of Engineering Programs

Purpose:

Better align credits required for graduation with other degree programs at Oregon State University and reduce expenses for College of Engineering students.

Name of Institution:

Oregon State University

Name of Colleges:

Engineering

Forestry

Science

Names of Department/Units:

Civil, Construction and Environmental Engineering

Electrical Engineering and Computer Science

Forest Engineering

Industrial and Manufacturing Engineering

Mechanical Engineering

Nuclear Engineering and Radiation Health Physics

Physics

Classification of Instructional Program Number:

CIP numbers for the degrees in this proposal will not change

Category I – Abbreviated

A. Title of the proposed instructional, research or public service unit. For name changes, give both the current and proposed name.

Not Applicable

B. Location within the institution’s organizational structure. Include “before” and “after” organizational charts.

No change is proposed.

C. Objectives, function and activities of the proposed units.

1. Academic programs in or affiliated with the College of Engineering propose to reduce the credits required for graduation to 180. At the request of the University Curriculum Council the proposals were gathered together into a single document to facilitate their review. The following degree programs are included in this proposal:

- Civil Engineering
- Computer Science – Applied Computer Science Option
- Computer Science – Computer Systems Option (CAC/ABET Accredited)
- Computer Science – Information Systems Option
- Construction Engineering Management
- Engineering Physics
- Forest Engineering
- Forest Engineering/Civil Engineering (dual degree)
- Industrial Engineering
- Manufacturing Engineering
- Mechanical Engineering
- Nuclear Engineering
- Radiation Health Physics
- Radiation Health Physics: Pre-Med Track

Faculty in the School of Electrical Engineering and Computer Science (EECS) are preparing a Category I proposal to combine their existing EE and CpE degrees into a single degree with graduation requirements of 180 credits. All degrees in or affiliated with the College of Engineering will have 180 credit graduation requirements except the three degrees in Chemical, Biological and Environmental Engineering if these proposals are approved.

Faculty responsible for these programs believe that these changes are in the best interest of the students in the programs. The proposed degree requirements place the programs in line with the majority of degree programs in the University and may reduce the cost for engineering students.

Faculty reviewed the proposed curricula and believes that the revised programs meet their education missions and responsibilities to the students as well as the respective

accreditation requirements. The proposed changes also allow the programs to shift scarce resources to graduate and research efforts.

A variety of approaches were taken to reduce the number of credits to 180. Details are included in Appendix A and a summary table is provided below.

Table 1 Summary Table

Proposed Changes in Graduation Requirements, credits

Program	Average graduates (last 3 years)	Free Electives	Science	Engineering Technical Electives or ENGR courses	Business	Other	Total	Comments
Civil Engineering	61	-2	-2 (unspecified science)	-8			-12	
Computer Science – Applied Computer Science Option	88	-6		-6			-12	
Computer Science – Computer Systems Option (CAC/ABET Accredited)		-6		-6			-12	
Computer Science – Information Systems Option		-6		-6			-12	
Construction Engineering Management	49		-7 (drop PH 201, 202, 203; add PH 211, 212)	7	-12 (Drop BA 211, 213, 340, unspecified BA Add BA 215 Net -12)		-12	
Engineering Physics	4	-15	1 (CH 205)	7		3 (WR 327)	-4	Catalog was 184 not 192
Forest Engineering	17		-3 (GEO 221)	-9			-12	
Forest Engineering/Civil Engineering	5		-3 (GEO 221)	-8		-3 (FS 453)	-14	234 credits required for graduation
Industrial Engineering	35	-3		-9			-12	
Manufacturing Engineering	9	-3		-9			-12	
Mechanical Engineering	93	-13		1			-12	
Nuclear Engineering	12	-5		-7			-12	
Radiation Health Physics	4	-3	-10 (Dropped unspecified math course -4 Dropped two of three of Z331, Z332, Z333 - 6)	-3			-16	Catalog was 196 not 192
Radiation Health Physics: Pre-Med Track		-9	-4 (unspecified math)	-3			-16	Catalog was 196 not 192
Totals	377	-71	-26	-59	-12	0	-170	

2. Outcomes will be assessed by following the procedures established by the Accreditation Board for Engineering and Technology (ABET) for the Civil, Forest, Industrial, Manufacturing, Mechanical, and Nuclear Engineering and the Computer Science-Computer Systems Option programs. The Construction Engineering Management program will follow guidelines established by their accreditation group, the American Council of Construction Education Board of Trustees. The two Radiation Health Physics programs and the Engineering Physics program will follow University guidelines for outcomes assessment.

D. Resources needed

1. Overall, the proposed changes will not require additional resources and may reduce available resources depending on how students respond to the proposed changes. It is nearly impossible to predict the final impact. Additional discussion follows.

Under the assumption that before the proposed changes all students graduate with 192 credits and after the change is implemented all students graduate with 180 credits, then the University will generate about 4,500 fewer student credit hours (SCH) annually (377 students graduating with 12 fewer credits). The SCH reduction would be distributed across Colleges as shown below.

College of Engineering – 1200
College of Science – 540
College of Business – 590
College of Liberal Arts – increase of 10
Unknown (free electives) – 2100

Obviously the assumptions stated above are flawed – only about 3 percent of COE students presently graduate with the exact number of credits required and there is no reason to believe that percentage will change if the graduation requirement is reduced to 180 credits. The average number of credits at graduation in COE over the last three years is approximately 230. On average 50 of these credits are transfer credits that may include Advanced Placement (AP), International Baccalaureate (IB), or credits taken at community colleges or elsewhere.

Fundamentally it is difficult to predict the outcomes from the proposed changes. With fewer required courses in their engineering degree, some students may choose an option or second major. Others will simply graduate with twelve fewer credits. Under this scenario the University will have 4,500 fewer SCH each year. Given the unpredictability of the legislature, the anticipated demise of the BAM model and the pending re-basing of the University budget model, the impact of the loss of 4,500 SCH cannot be estimated with any confidence. However it is likely that there will be a loss in revenue to the University and affected departments.

2. Departmental curriculum committees in each of the affected programs developed the proposed credit reductions in consultation with their faculty and head advisors. The proposed changes were approved by the affected faculty and relevant industrial/departmental advisory boards before being forwarded to the College Curriculum Committee for their consideration.

3. Per instructions from the Chairs of the Budget and Fiscal Planning and Curriculum Council, annual budgets are not included in this proposal. However estimated budgetary impacts are shown in Table 2. With the assumptions shown, the Departments and College expect to see reductions of just over \$250,000 annually. Department Heads have reviewed this information and believe that despite the fiscal impacts, the proposed changes are in the best interest of the students.

Table 2 – Estimated impacts on departmental budgets

Programs Moving to 180	Average graduates (last three years)	SRF Impacts (assumes 80% to Dept)	E&G BAM Impacts	Total
Civil Engineering	61	\$ (18,800)	\$ (54,200)	\$ (73,000)
Computer Science - All options	88	\$ (27,200)	\$ (46,000)	\$ (73,200)
Construction Engineering Management	49	\$ (15,200)	\$ 43,000	\$ 27,800
Engineering Physics	4	\$ (1,200)	\$ (1,200)	\$ (2,400)
Industrial Engineering	35	\$ (11,000)	\$ (35,500)	\$ (46,500)
Manufacturing Engineering	9	\$ (2,900)	\$ (9,400)	\$ (12,300)
Mechanical Engineering	93	\$ (28,700)	\$ 10,400	\$ (18,300)
Nuclear Engineering	12	\$ (3,800)	\$ (9,600)	\$ (13,400)
Radiation Health Physics	4	\$ (1,200)	\$ (1,300)	\$ (2,500)
Total	355	\$ (110,000)	\$ (95,500)	\$ (205,500)
		COE \$ (47,300)	\$ (8,300)	\$ (55,600)
		Totals \$ (157,300)	\$ (103,800)	\$ (261,100)

*** Assumptions & Notes:**

Forest Engineering is moving to 180, but is not included
 Data on Graduates - OSU Institutional Research
 12 credit reduction would result in one less term at OSU
 All reduction in tech electives occur at upper division level
 SRF loss was at the junior/senior level (\$443/term)
 E&G impacts based on FY04 BAM

E. Funding sources

1. Not applicable
2. Not applicable, however Department Heads in the College of Engineering understand that their budgets may be adversely impacted by the proposed changes and signed the proposal indicating their support.
3. Not applicable

F. Relationship of propose unit to the institutional mission

1. The programs resulting from the proposed changes maintain our commitment to the University mission of providing excellent academic programs and educational experiences. The reduction in credits allows students to complete their degrees at a lower cost and in a shorter time or to enrich their educational experience with additional coursework resulting in a minor or option.
2. Potential positive and negative impacts are described to the degree possible in Part 1 of Section D above.

G. Long-range goals & plans

As no additional resources are required for the proposed changes, planning for projected growth is not relevant.

H. Relationship to other institutions

1. Six OUS institutions have baccalaureate degree programs that are similar to those included in this proposal. The degrees and minimum credit hours required for graduation

are shown below. Very few students transfer from these programs into OSU in any given year (<10). We do not have information on the numbers of students transferring into other OUS programs from OSU Engineering, but anecdotally the number is small and most commonly related to family/spouse relocation. Naturally we would continue to accommodate transfer students within the proposed programs.

- Eastern Oregon University
 - Computer Science / Multimedia (180)
- Oregon Institute of Technology
 - Civil Engineering (194)
- Portland State University
 - Mechanical Engineering (192)
 - Civil Engineering (192)
 - Computer Science (180)
- Southern Oregon University
 - Computer Science (180)
- University of Oregon
 - Computer & Information Science (180)
- Western Oregon University
 - Computer Science (180)

2. Many students participating in engineering programs transfer credits from one or more community colleges before coming to OSU or take additional courses during the summer at community colleges. As noted previously, the average graduate of the College of Engineering has 50 transfer credits. The College of Engineering has long-standing relationships with the pre-engineering programs in Oregon Community Colleges. We will continue these relationships and have already begun discussing the proposed changes.

I. Accreditation

The Accreditation Board for Engineering and Technology (ABET) accredits seven of the thirteen programs included in this proposal – Civil Engineering, Computer Science (Systems option), Forest Engineering, Industrial Engineering, Manufacturing Engineering, Mechanical Engineering, Nuclear Engineering. Construction Engineering Management is accredited by the American Council of Construction Education Board of Trustees. The remaining programs are not professionally accredited.

There are numerous programs accredited throughout the United States at 180 credits (or 120 semester credits). College of Engineering faculty and administrators have reviewed the proposed curricula and believe that the new programs will meet all accreditation requirements. Naturally, we do not wish to jeopardize our accreditation and we have begun liaison with the accreditation boards.

Appendix A
Proposal to Change Selected College of Engineering Undergraduate Programs to 180
Credit Hours

The College of Engineering proposes to drop the credit hours required for the Bachelor of Science degrees to 180 credits in selected programs. Programs have taken a variety of approaches to reducing credits. The following sections detail the proposed modifications. Courses added to the existing programs are underlined; deleted courses are indicated with ~~strikethrough~~.

