Lehigh University

MINUTES OF THE FACULTY MEETING

29 March 2004

Presiding: Gregory Farrington (Sinclair Auditorium)

President Farrington called the meeting to order at 4:10 PM

1. Minutes. The minutes of the December 8, 2003 faculty meeting were APPROVED.

2. Memorial Resolutions. Professor Barbara Traister read a tribute to Albert E. Hartung, late Distinguished Professor Emeritus of English, who then MOVED that her remarks be incorporated in these minutes [see Attachment 1] and that a copy be sent to the family. The President declared the motion APPROVED by acclamation and the faculty STOOD for a moment of silence in memory of Albert E. Hartung.

Professor Barbara Malt read a tribute to Josef M. Brozek, late Research Professor Emeritus of Psychology, who then MOVED that her remarks be incorporated in these minutes [see Attachment 2] and that a copy be sent to the family. The President declared the motion APPROVED by acclamation and the faculty STOOD for a moment of silence in memory of Josef M. Brozek.

Professor Jack Paul read a tribute to Brian G. Brockway, late Dean Emeritus of the College of Business and Economics, and Distinguished Professor Emeritus of Law, who then MOVED that his remarks be incorporated in these minutes [see Attachment 3] and that a copy be sent to the family. The President declared the motion APPROVED by acclamation and the faculty STOOD for a moment of silence in memory of Brian G. Brockway.

Professor Steven Krawiec read a tribute to John W. Hunt, late Dean Emeritus of the College of Arts and Sciences, and University Service Professor Emeritus of English, who then MOVED that his remarks be incorporated in these minutes [see Attachment 4] and that a copy be sent to the family. The President declared the motion APPROVED by acclamation and the faculty STOOD for a moment of silence in memory of John W. Hunt.
3. **Committee Motions.** Professor Barbara Traister, on behalf of the Educational Policy Committee, MOVED to adopt course and curriculum changes in the P.C. Rossin College of Engineering and Applied Science. [See the binder, dated March 29, 2004, which is housed in the faculty secretary’s office. This binder will subsequently be referred to as “The Binder.”] The motion was SECONDED and PASSED.

Professor Traister then MOVED adoption of an honors program in the College of Business and Economics, and a course change to BIS 331 [see “The Binder”]. The motion was SECONDED and PASSED.

Professor Traister then MOVED to adopt course and curriculum changes in the College of Arts and Sciences [see “The Binder”]. The motion was SECONDED and PASSED.

Professor Traister then MOVED to waive the ‘10-Day Rule’ for the purpose of considering adoption of a Bachelor of Arts degree in Environmental Studies in the College of Arts and Sciences. The motion was SECONDED and PASSED.

Professor Traister then MOVED to adopt a Bachelor of Arts degree in Environmental Studies in the College of Arts and Sciences [see “The Binder”]. The motion was SECONDED.

Professor Paul asked if all concerns with respect to the proposed degree program had been satisfied. Professor Traister indicated that all concerns would be satisfied in writing, in a forthcoming memorandum.

Professor Frank Gunter asked if ECO 1 was given consideration as a degree requirement. Professor Sharon Friedman said students would be encouraged to take ECO 1.

The motion PASSED.

Professor Traister then MOVED a revision to R&P 3.11 1 to change the requirements for graduation honors [see “The Binder”]. The motion was SECONDED.

Professor Roger Simon asked which class would first be affected by the proposed change. Professor Traister replied that the change would be effective with the Class of 2008.

Professor Ed Kay noted that, based on current grade distributions, approximately 7-8% of students would achieve “Highest Honors”; another 6-7% would achieve “High Honors”; and an additional 10% would achieve “Honors.”
Professor Traister responded to questions about having a fixed percentage of students achieving various levels of honors by noting that the students were almost universally opposed to a "quota," preferring overwhelmingly for a fixed GPA cutoff.

Professor Traister concluded by advising the faculty that a revision to the university's overload policy would be forthcoming, and encouraged faculty to forward proposed amendments to the draft revision [see 'The Binder'] to the committee.

Professor George White, on behalf of the Graduate and Research Committee, MOVED curriculum and program additions and changes in the College of Business and Economics [see Attachment 5 and 'The Binder']. The motion was SECONDED and PASSED.

Professor White then MOVED to waive the '10-Day Rule' for the purpose of considering adoption of course and curriculum additions and changes in the College of Arts and Sciences. The motion was SECONDED and PASSED.

Professor White then MOVED curriculum and program additions and changes in the College of Arts and Sciences [see Attachment 5 and 'The Binder'] The motion was SECONDED and PASSED.

Professor White then MOVED curriculum and program additions and changes in the College of Education [see Attachment 5 and 'The Binder']. The new course - EdT 482 is no longer part of the motion, and, EdT 477 is 1-3 credit hours. The motion was SECONDED and PASSED.

Professor White then MOVED curriculum and program additions and changes in the PC Rossin College of Engineering and Applied Sciences itemized as 'Pre-A' through "F" [see Attachment 5 and "The Binder"]. The motion was SECONDED and PASSED.

Professor White then MOVED two interdisciplinary degree programs itemized as 'G' in Attachment 5 [see 'The Binder']. The motion was SECONDED and PASSED.

Marley McDermott and Michael d'Alessio, on behalf of the Student Senate, read the senate's statement on academic integrity. The faculty applauded the statement.

4. **Unfinished Business.** None.

5. **New Business.** None.
6. **Committee Reports.** None.

7. **President's Report.** President Farrington addressed a variety of physical plant improvement issues both off-campus and on-campus.

   The railroad right-of-way between 3rd and 4th Streets will become green space. The Johnson Machinery Building will be converted to apartments.

   The Sasaki Associates' Master Plan for the campus is now focused on reducing the opportunity for pedestrians to be run over by motor vehicles. Among the possibilities: substantially limit vehicular traffic in the center of campus; reconnect Brodhead Road to the upper campus; and construct a parking garage behind the Alumni Memorial Building.

   Planning has begun for the renovation of Linderman Library to include a Center for Humanities. A year's worth of planning is expected.

   President Farrington applauded the Greek Life Task Force for its work and recommendations. He noted the strong support from alumni.

   The Larry Fink art exhibit in Maginnes has generated a large volume of mail to trustees.

   Acceptance letters for the Class of 2008 were all sent by last Friday. This will be the most competitive class in Lehigh history.

The meeting stood adjourned at 5:33 PM

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Stephen F. Thode  
Secretary to the Faculty  
304 Rauch Business Center  
(610) 758-4557  
FAX: (610) 882-9415  
E-mail: sft©
CSE DEPARTMENT: Proposed New Courses for APC

1. Proposed course number and course description (as it will appear in course catalog):
   
   CSE 336 (ECE 336) Embedded Systems (3)
   

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week: Lecture, 3 hours per week. Laboratory, 1 hour per week.

3. Rationale for proposed new course: The course fills a gaping void in the Computer Engineering elective offerings. We have already offered it twice as a 39x course.

4. Academic impact on programs affected by new course:
   
   Is this proposed new course cross-listed? Yes with ECE.
   
   Is the proposed new course acceptable to all affected programs? Yes.
   
   If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided: There are no known effects outside CSE and ECE.

   Who was consulted?
   
   Is the proposed new course acceptable to the affected program?
   
   Will any changes be required in the affected programs? If so, describe.

   Identify any known effects of the proposed new course on the University's commitment to diversity.

   There are no known effects on the University’s commitment to diversity.

5. Resource Impact Statement:

   Provide each of the following:

   Library impact statement: None.
   
   Computer impact statement: About $50,000 worth of computers and peripherals will be required for the course. We have already acquired this equipment with a generous grant from Lucent Foundation.
   
   Faculty impact statement: We have recently hired Dr. Mark Arnold to teach this course.
   
   Facilities impact statement: The course will require refurbishing of FL 331. We have already done this with the aforementioned Lucent grant.

   Provide a statement indicating who will assume financial responsibility for any new resources required: Lucent Foundation has already paid the bills.

CSE DEPARTMENT: Proposed New Courses for APC

1. Proposed course number and course description (as it will appear in course catalog):

   CSE 345 WWW Search Engines (3)

   Study of algorithms, architectures, and implementations of WWW search engines. Information retrieval (IR) models; performance evaluation; properties of hypertext crawling, indexing, searching and ranking; link analysis; parallel and distributed IR; user interfaces. Credit will not be given for both 345 and 445. Prerequisite: CSE 109.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week: 3 hours of lecture

3. Rationale for proposed new course:

   With billions of addressable documents publicly accessible, WWW search engines continue to be fundamental to information seeking on the Web. The scale of these engines, both in content and in access
make the algorithms, architectures, and implementations of these systems challenging. This course is
designed for upper-level undergraduates and graduate students interested in learning how Web search
engines function.

This elective course focuses on the technologies for storing and retrieving hypertext from large databases. Particular emphasis is given to the data structures and algorithms needed to build efficient and scalable
search engines for the World Wide Web (WWW). Topics covered include: information retrieval (IR)
models, performance evaluation, properties of hypertext, crawling, indexing, searching, ranking, link
analysis, parallel and distributed IR, and user interfaces. Students will participate in class projects
involving both the creation and management of a large document collection on the WWW. This project
will require programming in languages such as Perl/CGI, C/C++, or Java.

4. Academic impact on programs affected by new course:
   Is this proposed new course cross-listed?  NO
   Is the proposed new course acceptable to all affected programs?  N/A
   If there are known effects, individuals in charge of the affected programs must be consulted
   about the changes and the following information provided:
     Who was consulted?
     Is the proposed new course acceptable to the affected program?
     Will any changes be required in the affected programs? If so, describe.
   Identify any known effects of the proposed new course on the University's commitment to
diversity.
   We are unaware of any effects.

5. Resource Impact Statement:
   Provide each of the following:
     Library impact statement: None
     Computer impact statement: We have used a grant from Lucent foundation to buy the
                                 necessary computers
     Faculty impact statement: We have recently hired Prof. Brian Davison specifically to
                                 teach such a course
     Facilities impact statement: No impact

   Provide a statement indicating who will assume financial responsibility for any new resources
   required:
   No additional resources beyond the already purchased computers are needed.

   CSE DEPARTMENT: Proposed New Courses for APC

1. Proposed new course number and course description (as is it will appear in course catalog):

   CSE 379 Senior Project (3)
   Design, implementation, and evaluation of a computer science capstone project. Conducted by student
   teams working from problem definition to testing and implementation; written progress reports
   supplemented by oral presentations. Prerequisite: senior standing.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and
   number of contact hours per week: 1 hour of lecture, 2 hours of independent study

3. Rationale for proposed new course:
   According to the current catalog, our seniors in CS are required to take ECE 251 Senior Project (2)
   and ECE 111 Prosensem (1). ECE dropped these two courses from the catalog. This proposed course
   replaces ECE 251 and ECE 111, having roughly the same content.

4. Academic impact on programs affected by new course:
   Is this proposed new course cross-listed?  NO
Is the proposed new course acceptable to all affected programs? YES
If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:
Who was consulted?
Is the proposed new course acceptable to the affected program?
Will any changes be required in the affected programs? If so, describe.
Identify any known effects of the proposed new course on the University's commitment to diversity. NO KNOWN EFFECT

5. Resource Impact Statement:
Provide each of the following:
Library impact statement: NONE
Computer impact statement: NONE
Faculty impact statement: NONE
Facilities impact statement: This will add to the enrollment in the IFD program. We have consulted with the directors of the program. They assure us they would be happy to accommodate this increased load.
Provide a statement indicating who will assume financial responsibility for any new resources required: NO EFFECT

CSE DEPARTMENT: Proposed Program Change for APC

Name and summary of current program:
Bachelor of Science in Computer Science

Proposed program changes (as they will appear in the catalog):
Current catalog entry:
Senior year: first semester (18 credit hours)
CSE 363 Operating System Design (3)
CSE 318 Automata & Formal Grammars (3)
ECE 111 Proseminar (1)
ECE 251 Senior Project I (2)
Math 230 Numerical Methods (3)
HSS electives (3)
Free elective (3)

Proposed catalog entry:
Senior year: first semester (18 credit hours)
CSE 363 Operating System Design (3)
CSE 318 Automata & Formal Grammars (3)
CSE 379 Senior Project I (3)*
Math 230 Numerical Methods (3)
HSS electives (3)
Free elective (3)

* In lieu of CSE 379 the student may take CSE 312 Business Information Systems Design I (3) and CSE 313 Business Information Systems Design II (3), or Engr 211 Integrated Product Development (IPD) Projects I (3) and Engr 212 Integrated Product Development (IPD) Projects II (2). The credits in excess of 3 credits accrued when choosing these alternatives can be used to satisfy the 'professional elective' requirement.

Description of proposed change(s):
Change the first semester senior year, replacing ECE 251 Senior Project (2) and ECE 111 Proseminar (1) with CSE 379 Senior Project (3). Allow as an alternative either 6 credits of CSB project courses or 5 credits of IPD project courses, where the excess credits can be considered professional electives.

Rationale for proposed change(s):
CSE 379 has roughly the same content as that of ECE 251 and ECE 111, which are no longer being offered.
Academic Impact Statement:

Is this proposed program change interdisciplinary? NO

Identify any known effects of the proposed program change on other programs at the University:

If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided: NONE

Who was consulted?
Is the proposed program change acceptable to the affected programs?
Will any changes be required in the affected programs? If so, describe.

Identify any known effects of the proposed program change on the University's commitment to diversity.

NO KNOWN EFFECTS

Resource Impact Statement:

Provide each of the following:

Library impact statement NONE
Computer impact statement NONE
Faculty impact statement NONE
Facilities impact statement NONE

Provide a statement indicating who will assume financial responsibility for any new resources required:

Who was consulted?
Is the proposed program change acceptable to the affected programs?
Will any changes be required in the affected programs? If so, describe.

Identify any known effects of the proposed program change on the University's commitment to diversity.

NO KNOWN EFFECTS

Resource Impact Statement:

Provide each of the following:

Library impact statement NONE
Computer impact statement NONE
Faculty impact statement NONE
Facilities impact statement NONE

Provide a statement indicating who will assume financial responsibility for any new resources required:
CSB PROGRAM: Proposed New Course for APC

1. Proposed new course number and course description (as is it will appear in course catalog):
   CSB 311 – Computer Applications in Business (3) fall
   Application of computer technology to business problems. Transaction processing systems which support the revenue, conversion, and expenditure cycles of manufacturing, service, and retail business organizations. Process modeling, data modeling, internal control, corporate IT governance, and systems development techniques. Application of CASE technology and apply this to a hypothetical business project. Prerequisites: Acc 152 or Acc 108 and CSB 17 or equivalent.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:
   Three hours of lecture

3. Rationale for proposed new course:
   This course is the first of a sequence of three courses that are the key integrative component of the Computer Science and Business (CSB) program. They deal with topics that lie at the boundary of the two disciplines. CSB 311 presents the theoretical foundation for computer technology application to business problems. CSB 312 and 313 provide a hands-on experience in the design and implementation of computer solutions to real-world clients.

4. Academic impact on programs affected by new course:
   Is this proposed new course cross-listed? NO
   Is the proposed new course acceptable to all affected programs? YES
   If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:
   Who was consulted?
   Is the proposed new course acceptable to the affected program?
   Will any changes be required in the affected programs?
   If so, describe.
   Identity any known effects of the proposed new course on the University’s commitment to diversity.
   We are unaware of any effects.

5. Resource Impact Statement:
   Provide each of the following:
   Library impact statement: There is no impact
   Computer impact statement: There is no impact
   Faculty impact statement: There is no impact.
   The course is currently being taught by Prof. James Hall as a separate section of Acc 311.
   Facilities impact statement: There is no impact.

   Provide a statement indicating who will assume financial responsibility for any new resources required:
   The resource implications of these courses were addressed as part of the total resource implications for the CSB program when it was passed by the faculty last year. The CSB proposal recognized the need for additional faculty positions in computer science and the CBE.
   It is the joint responsibility of the Deans and the respective chairs to see that these courses are covered.

CSB PROGRAM: Proposed New Course for APC

1. Proposed new course number and course description (as is it will appear in course catalog):
   CSB 312 – Design of Integrated Business Applications I (3) spring
   Integrated Product Development (FPD) Capstone Course I: Industry-based business information systems design project. Information systems design methodology, user needs analysis, project
feasibility analysis of design alternatives, and integrated product development methodology. Formal oral and written presentations to clients. Prerequisite: CSB 311.

2. **Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study or other) and number of contact hours per week:**
   
   One hour of lecture, two hours of laboratory per week.

3. **Rationale for proposed new course:**

   This course is the second of a sequence of three courses that are the key integrative component of the Computer Science and Business (CSB) program. They deal with topics that lie at the boundary of the two disciplines. CSB 311 presents the theoretical foundation for computer technology application to business problems. CSB 312 and 313 provide a hands-on experience in the design and implementation of computer solutions to real-world clients.

4. **Academic impact on programs affected by new course:**

   - Is this proposed new course cross-listed? NO
   - Is the proposed new course acceptable to all affected programs? YES
   - If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:
     - Who was consulted? We consulted John Oehs and Todd Watkins of the IPD program to be sure the program could accommodate our students.
     - Is the proposed new course acceptable to the affected program? Yes
     - Will any changes be required in the affected programs? If so, describe: No changes needed.
   - Identify any known effects of the proposed new course on the University's commitment to diversity.
     We are unaware of any effects.