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Civil Engineering

Summary of proposed changes to reduce the Civil Engineering undergraduate program from 192 credit hours to 180 credit hours:

- Drop Free Electives by 1 hour (e.g., in Freshman year)
- Drop Science Electives (2 credit hours) from Sophomore year
- Reduce credits of CE 491 from 4 to 3 in Senior year
- Drop ENGR 311 (3)
- Add ME 311 (4)
- Reduce Technical Electives from 17 to 8 in Senior year

Current Description (with markup)	Proposed Description
<p>Pre-Civil Engineering</p> <p>Freshman Year Approved biological science (4)⁵ CE 101. Civil, Construction, and Environmental Engineering Orientation (1)⁵ CE 102. Civil Engineering I: Problem Solving and Technology (3)^E CH 201^E, CH 202. *Chemistry for Engineering Majors (3,3)⁵ CH 205. Chemistry for Engineering Majors Lab (1)⁵ COMM 111. *Public Speaking (3) or COMM 114. *Argument and Critical Discourse (3)¹ HHS 231. *Lifetime Fitness for Health (2)¹ or NFM 232. Nutrition and Lifetime Fitness (2)¹ HHS 241-HHS 251. *Lifetime Fitness (various options) (1)¹ MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^{1,E} Perspectives (6)¹ Free elective (2) (1)</p> <p>Sophomore Year CE 201. Civil Engineering II: Graphics and Design (3)^E CE 202. Civil Engineering III: Geospatial Information and GIS (3) ENGR 201. Electrical Fundamentals (3)⁵ ENGR 211. Statics (3)^E ENGR 212. Dynamics (3)^{E,5} ENGR 213. Strength of Materials (3)^E MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, PH 213. *General Physics with Calculus (4,4)^E ST 314. Intro to Statistics for Engineers (3)^E WR 327. *Technical Writing (3)¹ Perspectives (6)¹ Science elective (2) Total=96 93</p>	<p>Pre-Civil Engineering</p> <p>Freshman Year Approved biological science (4) CE 101. Civil, Construction, and Environmental Engineering Orientation (1) CE 102. Civil Engineering I: Problem Solving and Technology (3)^E CH 201^E, CH 202. Chemistry for Engineering Majors (3,3)⁵ CH 205. Chemistry for Engineering Majors Lab (1)⁵ COMM 111. *Public Speaking (3) or COMM 114. *Argument and Critical Discourse (3)^{1,E} HHS 231. *Lifetime Fitness for Health (2)¹ or NFM 232. Nutrition and Lifetime Fitness (2)¹ HHS 241-HHS 251. *Lifetime Fitness (various options) (1)¹ MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^{1,E} Perspectives (6)¹ Free elective (1)</p> <p>Sophomore Year CE 201. Civil Engineering II: Graphics and Design (3)⁵ CE 202. Civil Engineering III: Geospatial Information and GIS (3) ENGR 201. Electrical Fundamentals (3) ENGR 211. Statics (3)^E ENGR 212. Dynamics (3)⁵ ENGR 213. Strength of Materials (3)^E MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, PH 213. *General Physics with Calculus (4,4)^E ST 314. Intro to Statistics for Engineers (3)⁵ WR 327. *Technical Writing (3)¹ Perspectives (6)¹ Total=93</p>

Current Description (with markup)	Proposed Description
<p>Professional Civil Engineering Junior Year CE 311. Fluid Mechanics (4) CE 313. Hydraulic Engineering (4) CE 321. Civil Engineering Materials (4) CE 361. Surveying Theory (4) CE 372. Geotechnical Engineering I (4) CE 373. Geotechnical Engineering II (4) CE 381, CE 382. Structural Theory I, II (4,4) CE 383. Design of Steel Structures (4) CE 392. Introduction to Highway Engineering (4) ENVE 321. Environmental Engineering Fundamentals (4) ENGR 390. Engineering Economy (3) Free Electives (2) (1)</p>	<p>Professional Civil Engineering Junior Year CE 311. Fluid Mechanics (4) CE 313. Hydraulic Engineering (4) CE 321. Civil Engineering Materials (4) CE 361. Surveying Theory (4) CE 372. Geotechnical Engineering I (4) CE 373. Geotechnical Engineering II (4) CE 381, CE 382. Structural Theory I, II (4,4) CE 383. Design of Steel Structures (4) CE 392. Introduction to Highway Engineering (4) ENVE 321. Environmental Engineering Fundamentals (4) ENGR 390. Engineering Economy (3) Free Electives (1)</p>
<p>Senior Year ENGR 311 Thermodynamics (3) <u>ME 311. Thermodynamics (4)</u> CE 412. Hydrology (3) CE 419. Civil Infrastructure Design (4) CE 454. ^Civil and Environmental Engineering Professional Practice (3) CE 481. Reinforced Concrete I (4) CE 491. Transportation Engineering (4) (3) Free elective (1) Perspectives (3)¹ Synthesis (6)¹ Technical electives (17) (8) Total=96 87</p> <p>Footnotes: ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>	<p>Senior Year ME 311. Thermodynamics (4) CE 412. Hydrology (3) CE 419. Civil Infrastructure Design (4) CE 454. ^Civil and Environmental Engineering Professional Practice (3) CE 481. Reinforced Concrete I (4) CE 491. Transportation Engineering (3) Free elective (1) Difference, Power and Discrimination (3)¹ Synthesis (6)¹ Technical electives (8) Total=87</p> <p>Footnotes: * = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>

Computer Science – Applied Computer Science Option

Summary of proposed changes to reduce the Computer Science (applied computer science) undergraduate program from 192 credit hours to 180 credit hours:

- Eliminate CS 151 (C programming). C will be the language used in CS 261 (Data Structures) starting fall 2006
- Change senior design course from two quarter to three quarter sequence
- Reduce the Number of Free Electives

Current Description (with markup)	Proposed Description
<p>Pre-Computer Science</p> <p>Freshman Year (48) (45)</p> <p>COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E CS 151. Intro to C Programming (4)^E CS 160. Computer Science Orientation (3)^E CS 161, CS 162. Intro to Computer Science I, II (4,4)^E HHS 231. *Lifetime Fitness for Health (2)1 HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ MTH 231, MTH 232. Elements of Discrete Mathematics (4,4)^E MTH 241. *Calculus for Management and Social Science (4)^E WR 121. *English Composition (3)^{1E} Biological science (4) Perspectives (6)¹ Electives (2) (3)</p>	<p>Pre-Computer Science</p> <p>Freshman Year (46)</p> <p>COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E CS 160. Computer Science Orientation (4)^E CS 161, CS 162. Intro to Computer Science I, II (4,4)^E HHS 231. *Lifetime Fitness for Health (2)1 HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ MTH 231, MTH 232. Elements of Discrete Mathematics (4,4)^E MTH 241. *Calculus for Management and Social Science (4)^E WR 121. *English Composition (3)^{1E} Biological science (4)¹ Perspectives (6)¹ Free Electives (3)</p>
<p>Sophomore Year (48)(45)</p> <p>CS 261. Data Structures (4)^E CS 275. Intro to Databases (4)^E CS 271. Computer Architecture and Assembly Language (4)^E MTH 245. Mathematics for Management, Life and Social Sciences (4)^E WR 214. *Writing in Business (3) or WR 222. *English Composition (3) Perspectives (20) Electives (9) (6)</p>	<p>Sophomore Year (45)</p> <p>CS 261. Data Structures (4)^E CS 275. Intro to Databases (4)^E CS 271. Computer Architecture and Assembly Language (4)^E MTH 245. Mathematics for Management, Life and Social Sciences (4)^E WR 214. *Writing in Business (3) or WR 222. *English Composition (3) Approved courses in applied program(8) Perspectives (6)¹ Difference, Power and Discrimination (3)¹ Physical Science (4)¹ Free Electives (5)</p>

Current Description (with markup)	Proposed Description
<p>Professional Computer Science</p> <p>Junior Year (48) (45)</p> <p>CS 311. Operating Systems I (4) CS 325. Analysis of Algorithms (4) CS 361. ^Software Engineering I (4) CS 362. Software Engineering II (4) CS 372. Intro to Computer Networks (4) CS 381. Programming Language Fundamentals (4) WR 327. *Technical Writing (3) Approved courses in applied program (12) Electives (9) (6)</p>	<p>Professional Computer Science</p> <p>Junior Year (45)</p> <p>CS 311. Operating Systems I (4) CS 325. Analysis of Algorithms (4) CS 352. Introduction to Usability Engineering (4) CS 361. ^Software Engineering I (4) CS 362. Software Engineering II (4) CS 372. Intro to Computer Networks (4) CS 381. Programming Language Fundamentals (4) WR 327. *Technical Writing (3) Science (Biological or Physical) (4) Approved courses in applied program(8) Free Electives (2)</p>
<p>Senior Year (48) (45)</p> <p>CS 391. *Social and Ethical Issues in Computer Science (3) CS 411. Operating Systems II (4) CS 461, CS 462. Senior Software Engineering Project (4,4)(2,2) <u>CS 463. Senior Software Engineering Project (2)</u> Approved computer science electives (8) Approved courses in applied program (16) Electives (9) (8)</p> <p>Total=192 180</p> <p>Footnotes:</p> <p>^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>	<p>Senior Year (44)</p> <p>CS 391. *Social and Ethical Issues in Computer Science (3) CS 411. Operating Systems II (4) CS 461, CS 462, CS 463. Senior Software Engineering Project (2, 2, 2) Approved computer science electives (8) Approved courses in applied program (12) Contemporary Global Issues (3)¹ Free Electives (8)</p> <p>Total=180</p> <p>Footnotes:</p> <p>* = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>

Computer Science – Computer Systems Option (CAC/ABET Accredited)

Summary of proposed changes to reduce the Computer Science (computer systems) undergraduate program from 192 credit hours to 180 credit hours:

- Eliminate CS 151 (C programming). C will be the language used in CS 261 (Data Structures) starting fall 2006
- Move Math 351 from Junior to Senior year
- Add CS 275 (Intro to Databases) in Sophomore year
- Change senior design course from two quarter to three quarter sequence
- Reduce the Number of Free Electives

Current Description (with markup)	Proposed Description
<p>Pre-Computer Science</p> <p>Freshman Year (48) (45)</p> <p>COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E CS 151. Intro to C Programming (4)^E CS 160. Computer Science Orientation (3)^E CS 161, CS 162. Intro to Computer Science I, II (4,4)^E HHS 231. *Lifetime Fitness for Health (2)1 HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ MTH 231, MTH 232. Elements of Discrete Mathematics (4,4)^E MTH 251. *Differential Calculus (4)^E WR 121. *English Composition (3)^{1E} Biological science (4) Perspectives (6)¹ <u>Liberal Arts Electives (2)(3)</u></p>	<p>Pre-Computer Science</p> <p>Freshman Year (46)</p> <p>COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E CS 160. Computer Science Orientation (4)^E CS 161, CS 162. Intro to Computer Science I, II (4,4)^E HHS 231. *Lifetime Fitness for Health (2)1 HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ MTH 231, MTH 232. Elements of Discrete Mathematics (4,4)^E MTH 251. *Differential Calculus (4)^E WR 121. *English Composition (3)^{1,E} Biological science (4)¹ Perspectives (6)¹ Liberal Arts Electives (3)</p>
<p>Sophomore Year (48) (46)</p> <p>CS 261. Data Structures (4)^E <u>CS 275. Intro to Databases (4)^E</u> ECE 271. Digital Logic Design (3)^E MTH 252. Integral Calculus (4)^E MTH 253. Infinite Series and Sequences (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E PH 221. Recitation for PH 211 (1)^E WR 214. *Writing in Business (3) or WR 222. *English Composition (3) Perspectives (2)¹(12) <u>Liberal Arts Electives (3)</u></p>	<p>Sophomore Year (46)</p> <p>CS 261. Data Structures (4)^E CS 275. Intro to Databases (4)^E ECE 271. Digital Logic Design (3)^E MTH 252. Integral Calculus (4)^E MTH 306. Matrix and Power Series Methods (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E PH 221. Recitation for PH 211 (1)^E WR 214. *Writing in Business (3) or WR 222. *English Composition (3) Perspectives (6)¹ Difference, Power and Discrimination (3)¹ Liberal Arts Electives (3) Free Electives (3)</p>

Current Description (with markup)	Proposed Description
<p>Professional Computer Science</p> <p>Junior Year (48) (44)</p> <p>CS 311. Operating Systems I (4) CS 321. Intro to Theory of Computation (3) CS 325. Analysis of Algorithms (4) CS 361. ^Software Engineering I (4) CS 362. Software Engineering II (4) CS 372. Intro to Computer Networks (4) CS 381. Programming Language Fundamentals (4) ECE 375. Computer Structures and Assembly Language Programming (4) MTH 351. Intro to Numerical Analysis (3) PH 212, PH 213. *General Physics with Calculus (4,4) PH 222, PH 223. Recitation for PH 212, PH 213 (1,1) WR 327. *Technical Writing (3) Electives (1)</p>	<p>Professional Computer Science</p> <p>Junior Year (44)</p> <p>CS 311. Operating Systems I (4) CS 321. Intro to Theory of Computation (3) CS 325. Analysis of Algorithms (4) CS 361. ^Software Engineering I (4) CS 362. Software Engineering II (4) CS 372. Intro to Computer Networks (4) CS 381. Programming Language Fundamentals (4) ECE 375. Computer Structures and Assembly Language Programming (4) PH 212, PH 213. *General Physics with Calculus (4,4) PH 222, PH 223. Recitation for PH 212, PH 213 (1,1) WR 327. *Technical Writing (3)</p>
<p>Senior Year (48) (45)</p> <p>CS 391. *Social and Ethical Issues in Computer Science (3) CS 411. Operating Systems II (4) CS 461, CS 462. Senior Software Engineering Project (4,4) (2,2) <u>CS 463. Senior Software Engineering Project (2)</u> CS 472. Computer Architecture (4) CS 480. Translators (4) ST 314. Intro to Statistics for Engineers (3) <u>MTH 351. Intro to Numerical Analysis (3)</u> Approved computer science electives (8) <u>Liberal Arts Electives (11)(9)</u> Perspectives (1)</p> <p>Total=192 180</p> <p>Footnotes:</p> <p>^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>	<p>Senior Year (44)</p> <p>CS 391. *Social and Ethical Issues in Computer Science (3) CS 411. Operating Systems II (4) CS 461, CS 462, CS 463. Senior Software Engineering Project (2,2,2)</p> <p>CS 472. Computer Architecture (4) CS 480. Translators (4) ST 314. Intro to Statistics for Engineers (3) MTH 351. Intro to Numerical Analysis (3) Approved computer science electives (8) Contemporary Global Issues (3)¹ Liberal Arts Electives (6)</p> <p>Total=180</p> <p>Footnotes:</p> <p>* = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>