5. **Resource Impact Statement:**

   Provide each of the following:
   - Library impact statement: There is no impact
   - Computer impact statement: There is no impact
   - Faculty impact statement: We will need to have a faculty member advise the teams of students enrolled in the course.
   - Facilities impact statement: There is no impact

   Provide a statement indicating who will assume financial responsibility for any new resources required:

   The resource implications of these courses were addressed as part of the total resource implications for the CSB program when it was passed by the faculty last year. The CSB proposal recognized the need for additional faculty positions in computer science and the CBE. It is the joint responsibility of the Deans and the respective chairs to see that these courses are covered.

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**CSB PROGRAM: Proposed New Course for APC**

1. **Proposed new course number and course description (as is it will appear in course catalog):**

   **CSB 313—Design of Integrated Business Applications II (3) fall**

   Integrated Product Development (IPD) Capstone Course II. This course extends the industry-based project initiated in CSB 312 into its implementation phase. Detailed design, in-house system construction and delivery, commercial software options, and systems maintenance and support. The practical component of the course is supplemented by several classroom-based modules dealing with topics that lie at the boundary of computer science and business. Formal oral and written presentations to clients. Prerequisite: CSB 312

2. **Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study or other) and number of contact hours per week:**

   One hour of lecture, two hours of laboratory per week.

3. **Rationale for proposed new course:**
This course is the third of a sequence of three courses that are the key integrative component of the Computer Science and Business (CSB) program. They deal with topics that lie at the boundary of the two disciplines. CSB 311 presents the theoretical foundation for computer technology application to business problems. CSB 312 and 313 provide a hands-on experience in the design and implementation of computer solutions to real-world clients.

4. Academic impact on programs affected by new course:
   Is this proposed new course cross-listed? NO
   Is the proposed new course acceptable to all affected programs? YES
   If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:
   Who was consulted?
   Is the proposed new course acceptable to the affected program?
   Will any changes be required in the affected programs? If so, describe.
   Identify any known effects of the proposed new course on the University's commitment to diversity.
   We are unaware of any effects.

5. Resource Impact Statement:
   Provide each of the following:
   Library impact statement: There is no impact
   Computer impact statement: There is no impact
   Faculty impact statement: We will need to have a faculty member advise the teams of students enrolled in the course.
   Facilities impact statement: There is no impact
   Provide a statement indicating who will assume financial responsibility for any new resources required:
   The resource implications of these courses were addressed as part of the total resource implications for the CSB program when it was passed by the faculty last year. The CSB proposal recognized the need for additional faculty positions in computer science and the CBE. It is the joint responsibility of the Deans and the respective chairs to see that these courses are covered.

CSB Program: Proposed Program Change for APC

Name and summary of current program:
Bachelor of Science in Computer Science and Business

Proposed program changes (as they will appear in the catalog):

Current catalog entry: Proposed catalog entry:

Freshman year, first semester (18 credit hours) Freshman year, first semester (18 credit hours)

Engl 1 – Composition and Literature I (3)
Eco 1 – Principles of Economics (4)
Math 21 – Calculus I (4)
Bus 1 – Intro to Business (3)
CSE 15 Intro to Computer Science (4)

Engl 1 – Composition and Literature I (3)
Eco 1 – Principles of Economics (4)
Math 21 – Calculus I (4)
Bus 1 – Intro to Business (3)
CSE 15 Intro to Computer Science (4)

Freshman year, second semester (16 credit hours)

Engl 2 – Composition and Literature II (3)
Math 22 – Calculus II (4)
Engr 2 – Intro to Engineering (1)
Phys 1.1, 1.2 – Intro to Physics I and lab (3)
CSE 17 – Structured Programming and data structures (4)

Engl 2 – Composition and Literature II (3)
Math 22 – Calculus II (4)
Phys 1.1, 1.2 – Intro to Physics I and lab (5)
CSE 17 – Structured Programming and data structures (4)

Sophomore year, first semester

Sophomore year, first semester
(17 credit hours)
Phy 20 Intro to Physics II (4)
ECE 33 Intro to Computer Engineering (4)
Math 205 - Linear Methods (3)
Acct 151 Intro to Financial Accounting (3)
CSE 261 Discrete Structures (3)

Sophomore year, second semester
(15 credit hours)
CSE 109 Systems Programming (3)
CSE 241 Data Base Systems (3)
Math 231 Probability and Statistics (3)
Acct 152 Intro to Managerial Accounting (3)
Eco 129 Money and Banking (3)

(17 credit hours)
Phy 20 Intro to Physics II (4)
ECE 33 Intro to Computer Engineering (4)
Math 205 - Linear Methods (3)
Acct 151 Intro to Financial Accounting (3)
CSE 261 Discrete Structures (3)

Sophomore year, second semester
(15 credit hours)
CSE 109 Systems Programming (3)
CSE 241 Data Base Systems (3)
Eco 129 Money and Banking (3)
Acct 152 Intro to Managerial Accounting (3)
Math 231 Probability and Statistics (3)

Junior year, first semester
(18 credit hours)
CSE 262 Programming Languages (3)
CSE 342 Fundamentals of Interntworking (3)
Fin 225 Business Finance (3)
Mkt 211 Principles of Marketing (3)
Eco 115 Applied Microeconomics (3)
CSB Professional Elective (3)

Junior year, first semester
(18 credit hours)
CSE 262 Programming Languages (3)
CSE 342 Fundamentals of Interntworking (3)
Fin 225 Business Finance (3)
Mkt 211 Principles of Marketing (3)
Eco 115 Applied Microeconomics (3)
CSB 311 Computer Applications in Business (3)

Junior year, second semester
(15 credit hours)
HSS Humanities/Social Sciences Elective (3)

Junior year, second semester
(18 credit hours)
HSS Humanities/Social Sciences Elective (6)
CSE 216 Software Engineering (3)
ECE 201 Computer Architecture (3)
CSB 312 Design of Integrated Business Applications I (3)
Law 201 Legal Environment for Business (3)

Senior year, first semester
(18 credit hours)
CSE 303 Operating System Design (3)
CSB 351 New Integrated Senior Project (2)

Senior year, first semester
(16 credit hours)
CSE 303 Operating System Design (3)
CSB 313 Design of Integrated Business Applications II (3)
Mgt 280 Management of People and Operations (4)
HSS Humanities/Social Sciences Electives (3)
CSB Professional Electives (3)

Senior year, second semester
(17 credit hours)
Mgt 301 Business Management Policies (3)
CSB 351 New Integrated Senior Project (2)
HSS Humanities/Social Sciences Electives (6)
CSB Professional Electives (6)

Senior year, second semester
(18 credit hours)
Mgt 301 Business Management Policies (3)
CSE 340 Design and Analysis of Algorithms (3)
CSB Professional Electives (6)
HSS Humanities/Social Sciences Electives (3)
CSE 262 Programming Languages (3)

Description of proposed change(s):
1. Drop Egr 2 (1 credit) in second semester
2. Replace Eco 115 (3 credits) with Eco 146 (3 credits) in the fifth semester
3. Replace CSB 351 (4 credits) in the seventh and eighth semester with CSB 312 (3 credits) and
315 (3 credits) in the sixth and seventh semesters

Rationale for proposed change(s):
1. Engr 2 is no longer offered
2. The CBE renumbered Eco 115 as Eco 146.
3. We believe that an IPD experience will make an excellent capstone course for CSB students

Academic Impact Statement:
Is this proposed program change interdisciplinary? YES

Identify any known effects of the proposed program change on other programs at the University. We know of none.

If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided: NONE

Who was consulted?
Is the proposed program change acceptable to the affected programs? Will any changes be required in the affected programs? If so, describe.
Identify any known effects of the proposed program change on the University’s commitment to diversity. NO KNOWN EFFECTS

Resource Impact Statement:
Provide each of the following:
  Library impact statement NONE
  Computer impact statement NONE
  Faculty impact statement NONE
  Facilities impact statement NONE

Provide a statement indicating who will assume financial responsibility for any new resources required: These changes do not require new resources beyond those previously requested
Proposed New Course for APC

Material Science and Engineering

1. Proposed new course number and course description (as it will appear in course catalog):

   Mat 352. Electronics for Materials Science and Engineering (3) fall

   Properties and structures of electronic components including resistors, capacitors, diodes and transistors, a.c. and d.c. circuits, electronic laboratory instruments, circuit analysis and design. Two lectures and one three-hour laboratory per week. Prerequisite: Mat 302 taken previously or concurrently Cargill

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:

   Lecture 2 hours per week and laboratory 3 hours per week.

3. Rationale for proposed new course:

   This course provides Materials Science and Engineering majors a three-credit hands-on course in electronics, with emphasis on materials aspects of electronic components, circuits using these components, and use of commonly encountered electronic laboratory instruments. This course complements Mat 302, Electronic Properties of Materials, which students will take as a pre- or co-requisite. This course is an alternative to the four-credit course ECE 81, Principles of Electrical Engineering, which is a lecture/recitation course without a laboratory and without emphasis on materials aspects of electronic components. For most Materials Science and Engineering majors the proposed Electronics for Materials Science and Engineering course will be more relevant to their use and understanding of materials in electronic devices and of electronic laboratory instruments in testing components and debugging circuits. This course was taught on an experimental basis with six students in Fall 2002 and with twelve students in Fall 2003.

4. Academic impact on programs affected by new course:
   
   Is this proposed new course cross-listed? no
   
   Is the proposed new course acceptable to all affected programs? Yes.
   
   If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

   Who was consulted? Physics: Mike Slavena. ECE: Bruce Fritchman, Don Bolle.
   
   Is the proposed new course acceptable to the affected program? OK with Physics for shared equipment use with PHYS-190. Fritchman and Bolle would prefer for our students to remain in ECE-81.
   
   Will any changes be required in the affected programs? If so, describe. No changes are anticipated, except perhaps one fewer section in ECE-081
   
   Identify any known effects of the proposed new course on the University's commitment to diversity. none

5. Resource Impact Statement:
   
   Provide each of the following:
   
   Library impact statement: none
   
   Computer impact statement: none
   
   Faculty impact statement: Faculty and TA for this course will be provided by MS&E.
   
   Facilities impact statement: This course will use laboratory facilities available in Physics, which will be expanded with funding provided by MS&E and RCFAS.
Provide a statement indicating who will assume financial responsibility for any new resources required: MS&EE and RCEAS will provide funding for expansion of lab facilities for this course.

Proposed Course Changes for APC

Material Science and Engineering

Kind of change, e.g., change in title:
Change in Cross listing

Current course number and course description (from course catalog):

Mat 344. (IE 344) Metal Machining Analysis (3)
Spring
Intensive study of metal cutting emphasizing forces,
energy, temperature, tool materials, tool life, and surface
integrity. Abrasive processes. Laboratory and project
work. Prerequisite: IE 115 or ME 240 or Mat 206.

Proposed course number and course description (as it will appear in course catalog):

MAT 344. (IE 344, ME 344) Metal Machining Analysis (3)
Spring
Intensive study of metal cutting emphasizing forces,
energy, temperature, tool materials, tool life, and surface
integrity. Abrasive processes. Laboratory and project
work. Prerequisite: IE 115 or ME 240 or Mat 206.

Description of proposed change(s):
Mechanical Engineering is adding a cross listing of this course to its program.

Rationale for proposed change(s):
See proposal from Mechanical Engineering.

Impact Statement:
None.

Proposed Program Changes for APC

Material Science and Engineering

Name and summary of current program:

BS in Materials Science and Engineering

Proposed program changes (as they will appear in the catalog):

Senior year, first semester (17-18 credits)
EGR 212 Integrated Product Development Projects II (2)
MAT 302 Electronic Properties of Materials (3)
ECE 81 Principles of Electrical Engineering (4) or
Physics 190 Electronics (3) or
MAT 352 Electronics for Materials Science and Engineering (3)
IE 328 Engineering Statistics (3) or
Math 231 Probability and Statistics (3)
HSS Humanities/Social Science Elective (3)

to replace

**Senior year, first semester (17-18 credits)**
Engr 212 Integrated Product Development Projects II (2)
Mat 302 Electronic Properties of Materials (3)
ECE 81 Principles of Electrical Engineering (4) or
Physics 190 Electronics (3)
IE 328 Engineering Statistics (3) or
Math 231 Probability and Statistics (3)
HSS Humanities/Social Science Elective (3)

**Description of proposed change(s):**
A new course: MAT 352 is to be included in the program as an alternative to ECE 81 and Physics 190.

**Rationale for proposed change(s):**
We wish to offer an alternative to ECE 81 that includes a lab experience. Physics 190, which would be suitable, is not given in the Fall semester. So we have developed a new course with labs, based on Physics 190. It shares their lab space.

**Academic Impact Statement:**

*Is this proposed program change interdisciplinary?*

No

*Identify any known effects of the proposed program change on other programs at the University.*

None

*If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided:*

Who was consulted?

*Is the proposed program change acceptable to the affected programs?*

**Will any changes be required in the affected programs? If so, describe.**

Identify any known effects of the proposed program change on the University's commitment to diversity.

None

**Resource Impact Statement:**

Provide each of the following:

- Library impact statement: none
- Computer impact statement: none
- Faculty impact statement: Faculty and TA for the course will be provided by MS&E.
Facilities impact statement The course will use laboratory facilities available in Physics, which will be expanded with funding provided by MS&E and RCEAS. Provide a statement indicating who will assume financial responsibility for any new resources required:
MS&E and RCEAS will provide funding for expansion of lab facilities for the course.
Proposed Course Changes for APC
Chemical Engineering

Kind of change, e.g., "change in title"

Change in description

Current course number and course description (from course catalog):
ChE 211 Chemical Reactor Design (3) spring
The application of chemical kinetics to the design and operation of chemical reactors. Plug flow and continuous stirred tank reactors. Homogeneous and heterogeneous reaction kinetics. Design of isothermal and adiabatic reactors. Prerequisite: ChE 151, ChE 210 or equivalent.

Proposed course number and course description (as it will appear in course catalog):
ChE 211 Chemical Reactor Design (3) spring
The theory of chemical kinetics and its application to the design and operation of chemical reactors. Plug flow and continuous stirred tank reactors. Homogeneous and heterogeneous reaction kinetics. Design of isothermal and adiabatic reactors. Prerequisite: ChE 151, ChE 210 or equivalent.

Description of proposed change(s):
Change in description to reflect new content

Rationale for proposed change(s):
To include topics that were previously covered in Chem 187.

Impact Statement:
None

Proposed Program Changes for APC
Chemical Engineering

Name and summary of current program:
BS in Chemical Engineering

Proposed program changes (as they will appear in the catalog):
Addition of Bios 31 as a required course.
Dropping of Chem 187 as a required course.

Description of proposed change(s):
Dropping one required course and adding another required course.

Rationale for proposed change(s):
Rationale:
1. The material in Chem 187 is nearly identical to ChE 210 and ChE 211, and should not be taught twice.
2. Molecular and cellular biology have become core, enabling sciences in chemical
engineering. Many chemical engineers are taking jobs in various “bio” and bio-related
fields. A basic background in molecular and cellular biology is an essential part of their
education as chemical engineers.

The course description for Bios 31 reads:
Introduction to Cell and Molecular Biology: Introduction to the structure,
function, and evolution of cells at the level of molecules, organelles, and
differentiated cell types. Includes basic structure and expression of genes,
cell physiology, and the molecular/cellular basis of disease and immunity.

3. Others are doing the same: For example, Penn, Carnegie Mellon, and MIT all require
a biology related course for their chemical engineering majors. This change is thus
consonant with changes going on at the national level in chemical engineering education.

Academic Impact Statement:

Is this proposed program change interdisciplinary?
Sort of.

Identify any known effects of the proposed program change on other programs at the University.
Increasing enrollment in Bios 31.

If there are known effects, individuals in charge of the affected programs must be consulted
about the proposed program change and the following information provided:

Who was consulted?
Neal Simon
Keith Schray

Is the proposed program change acceptable to the affected programs?
Yes.

Will any changes be required in the affected programs? If so, describe.
No.

Identify any known effects of the proposed program change on the University’s commitment to
diversity.

Resource Impact Statement:
Provide each of the following:
Library impact statement: None
Computer impact statement: None
Faculty impact statement: Some increased teaching load in Bio department, but
acceptable to them.
Facilities impact statement: None—lecture course only.

Provide a statement indicating who will assume financial
responsibility for any new resources required: no cost anticipated.
Proposed New Program for APC
Chemical Engineering
Minor in Chemical Engineering

1. Proposed new program mission statement:
To provide training in chemical engineering for non chemical engineering majors.

2. Rationale for proposed new program:
The Minor in Chemical Engineering creates an opportunity for other engineering majors
to gain in depth knowledge of chemical engineering, and to receive a minor when doing
so.

3. Description of proposed new program:
   Minor in Chemical Engineering

To earn a minor in Chemical Engineering, a student must complete 5 courses in Chemical
Engineering distributed as follows:

1. ChE 31    Material and Energy Balances of Chemical Processes (3)

2. ChE 44    Fluid Mechanics (4)
This course is waived if the student has taken or will take CEE 121, ME 231, or
equivalent in which case, the student must select one additional course from the list of
electives below.

3. ChE 151   Introduction to Heat Transfer (3)
This course is waived if the student has taken or will take ME 321 or equivalent in which
case, the student must select one additional course from the list of electives below.

4. ChE 210   Chemical Engineering Thermodynamics (3)
This course is waived if the student has taken or will take ME 104, MAT 205, or
equivalent in which case, the student must select one additional course from the list of
electives below.

5. ChE 211   Chemical Reactor Design (3)

Chemical Engineering elective courses:
ChE 201 Methods of Analysis in Chemical Engineering
ChE 242 Introduction to Chemical Process Control and Simulation
ChE 244 Mass Transfer and Separation Processes (3)
ChE 341 Biotechnology I (3) (Not permitted for students in Bio-Engineering program)
ChE 342 Biotechnology II (3) (Not permitted for students in Bio-Engineering program)
ChE 321 Fundamentals of Air Pollution (3)
ChE 391 Colloid and Surface Chemistry (3)
ChE 392 Introduction to Polymer Science (3)
Other 300 level course allowed with permission of department.

This minor is not available to majors in Chemical Engineering.

4. Academic Impact Statement:
   Is this proposed new program interdisciplinary?  
   No
   Identify any known effects of the proposed new program on other programs at the University.  
   None

   If there are known effects, individuals in charge of the affected programs must be consulted about the proposed new program and the following information provided:
   Who was consulted?  
   Is the proposed new program acceptable to the affected programs?  
   Will any changes be required in the affected programs? If so, describe.  
   Identify any known effects of the proposed new program on the University's commitment to diversity.

5. Resource Impact Statement:
   Provide each of the following:
   Library impact statement  
   None  
   Computer impact statement  

   None
Proposed New Course for APC

ME/MECH

1. Proposed new course number and course description (as it will appear in course catalog):

ME344 (IE344, Mat344) Metal Machining Analysis (3) spring

Intensive study of metal cutting emphasizing forces, energy, temperature, tool materials, tool life, and surface integrity. Abrasive processes. Laboratory and project work. Prerequisite ME240 or IE215 or MAT206.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:
- Lecture: 2 meetings/week = 1 hour per meeting
- Laboratory: 1 meeting/week = 2 hours per meeting

3. Rationale for proposed new course:
Provide our students with a formal departmental association with this course, now cross-listed as IE344 and MAT344. Over the years this course has been one of the recommended courses that our seniors have been advised to choose if their intended plans were directed towards manufacturing and its related issues.

4. Academic impact on programs affected by new course:
- Is this proposed new course cross-listed? YES. IE344 and MAT344
- Is the proposed new course acceptable to all affected programs? YES
- If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:
  - Who was consulted? Professors M. Groover and W. Misiolek
  - Is the proposed new course acceptable to the affected program? YES
  - Will any changes be required in the affected programs? If so, describe. NONE
- Both Professors M. Groover and W. Misiolek, the principal course content instructors from the respective departments, have been consulted regarding our intent and are agreeable with the material being offered as a cross-listed course. Furthermore, since Professor Misiolek now holds a joint appointment in both the Mechanical Engineering and Materials Science Departments, the incorporation of this course as a cross-listed ME course further complements the current arrangement.

Identify any known effects of the proposed new course on the University's commitment to diversity. NONE

5. Resource Impact Statement:
Provide each of the following:
- Library impact statement: None/no change
- Computer impact statement: None/no change
- Faculty impact statement: None/no change
- Facilities impact statement: None/no change

Provide a statement indicating who will assume financial responsibility for any new resources required: To our knowledge, no new resources will be required.

ME/MECH Proposed New Course
1. Proposed new course number and course description (as it will appear in course catalog):

ME 215: Engineering Reliability (3) fall spring

Applications of reliability methods to engineering problems. Modeling and analysis of engineered components and systems subjected to environmental and loading conditions. Modeling content encompasses mechanically based probability and experimentally based statistical approaches. Concepts needed for design with uncertainty are developed. Principles are illustrated through case studies and projects. Engineering applications software will be extensively utilized for the projects. Prerequisites: Math 23 or 33; Mech 12, previously or concurrently.

2. Instructional mode: Lecture three periods per week

3. Rationale for proposed change(s):

This course has been successfully taught twice with encouragement from the MEM faculty. The evaluations from MEM students who took the course were generally favorable. During the last MEM ABET review, it was suggested that MEM students have the opportunity to be exposed to engineering reliability problems and methods. This course is not a replacement for Math 231 Probability and Statistics, rather it is a different type of course. The main thrust of the course is to provide an introduction to an engineering approach to reliability modeling and problem solving. The approach will be demonstrated through engineering problems such as accelerated life testing of microelectronic components; beam deformation subject to random loading; cable design and analysis; corrosion and corrosion fatigue; elastic springback; fracture of brittle and ductile materials; interfacial damage growth; linear and nonlinear tolerancing; material coarsening and strengthening; mechanical load sharing; and system reliability

4. Academic Impact Statement:

Is this proposed program change interdisciplinary? No

Identify any known effects of the proposed program change on other programs at the University.

This course will result in less demand for Math 231 by ME Majors.

If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided:

Who was consulted? Chair of Mathematics. Mathematics faculty responsible for teaching Math 231, Associate Dean of Arts and Science, Chair of EdPol, Associate Dean of Engineering, Dean of Engineering. There have been numerous emails back and forth concerning the course and its impact on the Mathematics Department. There have been at least two formal face-to-face meetings with individuals listed above.

Is the proposed program change acceptable to the affected programs? No—it appears that the Mathematics Department is primarily concerned with duplication and reduction of class size in Math 231. Regarding duplication, it will be minimal in actuality and none in approach because this course is foremost an applied engineering reliability course rather than probability and statistics. Regarding reduction, there will be some; however, the value of the course to practicing engineers is felt to be sufficiently important to warrant the reduction. This reduction in the size of Math 231 should not be excessive. Currently, MEM students choose Math 208 Complex Variables, Math 230 Numerical Methods, or Math 231 Probability and Statistics to satisfy their fifth mathematics course. Approval of the proposed course would allow MEM students an additional course from which to choose. i.e., they would choose one from Math 208, 230, 231 or ME 215.

Will any changes be required in the affected programs? If so, describe. No

Identify any known effects of the proposed program change on the University's commitment to diversity:
There is no known effect on the University's commitment to diversity

5. Resource Impact Statement:

Provide each of the following:

Library impact statement: None existing facilities are adequate

Computer impact statement: Existing facilities are adequate; approximately 3 hr/week use of PCs or workstations required

Faculty impact statement: This course will be taught by Prof. Harlow

Facilities Impact statement: None

Proposed Program Changes for APC

ME/MECH

Name and summary of current program:

Undergraduate Program in Mechanical Engineering

Junior year, first semester (16 – 18 credit hours)

Math 208 Complex Variables (3) or
Math 230 Numerical Methods (3) or
Math 231 Probability and Statistics (3)

Proposed program changes (as they will appear in the catalog):

Undergraduate Program in Mechanical Engineering

Junior year, first semester (16 – 18 credit hours)

ME 215 Engineering Reliability (3) or
Math 208 Complex Variables (2) or
Math 230 Numerical Methods (3) or
Math 231 Probability and Statistics (3)

Description of proposed change(s):

ME 215 is a new course that can be used as an alternative in the ME curriculum, for any of the three Math courses listed.

Rationale for proposed change(s):

The course addresses topics in reliability methodology not found in other courses. It gives ME majors an additional option for their fifth mathematics course.
Academic Impact Statement: The Academic Impact Statement for this change is identical to that given in the proposal for the new course, ME215.

Is this proposed program change interdisciplinary?
Identify any known effects of the proposed program change on other programs at the University.
If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided:
  Who was consulted?
  Is the proposed program change acceptable to the affected programs?
  Will any changes be required in the affected programs? If so, describe.
Identify any known effects of the proposed program change on the University’s commitment to diversity.

Resource Impact Statement:
Provide each of the following:
  Library impact statement
  Computer impact statement
Faculty impact statement:
Facilities impact statement; provide a statement indicating who will assume financial responsibility for any new resources required:
ECE Course Additions – Submitted 11/10/03

ECE 363 Introduction to MEMS/NEMS (3) Survey of the standard IC fabrication processes, such as photolithography, dry and wet etching, oxidation, thin-film deposition and chemical mechanical polishing. In-depth analysis of MEMS-specific processes such as wafer bonding, wet anisotropic etching, photolithography using thick photoresist, and deep reactive ion etching of silicon. The basics of nano-fabrication techniques. The fundamentals of MEMS design will be outlined. A wide variety of MEMS and NEMS devices will be discussed. Prerequisite: Math 35 or ECE 351 or consent of the instructor.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:
Lecture, 3 hours per week

3. Rationale for proposed new course:

Similar course has been proposed for two years in a row now, very well received by students. It is the first in a line of several MEMS/NEMS courses that will be developed. No similar course exists at Lehigh yet.

4. Academic impact on programs affected by new course:
   Is this proposed new course cross-listed? No
   Is the proposed new course acceptable to all affected programs? N/A
   If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided: N/A
     Who was consulted?
     Is the proposed new course acceptable to the affected program?
     Will any changes be required in the affected programs? If so, describe.
     Identify any known effects of the proposed new course on the University’s commitment to diversity. None

5. Resource Impact Statement:
   Provide each of the following:
     Library impact statement: None.
     Computer impact statement: None.
     Faculty impact statement: This course will be taught by Svetlana Tatic-Luck
     Facilities impact statement: None.

   Provide a statement indicating who will assume financial responsibility for any new resources required: N/A


2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:
Lecture 3 hours/week

3. Rationale for proposed new course:
There is a critical need for two-semester courses on semiconductor lasers. Such courses have been taught twice at Lehigh in the past as special topic courses. These two courses serve students who want to receive the MS in Photonics and to pursue a Ph.D. in Optical Technologies.

4. **Academic impact on programs affected by new course:**
   - Is this proposed new course cross-listed? No
   - Is the proposed new course acceptable to all affected programs? Yes
   - If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided: There are no known effects outside ECE
     - Who was consulted?
     - Is the proposed new course acceptable to the affected program?
     - Will any changes be required in the affected programs? If so, describe.
     - Identify any known effects of the proposed new course on the University's commitment to diversity.
     - There are no known effects on the University's commitment to diversity.

5. **Resource Impact Statement:**
   - Provide each of the following:
     - Library impact statement: None
     - Computer impact statement: None
     - Faculty impact statement: Dr. Yufei J. Ding will teach this course.
     - Facilities impact statement: None
   - Provide a statement indicating who will assume financial responsibility for any new resources required: N/A

**ECE 359 Semiconductor Lasers II (3) Continuation of Semiconductor Lasers I/Advanced Semiconductor Lasers I**

Topics covered include: Gain and current relations; dynamic effects; perturbation and coupled-mode theory; dielectric waveguides; and photonic integrated circuits

2. **Institutional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:**

Lecture 3 hours/week

3. **Rationale for proposed new course:**

There is a critical need for two-semester courses on semiconductor lasers. Such courses have been taught twice at Lehigh in the past as special topic courses. These two courses serve students who want to receive MS in Photonics and to pursue a Ph.D. in Optical Technologies.

4. **Academic impact on programs affected by new course:**
   - Is this proposed new course cross-listed? No
   - Is the proposed new course acceptable to all affected programs? Yes
   - If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided: There are no known effects outside ECE
     - Who was consulted?
     - Is the proposed new course acceptable to the affected program?
     - Will any changes be required in the affected programs? If so, describe.
     - Identify any known effects of the proposed new course on the University's commitment to diversity.
     - There are no known effects on the University's commitment to diversity.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:

Lecture 3 hours/week

3. Rationale for proposed new course:

There is a critical need for this course due to expansion of the photonics program. Such a course has been taught at Lehigh in the past as a special topic course.

4. Academic impact on programs affected by new course:

Is this proposed new course cross-listed? No

Is the proposed new course acceptable to all affected programs? Yes

If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided: There are no known effects outside ECE.

Who was consulted?

Is the proposed new course acceptable to the affected program?

Will any changes be required in the affected programs? If so, describe.

Identify any known effects of the proposed new course on the University's commitment to diversity.

There are no known effects on the University's commitment to diversity.

5. Resource Impact Statement:

Provide each of the following:

Library impact statement: None

Computer impact statement: None

Faculty impact statement: Dr. Yujie J. Ding will teach this course.

Facilities impact statement: None

Provide a statement indicating who will assume financial responsibility for any new resources required: N/A

scmphores, mailboxes, queues. Task priorities and rate monotonic scheduling. Software architectures for embedded systems. Prerequisite: CSE 17.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week: Lecture, 3 hours per week Laboratory, 1 hour per week.

3. Rationale for proposed new course: The course fills a gaping void in the Computer Engineering elective offerings. It has already been offered twice as a 39x course.

4. Academic impact on programs affected by new course:
   Is this proposed new course cross-listed? Yes, with CSE.
   Is the proposed new course acceptable to all affected programs? Yes.
   If there are known adverse, individuals in charge of the affected programs must be consulted about the charges and the following information provided: There are no known affects outside CSE and ECE.
   Who was consulted?
   Is the proposed new course acceptable to the affected program?
   Will any changes be required in the affected programs? If so, describe.
   Identify any known effects of the proposed new course on the University’s commitment to diversity.
   There are no known effects on the University’s commitment to diversity.

5. Resource Impact Statement:
   Provide each of the following:
   Library impact statement: None.
   Computer impact statement: About $50,000 worth of computers and peripherals will be required for the course. We have already acquired this equipment with a generous grant from Lucent Foundation.
   Faculty impact statement: We have recently hired Dr. Mark Arnold to teach this course. It will have a positive impact on his teaching.
   Facilities impact statement: The course will require refurbishing of FL 331. We have already done this with the aforementioned Lucent grant.
   Provide statement indicating who will assume financial responsibility for any new resources required: Lucent Foundation has already paid the bills.

   Faculty impact statement
   Small
   Facilities impact statement
   None

   Provide statement indicating who will assume financial responsibility for any new resources required:
   Department.
Proposed Course Change for APC

Industrial and Systems Engineering

Kind of change, e.g., "change in title"

Change in title and description

Current course number and course description (from course catalog):

IE 319. Material Handling and Facilities Planning (3)
Material handling systems, storage systems, and automatic identification. Facilities planning including layout planning and facility location. Prerequisite: IE 131; or consent of department chair.

Proposed course number and course description (as it will appear in course catalog):

IE 319. Facilities Planning and Material Handling (3)
Facilities planning including plant layout design and facility location. Material handling analysis including transport systems, storage systems, utilizing equipment, and automatic identification and data capture. Prerequisite: IE 131; or consent of department chair.

Description of proposed change(s):

Changes in course title and course description, mostly editorial.

Rationale for proposed change(s):

The current description has been used since this course was originally published in the University catalog in 1989. The proposed changes would update the course content and increase the emphasis on facilities planning topics, consistent with textbook used for the course.

Impact Statement:

The proposed change will have minimal impact on teaching schedules, laboratory resources and library resources. The course will continue to be taught by Prof. Groover.

Proposed Course Change for APC

Industrial and Systems Engineering

Kind of change, e.g., "change in title"

Cross-listing of ME 344 to current IE 314 and Mat 344, so that ISE course title entry will read:

IE 344. (Mat 344, ME 344) Metal Machining Analysis (3) spring

Current course number and course description (from course catalog):

IE 344. (Mat 344) Metal Machining Analysis (3) spring
Intensive study of metal cutting emphasizing forces, energy, temperature, tool materials, tool life, and surface integrity. Abrasive processes. Laboratory and project work. Prerequisites: IE 215 or ME 240 or Mat 206.
Proposed course number and course description (as it will appear in course catalog):

IE 344. (Mat 344, ME 344) Metal Machining Analysis (3) spring
Intensive study of metal cutting emphasizing forces, energy, temperature, tool materials, tool life, and surface integrity. Abrasive processes. Laboratory and project work. Prerequisite: IE 213 or ME 240 or Mat 206.

Description of proposed change(s):

Addition of ME 344 to cross-listing of IE 344 and Mat 344.

Rationale for proposed change(s):

The course is and always has been a blend of mechanical engineering, industrial engineering and materials science. Accordingly, it makes sense to add ME 344 as a regular senior level course for mechanical engineering majors.

Impact Statement:

The proposed change will have minimal impact on teaching schedules, laboratory resources, and library resources. Currently, the course has minimal enrollments (6 students in Spring 2002 and 7 students in Spring 2003 and these enrollments include several ME students). It is hoped that the number of enrolled ME students will increase as a result of the change. The course will continue to be taught by Profs. Groover (ISF) and Misiolak (MS&E and ME/M).
Proposed Catalog Changes,
Civil And Environmental Engineering
For 2004-2005 Catalog
revised 11-19-03

This document provides proposed catalog changes for Civil and Environmental Engineering Department in the order and format prescribed by the APC in a recent document:

1. Proposed new programs: none
2. Proposed course changes: p. 1-2 (CEE 266 & CEE 272)
3. Proposed program changes: p. 3-5 (B.S. Environmental Engineering)
4. Proposed new courses: p. 6 (CEE 171)

1. Proposed New Programs: none

2. Proposed Course Changes

1. Current course number and course description (from course catalog):

   CEE 266. Project Management (3) spring
   An overview of the management and control of engineering ventures and projects. Emphasis on systems theory, life-cycle approach, resource management, financial controls, contracts, labor relations and organizational forms. Case studies and lecturers from industry. Prerequisite: CEE 202 or consent of the department chair. (ES 1, ED 2)

2. Proposed course number and course description (as it will appear in course catalog):

   CEE 266. Construction Management (3) spring
   An overview of management and construction techniques used in engineering ventures and projects. Scheduling, estimation, construction methods, financial controls, contracts, labor relations and organizational forms. Case studies and lecturers from industry. Prerequisites CEE 159 and CEE 202, or instructor's approval.

3. Description of proposed change(s):
   Change title and description
4. **Rationale for proposed change(s):** The course description will be changed to address the expertise of the instructor and to provide a greater breadth to students interested in the area of construction. The title change mirrors the new content.