Computer Science – Information Systems Option

Summary of proposed changes to reduce the Computer Science (computer systems) undergraduate program from 192 credit hours to 180 credit hours:

- Eliminate CS 151 (C programming). C will be the language used in CS 261 (Data Structures) starting fall 2006
- Change senior design course from two quarter to three quarter sequence
- Reduce the Number of Free Electives

Current Description (with markup)	Proposed Description
<p>Pre-Computer Science</p> <p>Freshman Year (48) (45)</p> <p>COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E CS 151. Intro to C Programming (4)^E CS 160. Computer Science Orientation (3)^E CS 161, CS 162. Intro to Computer Science I, II (4,4)^E HHS 231. *Lifetime Fitness for Health (2)1 HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ MTH 231, MTH 232. Elements of Discrete Mathematics (4,4)^E MTH 241. *Calculus for Management and Social Science (4)^E WR 121. *English Composition (3)^{1E} Biological science (4) Perspectives (6)¹ Electives (2) (3)</p>	<p>Pre-Computer Science</p> <p>Freshman Year (46)</p> <p>COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E</p> <p>CS 160. Computer Science Orientation (4)^E CS 161, CS 162. Intro to Computer Science I, II (4,4)^E HHS 231. *Lifetime Fitness for Health (2)1 HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ MTH 231, MTH 232. Elements of Discrete Mathematics (4,4)^E MTH 241. *Calculus for Management and Social Science (4)^E WR 121. *English Composition (3)^{1E} Biological science (4) Perspectives (6)¹ Free Electives (3)</p>
<p>Sophomore Year (48) (46)</p> <p>CS 261. Data Structures (4)^E CS 275. Intro to Databases (4)^E CS 271. Computer Architecture and Assembly Language (4)^E Econ 201. *Introduction to Microeconomics (4)^E MTH 245. Mathematics for Management, Life and Social Sciences (4)^E WR 214. *Writing in Business (3) or WR 222. *English Composition (3) Perspectives (20) Electives (5) (3)</p>	<p>Sophomore Year (45)</p> <p>CS 261. Data Structures (4)^E CS 275. Intro to Databases (4)^E CS 271. Computer Architecture and Assembly Language (4)^E ECON 201. *Introduction to Microeconomics (4)^E MTH 245. Mathematics for Management, Life and Social Sciences (4)^E WR 214. *Writing in Business (3) or WR 222. *English Composition (3) Business Minor courses (8) Perspectives (3)¹ Difference, Power and Discrimination (3)¹ Physical Science (4)¹ Free Electives (4)</p>

Current Description (with markup)	Proposed Description
<p>Professional Computer Science</p> <p>Junior Year (48) <u>(46)</u></p> <p>CS 311. Operating Systems I (4) CS 325. Analysis of Algorithms (4) CS 361. ^Software Engineering I (4) CS 362. Software Engineering II (4) CS 372. Intro to Computer Networks (4) CS 381. Programming Language Fundamentals (4) WR 327. *Technical Writing (3) Business minor courses (16) Electives (5) <u>(3)</u></p>	<p>Professional Computer Science</p> <p>Junior Year (45)</p> <p>CS 311. Operating Systems I (4) CS 325. Analysis of Algorithms (4) CS 361. ^Software Engineering I (4) CS 362. Software Engineering II (4) CS 372. Intro to Computer Networks (4) CS 381. Programming Language Fundamentals (4) WR 327. *Technical Writing (3) Science (Physical or Biological)¹ (4) Business minor courses (8) Free Electives (6)</p>
<p>Senior Year (48) (43)</p> <p>CS 391. *Social and Ethical Issues in Computer Science (3) CS 411. Operating Systems II (4) CS 440. Database Management Systems (4) CS 461, CS 462. Senior Software Engineering Project (4,4) <u>(2, 2)</u> <u>CS 463. Senior Software Engineering Project (2)</u> Approved computer science electives (8) Business minor courses (12) Electives (9) <u>(6)</u></p> <p>Total=192 180</p> <p>Footnotes:</p> <p>E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>	<p>Senior Year (44)</p> <p>CS 391. *Social and Ethical Issues in Computer Science (3) CS 411. Operating Systems II (4) CS 440. Database Management Systems (4) CS 461, CS 462, CS 463. Senior Software Engineering Project (2, 2, 2) Approved computer science electives (8) Business minor courses (12) Contemporary Global Issues (3)¹ Free Electives (4)</p> <p>Total=180</p> <p>Footnotes:</p> <p>* = Baccalaureate Core Course ^ = Writing intensive course (WIC) E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>

Construction Engineering Management

Summary of proposed changes to reduce the Construction Engineering Management undergraduate program from 192 credit hours to 180 credit hours:

- Drop PH 201, 202, & 203 (5,5,5) from Freshman year and replace with PH 211 & 212 (4,4) in Freshman and Sophomore years (-7)
- Drop BA 211 and 213 (4,4) and require BA 215 (4) in Sophomore year (-4)
- Drop BA 340 from Junior year (-4)
- Add Restricted Elective course (4) to be Upper Division in either Business or Engineering (+4)
- Eliminate 1 hour of CEM 407 in Senior year (-1)
- Drop Business Elective – BA 350, 357, or 390 (4) from Senior year and add CE 427 (4)

Current Description (with markup)	Proposed Description
<p>Pre-Construction Engineering Management</p> <p><i>Freshman Year</i></p> <p>CE 101. Civil, Construction, and Environmental Engineering Orientation (1)⁵ CE 102. Civil Engineering I: Problem Solving and Technology (3)^E COMM 111. *Public Speaking (3) or COMM 114. *Argument and Critical Discourse (3)¹ HHS 231. *Lifetime Fitness for Health (2)¹ or NFM 232. Nutritional and Lifetime Fitness (2)¹ HHS 241-HHS 251. *Lifetime Fitness (various options) (1)¹ MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E PH 201, PH 202, PH 203. *General Physics (5,5,5)^E <u>PH 211. *General Physics with Calculus (4)^E</u> PHL 205. *Ethics (4)¹ WR 121. *English Composition (3)^{1,E} Approved biological science (4)⁵ Perspectives (6) (9)¹</p>	<p>Pre-Construction Engineering Management</p> <p><i>Freshman Year</i></p> <p>CE 101. Civil, Construction, and Environmental Engineering Orientation (1) CE 102. Civil Engineering I: Problem Solving and Technology (3)^E COMM 111. *Public Speaking (3) or COMM 114. *Argument and Critical Discourse (3)¹ HHS 231. *Lifetime Fitness for Health (2)¹ or NFM 232. Nutritional and Lifetime Fitness (2)¹ HHS 241-HHS 251. *Lifetime Fitness (various options) (1)¹ MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E PH 211. *General Physics with Calculus (4)^E PHL 205. *Ethics (4)¹ WR 121. *English Composition (3)^{1,E} Approved biological science (4)⁵ Perspectives (6)¹ Difference, Power and Discrimination (3)¹</p>
<p><i>Sophomore Year</i></p> <p>BA 211. Financial Accounting (4)^E BA 213. Managerial Accounting (4)⁵ <u>BA 215. Fundamentals of Accounting (4)^E</u> BA 230. Business Law I (4) BA 275. Quantitative Business Methods (4)^E CE 201. Civil Engineering II: Engineering Graphics and Design (3)^{1,E} CE 202. Civil Engineering III: Geospatial Information and GIS (3) CEM 263. Plane Surveying (3)^E CH 201. Chemistry for Engineering Majors (3)⁵ ECON 201. *Intro to Microeconomics (4)¹ ECON 202. *Intro to Macroeconomics (4)¹ ENGR 211. Statics (3)^E ENGR 213. Strength of Materials (3)^E <u>PH 212. *General Physics with Calculus (4)^E</u> WR 327. *Technical Writing (3)¹ Free electives (2)</p> <p>Total=100 89</p>	<p><i>Sophomore Year</i></p> <p>BA 215. Fundamentals of Accounting (4)^E BA 230. Business Law I (4) BA 275. Quantitative Business Methods (4)^E CE 201. Civil Engineering II: Engineering Graphics and Design (3)^{1,E} CE 202. Civil Engineering III: Geospatial Information and GIS (3) CEM 263. Plane Surveying (3)^E CH 201. Chemistry for Engineering Majors (3)⁵ ECON 201. *Intro to Microeconomics (4)¹ ECON 202. *Intro to Macroeconomics (4)¹ ENGR 211. Statics (3)^E ENGR 213. Strength of Materials (3)^E PH 212. *General Physics with Calculus (4)^E WR 327. *Technical Writing (3)¹ Free electives (2)</p> <p>Total=89</p>

Current Description (with markup)	Proposed Description
<p>Professional Construction Engineering Management</p> <p><i>Junior Year</i> BA 340. Finance (4) BA 352. Organizational Behavior (4) CE 321. Civil Engineering Materials (4) CE 365. Highway Location and Design (3) CEM 311. Hydraulics (4) CEM 341, CEM 342. Construction Estimating (4,4) CEM 343. Construction Planning and Scheduling (4) CEM 381. Structures I (4) CEM 383. Structures II (4) ENGR 390. Engineering Economy (3) FE 315. Soil Engineering (4) or CE 372. Geotechnical Engineering I (4)</p>	<p>Professional Construction Engineering Management</p> <p><i>Junior Year</i> BA 352. Organizational Behavior (4) CE 321. Civil Engineering Materials (4) CE 365. Highway Location and Design (3) CEM 311. Hydraulics (4) CEM 341, CEM 342. Construction Estimating (4,4) CEM 343. Construction Planning and Scheduling (4) CEM 381. Structures I (4) CEM 383. Structures II (4) ENGR 390. Engineering Economy (3) FE 315. Soil Engineering (4) or CE 372. Geotechnical Engineering I (4)</p>
<p><i>Senior Year</i> Required Business elective (4) BA 453. Human Resources Management (4) CE 424. Contracts and Specifications (4) <u>CE 427. Temporary Construction Structures (4)</u> CEM 407. Seminar (1,1,1) CEM 441. Heavy Civil Construction Management (4) CEM 442. Building Construction Management (4) CEM 443. ^Project Management for Construction (4) CEM 471. Electrical Facilities (4) CEM 472. Mechanical Facilities (3) H 385. Safety and Health Standards and Laws (3) <u>Restricted Elective (4)</u> Required COMM elective (3) Synthesis (6)¹</p> <p>Total=92-91 ^E = Required for entry into the professional program. ¹ =Must be selected to satisfy the requirements of the baccalaureate core. ⁵ = Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>	<p><i>Senior Year</i> BA 453. Human Resources Management (4) CE 424. Contracts and Specifications (4) CE 427. Temporary Construction Structures (4) CEM 407. Seminar (1,1) CEM 441. Heavy Civil Construction Management (4) CEM 442. Building Construction Management (4) CEM 443. ^Project Management for Construction (4) CEM 471. Electrical Facilities (4) CEM 472. Mechanical Facilities (3) H 385. Safety and Health Standards and Laws (3) Restricted Elective (4) Required COMM elective (3) Synthesis (6)¹</p> <p>Total=91 * = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E = Required for entry into the professional program. ¹ =Must be selected to satisfy the requirements of the baccalaureate core. ⁵ = Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>

* The number of credit hours showing in the Current Description is short 3 credits of the 192 credits currently required for graduation. Somehow, changes were made to the curriculum and 3 credits of perspectives were eliminated. These credits should have been listed in the sophomore year. These credits have been added back in the proposed curriculum (freshman year).