5. **Impact Statement:** None
2. Proposed Course Changes (continued)

1. Current course number and course description (from course catalog):

   **CE 272 Environmental Risks, Regulations and Policy (2)**
   Assessment of voluntary and involuntary risks. Risk reduction through regulations and environmental policy. Role of life cycle analysis of products and engineered systems in risk allocation and risk reduction. (ES 1, Other 1)

2. Proposed course number and course description (as it will appear in course catalog):

   **CE 272 Environmental Risk Assessment (2)**

3. Description of proposed change(s):

   The proposed changes shown in Item #2 above, are a change in the course title and course description.

4. Rationale for proposed change(s):

   The original course title and description were written during the development of the new B.S. in Environmental Engineering, prior to the course being developed and taught. The proposed changes clarify the focus of the course as it is now taught.

5. Impact Statement: None

3. Proposed Program Changes to B.S. Environmental Engineering

1. Name and summary of current program:

   **B.S. Environmental Engineering**
   Environmental Engineering is a relatively young interdisciplinary branch of the engineering profession that has emerged from the societal needs to educate engineers in the causes, control, and prevention of environmental pollution while maintaining industrial and economic growth. Traditionally, environmental engineers were involved in designing and constructing drinking water treatment plants, sewage treatment facilities and water distribution networks. More recently, the environmental engineering profession has greatly expanded and the activities include detection and modeling fate
and transport of contaminants in both natural and engineered environments; applying technology-based solutions for restoring environmental quality; developing and/or modifying industrial processes for ecological preservation and enhanced sustainability. Previously, environmental engineering was included as part of the civil engineering program. Beginning in Fall 2002, it can now also be pursued as a separate B.S. degree that will be considered for accreditation at the next college review in 2006-2007.

### Proposed Program Changes (as they will appear in the catalog):

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<tr>
<td><strong>sophomore year, first semester</strong> (16 credit hours)</td>
<td><strong>sophomore year, first semester</strong> (17 credit hours)</td>
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<tr>
<td>Math 23 Calculus III (4)</td>
<td>Math 23 Calculus III (4)</td>
</tr>
<tr>
<td>Chem 51 Organic Chemistry I (3)</td>
<td>Chem 51 Organic Chemistry I (3)</td>
</tr>
<tr>
<td>CEE 12 Civil Eng. Statics (2)</td>
<td>CEE 12 Civil Eng. Statics (2)</td>
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<tr>
<td>Econ 1 Principles of Economics (4)</td>
<td>Econ 1 Principles of Economics (4)</td>
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**sophomore year, second semester** (18 credit hours)

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<tbody>
<tr>
<td>Math 205 Linear Methods (3)</td>
<td>Math 205 Linear Methods (3)</td>
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<tr>
<td>PHY 21 Intro Physics I (4)</td>
<td>PHY 21 Intro Physics I (4)</td>
</tr>
<tr>
<td>PHY 22 Intro Physics II, Laboratory (1)</td>
<td>PHY 22 Intro Physics II, Laboratory (1)</td>
</tr>
<tr>
<td>CEE 170 Intro. Environmental Engr (4)</td>
<td>CEE 170 Intro. Environmental Engr (4)</td>
</tr>
<tr>
<td>CEE 272 Env. Risk, Regulations and Policy (2)</td>
<td>CEE 272 Environmental Risk Assessment (2)</td>
</tr>
<tr>
<td>Pol 111 Politics of Environment (4)</td>
<td>Pol 111 Politics of Environment (4)</td>
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</tbody>
</table>

**junior year, first semester** (16 credit hours)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>CEE 121 Mechanics of Fluids (3)</td>
<td>CEE 121 Mechanics of Fluids (3)</td>
</tr>
<tr>
<td>CEE 142 Fund. Soil Mechanics (3)</td>
<td>CEE 142 Fund. Soil Mechanics (3)</td>
</tr>
<tr>
<td>CEE 276 Env. Engr. Processes (3)</td>
<td>CEE 276 Env. Engr. Processes (2)</td>
</tr>
<tr>
<td>EES 31 Intro. Env. Organizational Biology (4)</td>
<td>EES 31 Intro. Env. Organizational Biology (4)</td>
</tr>
</tbody>
</table>

**junior year, second semester** (17 credit hours)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>CEE 222 Hydraulic Engineering (3)</td>
<td>CEE 222 Hydraulic Engineering (3)</td>
</tr>
<tr>
<td>CEE 274 Environmental Water Chemistry (3)</td>
<td>CEE 274 Environmental Water Chemistry (3)</td>
</tr>
<tr>
<td>CHE 112 Technical Write. (3)</td>
<td>CHE 112 Technical Write. (3)</td>
</tr>
<tr>
<td>CHE 60 Unit Ops Survey (1)</td>
<td>CHE 60 Unit Ops Survey (1)</td>
</tr>
<tr>
<td>CEE 275 Energy-Geo-Hyd. Lab (2)</td>
<td>CEE 275 Energy-Geo-Hyd. Lab (2)</td>
</tr>
<tr>
<td>ISS Humanities/Soc. Sciences Elective (3)</td>
<td>ISS Humanities/Soc. Sciences Elective (3)</td>
</tr>
</tbody>
</table>

**senior year, first semester** (18 credit hours)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>CEE 222 Hydraulic Engineering (3)</td>
<td>CEE 222 Hydraulic Engineering (3)</td>
</tr>
<tr>
<td>CEE 274 Environmental Water Chemistry (3)</td>
<td>CEE 274 Environmental Water Chemistry (3)</td>
</tr>
<tr>
<td>EES 21 Introduction to Hunt Earth (4)</td>
<td>EES 21 Introduction to Hunt Earth (4)</td>
</tr>
<tr>
<td>CHE 60 Unit Ops Survey (3)</td>
<td>CHE 60 Unit Ops Survey (3)</td>
</tr>
<tr>
<td>CEE 275 Energy-Geo-Hyd. Lab (2)</td>
<td>CEE 275 Energy-Geo-Hyd. Lab (2)</td>
</tr>
<tr>
<td>ISS Humanities/Soc. Sciences Elective (3)</td>
<td>ISS Humanities/Soc. Sciences Elective (3)</td>
</tr>
</tbody>
</table>

**senior year, second semester** (18 credit hours)
3. Description of proposed change(s):

The specific changes are as follows:

i) Sophomore 1st semester — Add Chem 53

ii) Sophomore 2nd semester — Rename CEE 272 (recently approved by the APC).

iii) Junior 2nd semester — Move EES 21 from 1st semester senior year and remove three credits of technical electives.

iv) Senior 1st semester — Add CEE 202.

v) Senior 2nd semester — Remove CEE 373; remove CEE 290 and accompanying footnote and replace with CEE 377; remove two credits of technical electives; and add three credits of free electives.

vi) Footnote — In conjunction with above changes, replace "13" with "9" with regards to the technical elective credits.

4. Rationale for proposed change(s):

i) Chem 53 is being added to provide an additional laboratory element to the program supplementing Chem 51, which is a required course.

ii) Moving EES 21 to the junior year allows insertion of CEE 292 into Senior 1st semester.

iii) Addition of CEE 202 is to strengthen the engineering management portion of the program.

iv) CEE 373 is being dropped as a required course because it is a cross-listed course with Chemical Engineering and its offering through Chemical Engineering on an annual basis cannot be assured. It will be retained as a technical elective for students who wish to take the course.

v) The replacement of a technical elective with a free elective is to provide students with an opportunity to take breadth courses of their choosing.
vi) CEE 290 is the design course for the B.S. in Civil Engineering program, while CEE 377 is the equivalent design course for the B.S. in Environmental Engineering program. CEE 377 is being inserted in place of CEE 290 for the senior capstone design course.

5. **Academic Impact Statement:**

   a. **Is this proposed program change interdisciplinary?**  
      
      Yes

   b. **Identify any known effects of the proposed program change on other programs at the University.**
      
      Very minor impacts with slight increases in enrollments in CEE 202 and Chem 53.

   c. **If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided:**
      
      (1) **Who was consulted?**  
      
      EES, CHE and Chem faculty on the B.S. Environmental Engineering Committee (Daniel Zeroka, David Anastasio, and Ralph Gabriels).

      (2) **Is the proposed program change acceptable to the affected programs?**  
      
      Yes.

      (3) **Will any changes be required in the affected programs? If so, describe.**  
      
      No.

   d. **Identify any known effects of the proposed program change on the University’s commitment to diversity.**  
      
      No known changes.

6. **Resource Impact Statement:**

   a. **Provide each of the following:**
      
      (1) **Library impact statement**  
      
      No impact

      (2) **Computer impact statement**  
      
      No impact

      (3) **Faculty impact statement**  
      
      No impact

      (4) **Facilities impact statement**  
      
      No impact

   c. **Provide a statement indicating who will assume financial responsibility for any new resources required:**  
      
      No new resources are required.

1. Proposed new course number and course description (as is it will appear in course catalog):

CEE 171 (ChE 171, ES 171) Fundamentals of Environmental Technology (4)
Pollution control technologies and how they work for water, air, and solid wastes.
Assessment and management of risk as applied to remediation of contaminated wastes.
Role of life cycle analysis of products in risk reduction. Technologies leading
to sustainable environment. Government policies and regulations, including litigation
and Best Available Technology. Prerequisite: one advanced science course or
permission of instructor. Not available to students in RCEAS.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent
study, or other) and number of contact hours per week:
Three 50 minute periods, one 50 minute recitation

3. Rationale for proposed new course:
This course is a key component for the new B.A. in Environmental Studies being
proposed by the Environmental Initiative Task Force for adoption in the '04-'05
catalog (see box below for core courses; 16 credits are also required in an extensive
list of elective courses not shown below). It has also been suggested to the RCEAS
committee developing a minor in engineering for non-engineers (chair Roger Nagel).

<table>
<thead>
<tr>
<th>B.A. in Environmental Studies: Core Courses (28 credits required)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part 1: Required:</strong></td>
</tr>
<tr>
<td>ES 101 (Dept. 101) Introduction to Environmental Studies (4) SS New Course</td>
</tr>
<tr>
<td>EES 96 Environmental Science: Systems and Solutions (4) New Course</td>
</tr>
<tr>
<td>ES 381 Senior Seminar: Issues in Environmental Studies (4) SS New Course</td>
</tr>
<tr>
<td><strong>Part 2: At Least 4 of the 6 following courses:</strong></td>
</tr>
<tr>
<td>ES 102 (Dept. 102) Environmental Policy and Planning (4) SS New Course</td>
</tr>
<tr>
<td>ES 111 (Eco 111) A Humanities Perspective on the Environment (4) HU New Course</td>
</tr>
<tr>
<td>- (A revised version of Anth 121, Environment and Culture, (4) could be taught to get the major started until faculty are hired to teach this new course.)</td>
</tr>
<tr>
<td>ES 114 (Jour 114) Communicating about the Environment (4) SS New Course</td>
</tr>
<tr>
<td>- (Jour. 125 could be used for the major until faculty are hired to teach this course.)</td>
</tr>
<tr>
<td>ES 171 (ChE/CEE 171) Fundamentals of Environmental Technology (4) (ND) New Course</td>
</tr>
<tr>
<td>ES 315 (Hist 315) American Environmental History (4) SS</td>
</tr>
</tbody>
</table>

4. Academic impact on programs affected by new course:
   a. Is this proposed new course cross-listed?
      We are proposing that the course will be crosslisted with Civil &
      Environmental Engineering and Chemical Engineering, e.g.
      ES 171 (CHE/CEE 171).
   b. Is the proposed new course acceptable to all affected programs?
      We have sent this description to all groups that will be impacted, and will address
      comments as they are received.
   c. If there are known effects, individuals in charge of the affected programs
      must be consulted about the changes and the following information
      provided:
      1. Who was consulted? (parentheses indicate will be sent a copy in future)
         Arup SenGupta, Chair, Civil & Environmental Engineering; Director, BS
         in Environmental Engineering Program
         Steve Cutcliffe, LEO Director; STS Director; Chair Environmental
         Initiative Director Search Committee; Professor of History.
         Sharon Friedman, Chair, Environmental Initiative Curriculum Committee
         Anne Metzger, Chair, Earth & Environmental Sciences
         (Tony McHugh, Chair, Chemical Environmental Engineering)
         Carl Moses, Interim Dean, College of Arts & Sciences
      2. Is the proposed new course acceptable to the affected program? Yes
      3. Will any changes be required in the affected programs? If so, describe.
         No changes in existing programs. Has been suggested as a course to be
         included with the Engineering Minor Program (Roger Nagel, committee
         chair), and will be an elective in the new, proposed B.A. in Environmental
         Sciences Program.
   d. Identify any known effects of the proposed new course on the University's
      commitment to diversity. No effects are known at this time.

5. Resource Impact Statement:
   a. Provide each of the following:
      (1) Library impact statement:
         There will be minimal impact on the use of the library.
      (2) Computer impact statement:
         There will be minimal impact on the use of the computing facilities.
      (3) Faculty impact statement:
         This course is part of the proposed 20/20 Environmental Initiative, with a partial
         justification for hiring a new faculty in Engineering Technology is to teach this course as
         part of his or her duties. Thus there is no adverse impact, but rather, an opportunity to
         add a new faculty member. Although it is possible that the hire would be in either Civil &
         Environmental Engineering or Chemical Engineering. It is likely that the person would
         hold a joint appointment in the two departments.
      (4) Facilities impact statement:
         There will be minimal impact on the use of the facilities other than those
         mentioned above.
b Provide a statement indicating who will assume financial responsibility for any new resources required: Apart from the faculty member position, other financial responsibilities will be shared by the Environmental Initiative, and the department(s) in which the faculty member(s) reside.
#11

Approved S'04

**Proposed New Course for APC**

*(For ME Aerospace Minor)*

1. **Proposed new course number and course description (as is it will appear in course catalog):**

   Mech 328 *Fundamentals of Aircraft Design* (3) spring


2. **Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:** Three lecture hours per week.

3. **Rationale for proposed new course:**

   This course is required in the proposed Technical Minor in Aerospace Engineering.

4. **Academic impact on programs affected by new course:**

   Is this proposed new course cross-listed? No

   Is the proposed new course acceptable to all affected programs?

   If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

   Who was consulted?

   Is the proposed new course acceptable to the affected program?

   Will any changes be required in the affected programs? If so, describe.

   Identify any known effects of the proposed new course on the University’s commitment to diversity. The course is neutral regarding diversity.

5. **Resource Impact Statement:**

   Provide each of the following:

   - **Library impact statement:** The proposed course will have no appreciable effect on the library
   - **Computer impact statement:** The proposed course will have no appreciable effect on computing
   - **Faculty impact statement:** The proposed course will be taught by Prof. J. Grenestedt
   - **Facilities impact statement:** The proposed course will have no effect on facilities

   Provide a statement indicating who will assume financial responsibility for any new resources required: No new financial resources required
Proposed New Program for APC

Mechanical Engineering and Mechanics

1. Proposed new program mission statement: 1 Minor in Aerospace Engineering

This minor program intended primarily for mechanical engineering majors, provides sufficient background in aerospace studies to allow our graduates to have entry to MS and PhD programs in this field.

2. Rationale for proposed new program:

This minor program is a partial step towards addressing the lack of an aerospace engineering program in the college. To this extent it will assist in recruiting.

3. Description of proposed new program:

The technical minor in aerospace engineering consists of a minimum of 17 credits, as follows:

Required Courses:
- MECH 326 Aerodynamics (3)
- Mech 305 Advanced Mechanics of Materials (3)
- ME 343 Control Systems (3)
- Mech 328 Fundamentals of Aircraft Design (3)

Elective Courses
- ME 322 Gas Dynamics (3)
- ME 323 Reciprocating and Centrifugal Engines (3)
- ME 331 Advanced Fluid Mechanics (3)
- ME 389 Controls Laboratory (2)
- Mech 312 Finite Element Analysis (3)
- ME 348 Computer-Aided Design (3)
- MAT 509 Composite Materials (3)

4. Academic Impact Statement:

Is this proposed new program interdisciplinary? Yes

Identify any known effects of the proposed new program on other programs at the University.

No effect on other programs.

If there are known effects, individuals in charge of the affected programs must be consulted about the proposed new program and the following information provided:

Who was consulted?
Is the proposed new program acceptable to the affected programs?
Will any changes be required in the affected programs? If so, describe.

Identify any known effects of the proposed new program on the University's commitment to diversity.

The proposed program is neutral regarding diversity.

5. Resource Impact Statement:

Provide each of the following:

Library impact statement: The proposed program will have no appreciable impact on library resources.

Computer impact statement: The proposed program will have no appreciable impact on computer resources.

Faculty impact statement: Except for Mech 328, all ME and Mech required and elective courses are presently offered to seniors on a regular basis. Prof. Graschedt will develop and teach Mech 328.

Facilities impact statement: This program will have no effect on facilities.

Financial responsibility for any new resources required: Mechanical Engineering and Mechanics is responsible for the program.
Proposed New Course

1. Proposed new course number and course description (as it will appear in course catalog):

   BioE 132 - Bioengineering Research I (2) fall
   Research topic chosen by students, with the help of a faculty advisor from among the three bioengineering tracks (biopharmaceutical engineering, biogenic/biophotonics or cell and tissue engineering) Independent meetings with advising professor will track progress. Includes written report and oral presentation. Prerequisite: junior standing and permission of instructor.

2. Instructional mode (i.e. lecture, recitation, laboratory, seminar, independent study, or other)
   And number of contact hours per week:
   One 1 hour scheduled seminar and five hours of independent laboratory.

3. Rationale for proposed new course:

   Development of junior level courses as a part of the integrated experiential learning for Bioengineering Program

4. Academic impact on programs affected by new course:

   a. Is this proposed new course cross-listed? No

   b. Is the proposed new course acceptable to all affected programs? Yes

   c. If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

      1. Who was consulted? Advising faculty members and departmental chairs
      2. Is the proposed new course acceptable to the affected program? Yes
      3. Will any changes be required in the affected programs? If so, describe. No

   d. Identify any known effects of the proposed new course on the University's commitment to diversity. No known effects

5. Resource Impact Statement:

   a. Provide each of the following:

      (1) Library impact statement:

      The library has a good base of journals, monographs, and related materials to support this course. They will be able to absorb any additional introductory materials into the budget if additions appear gradually.

      (2) Computer impact statement: None
(3) **Faculty impact statement**: New faculty to support Bioengineering Program are being hired through traditional departments. In addition, the course needs support from individual faculty members as project mentors from each department.

(4) **Facilities impact statement**: None per Registrar

b. **Provide a statement indicating who will assume financial responsibility for any new resources required**: Bioengineering Program
Proposed New Course

1. Proposed new course number and course description (as it will appear in course catalog):

   BioE 142 – Bioengineering Research 2 (2) spring
   Continuation of research initiated in BioE 132, Research 1. Topic chosen by student, with the help of a
   faculty advisor from among the three bioengineering tracks (biopharmaceutical engineering,
   bioelectronic/biophotonics or cell and tissue engineering). Independent meetings with advising professor
   will track progress. Includes written report and oral presentation. Prerequisite: BioE 132 or permission of
   instructor

2. Instructional mode (i.e. lecture, recitation, laboratory, seminar, independent study, or other)
   And number of contact hours per week:

   One 1 hour scheduled seminar; five hours of independent laboratory

3. Rationale for proposed new course:

   Development of junior level courses as part of the integrated experiential learning for Bioengineering
   Program.

4. Academic impact on programs affected by new course:

   a. Is this proposed new course cross-listed? No

   b. Is the proposed new course acceptable to all affected programs? Yes

   c. If there are known effects, individuals in charge of the affected programs must be consulted
      about the changes and the following information provided:

      1. Who was consulted? Advising faculty members and departmental chairs

      2. Is the proposed new course acceptable to the affected program? Yes

      3. Will any changes be required in the affected programs? If so, describe. No

   d. Identify any known effects of the proposed new course on the University's commitment to
      diversity. No known effects

5. Resource Impact Statement:

   a. Provide each of the following:

      (1) Library impact statement:

      The library has a good base of journals, monographs, and related materials to support
      this course. They will be able to absorb any additional introductory materials
      into the budget if additions appear gradually

      (2) Computer impact statement: None

      (3) Faculty impact statement: New faculty to support Bioengineering Program are being hired
      through traditional departments. In addition, the course need support from individual faculty
      members as project mentors from each department.

      (4) Facilities impact statement: None per Registrar

   b. Provide a statement indicating who will assume financial responsibility for any new
      resources required: Bioengineering Program
Proposed New Course

1. Proposed new course number and course description (as it will appear in course catalog):

   BioE 225 - Bioengineering Design (3) Spring
   Bioengineering design, including examples of engineering analysis and design applied to representative topics in biomechanics, bioinstrumentation, biomaterials, biotechnology and related areas. Technological needs, design methodology, testing procedures, statistical analysis, governmental regulation, evaluation of costs and benefits, quality of life and ethical issues. Prerequisite: BioE 110

2. Instructional mode (i.e. lecture, recitation, laboratory, seminar, independent study, or other)
   And number of contact hours per week:

   Three 1-hour lectures per week

3. Rationale for proposed new course:

   Development of junior level courses as a part of the integrated experiential learning for Bioengineering Program.

4. Academic impact on programs affected by new course:
   a. Is this proposed new course cross-listed? No
   b. Is the proposed new course acceptable to all affected programs? Yes
   c. If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

      1. Who was consulted? Advising faculty members and departmental chairs
      2. Is the proposed new course acceptable to the affected program? Yes
      3. Will any changes be required in the affected programs? If so, describe. No

   b. Identify any known effects of the proposed new course on the University's commitment to diversity. No known effects

5. Resource Impact Statement:
   a. Provide each of the following:

      (1) Library impact statement:

      The library has a good base of journals, monographs, and related materials to support this course. They will be able to absorb any additional introductory materials into the budget if additions appear gradually.

      (2) Computer impact statement: None

      (3) Faculty impact statement: New faculty to support Bioengineering Program are being hired through traditional departments

      (4) Facilities impact statement: None per Registrar

   b. Provide a statement indicating who will assume financial responsibility for any new resources required: Bioengineering Program
Proposed New Course

1. Proposed new course number and course description (as it will appear in course catalog):

   BioE 210 - Introduction to Engineering Physiology (3) spring
   Mammalian physiology for bioengineering students, with an emphasis on control mechanisms and engineering principles. Basic cell functions; biological control systems; muscle; neural; endocrine, circulatory, digestive, respiratory, renal and reproductive systems; regulation of metabolism and defense mechanisms. Includes laboratory work. Prerequisite: BioE 110

2. Instructional mode (i.e. lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:

   Two 1-hour lectures and one 1-hour laboratory session per week

3. Rationale for proposed new course:

   Development of junior level courses as a part of the integrated experiential learning for Bioengineering Program.

4. Academic impact on programs affected by new course:

   a. Is this proposed new course cross-listed? No

   b. Is the proposed new course acceptable to all affected programs? Yes

   c. If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

      1. Who was consulted? Advising faculty members and departmental chairs

      2. Is the proposed new course acceptable to the affected program? Yes

      3. Will any changes be required in the affected programs? If so, describe. No

   d. Identify any known effects of the proposed new course on the University’s commitment to diversity. No known effects

5. Resource Impact Statement:

   a. Provide each of the following:

      (1) Library impact statement:

         The library has a good base of journals, monographs, and related materials to support this course. They will be able to absorb any additional introductory materials into the budget if additions appear gradually.

      (2) Computer impact statement: None

      (3) Faculty impact statement: New faculty to support Bioengineering Program are being hired through traditional departments.

      (4) Facilities impact statement: None per Registrar

   b. Provide a statement indicating who will assume financial responsibility for any new resources required: Bioengineering Program
Proposed New Course

1. Proposed new course number and course description (as it will appear in course catalog):

   BioE 231 – Integrated Bioelectronics Laboratory (2) spring
   Experiments in microelectronics, micro fabrication of MEMS, instrumentation and computer interfaces, lasers, optics, optoelectronics, fiber optics and modern optical microscopy for use in biomedical applications. Prerequisite: BioE 110 or permission of instructor

2. Instructional mode (i.e. lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:

   Two three-hour laboratory sessions

3. Rationale for proposed new course:

   Development of junior level courses as a part of the integrated experiential learning for Bioengineering Program.

4. Academic impact on programs affected by new course:

   a. Is this proposed new course cross-listed? No

   b. Is the proposed new course acceptable to all affected programs? Yes

   c. If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

      1. Who was consulted? Advising faculty members and departmental chairs

      2. Is the proposed new course acceptable to the affected program? Yes

      3. Will any changes be required in the affected programs? If so, describe. No

   d. Identify any known effects of the proposed new course on the University's commitment to diversity. No known effects

5. Resource Impact Statement

   a. Provide each of the following:

      (1) Library impact statement:

         The library has a good base of journals, monographs, and related materials to support this course. They will be able to absorb any additional introductory materials into the budget if additions appear gradually.

      (2) Computer impact statement: None

      (3) Faculty impact statement: New faculty to support Bioengineering Program are being hired through traditional departments.

      (4) Facilities impact statement: None per Registrar

   b. Provide a statement indicating who will assume financial responsibility for any new resources required: Bioengineering Program
Proposed New Course

1. Proposed new course number and course description (as it will appear in course catalog):

   BioE 243 – Integrated Biotechnology Laboratory (2) spring
   Biosafety, sterilization, media formulation, biochemical and enzyme assays, recombinant DNA technique, protein and DNA isolation and purification, for microbial fermentation and animal cell culture. Integration of biotechnology techniques for biopharmaceutical production. Prerequisite: BioE 110 or permission of instructor.

2. Instructional mode (i.e. lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:

   Two three-hour laboratory sessions.

3. Rationale for proposed new course:

   Development of senior level courses as a part of the integrated experiential learning for Bioengineering Program.

4. Academic impact on programs affected by new course:

   b. Is this proposed new course cross-listed? No.

   c. Is the proposed new course acceptable to all affected programs? Yes.

   d. If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

      1. Who was consulted? Advising faculty members and departmental chairs.

      2. Is the proposed new course acceptable to the affected program? Yes.

      3. Will any changes be required in the affected programs? If so, describe. No.

   d. Identify any known effects of the proposed new course on the University’s commitment to diversity. No known effects.

5. Resource Impact Statement

   a. Provide each of the following:

      (1) Library impact statement:

      The library has a good base of journals, monographs, and related materials to support this course. They will be able to absorb any additional introductory materials into the budget if additions appear gradually.

      (2) Computer impact statement: None.

      (3) Faculty impact statement: New faculty to support Bioengineering Program are being hired through traditional departmen.

      (4) Facilities impact statement: None per Registrar.

   b. Provide a statement indicating who will assume financial responsibility for any new resources required: Bioengineering Program.
Proposed New Course

1. Proposed new course number and course description (as it will appear in course catalog):

   BioE 257 - Integrated Biostructural Mechanics Laboratory (2) Fall
   Basic concepts of bioengineering design through experimental designs and procedures involving
cellular and tissues and their interface with synthetic implants. Experimental techniques include
surface characterization and interactions, spectroscopy, and advanced techniques in microscopy.
Nerve action, electrocardiography, mechanics of muscle, membranes and other model
systems in vitro. Prerequisite: BioE 110 or permission of instructor.

2. Instructional mode (i.e. lecture, recitation, laboratory, seminar, independent study, or other)
   And number of contact hours per week:

   Two three-hour laboratory sessions.

3. Rationale for proposed new course:

   Development of junior level courses as a part of the integrated experiential learning for
Bioengineering Program

4. Academic impact on programs affected by new course:

   a. Is this proposed new course cross-listed? No

   b. Is the proposed new course acceptable to all affected programs? Yes

   c. If there are known effects, individuals in charge of the affected programs must be
      consulted about the changes and the following information provided:

      i. Who was consulted? Advising faculty members and departmental chairs

      ii. Is the proposed new course acceptable to the affected program? No

   3. Will any changes be required in the affected programs? If so, describe.

      No

   d. Identify any known effects of the proposed new course on the University's
      commitment to diversity. No known effects

5. Resource Impact Statement:

   a. Provide each of the following:

      (1) Library impact statement:

      The library has a good base of journals, monographs, and related materials to
      support this course. They will be able to absorb any additional
      introductory materials appearing gradually.

      (2) Computer impact statement: None
(3) **Faculty impact statement:** New faculty to support Bioengineering Program are being hired through traditional departments.

(4) **Facilities impact statement:** None per Registrar.

b. Provide a statement indicating who will assume financial responsibility for any new resources required: Bioengineering Program.
Proposed New Course for ISE

1. Proposed new course number and course description (as is it will appear in course catalog):

IE 362 (MSE 362) Logistics and Supply Chain Management. Modeling and analysis of supply chain design, operations, and management. Analytical framework for logistics and supply chains, demand and supply planning, inventory control and warehouse management, transportation, logistics network design, supply chain coordination, and financial factors. Students complete case studies and a comprehensive final project. Prerequisite: IE 220 and IE 251 or equivalents, or instructor approval.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:

Lecture; 3 hours per week.

3. Rationale for proposed new course:

The topic of logistics and supply chain management has attracted significant attention in industry, in particular in the industrial engineering community. Of special interest to engineering students are the technical issues related to the analysis and implementation of systems that arise in the supply chain and logistics context. There is currently no supply chain/logistics course at Lehigh that has a technical and quantitative focus. An experimental course, IE 395 Quantitative Models for Supply Chain Management, has been taught twice in the past two years, and will be offered a third time in spring 2004. Enrollments have exceeded 30 students in all previous offerings. Judging from the popularity of this course, we believe it is time to make the course a regular offering. The course is intended for undergraduate seniors and first year graduate students.

4. Academic impact on programs affected by new course:

Is this proposed new course cross-listed? We intend to cross list as MSE 362
Is the proposed new course acceptable to all affected programs? Yes
If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:

- Who was consulted? Keith Gardiner; Mike Kolchin (Supply Chain Management)
- Is the proposed new course acceptable to the affected program? Yes
- Will any changes be required in the affected program? If so describe.

The required MSE 425 course will be replaced by IE/MSE 362

Identify any known effects of the proposed new course on the University’s commitment to diversity. N/A

5. Resource Impact Statement:

Provide each of the following:

- Library impact statement: n/a
- Computer impact statement: n/a
- Faculty impact statement: At least three existing ISE faculty members are qualified and have interest in teaching this course.
- Facilities impact statement: n/a
Provide a statement indicating who will assume financial responsibility for any new resources required: The ISE Department will assume any financial responsibility for this course.
Proposed New Course for MSE

1. Proposed new course number and course description (as is it will appear in course catalog):

**MSE 362 (IE 362) Logistics and Supply Chain Management.** Modeling and analysis of supply chain design, operations, and management. Analytical framework for logistics and supply chains, demand and supply planning, inventory control and warehouse management, transportation, logistics network design, supply chain coordination, and financial factors. Students complete case studies and a comprehensive final project. Prerequisite: IE 220 and IE 251 or equivalents, or instructor approval.

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study or other) and number of contact hours per week:

Lecture; 3 hours per week.

3. Rationale for proposed new course:

The topic of logistics and supply chain management has attracted significant attention in industry, in particular in the industrial engineering community. Of special interest to engineering students are the technical issues related to the analysis and implementation of systems that arise in the supply chain and logistics context. There is currently no supply chain/logistics course at Lehigh that has a technical and quantitative focus. An experimental course, IE 395 Quantitative Models for Supply Chain Management, has been taught twice in the past two years, and will be offered a third time in spring 2004. Enrollments have exceeded 30 students in all previous offerings. Judging from the popularity of this course, we believe it is time to make the course a regular offering. The course is intended for undergraduate seniors and first year graduate students.

4. Academic impact on programs affected by new course:

- Is this proposed new course cross-listed? We intend to cross list as IE 362
- Is the proposed new course acceptable to all affected programs? Yes
- If there are known effects, individuals in charge of the affected programs must be consulted about the changes and the following information provided:
  - Who was consulted? David Wu, Mike Koehlin (Supply Chain Management)
  - Is the proposed new course acceptable to the affected program? Yes
  - Will any changes be required in the affected programs? If so, describe.
  - The required MSE 425 course will be replaced by IE/MSE 362

Identify any known effects of the proposed new course on the University's commitment to diversity. N/A

5. Resource Impact Statement:

Provide each of the following:

- Library impact statement: n/a
- Computer impact statement: n/a
- Faculty impact statement: At least three existing faculty members are qualified and have interest in teaching this course.
- Facilities impact statement: n/a

Provide a statement indicating who will assume financial responsibility for any new resources required:

The MSE program and ISE Department will assume any financial responsibility for this course.
Proposed Course Changes

Drop Engineering 250

1. Current course number and course description (from course catalog):

   **Engr 250. Computer Modeling of Scientific and Engineering Systems (3) fall**
   Introduction to the mathematical modeling of scientific engineering systems, with emphasis on higher-order nonlinear models for which analytical methods are precluded. Solution of the model equations by computer-based numerical algorithms. Introduction to numerical methods for linear and nonlinear algebraic systems, ordinary and partial differential equations, error analysis and control, stability and convergence in numerical calculations. Prerequisites: Engr 1; Math 205, previously or concurrently. (ES 1) (ED 1)

2. Proposed course number and course description (as it will appear in course catalog):

3. Description of proposed change(s):

   Drop the course

4. Rationale for proposed change(s):

   The course was offered by a faculty member who has now retired. It has not been offered in about 10 years.

5. Impact Statement:

   Dropping the course will reduce confusion on the part of those students who look forward to taking the course. There will be no other impact. The retired faculty member is aware of the change and promised not to be insulted.
PROPOSAL

University-Wide Honors Program Extension Into The College of Business and Economics

The Roy Eckardt College Scholar program is intended for students who show outstanding academic promise. The program, in its current form, is available only to students in the College of Arts & Sciences. The initial implementation will involve a small group of CBE students, approximately 5, who are entering their first year in August 2004 and another 5 second-year students who have achieved Dean’s List. The number of Business students will increase if the program is deemed to be successful.

Admission: First-year student positions will be offered to the top 5 to 10 candidates for admission to the College of Business & Economics, as determined by the academic index. Second-year student positions will be offered to the top 5 to 10 students who, at the end of their freshman year have the best grade point average.

Mission

The principal mission of the Roy Eckardt University Scholar Program is to produce enlightened, responsible citizens who embody the highest standards of intellectual and professional achievement. It offers a unique educational experience that enables outstanding students in all three colleges to reach their fullest potential. A secondary objective is to attract and nurture likely candidates for post-graduate awards. In pursuit of these goals, the program seeks to create a community of people who engage in enriching extra-curricular pursuits accept difficult academic challenges and share a commitment to scholarship and to each other.