Engineering Physics

Summary of proposed changes to reduce the Engineering Physics undergraduate program from 184 credit hours to 180 credit hours:

- Add CH 205 chemistry lab for CH202, (+1)
- Drop Engineering Electives in Sophomore year (-4)
- Add: PH 320, Paradigms in Physics: Symmetries (+2)
- Drop: PH 423. Paradigms in Physics: Energy and Entropy (-2)
- Drop: 2 credits of Physics electives in senior year (-2)
- Reduce free electives from 18 to 6 (-12)
- Add WR 327 to junior year (+3)
- Increased engineering electives from 4 to 14 (+10)
- Add PH 403 Thesis (WIC) in senior year (+3)

Current Description (with markup)	Proposed Description
<p>Pre-Engineering Physics Freshman Year</p> <p>Biological science (4)¹ CH 201, CH 202. *Chemistry for Engineering Majors (or equivalent)(6)^{1,E} <u>CH 205 Laboratory for CH 202 (1)</u> COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E ENGR 111. Engineering Orientation I (or other engineering elective) (3) HHS 231. *Lifetime Fitness for Health (2)¹ HHS 241-251. *Lifetime Fitness:(various activities) (1)¹ MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^{1,E} PH 211. *General Physics with Calculus (4)^{1,E} PH 221. Recitation for PH 211 (1)^{1,E} PH 265. Scientific Computing (or equivalent) (3) Perspectives (6)¹ Writing I (3)^{1,E}</p> <p>Sophomore Year</p> <p>ENGR 201. Electrical Fundamentals (3)^E Select either ENGR 202 and ENGR 203. Electrical Fundamentals (3,3)^E or ENGR 211. Statistics (3) and select either ENGR 212. Dynamics (3) or ENGR 213. Strength of Materials (3)^E MTH 255. Vector Calculus II (4)^E MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, PH 213. *General Physics with Calculus (4,4)^E PH 222, PH 223. Recitation for PH 212, PH 213 (1,1)^E PH 314. Introductory Modern Physics (4) ST 314. Intro to Statistics for Engineers (or approved substitute) (3) <u>Engineering electives (4)</u> Perspectives (3)¹ Total : 93 (90)</p>	<p>Pre-Engineering Physics Freshman Year</p> <p>Biological science (4)¹ CH 201^E, CH 202, CH205. Chemistry for Engineering Majors (or equivalent)(7) COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E ENGR 111. Engineering Orientation I (or other engineering elective) (3) HHS 231. *Lifetime Fitness for Health (2)¹ HHS 241-251. *Lifetime Fitness:(various activities) (1)¹ MTH 251. *Differential Calculus (4)^{1,E} MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^{1,E} PH 221. Recitation for PH 211 (1) PH 265. Scientific Computing (or equivalent) (3)^E Perspectives (6) Writing I (3)^{1,E}</p> <p>Sophomore Year</p> <p>ENGR 201. Electrical Fundamentals (3)^E Select either ENGR 202^E and ENGR 203. Electrical Fundamentals (3,3) or ENGR 211. Statistics (3)^E and select either ENGR 212. Dynamics (3) or ENGR 213. Strength of Materials (3) MTH 255. Vector Calculus II (4) MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, PH 213. *General Physics with Calculus (4,4)^E PH 222, PH 223. Recitation for PH 212, PH 213 (1,1) PH 314. Introductory Modern Physics (4) ST 314. Intro to Statistics for Engineers (or approved substitute) (3) Perspectives (3)¹ Total : 90</p>

Current Description (with markup)	Proposed Description
<p>Professional Engineering Physics Junior Year ENGR 311. Thermodynamics (3) <u>ME 311 Thermodynamics (4)</u> or PH 441. Capstones in Physics: Thermal and Statistical Physics (or equivalent) (3) ENGR 390. Engineering Economy (3) <u>PH 320. Paradigms in Physics: Symmetries (2)</u> PH 421. Paradigms in Physics: Oscillations (2) PH 422. Paradigms in Physics: Static Vector Fields (2) PH 423. Paradigms in Physics: Energy and Entropy (2) PH 424. Paradigms in Physics: Waves in One Dimension (2) PH 425. Paradigms in Physics: Quantum Measurements and Spin (2) PH 426. Paradigms in Physics: Central Forces (2) PH 427. Paradigms in Physics: Periodic Systems (2) or PH 428 Paradigms in Physics: Rigid Bodies (2) Approved engineering electives (<u>18 or 19 depending on choice of ME 311 or PH 441</u>) <u>WR 327. Technical Writing (3)</u> Humanities/social science elective (3) Perspectives (6)¹</p>	<p>Professional Engineering Physics Junior Year ME 311. Thermodynamics (4) or PH 441. Capstones in Physics: Thermal and Statistical Physics (or equivalent) (3) ENGR 390. Engineering Economy (3) PH 320. Paradigms in Physics: Symmetries (2) PH 421. Paradigms in Physics: Oscillations (2) PH 422. Paradigms in Physics: Static Vector Fields (2) PH 424. Paradigms in Physics: Waves in One Dimension (2) PH 425. Paradigms in Physics: Quantum Measurements and Spin (2) PH 426. Paradigms in Physics: Central Forces (2) PH 427. Paradigms in Physics: Periodic Systems (2) or PH 428 Paradigms in Physics: Rigid Bodies (2) Approved engineering electives (18 or 19 depending on choice of ME 311 or PH 441) WR 327. Technical Writing (3) Perspectives (3)¹ Difference, Power and Discrimination (3)¹</p>
<p>Senior Year PH 431. Capstones in Physics: Electromagnetism (3) PH 461. Capstones in Physics: Mathematical Methods (3) PH 481. Physical Optics (4) Physics electives at the 400 level (5) (<u>3</u>) Additional approved engineering electives (4) (<u>14</u>) Synthesis (6)¹ Unrestricted electives (18) (<u>6</u>) <u>PH403 Thesis (WIC) (3)</u> Total: 94 (<u>90</u>) Footnotes: ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>	<p>Senior Year PH 431. Capstones in Physics: Electromagnetism (3) PH 461. Capstones in Physics: Mathematical Methods (3) PH 481. Physical Optics (4) Physics electives at the 400 level (3) Additional approved engineering electives (14) Synthesis (6)¹ Free Electives (6) PH403 ^Thesis (WIC) (or equivalent) (3) Total: 90 Footnotes: * = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core.</p>

Forest Engineering

Summary of proposed changes to reduce the Forest Engineering undergraduate program from 192 credit hours to 180 credit hours:

- Add additional credit to FE 102 in Freshman year.
- Move CSS 205 from Sophomore to Freshmen year
- Drop Environmental Geology in Freshman year.
- Add Computer graphics to Sophomore year.
- Add 1 credit statistical recitation to Sophomore year.
- Elimination of Engineering Science Elective in Sophomore year.
- Add additional credit to FE 357 in Junior year.
- Elimination of FS 453 in Senior year.
- Required Bac Core in Fisheries and Wildlife in Senior year.
- Reduction of 1 credit for FE 415 from 4 to 3 in Senior year.
- Elimination of Forest Engineering Electives in Senior year.

Current Description (with markup)	Proposed Description
<p>Forest Engineering</p> <p>Freshman Year</p> <p>FE 101. Orientation to Forest Engineering (2) FE 102. Forest Engineering Computations (2)(3) FOR 111. Introduction to Forestry (3) FOR 141. Tree and Shrub Identification (3) WSE 210. Wood Technology and Utilization (4) CSS 205 Soils Sustainable Ecosystem (4)¹ GEO 221. Environmental Geology (3) CH 201. *Chemistry for Engineering Majors (3) COMM 111. *Public Speaking (3)¹ or COMM 114. *Argument and Critical Discourse (3)¹ HHS 231. *Lifetime Fitness for Health (2)¹ or NFM 232. Nutrition and Lifetime Fitness (2)¹ HHS 241-HHS 251. *Lifetime Fitness (various options) (1)¹ MTH 251. *Differential Calculus (4) MTH 252. Integral Calculus (4) MTH 254. Vector Calculus I (4)</p> <p>PH 211. *General Physics with Calculus (4) WR 121. *English Composition (3)¹ Elective Literature & Arts (BC) (3)¹</p> <p>Total 49</p>	<p>Forest Engineering</p> <p>Freshman Year</p> <p>FE 101. Orientation to Forest Engineering (2) FE 102. Forest Engineering Computations (3) FOR 111. Introduction to Forestry (3) FOR 141. Tree and Shrub Identification (3) WSE 210. Wood Technology and Utilization (4) CSS 205. Soils Sustainable Ecosystem (4)¹</p> <p>CH 201. Chemistry for Engineering Majors (3) COMM 111. *Public Speaking (3)¹ or COMM 114. *Argument and Critical Discourse (3)¹ HHS 231. *Lifetime Fitness for Health (2)¹ or NFM 232. Nutrition and Lifetime Fitness (2)¹ HHS 241-HHS 251. *Lifetime Fitness (various options) (1)¹ MTH 251. *Differential Calculus (4) MTH 252. Integral Calculus (4) MTH 254. Vector Calculus I (4)</p> <p>PH 211. *General Physics with Calculus (4) WR 121. *English Composition (3)¹</p> <p>Total 47</p>

Current Description (with markup)	Proposed Description
<p>Forest Engineering</p> <p>Sophomore Year</p> <p>ENGR 211. Statics (3) ENGR 212. Dynamics (3) ENGR 213. Strength of Materials (3) ENGR 311. or ENGR 201. Electrical Fundamentals or Thermodynamics (3) <u>CE 201 Computer Graphics (3)</u> ECON 201. Introduction to Microeconomics (4) MTH 256. Applied Differential Equations (4) PH 212. General Physics with Calculus (4) ST 314. Intro to Statistics for Engineers (3) <u>FE 314X. Forest Engineering Statistical Recitation for ST314 (1)</u> <u>FE 309. Forest Photogrammetry (4)</u> <u>FE 308. Forest Surveying (4)</u> FE 330. Forest Engineering Fluid Mechanics and Hydraulics(3) FOR 240. Forest Biology (4) WR 327. *Technical Writing (3)¹ CSS 205 Soils Sustainable Ecosystem (4)</p> <p>Elective Difference, Power, and Discrimination (BC) (3)¹ Elective Western Culture (BC) (3)¹</p> <p>Total: 47</p>	<p>Forest Engineering</p> <p>Sophomore Year</p> <p>ENGR 211. Statics (3) ENGR 212. Dynamics (3) ENGR 213. Strength of Materials (3)</p> <p>CE 201. Computer Graphics (3). ECON 201. Introduction to Microeconomics (4)¹ MTH 256. Applied Differential Equations (4) PH 212, General Physics with Calculus (4) ST 314. Intro to Statistics for Engineers (3) FE 314X. Forest Engineering Statistical Recitation for ST314 (1) FE 309. Forest Photogrammetry (4) FE 308. Forest Surveying (4) FE 330. Forest Engineering Fluid Mechanics and Hydraulics (3) FOR 240 Forest Biology (4)¹</p> <p>Elective Western Culture (BC) (3)¹</p> <p>Total: 46</p>
<p>Junior Year</p> <p>FOR 321. Forest Mensuration (5) FE 308. Forest Surveying (4) FE 371. Harvesting Process Engineering (4) FE 357. GIS & Forest Engineering Applications (2)(3) FE 309. Forest Photogrammetry (4) FE 315. Soils Engineering (4) FE 434. Forest Watershed Management (4) FE 316. Soil Mechanics (4) FE 310. Forest Route Surveying (4) FE 470. Logging Mechanics (4) FE 471. Harvesting Management (3) FE 440. Forest Operations Analysis (3) FOR 441. Silvicultural Principles (4) <u>WR 327. *Technical Writing (3)¹</u></p> <p>Elective Cultural Diversity (BC) (3)¹</p> <p>Total 52</p>	<p>Junior Year</p> <p>FOR 321. Forest Mensuration (5) FE 371. Harvesting Process Engineering (4) FE 357. GIS & Forest Engineering Applications (3) FE 315. Soils Engineering (4) FE 434. Forest Watershed Management (4) FE 316. Soil Mechanics (4) FE 310. Forest Route Surveying (4) FE 470. Logging Mechanics (4) FE 471. Harvesting Management (3) FE 440. Forest Operations Analysis (3) FOR 441. Silvicultural Principles (4) WR 327. *Technical Writing (3)¹</p> <p>Elective Cultural Diversity (BC) (3)¹</p> <p>Total 48</p>

Current Description (with markup)	Proposed Description
<p>Forest Engineering</p> <p>Senior Year</p> <p>FOR 330. Forest Resource Economics I (4) FE 415. Forest Road Engineering (4)(3) FE 416. Forest Road Systems Management (4) FE 449. Strategic & Tactical Planning Techniques (3) FE 480. Forest Engineering Practice & Professionalism (1) FE 441. Production Planning (3) FE 450. Forest Operations Design I (3) FE 451. Forest Operations Design II (3) FE 460. Forest Operations Regulations and Policy Issues (3) FE 453. Forest Management and Wildlife Conservation (3) Forest Engineering Electives (8)</p> <p><u>FW 325 Global Crises in Resource Ecology (BC) (3)¹</u> <u>and</u> <u>Elective Science, Technology and Society (BC) (3)¹</u> OR <u>FW350 Endangered Species, Society and Sustainability (BC) (3)¹ and</u> <u>Elective Contemporary Global Issues (BC) (3)¹</u></p> <p>Elective Science, Technology and Society (BC) (3)¹ Elective Contemporary Global Issues (BC) (3)¹</p> <p>Total 45</p> <p>1= Must be selected to satisfy the requirements of the baccalaureate core.</p>	<p>Forest Engineering</p> <p>Senior Year</p> <p>FOR 330. Forest Resource Economics I (4) FE 415. Forest Road Engineering (3) FE 416. Forest Road Systems Management (4) FE 449. Strategic & Tactical Planning Techniques (3) FE 480. Forest Engineering Practice & Professionalism (1) FE 441. Production Planning (3) FE 450. Forest Operations Design I (3) FE 451. Forest Operations Design II (3) FE 460. Forest Operations Regulations and Policy Issues (3)</p> <p>FW 325 Global Crises in Resource Ecology (BC) (3)¹ and Elective Science, Technology and Society (BC) (3)¹ OR FW350 Endangered Species, Society and Sustainability (BC) (3)¹ and Elective Contemporary Global Issues (BC) (3)¹</p> <p>Elective Literature & Arts (BC) (3)¹ Elective Difference, Power, and Discrimination (BC) (3)¹</p> <p>Total 39</p> <p>* = Baccalaureate Core Course 1= Must be selected to satisfy the requirements of the baccalaureate core.</p>

Forest Engineering / Civil Engineering

Summary of proposed changes to reduce the Forest Engineering / Civil Engineering undergraduate program from 249 credit hours to 234 credit hours:

- Elimination of CE 102 Freshman year – duplication (FE 102) (-3)
- Elimination of Environmental Geology in Freshman year (-3)
- Move MTH 306 to Sophomore Year no change
- Move Literature and Arts BCC to FE Junior year no change
- Move CSS 205 to Freshman year no change
- Addition of 1 credit FE 314X in Sophomore year (+1)
- Move Cultural Diversity BCC to Junior year no change
- Move ENGR 212 to Junior year no change
- Move MTH 254 to Freshman year no change
- Move ECON 201 to Sophomore year no change
- Move FE 308 to Sophomore year no change
- Move FE 309 to Sophomore year no change
- Change ENGR 311 to ME 311 Addition of 1 credit (+1)
- Elimination of FE 471 in Junior year (-3)
- Elimination of FS 453 in Senior year (-3)
- Elimination of FE 449 in Senior year (-3)
- Reduction of 1 credit for FE 415 from 4 to 3 in Senior year (-1)
- Move Difference, Power, and Discrimination BCC to Junior year no change
- Required BCC; FW350 to satisfy accreditation criteria no change
- Required BCC; FE/FOR456 to satisfy accreditation criteria no change

Current catalog curriculum has errors in credit hour totals. This proposal will correct those errors.

Current Description (with markup)	Proposed Description
<p>Forest Engineering</p> <p>Freshman Year</p> <p>FE 101. Orientation to Forest Engineering (2) FE 102. Forest Engineering Problem Solving and Technology (3) CE 101. CCE Engineering Orientation (1) CE 102. Civil Engineering I: Problem Solving and Technology (3) CH 201. Chemistry for Engineering Majors (3) CH 202. Chemistry for Engineering Majors (3) CH 205. Laboratory for CH 202 (1) COMM 111. Public Speaking (3) or COMM 114. Argument and Critical Discourse (3) FOR 141. Tree and Shrub Identification (3) GEO 221. Environmental Geology (3) HHS 231. Lifetime Fitness for Health (2)</p>	<p>Forest Engineering</p> <p>Freshman Year</p> <p>FE 101. Introduction to Forest Engineering (2) FE 102. Forest Engineering Problem Solving & Technology (3)+ CE 101. CCE Engineering Orientation (1) ++</p> <p>CH 201. Chemistry for Engineering Majors (3) + CH 202. Chemistry for Engineering Majors (3) ++ CH 205. Laboratory for CH 202 (1) ++ COMM 111. Public Speaking [BC] (3) + or COMM 114. Argument and Critical Discourse [BC] (3) + FOR 141. Tree and Shrub Identification (3)</p>

<p>HHS 241-HHS 251. Lifetime Fitness: (various activities) (1) MTH 251. Differential Calculus (4) MTH 252. Integral Calculus (4) MTH 306. Matrix and Power Series Methods (4) PH 211. General Physics with Calculus (4) WR 121. English Composition (3) Literature and Arts BCC elective (3)</p> <p>Total 50</p>	<p>HHS 231. Lifetime Fitness for Health [BC] (2) HHS 241-HHS 251. Lifetime Fitness (various options) [BC] (1) MTH 251. Differential Calculus [BC] (4) + MTH 252. Integral Calculus (4) +</p> <p>PH 211. General Physics with Calculus [BC](4) + WR 121. *English Composition [BC] (3) +</p> <p>MTH 254. Vector Calculus I (4) + CSS 205. Soils Sustainable Ecosystem (4)</p> <p>Total 45 + Required courses for Pre-Engineering ++ Required courses for Pre-Civil Engineering</p>
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Current Description (with markup)	Proposed Description
<p>Forest Engineering</p> <p>Sophomore Year</p> <p>CE 201. CE II: Engineering Graphics & Design (3)+ CSS 205. Soils: Sustainable Ecosystems (4) ENGR 201. Electrical Fundamentals (3)+ ENGR 211. Statics (3)+ ENGR 212. Dynamics (3)+ ENGR 213. Strength of Materials (3)+ FOR 240. Forest Biology (4) MTH 254. Vector Calculus I (4) MTH 256. Applied Differential Equations (4) PH 212, PH 213. General Physics with Calculus (4,4)+ ST 314. Introduction to Statistics for Engineers (3)+ WSE 210. Wood Technology and Utilization (4)</p> <p>Cultural Diversity BCC elective (3) Western Culture BCC elective (3)</p> <p>Total: 52</p>	<p>Forest Engineering</p> <p>Sophomore Year</p> <p>CE 201. CE II: Engineering Graphics & Design (3) ++ ENGR 201. Electrical Fundamentals (3) + ENGR 211. Statics (3) + ENGR 213. Strength of Materials (3) ++ FOR 240 Forest Biology (4) MTH 256. Applied Differential Equations (4) + PH 212, PH 213. General Physics with Calculus (4,4) + ST 314. Intro to Statistics for Engineers (3) ++ ECON 201. Introduction to Microeconomics [BC] (4) MTH 306. Matrix and Power Series Methods (4) + FE 308. Forest Surveying (4) FE 309. Forest Photogrammetry (4) FE 314X. Forest Engineering Statistical Recitation for ST314 (1) ++ Western Culture elective [BC] (3)</p> <p>Total: 51</p> <p>+ Required courses for Pre-Engineering ++ Required courses for Pre-Civil Engineering</p>
<p>Forest Engineering</p> <p>Junior Year</p> <p>ECON 201. Intro to Microeconomics (4) FE 308. Forest Surveying (4) FE 309. Forest Photogrammetry (4) FE 310. Forest Route Surveying (4) FE 357. GIS and Forest Engineering Applications (3) FE 371. Harvesting Process Engineering (4) FE 434. Forest Watershed Management (4) FE 440. Forest Operations Analysis (3)</p>	<p>Forest Engineering</p> <p>Junior Year</p> <p>FE 310. Forest Route Surveying (4) FE 357. GIS and Forest Engineering Applications (3) ++ FE 371. Harvesting Process Engineering (4) FE 434. Forest Watershed Management (4) FE 440. Forest Operations Analysis (3)</p>

<p>FE 470. Logging Mechanics (4) FE 471. Harvesting Management (3) FOR 321. Forest Mensuration (5) FOR 441. Silviculture Principles (4) WR 327. Technical Writing (3)</p> <p>Total 49</p>	<p>FE 470. Logging Mechanics (4) FOR 321. Forest Mensuration (5) FOR 441. Silviculture Principles (4) WR 327. Technical Writing [BC] (3)</p> <p>ENGR 212. Dynamics (3)+</p> <p>Cultural Diversity elective [BC] (3) Literature & Arts elective [BC] (3) Difference, Power, and Discrimination elective [BC] (3)</p> <p>Total 46</p> <p>+ Required courses for Pre-Engineering ++ Required courses for Pre-Civil Engineering</p>
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Current Description (with markup)	Proposed Description
<p>Civil Engineering</p> <p>Junior Year</p> <p>CE 311. Fluid Mechanics I (4) CE 313. Hydraulic Engineering (4) CE 321. Civil Engineering Materials (4) CE 381, CE 382. Structural Theory I, II (4,4) CE 383. Design of Steel Structures (4) CE 392. Intro to Highway Engineering (4) ENGR 311. Thermodynamics (3)</p> <p>ENVE 321. Environmental Engineering Fundamentals (4) FE 315. Soil Engineering (4) FE 316. Soil Mechanics (4) FE 480. Forest Engineering Practice and Professionalism (1) FOR 330. Forest Resource Economics I (4)</p> <p>Total 48</p>	<p>Civil Engineering</p> <p>Junior Year</p> <p>CE 311. Fluid Mechanics I (4) CE 313. Hydraulic Engineering (4) CE 321. Civil Engineering Materials (4) CE 381, CE 382. Structural Theory I, II (4,4) CE 383. Design of Steel Structures (4) CE 392. Intro to Highway Engineering (4) ME 311. Introduction to Thermo-Fluid Sciences (4) ENVE 321. Environmental Engineering Fundamentals (4) FE 315. Soil Engineering (4) FE 316. Soil Mechanics (4) FE 480. Forest Engineering Practice and Professionalism (1) FOR 330. Forest Resource Economics I (4)</p> <p>Total 49</p>

Current Description (with markup)	Proposed Description
<p>Forest Engineering / Civil Engineering</p> <p>Senior Year</p> <p>CE Design elective (3) CE 419. Civil Infrastructure Design (4) CE 481. Reinforced Concrete I (4) CE 491. Transportation Engineering (4) FE 415. Forest Road Engineering (4) change to 3 credits FE 416. Forest Road System Management (4) FE 441. Production Planning (3) FE 449. Strategic and Tactical Planning Techniques (3) FE 450, FE 451. Forest Operations Design I, II (3,3) FE 460. Forest Operations Regulations and Policy Issues (3) FS 453. Forest Management and Wildlife Conservation (3) Contemporary Global Issues BCC elective (3) Difference, Power, and Discrimination BCC</p>	<p>Forest Engineering / Civil Engineering</p> <p>Senior Year</p> <p>CE Design elective (3) CE 419. Civil Infrastructure Design (4) CE 481. Reinforced Concrete I (4) CE 491. Transportation Engineering (4) FE 415. Forest Road Engineering (3)¹ FE 416. Forest Road System Management (4) FE 441. Production Planning (3)</p> <p>FE 450, FE 451. Forest Operations Design I, II [WIC] (3,3) FE 460. Forest Operations Regulations and Policy Issues (3)</p> <p>FE/FOR 456 **International Forestry [BC] (3)</p> <p>FW350 *Endangered Species, Society and Sustainability [BC] (3) CE or FE Design Elective (3)</p>

<p>elective (3) Science, Technology and Society BCC elective (3)</p> <p>Total 50</p>	<p>Total 43</p> <p>¹ Category II proposal for this credit hour change will be submitted shortly *FW 350 baccalaureate core class in Science, Technology and Society, selected to satisfy accreditation criteria **FE/FOR 456 baccalaureate core class in Contemporary Global Issues, selected to satisfy accreditation criteria</p>
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Industrial Engineering

Summary of proposed changes to reduce the Industrial Engineering undergraduate program from 192 credit hours to 180 credit hours and bring it into conformance with recent COE curricular changes:

- Drop Engineering Science Elective (3 credit hours) from Junior year
- Drop two Restricted Electives (3, 3) from Senior year
- Drop Free Elective (3) from Senior year
- Move one Restricted Elective (4) from Senior to Junior year
- Drop Pre-E Core requirement (^E) from ENGR 212

Current Description (with markup)	Proposed Description
<p>Pre-Industrial Engineering</p> <p>Freshman Year (50)</p> <p>CH 201. Chemistry for Engineering Majors (3)^E CH 202. *Chemistry for Engineering Majors (3) COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E ENGR 111. Engineering Orientation I (3) ENGR 112. Engineering Orientation II (3)^E ENGR 248. Engineering Graphics and 3-D Modeling (3) MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^E Biological science elective (4)¹ Perspectives (9)¹</p>	<p>Pre-Industrial Engineering</p> <p>Freshman Year (50)</p> <p>CH 201. Chemistry for Engineering Majors (3)^E CH 202. Chemistry for Engineering Majors (3)⁵ COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E ENGR 111. Engineering Orientation I (3) ENGR 112. Engineering Orientation II (3)^E ENGR 248. Engineering Graphics and 3-D Modeling (3)⁵ MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^E Biological science elective (4)¹ Perspectives (9)¹</p>
<p>Sophomore Year (50)</p> <p>CS 151. Intro to C Programming (4) ENGR 201. Electrical Fundamentals (3)^E ENGR 211. Statics (3)^E ENGR 212. Dynamics (3)^E ENGR 213. Strength of Materials (3) ENGR 390. Engineering Economy (3) HHS 231. *Lifetime Fitness for Health (2) HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1) IE 285. Intro to Industrial and Manufacturing Engineering (3) MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, 213. *General Physics with Calculus (4,4)^E ST 314. Intro to Statistics for Engineers (3)⁵ Perspectives (6)¹</p>	<p>Sophomore Year (50)</p> <p>CS 151. Intro to C Programming (4) ENGR 201. Electrical Fundamentals (3)^E ENGR 211. Statics (3)^E ENGR 212. Dynamics (3) ENGR 213. Strength of Materials (3) ENGR 390. Engineering Economy (3) HHS 231. *Lifetime Fitness for Health (2) HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1) IE 285. Intro to Industrial and Manufacturing Engineering (3) MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, 213. *General Physics with Calculus (4,4)^E ST 314. Intro to Statistics for Engineers (3)⁵ Perspectives (3)¹ Difference, Power and Discrimination (3)¹</p>