Major Program Characteristics

1. Students devise individualized courses of study and engage in scholarly work of an advanced nature. In the case of CBE students, they will still be required to complete the CBE core courses as well as a Business major.

2. All students are required to complete the total number of credits required for his or her degree. In the case of CBE students, this would be 124.

3. They are released from distribution requirements and, if necessary, modifications may be made in major requirements. It is not expected that any modifications will be made for our students.

4. Responsibility for the student’s overall program lies with the (Roy Eckardt University Scholars) Program Director, Ian Duffy.

5. In the final two years, the student receives up to twelve credits for individual work with a faculty member, leading to a senior project of substantial dimensions. This work can be either within the CBE or in other Colleges. The faculty member referenced to here, would have the responsibility of supervising an independent research project. Participation by any individual professor will be completely voluntary.
6. Roy Eckardt University Scholars are expected to enroll and participate in at least two "University Scholar Seminars". This is a course created and run by the Program Director, Ian Duffy. Such courses have a "great books" format, emphasizing the interdisciplinary nature of those works.

7. In addition to the academic privileges of the program, University Scholars are offered a variety of extra-curricular opportunities. These include invitations to visiting speakers, dinners, plays, musicals, operas and other cultural events.

Resource Impact: Faculty are likely to be the major resource effected. This will happen in two possible ways – 1. Members may be asked to serve as advisors to Scholars’ independent project papers. 2. Members may be invited to teach a section of the interdisciplinary course. Both would be done on a completely voluntary basis.

Financial Responsibility: The Roy Eckardt University Scholar Program will assume all additional financial responsibility created by the expansion of the program.

Approval: This proposal has been approved by the following College of Business & Economics groups:
   Executive Committee
   College Policy
   Faculty
To: Faculty in the department of Management and Marketing

From: Catherine Rdings

Date: August 25, 2003

Re: FYI and comments, if needed, on the new number and description for BIS 331

Current description:

BIS 331 (Mkt 331). Electronic Commerce (3)
This course covers how businesses, the government and consumers use the Internet to exchange information and initiate transactions. Topics include risks of insecure systems, Internet security standards and protocols, cryptography, authentication and digital signatures, web-site attestation and assurance, firewalls, electronic cash systems, electronic legal agreements and international cryptographic restrictions. Students will get hands-on experience designing security-conscious web-sites using FrontPage. Prerequisite: BIS 211 or Acct 311, Mkt 211 or consent of instructor

Proposed description:

BIS 331 (Mkt 331). Electronic Commerce (3)
This course covers how businesses and consumers use the Internet to exchange information and complete transactions. Both theoretical concepts and practical skills will be addressed within the scope of the class. Topics include advertising and marketing, ecommerce business and revenue models, online consumer behavior, web site design issues, Internet security, electronic payments, infrastructure issues, privacy issues, and overall electronic commerce strategy. Students will get hands-on experience designing ecommerce web-sites using web authoring software. Prerequisite: BIS 111 or Acct 311, Mkt 211 or consent of instructor.

Rationale:

In the past this class was narrowly focused on security aspects of electronic commerce. We have lessened the emphasis on security and broadened the content of the course to include additional topics such as advertising, strategy, and online consumer behavior. The course description needs to reflect this content change. In addition, we need to remove the reference to a specific web authoring package in order to allow future flexibility in changing out FrontPage if need be. Finally, BIS 211 has been replaced by BIS 111, so we are changing this in the prerequisites.
Rationale: After a review of the standards that have been in place for a long time and an increasing percent of students graduating with honors the committee decided to review the minimum standard for honors. The effect of the changes noted below increase the minimum g.p.a. for honors to 3.40 for honors from 3.25, 3.60 for high honors from 3.5 and 3.80 for highest honors from 3.75. The committee reviewed data from 20 colleges and universities for minimum g.p.a. requirements, percent of graduates receiving honors, and a report of grade distribution from our most recent graduating classes. After that review the changes noted below are recommended.

Delete underlined current rules and add bolded text.

3.11.1 Graduation honors

Degrees with honors are awarded by vote of the university faculty to those students who have attained an average of not less than [[8.75]] 3.40 in a minimum of ninety credit hours in residence at Lehigh University or in programs approved by the faculty to have grades and credit accepted toward the undergraduate degree.

Degrees with high honors are awarded by vote of the university faculty to those students who have an average of not less than [[8.50]] 3.60 in a minimum of ninety credit hours in residence at Lehigh University or in programs approved by the faculty to have grades and credit accepted toward the undergraduate degree.

Degrees with highest honors are awarded by the vote of the university faculty to those students who have an average of not less than [[8.75]] 3.80 in a minimum of ninety credit hours in residence at Lehigh University or in programs approved by the faculty to have grades and credit accepted toward the undergraduate degree.

For the purposes of graduation honors calculations, courses taken more than once at Lehigh will only have the most recent grade used in the calculation. Courses taken under the cross registration policy of the IVAIC, or in programs approved for both credit and grade transfer will be used. Courses taken under the auspices of Lehigh Abroad will not be used except as indicated in the following paragraph.

Students who spend part of their career at another institution, or are transfer admits to degree programs and have fewer than ninety hours of in residency courses, may qualify for graduation honors under the following conditions:

Revised paragraph

The student must have at least sixty credit hours of regularly graded (not pass/fail) courses that meet Lehigh's residency requirement. The graduation honors category is determined by the lower of two averages computed as follows:

1. the average of grades received at Lehigh;
2. the average of grades received at Lehigh, grades received in courses taken elsewhere for a regular grade and appropriate to be considered for transfer to Lehigh (i.e. those actually transferred and those that did not transfer because the grade was too low, too old, etc, to be accepted for transfer), and any grades received for courses taken under the auspices of Lehigh Abroad

To be deleted:

The student must have at least sixty credit hours of regularly graded (not pass/fail) courses that meet the residency requirement. The graduation honors category is
determined by the lower of the two averages computed as follows: (1) the average of grades received at Lehigh; (2) the average of grades received at Lehigh, grades for courses taken elsewhere for a regular grade and appropriate for transfer to Lehigh, and grades received in courses taken under the auspices of Lehigh Abroad.

Graduation honors are announced on University Day and published in the official commencement program.
The concerns about student overloads currently include issues related to course availability for sophomores and first year students when seniors and juniors overload, performance decreases associated with overloads, resource issues when students pay less for their degree (graduate early) or finish double degrees in four years, the use of overloads to increase the "shopping period" for course selection, and students who take graduate courses with a higher credit load than allowed to the graduate students. While these issues are clearly important and place stresses on both students and the institution, there are some very valid reasons for overloads including the participation of students in programs that enhance their college experiences and the desire of a sub-set of the most capable students to challenge themselves by taking high numbers of credits. Therefore, the following proposal includes several different pieces which together are aimed at solving the problems noted above and meeting the needs of the students at the same time.

Proposed Overload rules:

1) No courses registered for as an overload can be used to accelerate the expected degree date.

2) Programs for double degrees will not be approved if they include overload semesters to complete the programs.

3) Overload approval will not be granted for the purpose of repeating a course.

4) No overload approval will be granted in a semester where the student is enrolled in a graduate course.

5) Any course(s) approved for overload cannot be added until after the end of the normal (three week) registration period. Space in a course cannot be reserved for students intending to add the course as an overload.

6) Overload approval requirements vary by GPA and entry into the University. Typical loads are 14 to 17 credits. 18 credits is an overload for first semester students and for students with a GPA below 2.5. 19 credits is an overload for all other students. Overload rules by grade point average are below:

First semester students: 18-19, Associate Dean
20 or more, SOS

GPA below 2.5 18, Associate Dean 19 or more, SOS

GPA between 2.5 and 3.3: 19, Associate Dean 20 or more, SOS

GPA above 3.3: 19-20 Associate Dean 21 or more, SOS
Participatory courses include music ensembles, theatre practice, Brown and White e.g., as noted in a specific semester. One additional credit can be approved by the Associate Dean if all overload credits are these courses. These courses may be approved for addition during the normal registration time if they can be managed by Barner. The courses involved in this recommendation are conceptualized and scheduled very differently from most other courses. Many students, indeed, take these courses in order to pursue an avocational interest that greatly enriches their experience. The data indicate that courses in this group do not pose the same risk to GPA or academic progress as other courses, even in overload. Access to courses of this nature is an important element in recruiting outstanding science and engineering students (and probably other students, too) who find that they cannot easily combine their academic objectives with the pursuit of music or theatre interests at most institutions of Lehigh's caliber.
New Curriculum: BA in Environmental Studies

University faculty meeting: 29 Mar 04
Educational Policy Committee Meeting: 17 Mar 04

Introduction

Environmental issues, problems, and opportunities, in all their importance and complexity, are of widespread interest to people at all levels of the educational spectrum. Lehigh has a special opportunity and a responsibility to educate the next generation of environmentally literate citizens, whether they become professional scientists, engineers, policy analysts, or poets. Failure to grasp this opportunity risks losing such environmentally inclined students to competing institutions of higher learning.

Lehigh has long excelled at preparing both undergraduate and graduate level earth and environmental scientists and civil engineers. These programs have strong national reputations. However, Lehigh students currently miss the opportunity to pursue less technical environmental studies. To provide such an opportunity, a new BA program in Environmental Studies is proposed as part of the 2020 Environmental Initiative (EI).

In keeping with the liberal arts tradition, the proposed Environmental Studies degree will provide broad exposure to the range of issues confronting the human condition, cultural and historical perspectives on how society has evolved to its present state, and insight into the range of possible corresponding methodological approaches and solutions to the global questions humanity confronts.

This new degree will complement existing BA and BS programs in Earth and Environmental Sciences as well as the new MS program in Environmental Engineering. The Environmental Initiative also plans to develop a MA in Environmental Policy plus a MEd in Environmental Education. With environmental programs in all four colleges, ranging from BA to BS to MA to MEd to PhD, Lehigh students will have available the most comprehensive array of programs possible.

Program Description:

The new BA is interdisciplinary in nature, involving courses in four colleges and 10 different departments. It has a strong background in a number of the social science disciplines but also includes humanities, education, science, mathematics and engineering. It is designed so students will develop a wide-ranging knowledge about social environmental concerns, along with a basic familiarity with environmental science, statistics and research methods. As a consequence, the BA has 44 hours of required, core, and elective courses in a variety of fields and 19-20 hours of collateral requirements in mathematics, science and social science research methods.

The Environmental Studies major will need eight new courses for its required and core courses that are being or will be developed as new faculty are hired within the Environmental Initiative. Five will be developed for 2004-05, while three others will be phased in over two or three years. In the meantime, several currently existing courses will be substituted for these three. Two core courses are already regularly offered. A large number of already offered environmental social science and humanities courses will serve as electives for the program, allowing a variety of choices for students. All of the collateral courses are currently being offered.

The BA Program

The BA program is intended for students who are interested in environmental affairs from the perspectives of the social sciences and humanities. This degree will prepare students for a variety of career options, ranging from positions in corporate management or policy agencies at the federal, state and local government levels to jobs in non-profit
organizations, environmental journalism or environmental law. It is well suited to prepare students for graduate studies in a number of environmental policy and social science fields.

The BA is specifically designed to be broadly inclusive yet flexible enough to allow for double majors and minors in other fields. A minor in EES, for example, could easily be accomplished by adding the EES collateral options to the required introductory environmental science course. ES (EES) 2. Double majors or minors in social science fields such as anthropology, history, international relations, political science, psychology, science and environmental or general journalism, or sociology could easily be attained.

College Requirements not met in the Proposed Program (18 credits)

Arts 1 Choice and Decision (1)
Freshman Seminar (3)
English Composition (5)
Humanities: Distribution Requirement (8)

Environmental Studies Core Courses (28 credits)

Required Courses:

ES 1 Introduction to Environmental Studies (4) SS
ES (EES) 2 Environmental Science: Systems and Solutions (4) NS
ES 381 Senior Seminar: Issues in Environmental Studies (4) SS

Core Courses: At least 4 of the 7 following courses:

ES 101 Environmental Policy and Planning (4) SS
ES 102 Environmental Values and Ethics (4) IU
ES 111 (Eco. 111) Introduction to Environmental Economics (4) SS
Prerequisites of Eco. 1
ES 115 (Jour 115) Communicating about the Environment (4) SS Writing Intensive
ES 121 (Anth. 221) Environment and Culture (4) SS
ES 171 (Che/Cee 171) Fundamentals of Environmental Technology (4) (ND)
Prerequisites: One course designated NS
ES 315 (Hist 315) American Environmental History (4) SS

Major Electives (16 credits including two courses at the 200 level or above):

Already Existing and Immediately Proposed Courses

Anth. 305 Anthropology of Fishing (4)
Arts 195 Sustainable Development: The Costa Rican Experience (1)
CEE 272 Environment, Risk Regulation and Policy (2)
Eco. 311 Environmental Economics (Advanced course with two prerequisites) (3)
Engl. 204-11 The Environmental Imagination (4)
EES 109 Geographical Analysis of our Changing World (4)
ES 110 Environment and the Consumer Society (4)
ES (Jour) 115 Risky Business (4)
ES 131 Internship (1-2)
ES 181 Independent Study (1-4)
ES 371 Special Topics (4)
ES 391 Honors Thesis (4)
IR 344 Politics of Oil (4)
Jour 125 Environment, the Public and the Mass Media (4)
Jour (STS) 323 Controversies (4)
PolS 111 Politics of the Environment (4)
PolS 328 U.S. Politics and the Environment (4)
PolS 375 Seminar: Green Policy (4)
Rel 6 Religion and the Ecological Crisis (4)
Rel 254 Buddhism and Ecology (4)
IBTE 394 Special Topics in Education - Environmental Education

Elective Courses Eventually Anticipated as Part of the Environmental Initiative (Major does not depend on their availability)

ES 1xx Energy and Society (4)
ES 3xx Environmental and Sustainable Development (4)
ES 2xx Environmental Risk Perception and Communication (4)
ES 3xx Environmental Ethics (4)
ES 3xx Environmental Planning and Green Design (4)
ES 3xx International Politics and the Environment (4)

Collateral Requirements (18–20 credits)

Required (8 credits)

Math 13 Basic Statistics (4) A calculus course may be substituted with permission of the program director. Fulfills College Math requirement
SR 111 Research Methods and Data Analysis (4)

Electives: At least one ES and two other science courses from these seven courses (10–12 credits): More advanced science or environmental engineering courses may be substituted with the permission of the program director. Fulfills College Science requirement.

Chem 11 Chemistry and National Issues (3)
Chem 21 Introductory Chemical Principles (4)
IBES 11 Global Environmental Change (4)
IBES 12 Environmental Geology (3)
IBES 21 Introduction to Planet Earth (4)
IBES 31 Introduction to Environmental Biology (4)
Physics 11 Concepts in Physics (4)

Collateral Minor:
Minor programs in various social sciences and selected humanities will be highly recommended to students to get depth in a field, but are not required

Honors:
To graduate with honors, a major in Environmental Studies must maintain a 3.2 overall average, attain a 3.5 average in the courses constituting the major program, and complete an honors thesis in the senior year.

Total Credits Required for the BA program:

Total Credits for the Major including Electives: 44 credits
Total Credits for the Major including Collateral Requirements: 62–64

BA Program Explanations

1. Departmental Crosslistings:

   - To emphasize the interdisciplinary nature of the BA program, all ES core courses will be crosslisted with disciplinary departments where Environmental Initiative faculty will be jointly appointed. It is hoped that these crosslistings will ensure that ES courses are considered an integral part of a department’s offerings and that students in a discipline will be encouraged to take these courses even if they do not major in the ES program.
   - All departments who are crosslisted have given their permission to do so. Departments are not named for ES 101 and 102 because a particular department has not yet been identified as the disciplinary home for these courses. That home will depend on the discipline of the faculty member hired to teach these courses.
   - No departmental crosslistings are anticipated for ES 116, 131, 181, 371, 381, or 391.
2. New Courses in the Required and Core Courses

There are eight new courses proposed in the required and core areas: ES 1, 2101, 102, 111, 115, 171 and 381.

Required Courses.

- It is anticipated that ES 1 will be taught in 2004-05. A search is currently under way for a new ES 1 faculty member in Environmental Policy and Politics and she is expected to teach ES 1. A fallback for ES 1 would be to substitute ES 1, Environment and the Consumer Society, temporarily. ES 1 is taught every spring semester as the introductory course for the Environment and Society minor. As part of this proposal it will undergo a program designation and number change to ES 10.
- ES (ES) 2 will be taught spring 2003 as EUS 96 and will be taught yearly thereafter.
- ES 381 will be offered in 2004-05 by one or several current social science faculty who teach environmental courses.

Core Courses.

- ES 101, ES (Anth) 121, ES (ChU/CMU) 171 and ES (Hist) 315 will be offered next year. The new faculty hire in Environmental Policy and Politics will teach ES 101.
- For those core classes not yet available, substitutes are available.
- Rel 6, Religion and the Ecological Crisis, would be substituted for ES 102.
- Jour. 125, Environment, the Public and the Mass Media, would be substituted for ES (Jour) 115. Jour 125 is a writing intensive course and could fulfill that need until ES (Jour) 115 is available.
- Eco 511 would be accepted in place of ES (Eco) 111. Although it requires one more prerequisite than ES (Eco) 111, many students take that prerequisite.
- If needed, other courses from the Electives category could be substituted if students needed additional courses to have the four core courses required for the BA.

It is anticipated that within a few years, new hires and faculty reallocations for the Environmental Initiative will allow offering of all the required and core courses. While several of the core courses are not currently available, it was considered important to present the entity of the BA program as anticipated for approval to show the integrated, widely interdisciplinary nature of the program.