Current Description (with markup)	Proposed Description
<p>Professional Industrial Engineering</p> <p>Junior Year (43) (44)</p> <p>ENGR 321. Materials Science (3) IE 337. Industrial Manufacturing Systems (4) IE 355. Statistical Quality Control (4) IE 356. Experimental Design for Industrial Processes (4) IE 366. ^Work Design (4) IE 367. Production Planning and Control (4) IE 368. Facility Design and Operations Management (4) IE 415. Simulation and Decision Support Systems (4) Engineering Science Elective (3) WR 327. *Technical Writing (3) Math or Science Elective (3) Restricted IME Elective (3) (7)</p>	<p>Professional Industrial Engineering</p> <p>Junior Year (44)</p> <p>ENGR 321. Materials Science (3) IE 337. Industrial Manufacturing Systems (4) IE 355. Statistical Quality Control (4) IE 356. Experimental Design for Industrial Processes (4) IE 366. ^Work Design (4) IE 367. Production Planning and Control (4) IE 368. Facility Design and Operations Management (4) IE 415. Simulation and Decision Support Systems (4) WR 327. *Technical Writing (3) Math or Science Elective (3) Restricted IME Elective (7)</p>
<p>Senior Year (49) (36)</p> <p>IE 412. Information Systems Engineering (4) IE 425. Industrial Systems Optimization (4) IE 497, IE 498. Industrial Engineering Analysis and Design (3,3) Restricted IME Electives (26) (16) Synthesis (6)¹ Free Elective (3)</p> <p>Total=192 180</p> <p>Footnotes:</p> <p>^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>	<p>Senior Year (36)</p> <p>IE 412. Information Systems Engineering (4) IE 425. Industrial Systems Optimization (4) IE 497, IE 498. Industrial Engineering Analysis and Design (3,3) Restricted IME Electives (16) Synthesis (6)¹</p> <p>Total=180</p> <p>Footnotes:</p> <p>* = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>

Manufacturing Engineering

Summary of proposed changes to reduce the Manufacturing Engineering undergraduate program from 192 credit hours to 180 credit hours bring it into conformance with recent COE curricular changes:

- Drop Engineering Science Elective (3 credit hours) from Junior year
- Drop Restricted Electives (3) from First Senior year
- Drop Free Elective (3) from First Senior year
- Drop ENGR 331 (4) from Second Senior year
- Replace ENGR 311 (3) with ME 311 (4) Second Senior Year
- Drop Pre-E Core requirement (^E) from ENGR 212

Current Description (with markup)	Proposed Description
<p>Pre-Manufacturing Engineering</p> <p><i>Freshman Year (50)</i> CH 201. Chemistry for Engineering Majors (3)^E CH 202. *Chemistry for Engineering Majors (3) COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E ENGR 111. Engineering Orientation I (3) ENGR 112. Engineering Orientation II (3)^E ENGR 248. Engineering Graphics and 3-D Modeling (3) MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^E Biological Science Elective (4)¹ Perspectives (9)¹</p>	<p>Pre-Manufacturing Engineering</p> <p><i>Freshman Year (50)</i> CH 201. Chemistry for Engineering Majors (3)^E CH 202. Chemistry for Engineering Majors (3)⁵ COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E ENGR 111. Engineering Orientation I (3) ENGR 112. Engineering Orientation II (3)^E ENGR 248. Engineering Graphics and 3-D Modeling (3)⁵ MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^E Biological Science Elective (4)¹ Perspectives (9)¹</p>
<p><i>Sophomore Year (50)</i> CS 151. Intro to C Programming (4) ENGR 201. Electrical Fundamentals (3)^E ENGR 211. Statics (3)^E ENGR 212. Dynamics (3)^E ENGR 213. Strength of Materials (3) ENGR 390. Engineering Economy (3) HHS 231. *Lifetime Fitness for Health (2) HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1) IE 285. Intro to Industrial and Manufacturing Engineering (3) MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, 213. *General Physics with Calculus (4,4)^E ST 314. Intro to Statistics for Engineers (3)⁵ Perspectives (6)¹</p>	<p><i>Sophomore Year (50)</i> CS 151. Intro to C Programming (4) ENGR 201. Electrical Fundamentals (3)^E ENGR 211. Statics (3)^E ENGR 212. Dynamics (3) ENGR 213. Strength of Materials (3) ENGR 390. Engineering Economy (3) HHS 231. *Lifetime Fitness for Health (2) HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1) IE 285. Intro to Industrial and Manufacturing Engineering (3) MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, 213. *General Physics with Calculus (4,4)^E ST 314. Intro to Statistics for Engineers (3)⁵ Perspectives (3)¹ Difference, Power and Discrimination (3)¹</p>

Current Description (with markup)	Proposed Description
<p>Professional Manufacturing Engineering</p> <p><i>Junior Year</i> (33) <u>(30)</u> ENGR 321. Materials Science (3) IE 337. Industrial Manufacturing Systems (4) IE 355. Statistical Quality Control (4) IE 356. Experimental Design for Industrial Processes (4) IE 366. Work Design (4) IE 367. Production Planning and Control (4) IE 368. Facility Design and Operations Management (4) Engineering Science Elective (3) Synthesis (3)¹</p>	<p>Professional Manufacturing Engineering</p> <p><i>Junior Year</i> (30) ENGR 321. Materials Science (3) IE 337. Industrial Manufacturing Systems (4) IE 355. Statistical Quality Control (4) IE 356. Experimental Design for Industrial Processes (4) IE 366. ^Work Design (4) IE 367. Production Planning and Control (4) IE 368. Facility Design and Operations Management (4) Synthesis (3)¹</p>
<p><i>First Senior Year</i> (34) <u>(25)</u> IE 338. Manufacturing Process Development (4) IE 412. Information Systems Engineering (4) IE 415. Simulation and Decision Support Systems (4) IE 436. Lean Manufacturing Systems Engineering (4) WR 327. *Technical Writing (3) Free Elective (3) Math or Science Elective (3) Restricted IME Elective (3) Synthesis (3)¹</p>	<p><i>First Senior Year</i> (25) IE 338. Manufacturing Process Development (4) IE 412. Information Systems Engineering (4) IE 415. Simulation and Decision Support Systems (4) IE 436. Lean Manufacturing Systems Engineering (4) WR 327. *Technical Writing (3) Math or Science Elective (3) Synthesis (3)¹</p>
<p><i>Second Senior Year</i> (28) <u>(25)</u> ENGR 311. Thermodynamics (3) <u>ME 311. Thermodynamics (4)</u> ENGR 331. Momentum, Energy, and Mass Transfer (4) ENGR 440. Modern Electronics Manufacturing (4) IE 425. Industrial Systems Optimization (4) IE 437. Virtual and Automated Manufacturing Systems (4) IE 497, IE 498. Industrial Engineering Analysis and Design (3,3) Restricted IME Elective (3)-</p> <p>Total=192 <u>180</u></p> <p>Footnotes: ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>	<p><i>Second Senior Year</i> (25) ME 311. Thermodynamics (4) ENGR 440. Modern Electronics Manufacturing (4) IE 425. Industrial Systems Optimization (4) IE 437. Virtual and Automated Manufacturing Systems (4) IE 497, IE 498. Industrial Engineering Analysis and Design (3,3) Restricted IME Elective (3)</p> <p>Total=180</p> <p>Footnotes: * = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>

Mechanical Engineering

Summary of proposed changes to reduce the Mechanical Engineering undergraduate program from 192 credit hours to 180 credit hours:

- Reduce Free Electives from (13) to (2).
- Reduce Restricted ME analysis or design elective from (4) to (3).
- Moved a Perspective (3) from senior year to sophomore year.

Current Description (with markup)	Proposed Description
<p>Pre-Mechanical Engineering</p> <p>Freshman Year (48) (47)</p> <p>CH 201, CH 202. *Chemistry for Engineering Majors (3^E,3)</p> <p>CH 205. Laboratory for CH 202 (1)</p> <p>COMM 111. *Public Speaking (3)^{1,E}</p> <p>HHS 231. *Lifetime Fitness for Health (2)¹</p> <p>HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹</p> <p>ENGR 248. Engineering Graphics and 3-D Modeling (3)</p> <p>ME 101. Intro to Mechanical Engineering (3)</p> <p>MTH 251. *Differential Calculus (4)^E</p> <p>MTH 252. Integral Calculus (4)^E</p> <p>MTH 254. Vector Calculus I (4)^E</p> <p>PH 211. *General Physics with Calculus (4)^E</p> <p>WR 121. *English Composition (3)^E</p> <p>Perspectives (9)¹</p> <p>Free electives (1)</p>	<p>Pre-Mechanical Engineering</p> <p>Freshman Year (47)</p> <p>CH 201, CH 202. Chemistry for Engineering Majors (3^E,3)</p> <p>CH 205. Laboratory for CH 202 (1)</p> <p>COMM 111. *Public Speaking (3)^{1,E}</p> <p>HHS 231. *Lifetime Fitness for Health (2)¹</p> <p>HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹</p> <p>ENGR 248. Engineering Graphics and 3-D Modeling (3)</p> <p>ME 101. Intro to Mechanical Engineering (3)</p> <p>MTH 251. *Differential Calculus (4)^E</p> <p>MTH 252. Integral Calculus (4)^E</p> <p>MTH 254. Vector Calculus I (4)^E</p> <p>PH 211. *General Physics with Calculus (4)^E</p> <p>WR 121. *English Composition (3)^E</p> <p>Perspectives (9)¹</p>
<p>Sophomore Year (48) (47)</p> <p>ENGR 201, ENGR 202. Electrical Fundamentals I, II (3^E,3)</p> <p>ENGR 211. Statics (3)^E</p> <p>ENGR 212. Dynamics (3)^E</p> <p>ENGR 213. Strength of Materials (3)⁵</p> <p>ME 102. Intro to Mechanical Engineering (3)</p> <p>MTH 256. Applied Differential Equations (4)^E</p> <p>MTH 306. Matrix and Power Series Methods (4)^E</p> <p>PH 212, PH 213. *General Physics with Calculus (4,4)^E</p> <p>ST 314. Intro to Statistics for Engineers (3)⁵</p> <p>WR 327. *Technical Writing (3)</p> <p>Biological science (4)¹</p> <p>Perspectives (3)¹</p> <p>Free electives (4)</p>	<p>Sophomore Year (47)</p> <p>ENGR 201, ENGR 202. Electrical Fundamentals I, II (3⁵,3)</p> <p>ENGR 211. Statics (3)^E</p> <p>ENGR 212. Dynamics (3)^E</p> <p>ENGR 213. Strength of Materials (3)⁵</p> <p>ME 102. Intro to Mechanical Engineering (3)^E</p> <p>MTH 256. Applied Differential Equations (4)^E</p> <p>MTH 306. Matrix and Power Series Methods (4)^E</p> <p>PH 212, PH 213. *General Physics with Calculus (4,4)^E</p> <p>ST 314. Intro to Statistics for Engineers (3)⁵</p> <p>WR 327. *Technical Writing (3)</p> <p>Biological science (4)¹</p> <p>Difference, Power and Discrimination (3)¹</p>

Current Description (with markup)	Proposed Description
<p>Professional Mechanical Engineering</p> <p>Junior Year (48) (44)</p> <p>ENGR ME 311, ENGR ME 312. Thermodynamics (3 4,4) ENGR ME 321. Materials Science (3) ENGR ME 322. Mechanical Properties of Materials (4) ENGR ME 331, ENGR ME 332. Momentum, Energy and Mass Transfer (4,4) ME 316. Mechanics of Materials (3) ME 317. Dynamics (4) ME 373. Computational Methods (3) ME 382. Introduction to Design (4) ME 383. Mechanical Component Design (4) ENGR 390. Engineering Economy (3) Free Electives (5)</p>	<p>Professional Mechanical Engineering</p> <p>Junior Year (44)</p> <p>ME 311, ME 312. Thermodynamics (4,4) ENGR 321. Materials Science (3) ENGR 322. Mechanical Properties of Materials (4) ME 331, ME 332. Momentum, Energy and Mass Transfer (4,4) ME 316. Mechanics of Materials (3) ME 317. Dynamics (4) ME 373. Computational Methods (3) ME 382. Introduction to Design (4) ME 383. Mechanical Component Design (4) ENGR 390. Engineering Economy (3)</p>
<p>Senior Year (48) (42)</p> <p>ME 418, ME 419. Senior Project (4,4) ME 430. Systems Dynamics and Control (4) Restricted ME laboratory course (4) Restricted ME analysis elective (4) Restricted ME design elective (4) Restricted ME analysis or design elective (4) (3) ME 451. ^Mechanical Laboratory (4) Perspectives (7) (4)¹ Free Electives (3) (1) Synthesis (6)¹</p> <p>Total=192 180</p> <p>Footnotes:</p> <p>^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>	<p>Senior Year (42)</p> <p>ME 418, ME 419. Senior Project (4,4) ME 430. Systems Dynamics and Control (4) Restricted ME laboratory course (4) Restricted ME analysis elective (4) Restricted ME design elective (4) Restricted ME analysis or design elective (3) ME 451. ^Mechanical Laboratory (4) ECON 201 *Introduction to Microeconomics (4)¹ or ECON 202 *Introduction to Macroeconomics (4)¹ Free Electives (1) Synthesis (6)¹</p> <p>Total=180</p> <p>Footnotes:</p> <p>* = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E= Required for entry into the professional program. ¹= Must be selected to satisfy the requirements of the baccalaureate core. ⁵= Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program.</p>