3. New Designations for Courses in the Electives

- ES 310 and 371 (Independent Study and Special Topics) are courses already offered under the Environmental Society and are being transferred to the ES program. ES 310 (Internship) and 391 (Honors Thesis) are new elective courses. These courses have been or will be taught on an hours-arranged basis during 2004-05 and as needed thereafter staffed by one or several current faculty who teach environmental social science courses.
- ES elective courses that are anticipated are only included in this proposal as an indicator of possible future courses to be added to the BA as faculty are added to the U1. These are not included for approval with this request.
- ES (Jour) 116 is a summer course that has already been taught as E&S (Jour) 197 and is being added to the regular curriculum with this request and that from the Journalism and Communication Department.

Minor in Environmental Studies

A minor is proposed in Environmental Studies that will consist of four core courses, for a total of 16 credits. These should include ES 1, one course from the core set for the major, and two courses from either the core or elective courses for the major. One of the two courses must be at the 300-level course. The current minor in Environment and Society will be discontinued in favor of this minor.
Sample Model Course Schedule  
BA Major in Environmental Studies

**Fall**

**Year 1**
Eng. 1 Composition and Literature (3)
XX 90 First year course (3)
ES1 Intro. To Environmental Studies (4)

Elective (4)
A&S 1 (1)

**Year 2**
1st science course (3-4)
ES 1xx (Core elec. #1) (4)
Humanities Elect./Eco. 1 (4)
ES 1xx (Core elec. #2) (4)

**Year 3**
ES 1xx (Core elec. #4) (4)
SR 111 Research Methods (4)
Humanities Elect. (4)
3rd science course (4)

**Year 4**
ES 381 Senior Seminar (4)
ES 2/3xx (Major elec. #3) (4)
Elective (4)

**Spring**

Eng. 2 Comp. and Lit. II (3)
Math 12 Basic Statistics (4)
ES (EES) 2 Environmental Science: Systems and Solutions (4)

Elective (4)
Humanities Elect./Eco. 1 (4)
Elective (4)

Elective (4)

**Academic Impact Statements**

1. **Crosslisting:**
   - This program is highly interdisciplinary involving 10 departments and 4 colleges.
   - Crosslisted courses include ES (EES) 2, ES (Eco) 111, ES (Econ) 115, FS (Clm) 116, ES (Arth) 121, ES (ChE/CEE) 171 and ES (Hist) 315.

2. **Effects on other Programs:**
   - This program will merge with the Environment and Society program and minor and all E&S courses will be converted to Environmental Studies courses. The ES minor will take the place of the E&S minor.
   - No effects on other programs are anticipated.

3. **People Consulted:**
   - The Civil and Environmental Engineering, Earth and Environmental Sciences, Economics, History, Journalism and Communication, and Sociology and Anthropology Departments have all agreed to crosslist their respective courses in the required and core segments of the program.
   - The Mathematics and Sociology and Anthropology Departments have both agreed to allow their respective courses in the required collateral requirements. The instructor for Religion 6 has agreed to let the course be used until the time that ES 162 is developed.
The Earth and Environmental Sciences, Physics and Chemistry Departments have agreed to allow their courses in the science electives section of the program.

All E&S faculty were consulted and agreed to merge the E&S program and minor into the ES program and minor.

4. Impact on Diversity
   - Not known, but potential new hires might help the university's diversity efforts.

Resource Impact Statements

1. Library Impact
   - A separate Library Impact statement prepared by library personnel for the entire EI is attached to this proposal.
   - It was considered counterproductive to separate out only the BA element since the library impact of the whole EI will be considerably greater than that of the BA program.

2. Computer Impacts—none are anticipated.

3. Classroom Impacts—none are anticipated except the need for regular classrooms for the courses.

4. Faculty Impacts
   - To implement this new BA program in Environmental Studies and a proposed MA program in Environmental Policy, as well as expand Lehigh's existing environmental research strengths, the Environmental Initiative expects to coordinate the hiring of 11 new faculty and a director over a four-year timeframe. The 11 new faculty will teach courses in the new degree programs and enhance curricula in existing environmental science and engineering programs.
   - For the BA program, probably five new faculty will eventually be needed and a search for one is currently under way. As noted above, there are enough social science faculty who currently teach environmental courses that can be substituted for the new courses until additional faculty are hired. However, these substitutions are only offered as a courtesy to get this program under way. All departments allowing these substitutions have indicated that new faculty must eventually take over the BA core and required courses because the departments are already stretching to teach them and have other commitments.
   - The 2020 EI program calls for the assignment of a number of teaching assistants to help support both the undergraduate and graduate degree programs. Specific TA numbers are not yet available.

5. Facility Impacts
   - None are anticipated, although some temporary office housing will be needed for the early new hires for the EI until the new environmental building is built.
   - Laboratory impacts—there may be a minor impact in lab sections of EES 21 and 31. However, since majors will fulfill their college science requirements with two of the three required science courses, their presence should not be any great addition beyond the normal number of students accommodated in these labs. In addition, students in the BA program can choose among seven science courses, five of which do not have labs.

6. Financial Responsibility
   - Budgetary plans for the new hires and faculty reallocations needed for the BA program are part of the 2020 EI proposal.
   - It is expected that support will come from the offices of the Dean of the College of Arts and Sciences and the Provost.


BA in Environmental Studies—New Courses

1. Proposed new course numbers and course descriptions (as it will appear in course catalogue):

ES 1 Introduction to Environmental Studies (4)
Gateway to the field of Environmental Studies, the course surveys central issues and themes confronting humanity in the natural world on a national and global basis. Topics include humankind’s role in environmental change; society’s response to the dynamism of nature; cultural evaluations of nature; population dynamics; resource availability and pollution sinks; land use patterns; sustainability and consumerism; environmental justice and ethics; policy and planning. (SS)

ES (EES) 2 Environmental Science: Systems and Solutions (4)
An overview of environmental issues, problems, and solutions from an Earth system perspective. A review of how natural systems create the environment and how society is a part of these systems rather than distinct from them. Includes consideration of issues like resource management, natural and induced hazards, land use, habitat degradation, and environmental impact. Course intended for non-science majors with an interest in the environment, how it works, and what’s important to sustain a habitable planet. Environmental issues on local, national, and global scales are considered and compared. Fulfills science distribution requirement. Lecture and recitation, class discussions, debates, and case studies. Melzer (NS)

ES 101 Environmental Policy and Planning (4)
Analysis of the framework that has been established to protect the environment and promote sustainable growth. Focus on the roles of the different branches of the U.S. government and the relative responsibilities of state and local governments within this framework as well as key international accords. Consideration of the political nature of environmental issues and the social forces influencing environmental protection. (SS)

ES 102 Environmental Values and Ethics (4)
A broad survey of the role of values and ethics in environmental issues. How have humans perceived their relation to nature across vast spans of time and culture? Do premodern ecological views still have lessons to teach contemporary citizens? Contemporary developments such as environmental justice, deep ecology, environmentalism, bioregionalism, campus ecology, and issues of ecological identity will be explored. (HC)

ES 111 (Eco 111) Introduction to Environmental Economics (4)
An examination of the interactions between our economic systems and the environment. Pollution as a consequence of human activity within a framework for analyzing the relationships between environmental quality, scarcity of resources and economic growth. How to develop appropriate public policies to deal with these issues. Prerequisite: Eco 1. (SS)

ES 115 (Jour 115) Communicating about the Environment (4)
Introduction to the need for and ways to communicate about environmental issues to laypersons, government officials, journalists, members of the judiciary and technical experts. Explores case studies of good and bad communication about environmental issues. Internet communication, including the efficiency of placing governmental reports and databases on the Web for public consumption, will be evaluated. (SS)

ES (Jour) 116 Risky Business (4)
This course explores the risks and effects of environmental contamination on human health and behavior as well as the role of the mass media in alerting citizens to potential environmental health risks. Environmental topics vary but usually include air and water pollution, endocrine disrupters and radioactive waste. S. Friedman (SS)

ES 131 Internship (1-2)
Practical experience in the application of environmental studies for both on- and off-campus organizations. Course is designed to provide credit for supervised experiential learning experiences. May be repeated for credit up to four credits. Prerequisite: consent of the program director. (ND)

ES 171 (ChE/CEE 171) Fundamentals of Environmental Technology (4)
Pollution control technologies and how they work for water, air and solid wastes. Assessment and management of risk as applied to remediation of contaminated wastes. Role of life cycle analysis of products in risk reduction. Emphasis on technologies leading to sustainable environment. Government policies and regulations, including litigation and Best Engineering Practices. Prerequisite: A course designated NS. Not available to students in RCEAS. (ND)

ES 351 Senior Seminar: Issues in Environmental Studies (4)
Advanced seminar focusing on discussion and research on specialized subjects in Environmental Studies. Subject matter varies from semester to semester. Intended for Environmental Studies majors and minors but open to others. Prerequisite: ES 1, 2 or another FBS course, and one core course or consent of the program director. (SU)

FS 391 Honors Thesis (4)
Directed undergraduate research thesis required of students who apply and qualify for graduation with program honors. Prerequisite: consent of the program director. (HU or SS)

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other) and number of contact hours per week:
   - This is hard to anticipate but it is expected that ES 1, 101, 111, 115, and 171 will be lecture/discussion courses and not require laboratories.
   - ES [FES] 2 will be a lecture and recitation.
   - ES 131 will be hours arranged.
   - ES [Jour] 116 is a discussion class twice a week during the summer
   - ES 381 will be a seminar.

3. Rationale for proposed new courses:
   - ES 1, 2, 101, 102, 111, 115, 171, and 381 are integral parts of the required and core set of courses needed for the new BA in Environmental Sciences.
   - ES [Jour] 116 is an elective for the new BA and was taught in summer school as E&S (Jour) 197. It now needs to become a regular summer offering for ES and Journalism. Since the E&S program is merging with the Environmental Studies program, a new designation and number are needed for this course.
   - ES 131 and 391 are electives for the new BA and are needed to provide internship and honors opportunities for students majoring in the program.

4. Academic impact on programs affected by new courses:
   a. Are these proposed new courses crosslisted?
      - ES 2, 111, 115, 116 and 171 are crosslisted so that they also have a departmental home. All departments involved have agreed to crosslist them.
      - ES 101 and 102 will eventually be crosslisted with unspecified departments as new hires are added to teach these courses.

   b. If there are known effects individuals in charge of the affected programs must be consulted about the changes and the following information provided.
      - Known impacts on other programs. The Environment and Society minor will be merged with the ES major and minor. No other program is affected.
      - Who was consulted? The program director and all members of the Environment and Society faculty were consulted and agreed to the change. All chairs of departments with crosslisted courses were consulted and agreed to the crosslistings.
      - Will any changes be required in the affected programs? If so, describe. Just the crosslisting of courses by the cooperating department courses.

   c. Identify any known effects of the proposed new courses on the University’s commitment to diversity.
      - New hires who will eventually teach several of these courses might positively affect the university’s commitment to diversity.

5. Resource Impact Statement:
   - Library impact statement—see the EI Library Impact Statement attached.
   - Computer impact statement—none
   - Faculty impact statement—see the BA proposal for further information
   - Facilities impact statement—see the BA proposal for further information

   a. Provide a statement indicating who will assume financial responsibility for any new resources required:
Will be assumed by funding for the 2020 Environmental Initiative through the offices of the Dean of the College of Arts and Sciences and the Provost.

Environment Initiative: Library Impact Statement

Prepared by Brian Simboli and other personnel from Information Resources

The Environment Initiative, described at http://www.leo.uchicago.edu/announce, may require significant enhancements to the collection of library resources.

What follows is an analysis of the needs for various aspects of the program, including instruction and research.

CONTENTS

• BOOKS
• ONLINE LIBRARY DATABASES
• GOVERNMENT DOCUMENTS
• SOFTWARE AND DATA SETS
• LIBRARIAN SERVICES
• JOURNALS
• CONCLUDING NOTES

BOOKS

There will need to be some increased spending on books and reference works covering environmental policy, recycling, and environmental management.

After the EI director and as new faculty are hired, we would like to review the collection management statement to see whether any particular categories need coverage in our approval book plan. We should be able to accommodate the overall needs of the EI within our existing book budget, but will require notification of new courses and faculty hires as they occur.

GIS is an area in which there has not been systematic book collecting. This will be needed as the technology evolves and as specific needs emerge. If GIS becomes a significant part of EI, we will want to buy more systematically in this area. We can assume that currency of materials is important, so we could primarily buy materials on a “path forward” basis rather than worry about retrospective coverage. The same holds for hydrology and hydrogeology. A small initial outlay, to buy a block of current books, might be appropriate and could be handled by the current book budget.

ONLINE LIBRARY DATABASES

Many of UChicago’s databases already provide coverage of environmental issues.
We currently have Ecology Abstracts, a description of which can be found at:
As the description suggests, this is an interdisciplinary resource and addresses and at least some of the needs of the Environmental Initiative.

In general, major bibliographic databases typically provide interdisciplinary coverage, and so the databases we have will cover environmental themes to the extent that the latter overlap with their primary thrust.

Other useful library databases for environmental research we receive include but are not limited to:

- ABI Inform
- Applied Science and Technology Index
- Engineering Index (Compendex)
- Factiva
- GeoRef
- Infotrac
- PAIS
- Periodicals Abstracts
- SciFinder Scholar (Chemical Abstracts)
- National Bureau of Economic Research Reports Database
- The Web of Science

A word about the Web of Science, which the library will be acquiring very shortly. It provides access to three major databases: Science Citation Index (SCI), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (AHCI). These databases enable one to track cited/citing relationships between citations. Lehigh currently has access to all these databases through CD for SCI and SSCI and web access to AHCI. Having SCI and SSCI on the web would likely greatly increase their use on campus. Also, it will address the interdisciplinary needs of the EI. The high expense of this resource has been a barrier to its purchase in the past.

Possible future acquisitions of databases are these:

- **BNA Environment Reporter**—Electronic subscription cost, up to 2 users @ 1 location: $1609 per year, also offers 2 to 5 users at any location: $1785 per year. This multi-part environmental resource offers coverage of legislative, regulatory, legal, and policy news plus authoritative documentation of federal laws, rules, cases, and mining regulation. See: http://www.bna.com/products/ens/erer.htm

- Ecology Abstracts, which we have, is one part of a suite of databases, collectively titled “Environmental Sciences & Pollution Management Database”, offered by Cambridge Scientific Abstracts. (See http://www.csa.com/csa/ids/databases-collections.shtml) Should the need arise, the library can explore purchase of other databases in this suite, which collectively includes: Agricultural & Environmental Biotechnology Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality; Ecology Abstracts/EIS: Digests of Environmental Impact Statements; Environmental Engineering Abstracts; Health & Safety Science Abstracts; Industrial and Applied Microbiology; Microbiology Abstracts Section A; Bacteriology: Microbiology Abstracts Section B; Pollution Abstracts; Risk Abstracts; Toxicology Abstracts; Water Resources Abstracts.

- **Columbia Earthscape** is a database that we may want to consider buying after the environmental initiative evolves further. According to the vendor, “columbia earthscape is an integrated, interdisciplinary resource that connects the Earth and environmental sciences with their social, political, and economic dimensions. Although it primarily serves undergraduates, it also functions as an online
reference for graduate students, investigators, and professionals, as well as a core text and enrichment for high schools and continuing education." This is an evolving resource that will have over 100 new resources in the next update. We are currently giving it a trial. If it we do not purchase it now, it is worth considering purchase after the EF evolves further.

- GEOBASE Information about this database, which includes coverage of environment, hydrology, and cartography, is available at: http://www.elsevier.com/ina/publications/store/4/2/2/5/9/7/index.htm. GEOBASE is a unique multidisciplinary database supplying bibliographic information and abstracts for development studies, the Earth sciences, ecology, geomechanics, human geography, and oceanography. The database provides current coverage of over 1,800 journals and archive coverage of several thousand additional titles. The material covered includes refereed scientific papers, trade journal and magazine articles, product reviews, directories and any other relevant material. GEOBASE contains over 1 million records from 1980, with 76,000 records added annually. The database is available electronically either online (which includes the World Wide Web), or CD-ROM. Also see http://www.oclcd.org/firstsearch/databases/index.htm

GOVERNMENT DOCUMENTS

Government documents are a resource not peculiar to the discipline, but nonetheless of obvious importance. The library's online catalog indexes all new Federal government websites, whether or not we own whatever paper counterparts are available. Major portions of the printed collection are also indexed in our online catalog. The physical collection is comprised of materials published by a full range of U.S. and Pennsylvania government agencies and is particularly strong in materials from the United States Geological Survey, the Environmental Protection Agency and the Department of Energy. The collection also maintains physical copies of the hearings and committee prints from Congressional committees which address public environmental policy and governmental regulation of the environment. Also available are commercially published materials that facilitate research in government information. There are over 185,330 print, 451,689 microfiche publications and over 1,964 CD-ROMS in the Government Documents Collection. The government documents area of the library (2nd floor south, l'M) houses a workstation for use of government supplied CD-ROM databases and access to the many government information sources available on the Internet. The CD/Rom materials also circulate and remote access is naturally available to the Government internet resources.

While the U.S. government resources will be readily obtained or cataloged as part of our federal depository collection, more effort will be needed to collect those of local, foreign and international organizations.

If an interest in agricultural matters emerges, we will need to collect more items from the Agriculture Department. If the latter materials are electronically available, the cost will be negligible. If we need to get materials in print there will be some slight staff time costs as well as the cost of housing the materials.