Nuclear Engineering

Summary of proposed changes to reduce the nuclear engineering undergraduate program from 192 credit hours to 180 credit hours:

- Drop Intro to C Programming (4) from Sophomore year
- Drop Restricted Elective (3) from Senior year
- Drop Free Electives (2) from Junior year
- Drop Internship (3) course from Senior year
- Replace Perspective (3) in Junior year
- Add ENGR 248 – Engineering Graphics and 3-D Modeling in Sophomore year (3)
- Replace General Biology course (4) with bacc core biology elective in Sophomore year (4)
- Replace Neutronic Analysis and Laboratory III (4) with Restricted elective in Senior year (4)

Current Description (with markup)	Proposed Description
<p>Pre-Nuclear Engineering</p> <p>Freshman Year (46)</p> <p>CH 201. Chemistry for Engineering Majors (3)^E CH 202. *Chemistry for Engineering Majors (3) COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E NE 114. Introduction to NERHP I (2) NE 115. Introduction to NERHP II (2)^E NE 116. Introduction to NERHP III (2) HHS 231. *Lifetime Fitness for Health (2) HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1) MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^E Free electives (3) Perspectives (6)¹</p>	<p>Pre-Nuclear Engineering</p> <p>Freshman Year (46)</p> <p>CH 201. Chemistry for Engineering Majors (3)^E CH 202. Chemistry for Engineering Majors (3) COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E NE 114. Introduction to NERHP I (2) NE 115. Introduction to NERHP II (2)^E NE 116. Introduction to NERHP III (2) HHS 231. *Lifetime Fitness for Health (2) HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1) MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 254. Vector Calculus I (4)^E PH 211. *General Physics with Calculus (4)^E WR 121. *English Composition (3)^E Free electives (3) Perspectives (6)¹</p>
<p>Sophomore Year (48) (47)</p> <p>BI 101 or BI 102 or BI 103 *General Biology (4)¹ <u>Biological science elective (4)¹</u> CS 151. Intro to C Programming (4) <u>ENGR 248. Engineering Graphics and 3-D Modeling (3)</u> ENGR 201. Electrical Fundamentals (3)^E ENGR 211. Statics (3)^E ENGR 212. Dynamics (3)^E ENGR 213. Strength of Materials (3) MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, 213. *General Physics with Calculus (4,4)^E NE 234, NE 235. Nuclear and Radiation Physics I,II (4,4) NE 236. Nuclear Radiation Detection and Instrumentation (4)</p>	<p>Sophomore Year (47)</p> <p>Biological science elective (4)¹</p> <p>ENGR 248. Engineering Graphics and 3-D Modeling (3) ENGR 201. Electrical Fundamentals (3) ENGR 211. Statics (3)^E ENGR 212. Dynamics (3)^E ENGR 213. Strength of Materials (3) MTH 256. Applied Differential Equations (4)^E MTH 306. Matrix and Power Series Methods (4)^E PH 212, 213. *General Physics with Calculus (4,4)^E NE 234, NE 235. Nuclear and Radiation Physics I,II (4,4) NE 236. Nuclear Radiation Detection and Instrumentation (4)</p>

Current Description (with markup)	Proposed Description
<p>Professional Nuclear Engineering Junior Year (47) (<u>45</u>)</p> <p>ENGR 311, ENGR 312. Thermodynamics (3,4) NE 311. Intro to Thermal Fluids Sciences (4) NE 312. Thermodynamics (3,4) ENGR 321. Materials Science (3) ENGR 331, ENGR 332. Momentum Energy and Mass Transfer —(4,4) NE 331. Fluid Mechanics (4) NE 332. Heat Transfer (4) ENGR 390. Engineering Economy (3) ME 373. Computational Methods (3) NE 481. Radiation Protection (4) NE 482. ^Applied Radiation Safety (4) WR 327. *Technical Writing (3)¹ Free electives (5) (<u>3</u>) Perspectives (6) (<u>3</u>)¹ Synthesis (3)</p>	<p>Professional Nuclear Engineering Junior Year (45)</p> <p>NE 311. Intro to Thermal Fluid Sciences (4) NE 312. Thermodynamics (4) ENGR 321. Materials Science (3)</p> <p>NE 331. Fluid Mechanics (4) NE 332. Heat Transfer (4) ENGR 390. Engineering Economy (3) ME 373. Computational Methods (3) NE 481. Radiation Protection (4) WR 327. *Technical Writing (3)¹ Restricted Elective (4)³ Free electives (3) Perspectives (3)¹ Synthesis (3)</p>
<p>Senior Year (59) (<u>42</u>)</p> <p>NE 407. Nuclear Engineering Seminar (3 terms) (1,1,1) NE 410. Internship (3) NE 415. Nuclear Rules and Regulations (2)⁶ NE 451, NE 452, NE 453. Neutronic Analysis and Lab I, II, III (4,4,4) NE 467. Nuclear Reactor Thermal Hydraulics (4) NE 474, NE 475. Nuclear Design I, II (4,4) NE 490. Radiation Dosimetry (4) Electives (restricted) (4)³ Perspectives (6)¹ Synthesis (3)¹ Total=192 180</p> <p>Footnotes: *Baccalaureate core course (BCC) ^Writing intensive course (WIC) ^E=Required for entry into the professional program. ¹=Must be selected to satisfy the requirements of the baccalaureate core. ²=Approved engineering science elective from departmental list. ³=Approved technical electives from departmental list. ⁴=Recommended to satisfy core requirement. ⁵=Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program. ⁶=Taught alternate years. ⁷=MTH 111, MTH 112, MTH 241, MTH 245, MTH 251, MTH 252, MTH 253, MTH 256, MTH 306 approved courses. ⁸=Completion of any two of these courses is required for entry into the professional program.</p>	<p>Senior Year (42)</p> <p>NE 407. Nuclear Engineering Seminar (3 terms) (1,1,1)</p> <p>NE 415. Nuclear Rules and Regulations (2)⁶ NE 451, NE 452. Neutronic Analysis and Lab I, II (4,4) NE 467. Nuclear Reactor Thermal Hydraulics (4)</p> <p>NE 474, ^NE 475. Nuclear Design I, II (4,4) NE 490. Radiation Dosimetry (4) Restricted Elective (4)³ Perspectives (3)¹ Difference, Power and Discrimination (3)¹ Synthesis (3)¹ Total=180</p> <p>Footnotes: * = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E=Required for entry into the professional program. ¹=Must be selected to satisfy the requirements of the baccalaureate core. ²=Approved engineering science elective from departmental list. ³=Approved technical electives from departmental list. ⁴=Recommended to satisfy core requirement. ⁵=Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program. ⁶=Taught alternate years.</p>

Radiation Health Physics

Summary of proposed changes to reduce the radiation health physics undergraduate program from 192 credit hours to 180 credit hours:

- Drop Anatomy and Physiology courses (6) from Junior year
- Drop Internship (3) from Senior year
- Drop Perspective (3) from Freshman year
- Move Perspective (3) from Sophomore year to Junior year
- Replace General Biology sequence with Principles of Biology sequence
- Require MTH 256 or MTH 268 in place of general mathematics course in Freshman year

Current Description (with markup)	Proposed Description
<p>Pre-Radiation Health Physics</p> <p>Freshman Year (49) (46)</p> <p>CH 121, CH 122, CH 123. General Chemistry (5,5,5)^E or CH 221, CH 222, CH 223. *General Chemistry (5,5,5)^E COMM 111. *Public Speaking (3)^{1,E} or COMM 114. *Argument and Critical Discourse (3)^{1,E} CS 101. Computers: Applications and Implications (4) or CS 151. Intro to C Programming (4) Mathematics (4)^{1,7,E} MTH 256. Applied Differential Equations (4)^{1,7,E} or MTH 268. Mathematical Ideas in Biology (4)^{1,7,E} MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E RHP 114, RHP 115, RHP 116. Intro to Nuclear Engineering and Radiation Health Physics (2,2,2) WR 121. *English Composition (3)^{1,E} Perspectives (6) (3)¹</p> <p>Sophomore Year (48) (45)</p> <p>BI 101, BI 102, BI 103. *General Biology (4,4,4)⁸ BI 211, BI 212, BI 123. *Principles of Biology (4,4,4)⁸ HHS 231. *Lifetime Fitness for Health (2)¹ HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ PH 201, PH 202, PH 203. *General Physics (5,5,5)^E or PH 211, PH 212, PH 213. *General Physics with Calculus (4,4,4) plus free elective (3) RHP 234, RHP 235. Nuclear and Radiation Physics I, II (4,4) RHP 236. Nuclear Radiation Detection and Instrumentation (4) Perspectives (6) (3)¹</p>	<p>Pre-Radiation Health Physics</p> <p>Freshman Year (46)</p> <p>CH 121, CH 122(*), CH 123(*). General Chemistry (5,5,5)^E or CH 221, CH 222, CH 223. *General Chemistry (5,5,5)^E COMM 111. *Public Speaking (3)^{1,E} or COMM 114. *Argument and Critical Discourse (3)^{1,E} CS 101. Computers: Applications and Implications (4) or CS 151. Intro to C Programming (4)</p> <p>MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 268. Mathematical Ideas in Biology (4) RHP 114, RHP 115, RHP 116. Intro to Nuclear Engineering and Radiation Health Physics (2,2,2) WR 121. *English Composition (3)^{1,E} Perspectives (3)¹</p> <p>Sophomore Year (45)</p> <p>BI 211^E, BI 212^E, BI 213. *Principles of Biology (4,4,4) HHS 231. *Lifetime Fitness for Health (2)¹ HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ PH 201, PH 202, PH 203. *General Physics (5,5,5)^E or PH 211, PH 212, PH 213. *General Physics with Calculus (4,4,4)^E plus free elective (3) RHP 234, RHP 235. Nuclear and Radiation Physics I, II (4,4) RHP 236. Nuclear Radiation Detection and Instrumentation (4) Perspectives (3)¹</p>

Current Description (with markup)	Proposed Description
<p>Professional Radiation Health Physics</p> <p>Junior Year (47) (44)</p> <p>RHP 481. Radiation Protection (4) RHP 482. ^Applied Radiation Safety (4) ST 201, ST 202. Principles of Statistics (3,3) or ST 314. Intro to Statistics for Engineers (3) plus free elective (3) WR 327. *Technical Writing (3) Z 331, Z 332 <u>or</u> Z 333. Human Anatomy and Physiology (3,3,3) Perspectives (6) (9)¹ Synthesis (3)¹ Free electives (3) Restricted electives (6)³ Electives (restricted in Health) (3)</p>	<p>Professional Radiation Health Physics</p> <p>Junior Year (44)</p> <p>RHP 481. Radiation Protection (4) ST 201, ST 202. Principles of Statistics (3,3) or ST 314. Intro to Statistics for Engineers (3) plus free elective (3) WR 327. *Technical Writing (3) Z 331, Z 332 or Z 333. Human Anatomy and Physiology (3) Perspectives (6)¹ Difference, Power and Discrimination (3)¹ Synthesis (3)¹ Restricted electives (10)³ Electives (restricted in Health) (3) Free electives (3)</p>
<p>Senior Year (48) (45)</p> <p>H 425. Foundations of Epidemiology (3) RHP 407. Seminar in Radiation Health Physics (3 terms) (1,1,1) RHP 410. Internship (3) RHP 415. Nuclear Rules and Regulations (2)⁶ RHP 483. Radiation Biology (4)⁶ RHP 488. Radioecology (3) RHP 490. Radiation Dosimetry (4) Synthesis (3)¹ Electives (restricted in Health) (9) Free electives (8) Restricted electives (6)³</p> <p>Total=192 180</p> <p>Footnotes:</p> <p>^E =Required for entry into the professional program. ¹ =Must be selected to satisfy the requirements of the baccalaureate core. ² =Approved engineering science elective from departmental list. ³ =Approved technical electives from departmental list. ⁴ =Recommended to satisfy core requirement. ⁵ =Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program. ⁶ =Taught alternate years. ⁷ =MTH 111, MTH 112, MTH 241, MTH 245, MTH 251, MTH 252, MTH 253, MTH 256, MTH 306 approved courses. ⁸ =Completion of any two of these courses is required for entry into the professional program.</p>	<p>Senior Year (45)</p> <p>H 425. Foundations of Epidemiology (3) RHP 407. Seminar in Radiation Health Physics (3 terms) (1,1,1) RHP 406. ^Projects (3) RHP 415. Nuclear Rules and Regulations (2)⁶ RHP 483. Radiation Biology (4)⁶ RHP 488. Radioecology (3) RHP 490. Radiation Dosimetry (4) Synthesis (3)¹ Restricted electives (3)³ Electives (restricted in Health) (9) Free electives (8)</p> <p>Total=180</p> <p>Footnotes:</p> <p>* = Baccalaureate Core Course ^ = Writing intensive course (WIC) ^E =Required for entry into the professional program. ¹ =Must be selected to satisfy the requirements of the baccalaureate core. ² =Approved engineering science elective from departmental list. ³ =Approved technical electives from departmental list. ⁴ =Recommended to satisfy core requirement. ⁵ =Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program. ⁶ =Taught alternate years.</p>

Radiation Health Physics: Pre-Med Track

Summary of proposed changes to reduce the radiation health physics pre-med track undergraduate program from 192 credit hours to 180 credit hours:

- Drop Mathematics course (4 credit hours) from Freshman year
- Drop Free Electives (2) from Sophomore year
- Drop Free Elective (3) from Junior year
- Drop RHP 410 – Internship (3) from Senior year

Current Description (with markup)	Proposed Description
<p>Pre-Radiation Health Physics</p> <p>Freshman Year (47)</p> <p>BI 109. Health Professions: Medical (1) CH 221, CH 222, CH 223. *General Chemistry (5,5,5)^E COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E CS 101. Computers: Applications and Implications (4) or CS 151. Intro to C Programming (4) Mathematics (4)^{1,7,E} MTH 256. Applied Differential Equations (4)^{1,7,E} or MTH 268. Mathematical Ideas in Biology (4)^{1,7,E} MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E RHP 114, RHP 115, RHP 116. Intro to Nuclear Engineering and Radiation Health Physics (2,2,2) WR 121. *English Composition (3)^E Perspectives (3)¹</p>	<p>Pre-Radiation Health Physics</p> <p>Freshman Year (47)</p> <p>BI 109. Health Professions: Medical (1) CH 221, CH 222, CH 223. *General Chemistry (5,5,5)^E COMM 111. *Public Speaking (3)^E or COMM 114. *Argument and Critical Discourse (3)^E CS 101. Computers: Applications and Implications (4) or CS 151. Intro to C Programming (4)</p> <p>MTH 251. *Differential Calculus (4)^E MTH 252. Integral Calculus (4)^E MTH 268. Mathematical Ideas in Biology (4) RHP 114, RHP 115, RHP 116. Intro to Nuclear Engineering and Radiation Health Physics (2,2,2) WR 121. *English Composition (3)^E Perspectives (3)¹</p>
<p>Sophomore Year (50) (48)</p> <p>BI 211, BI 212, BI 213. *Principles of Biology (4,4,4)^E HHS 231. *Lifetime Fitness for Health (2)¹ HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ PH 201, PH 202, PH 203. *General Physics (5,5,5)^E RHP 234, RHP 235. Nuclear and Radiation Physics I, II (4,4) RHP 236. Nuclear Radiation Detection and Instrumentation (4) Free electives (2) Perspectives (6)¹</p>	<p>Sophomore Year (48)</p> <p>BI 211^E, BI 212^E, BI 213. *Principles of Biology (4,4,4) HHS 231. *Lifetime Fitness for Health (2)¹ HHS 241-HHS 251. *Lifetime Fitness: (various activities) (1)¹ PH 201, PH 202, PH 203. *General Physics (5,5,5)^E or PH 211, PH 212, PH 213. *General Physics with Calculus (4,4,4)^E plus free elective (3) RHP 234, RHP 235. Nuclear and Radiation Physics I, II (4,4) RHP 236. Nuclear Radiation Detection and Instrumentation (4) Perspectives (6)¹</p>

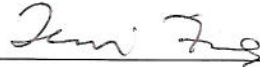
Current Description (with markup)	Proposed Description
<p>Professional Radiation Health Physics</p> <p>Junior Year (47) (44)</p> <p>BI 311. Genetics (4) BI 314. Cell and Molecular Biology (3) CH 334, CH 335, CH 336. Organic Chemistry (3,3,3) RHP 481. Radiation Protection (4) RHP 482. ^Applied Radiation Safety (4) ST 351. Intro to Statistical Methods (4) WR 327. *Technical Writing (3) Z 331, Z 332, Z 333. Human Anatomy and Physiology (3,3,3) Free electives (6) (1) Synthesis (3)²</p>	<p>Professional Radiation Health Physics</p> <p>Junior Year (43)</p> <p>BI 311. Genetics (4) BI 314. Cell and Molecular Biology (3) CH 334, CH 335, CH 336. Organic Chemistry (3,3,3) RHP 481. Radiation Protection (4) ST 351. Intro to Statistical Methods (4) WR 327. *Technical Writing (3) Z 331, Z 332, Z 333. Human Anatomy and Physiology (3,3,3) H 425. Foundations of Epidemiology (3) Synthesis (3)¹ Free Electives (1)</p>
<p>Senior Year (48) (41)</p> <p>BB 450, BB 451. General Biochemistry (4,3) CH 337. Organic Chemistry Lab (3) H 425. Foundations of Epidemiology (3) RHP 407. Seminar in Radiation Health Physics (3 terms) (1,1,1) RHP 410. Internship (3) RHP 415. Nuclear Rules and Regulations (2)⁶ RHP 483. Radiation Biology (4)⁶ RHP 488. Radioecology (3) RHP 490. Radiation Dosimetry (4) Synthesis (3)² Perspectives (9) (6)¹ Free electives (6) (3)</p> <p>Total=192 180</p>	<p>Senior Year (42)</p> <p>BB 450, BB 451. General Biochemistry (4,3) CH 337. Organic Chemistry Lab (3) RHP 406. ^Projects (4) RHP 407. Seminar in Radiation Health Physics (3 terms) (1,1,1) RHP 415. Nuclear Rules and Regulations (2)⁶ RHP 483. Radiation Biology (4)⁶ RHP 488. Radioecology (3) RHP 490. Radiation Dosimetry (4) Perspectives (3)¹ Difference, Power and Discrimination (3)¹ Synthesis (3)¹ Free electives (3)</p> <p>Total=180</p>
<p>Footnotes:</p> <p>^E =Required for entry into the professional program. ¹ =Must be selected to satisfy the requirements of the baccalaureate core. ² =Approved engineering science elective from departmental list. ³ =Approved technical electives from departmental list. ⁴ =Recommended to satisfy core requirement. ⁵ =Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program. ⁶ =Taught alternate years. ⁷ =MTH 111, MTH 112, MTH 241, MTH 245, MTH 251, MTH 252, MTH 253, MTH 256, MTH 306 approved courses. ⁸ =Completion of any two of these courses is required for entry into the professional program.</p>	<p>Footnotes:</p> <p>^E =Required for entry into the professional program. ^ = Writing intensive course (WIC) ¹ =Must be selected to satisfy the requirements of the baccalaureate core. ² =Approved engineering science elective from departmental list. ³ =Approved technical electives from departmental list. ⁴ =Recommended to satisfy core requirement. ⁵ =Prerequisite for several upper-division courses. Recommended for completion prior to entry into the professional program. ⁶ =Taught alternate years.</p>

Appendix B
Transmittal Sheet

We the undersigned unit leaders support this proposal.



Belinda A. Batten, Head
Mechanical Engineering



Terri S. Fiez, Director
School of Electrical Engineering and Computer
Science



Kenneth H. Funk, Interim Head
Industrial and Manufacturing Engineering



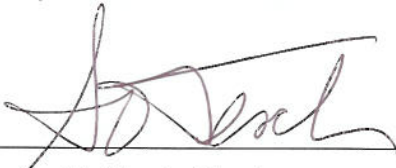
Jose N. Reyes, Jr., Head
Nuclear Engineering and Radiation Health Physics



Kenneth J. Williamson, Head
Civil, Construction and Environmental Engineering



Henri Jansen, Chair
Physics



Steven D. Tesch, Head
Forest Engineering

I support this proposal.



Ronald L. Adams, Dean
College of Engineering

Appendix C Liaison

This liaison correspondence will be sent to:

Deans of Engineering at
Portland State University
Oregon Institute of Technology
University of Portland
Dean, College of Arts and Sciences, Eastern Oregon University
Dean, College of Liberal Arts and Sciences, Western Oregon University
Dean, College of Liberal Arts and Sciences, University of Oregon
Dean, School of Sciences, Southern Oregon University
Deans of all OSU Colleges
Directors of Pre-Engineering programs at Oregon Community Colleges
Executive Director of the Oregon State Board of Examiners of Engineering and Land Surveyors

Sample correspondence

The College of Engineering at Oregon State University proposes to reduce the credit hours required for the baccalaureate degrees to 180 credits in selected programs in or affiliated with the College. This action will bring the majority of our programs in alignment with other degree programs at the University and with other engineering programs around the country. Faculty in each program have carefully considered their curriculum and made reductions in ways that will not jeopardize the quality of the educational program or their accreditation (where applicable). The proposed reductions offer students opportunities to reduce the cost of their education or to expand their education through minors, options or additional majors.

Programs have taken a variety of approaches to reducing credits. The attached document describes the reductions in each program.

Please review the document and provide me with your comments before December 2, 2005. If we have not responded by this date, we will assume that you approve of the proposed changes.

Jim

Jim Lundy, Ph.D., P.E.
Associate Dean
College of Engineering
Oregon State University

Enclosure: CAT I (abbreviated) "Reduction in Graduation Requirements for Selected College of Engineering Programs"

Library evaluation is not required for this proposal as academic programs are not being expanded.

At the direction of Chairs of the Budget and Fiscal Planning and the Curriculum Council, budget sheets are not included with this proposal.

From: Michael J. Quinn [quinn@eecs.oregonstate.edu]
Sent: Friday, February 17, 2006 5:32 PM
To: Marvin.Pyles@orst.edu; Cluskey, Mary
Cc: Shellhammer, Gina; quinn@eecs.oregonstate.edu
Subject: Category I proposals approved by Budgets & Fiscal Planning Committee

Marv and Mary,

Today the Budgets and Fiscal Planning Committee approved two Category I proposals from the College of Engineering.

We approved the Category I proposal to reduce the number of credits needed for selected degrees from 192 to 180. We asked the departments for additional clarification with regard to anticipated lost revenue from engineering student resource fees and BAM funding. We are satisfied with the answers we have received from these departments. They boil down to:

1. The possible loss of \$261,000 in revenues is a worst-case scenario. The loss probably won't be that bad, because most current students are going way over 192 credits.
2. Even if the loss did happen, it would be phased in over four years.
3. Many departments are seeing increases in majors that could offset the anticipated loss.
4. More students may decide to stick around and work toward M.Eng. degrees, which would be a revenue increase.

We also approved the Category I proposal for the initiation of a new instructional program leading to the Bachelor of Science in Electrical and Computer Engineering. In effect, the School of Electrical Engineering and Computer Science is merging its current Electrical Engineering and Computer Engineering programs into a single track. Even though there may be a loss of revenue from BAM and engineering student resource fees, we think the School can handle it. Some of the answers are similar to the previous Category I proposal:

1. The possible loss of \$150,000/year is a worst-case scenario.
2. Even if the loss did happen, it would be phased in over four years.
3. EECS has a budget of \$7 million a year (excluding research). It is currently operating under a surplus, which exceeds any loss that the unit might suffer in the first year.
4. EECS has been asked to prepare a plan for a 5% budget cut, which amounts to \$350,000. So any amount lost by this change could well be dwarfed by a future budget reduction.

A member of our committee pointed out that "Electrical and Computer Engineering" programs seem to be a bit of a rarity, compared with "Electrical Engineering" and "Computer Engineering" programs. At least the School wasn't able to come up with too many examples of other universities offering "Electrical and Computer Engineering"

rather than both "Electrical Engineering" and "Computer Engineering."

There don't appear to be many "top 25" schools on their list (p. 9).

We decided this is clearly the jurisdiction of the Curriculum Council, not the Budgets & Fiscal Planning Committee, however, so we're simply pointing out this issue to you as we pass the proposal over.

Thanks,

Mike

Michael J. Quinn quinn@eecs.oregonstate.edu
Oregon State University Phone: 541-737-5572
EECS Fax: 541-737-3014
Corvallis, OR 97331