SOFTWARE AND DATA SETS

LTS currently makes available 50 PC seats of ArcView. If additional GIS software support is required, this can be discussed with LTS's software committee. We can further investigate, for example, whether to obtain an ArcGIS site license.
Requests for datasets may also be proposed to the LTS software committee. Whether requests be for software or datasets, LTS requires the software or dataset will be used for instructional purposes.

In addition, librarians at Lehigh gave LEO a document containing recommendations about making the GIS-related materials at the LEO website "user-friendly". The librarians are available to provide similar recommendations about other GIS materials that might emerge as E2 evolves.

LIBRARIAN SERVICES

Lehigh Library's subject specialists are available to support E2 as library-related needs arise whether in relation to courses or faculty research. This support can take the form of:

- searching literature
- recommending books, journals and other materials to purchase
- providing classroom instruction about use of library resources
- creating web-based research guides for classes and research

JOURNALS

Lehigh does not hold a significant number of journals that may be eventually prove of interest to E2. The question arises how to find any large demand for new journals that would arise with E2; whether they be the journals identified above or other journals that should prove useful. Currently, the library's ability to support journal purchases derives from the budgets it has to support journals for the involved departments. With the upwardly spiraling costs of our journal subscriptions, the library's ability to buy new journals in any given year may be limited. What follows is an accounting of possible future needs from various perspectives. In light of the burgeoning costs of journals, the library is willing to cooperate in any initiatives to use money from outside its budgets to develop library resources for E2, e.g., grant money brought in by new hires in the E2 program.

1. One perspective on Lehigh's coverage of environmentally related journals is provided by looking at journal impact factor data produced by SRI. Individual titles in these lists may be more or less related to the goals of the E2. The first lists the top 20 journals, ranked by impact factor, that appear under the category "Environmental Sciences" in the "2001 JCR: Journal Citation Reports Science Edition". Whether or not we have a current subscription is indicated.

JCR describes impact factors as "the average number of times recent articles in a specific journal were cited in the JCR cover year. For JCR impact factors recent articles are those published in the two years preceding the JCR cover year". Users of impact factors should be aware of caveats about them; e.g., see the Nature article at:
http://www.nature.com/cgi/f/DynaPage.taf?
file=/nature/journal/v415/n6873/full/415726a_fs.html

1. Journal of Toxicology and Environmental Health-Part B-Critical Reviews Not currently received
2. Global Change Biology Have currently
3. Global Biogeochemical Cycles Have currently
4. Environmental Health Perspectives Have currently
5. Journal of Atmospheric Chemistry Not currently received
6. Conservation Biology Have currently
7. Environmental Science & Technology Have currently
8. Biogeochemistry Have currently
9. Atmospheric Environment Not currently received
10. Environmental and Molecular Mutagenesis Not currently received
11. Applied Catalysis A-General Have currently
12. Critical Reviews in Environmental Science and Technology Have currently
13. SAR and QSAR in Environmental Research Not currently received
14. Environmental Toxicology and Chemistry Not currently received
15. Reviews of Environmental Contamination and Toxicology Not currently received
16. Climatic Change Have currently
17. Radiation and Environmental Biophysics Not currently received
18. Water Resources Research Have currently
19. Geomicrobiology Journal Not currently received
20. Remote Sensing of Environment Not currently received

The second list is from the Social Sciences edition of JCR, 2001 version, category "Environmental Studies".

1. European Urban and Regional Studies Not currently received
2. Harvard Environmental Law Review Not currently received
3. Energy Journal Not currently received
4. Environment and Planning D-Society & Space Not currently received
5. Regional Studies Have currently
6. Journal of Environmental Economics and Management Have currently
7. Environment and Planning A Not currently received
8. Ecology Law Quarterly Not currently received
9. Ecosystem Health Not currently received
10. Urban Studies Not currently received
11. Society and Natural Resources Have currently
12. Environmental Values Not currently received
13. Land Economics Have currently
14. Transportation Research Part D-Transport and Environment Not currently received
15. Health Physics Not currently received
16. International Regional Science Review Not currently received
17. Regional Science and Urban Economics Have currently
18. Habitat International Not currently received
19. Human Ecology Not currently received
20. Environment and Planning C-Government and Policy Not currently received

2. Our collection of academic journals in the area of environmental policy and environmental management will need to be enhanced. (These comments apply to the MA in Environmental Policy, but can extend to research efforts as well.) As mentioned elsewhere in this document, journals on the application and use of GIS will be needed. Among the policy journals that might be acquired are:

Environmental Policy and Law - $399 per year
(Indexed in the following indexes to which we have access: Engineering Index, PAIS International)

Environmental Politics - $285 per year
(Indexed in the following indexes to which we have access: Expanded Academic ASAP and Proquest)
International Journal of Environmental Studies - $1307 per year
(Indexed in the following indexes to which we have access: ABI Inform, Agricola, Biosis, GeoRef, PAIS, Proquest)

Environment and Development Economics - $199 per year print and electronic
(Indexed in the following indexes to which we have access: EconLit and PAIS)

Journal of Environmental Economics and Management - $805 per year (Indexed in ABI Inform or Factiva)

5. We receive requests for new journals each year, but there are still outstanding requests not yet funded. What follows are outstanding requests (prices are from Ulrich's Periodicals Directory):

- Aquatic Botany Windham $1154
- Earth Surface Processes and Landforms William & Wilkins $250
- Forest Science Windham $230
- International Journal of Plant Sciences Windham $680
- New phytologist Windham $1246 combined print and online
- Vegetatio Windham (Plant Ecology was formerly Vegetatio; Netherland) Plant Ecology's $2618 for print or online

4. An area of interest that might arise in the Environmental Initiative is green accounting. Our understanding is that:

- there is currently no premier journal that covers this field specifically
- accounting journals that the library provides may occasionally cover topics related to this field
- the issues surrounding green accounting are many-faceted, e.g., metrics for evaluation, how the government measures and defines pollution

Our business databases are a resource to identify literature coverage in this area.

5. BioOne

From http://www.bioone.org/bioone/?request=get-help-faq#W1B

"BioOne brings to the Web a uniquely valuable aggregation of the full-texts of high-impact bioscience research journals. Most of BioOne's titles are published by small societies and non-commercial publishers, and, until now, have been available only in printed form. BioOne provides integrated, cost-effective access to a thoroughly linked information resource of interrelated journals focused on the biological, ecological and environmental sciences."

This aggregated website of electronic journals is worth monitoring for its potential relevance to the aims of the Environment Initiative. A list of the journals available through BioOne is at:
http://www.bioone.org/bioone/?request=get-static&name=Titles-Publishers

6. The following is a supplemental list of journals, not currently received by Lehigh, related to the interests of the environmental initiative. Some are more directly relevant than others, but the latter are included for completeness. No effort is made to rank their relevance to EI, since this will depend on faculty input and the needs of the initiative as it develops. The list provides a list of possible candidates for journal additions.
GIS-related journals are included in the list below, since GIS plays a role in the E1 proposal and is an area that needs addressing. We are already receiving "Proceedings of the ACM Symposium on Advances in Geographic Information Systems", but greater depth of journal coverage in this area may be needed.

Or request we can generate lists of other journals available in other specialized fields.

Some of the items below may be monographic series, a set of books that have a common serial title. If any monographic series proves relevant to the program, then we can determine whether to order them on our book budget lines.

The results were derived by using searches in Ulrich's Periodicals Directory (available off the library homepage), with a focus on environmental studies and GIS.

Journals resulting from these searches:

- Alternatives Journal: environmental thought, policy and action
- Ambio: a journal of the human environment
- Annals of Forest Science
- Applied Geography $547
- Atmospheric Environment $5040
- The Cartographic Journal $198
- Cartographica $130
- Cartography and Geographic Information Science
- Chemosphere: chemistry, biology and toxicology as related to environmental problems $3960
- Chinese Environmental Science
- Computers, Environment and Urban Systems $1070
- Cultural Geographies: a journal of cultural geographies $388
- Earth Interactions "Free with any AGU journals"
- Ecography $213 for combined sub per year; print and online editions
- Ecological Restoration $125
- Ecology Law Quarterly $54
- E II P Supplements
- Energy $1969
- Environment: where science and policy meet $96
- Environments: a journal of interdisciplinary studies — revue d'études interdisciplinaires
- Environment and Ecology
- Environment and Urbanization $100
- Environment International: a journal of environmental science, risk and health $1232
- Environmental Awareness
- Environmental Health Review
- Environmental Policy and Law $399
- Environmental Science and Pollution Research: international
- Environmental Toxicology: an international journal
- Environmental Values $165
- Environmetrics $1165
- European Water Management
- Field Studies
- Geoforum: the international multi-disciplinary journal for the rapid publication of research results and critical review articles in the physical, human and regional geosciences $877
- GeoInformatica: an international journal on advances of computer science for geographic information
- Geospatial Solutions: applications of GIS and related spatial information technologies
- Indian Journal of Ecology
- Indigenous Knowledge and Development Monitor
- Industry and Environment
- International Journal of Applied Earth Observation & Geoinformation $301
- International Journal of Ecology and Environmental Sciences
- International Journal of Geographical Information Science $901
- International Journal of Remote Sensing $3983
- International Planning Studies $371
- Journal for Nature Conservation
- Journal of Contaminant Hydrology $2133
- Journal of Environmental Biology: an international research journal of environmental sciences & toxicology
- The Journal of Environmental Education $98
- Journal of Environmental Health $90
- Journal of Environmental Law $212
- Journal of Environmental Planning and Management $967
- Journal of Environmental Quality
- Journal of Freshwater Ecology
- Journal of Geographical Systems: geographical information, analysis, theory and decision
- Journal of Great Lakes Research: Devoted to research on large lakes of the world $100
- Journal of Human Ecology: international, interdisciplinary journal of man-environment relationship $60
- Journal of Industrial Pollution Control
- Land Contamination & Reclamation
- Landscape and Urban Planning $1444
- Marine Geodesy: an international journal of ocean surveys mapping and sensing $367
- Mountain Research and Development $150
- Natural Areas Journal $125
- Natural Resources Management
- Ozone: Science and Engineering
- Political Geography $931
- Pollution Atmospherique
- Population Ecology
- Progress in Physical Geography: an international review of geographical work in the natural and environmental sciences $403
- Race, Poverty and the Environment $40
- Resources, Conservation and Recycling $1453
- Rivers Research and Applications: an international journal devoted to river research and management $1195
- South African Geographical Journal $100
- Surveying and Land Information Science
CONCLUDING NOTES

Three aspects of the EI will not require significant enhancements to the program.

First, given that the certification programs will draw on already extant courses, no new materials over and above those already supporting the EI will be needed.

Second, given the brief duration of the short courses plus the fact that they are tied to subjects already covered in the environmental initiative, plus build on faculty strengths, special library materials over and above those already provided (or to be provided) for EI will not be needed.

Third, our environmental engineering collection is strong and we are in a good start-up position with respect to materials for this area.
Proposed Course Changes for BA in Environmental Studies

1. Current course number and course description (from course catalogue):

   E&S 181 Independent Study (1-4)
   No course description

   E&S 371 Special Topics (1-4)
   No course description

2. Proposed course number and course description (as it will appear in course catalogue):

   ES 181 Independent Study (1-4)
   Directed readings or research on an Environmental Studies topic. May be repeated for credit up to four credits. Prerequisite: consent of the program director. (HU or SS)

   ES 371 Special Topics (1-4)
   Intensive, research-oriented study of a subject or issue in Environmental Studies not covered in other courses. For students of demonstrated ability and adequate preparation. May be repeated for credit up to four credits. Prerequisite: consent of the program director. (HU or SS)

3. Description of proposed change(s):
   Change in program designation and course description.

4. Rationale for proposed change(s):
   As the Environment and Society (E&S) program is merging with the Environmental Studies program, these courses need to change program designation. Course descriptions are added to be more explicit about course topics and requirements.

5. Resource Impact Statement: None

1. Current course number and course description (from course catalogue):

   E&S 1, Environment and the Consumer Society (4)
   Is there such a thing as sustainable consumption, or will life on Earth become increasingly imbalanced? Will our grandchildren accuse us of "devouring" their future? This multidisciplinary course investigates these issues, both locally and globally from the perspectives of anthropology, history, communication and politics. Topics include cultural causes of and responses to past environmental disasters; biological and cultural limits to growth; over-fishing the commons; resources and land use issues; communication in a consumer culture; and politics and governmental regulations. Team projects researching the environmental impacts of campus consumption will be included. (SS)

2. Proposed course number and course description (as it will appear in course catalogue):

   ES 10, Environment and the Consumer Society (4).
   Is there such a thing as sustainable consumption, or will life on Earth become increasingly imbalanced? Will our grandchildren accuse us of "devouring" their future? This multidisciplinary course investigates these issues, both locally and globally from the perspectives of anthropology, history, communication and politics. Topics include cultural causes of and responses to past environmental disasters; biological and cultural limits to growth; over-fishing the commons; resources and land use
issues; communication in a consumer culture; and politics and governmental regulations. Team projects researching the environmental impacts of campus consumption will be included. (SS)

3. Description of proposed change(s):
Change in program designation and number. No change in course description.

4. Rationale for proposed change(s):
As the E&S program is merging with the Environmental Studies program, a new designation and number are needed for this course.

5. Resource Impact Statement—None

1. Current course number and course description (from course catalogue):
   Anth 121, Environment and Culture (4)
   Hist 315, American Environmental History (4)

2. Proposed course number and course description (as it will appear in course catalogue)
   ES (Anth) 121, Environment and Culture (4)
   ES (Hist) 315, American Environmental History (4)

3. Description of proposed change(s):
   Crosslisting these two courses.

   Rationale for proposed change(s):
   These two courses are part of the core offerings for the BA degree in Environmental Studies and should carry ES as well as their home department designations.

   Resource Impact Statement—None
Proposed Graduate Certificate Program in "Nanomaterials"

MATERIAL SCIENCE AND ENGINEERING

1. Mission statement:

Nanotechnology and nanomaterials are becoming important in a wide range of industries. Some of the concepts in these areas lie just outside typical physics, chemistry, and materials courses. The proposed group of courses will address this deficiency for people in industry, government, and academia who took their coursework either outside the field or more than a few years ago. Particular stress will be placed on two areas: (1) nanocharacterization methods and (2) the differences between nanomaterials and bulk materials of the same composition. Examples will be shown of nanometer-sized technological structures related to electronics, photonics, catalysis, and biotechnology.

2. Rationale:

Typically materials science, chemistry, physics, electrical engineering, and biology departments use different materials synthesis methods and different instrumentation for physical characterization of materials. However, as the interfaces among these disciplines begin to blur, students need to have a working knowledge of a broad range of instrumentation to solve nanotechnology problems. The time when a nanotechnology research project can be carried on with just one type of microscope and one type of diffraction apparatus is gone. Many of the nanotech devices now contemplated are below the size regime of typical microscopes and diffraction systems. In a sense, no work in nanotechnology can proceed without the use of nanocharacterization tools, yet these tools are often the most complex analytical instruments ever manufactured. Not only is there a need to analyze the microstructure of nanometer-sized materials, but the chemical and physical properties of these structures must be assessed. No one tool can do this. The researcher must be familiar with a broad range of synthesis schemes and characterization tools.

3. Description of proposed new program:

Admission criteria:

- B.S. degree in chemistry, physics, or any branch of engineering
- Undergraduate GPA: 3.00 or higher
- Undergraduate chemistry, physics, and mathematics through differential equations and linear algebra
- Pre-requisite: An introductory materials course similar to Lehigh's Mat 33
- Admission policies will be the same as for other graduate students in materials science and engineering
- TOEFL score > 550
The application process would be similar to other interdisciplinary graduate programs. Eventually several departments may participate, but the program would begin in the Dept. of Materials Science and Engr.
Application deadline: January 15

Certificate Program Requirements
Two core courses to give a common background in materials and nanotechnology
Two elective courses from a list provided

Core Courses

Materials for Nanotechnology (3)
(Mat 378/478)
This course, offered on both an undergraduate and graduate level, begins with an introduction to the nanoworld and how we see the nanoworld through transmission electron microscopy. Other topics include: probing nanosurfaces, carbon as a nanomaterial, fullerences, carbon nanotubes, metal clusters, metal nanoparticle preparation, and directed self-assembly of nanoparticles. Also discussed are the thermal, chemical, electronic, optical, and magnetic properties of metal nanoparticles, nanowires, semiconductor nanoparticles, and inorganic nanoparticles.

Strategies for Nanocharacterization (3)
(Mat 377/477)
Lectures describe various nanocharacterization techniques in terms of which technique is best for specific measurements. Special attention paid to spatial resolution and detection limits for SEM, TEM, X-ray analysis, diffraction analysis, ion beam techniques, surface techniques, AFM and other SPMs, and light microscopies and spectroscopies.

Current Elective Courses

Thin Film Processing And Mechanical Behavior (3)
(Mat 397)
Metallic, ceramic and glassy films, with thickness less than approximately 1 μm, formed by gas phase deposition. Thin film applications, vacuum fundamentals, PVD and CVD, models for general thin film growth, epitaxial growth, sources of stress, deformation mechanisms, and mechanical characterization techniques such as substrate curvature and nanoindentation. Prerequisite: Mat33. Also recommended, but not required, is some experience with mechanics of materials.

Electron Microscopy and Microanalysis (4)
(Mat 334)
Fundamentals and experimental methods in electron optical techniques including scanning electron microscopy (SEM), conventional transmission (TEM) and scanning transmission (STEM) electron microscopy. Specific topics covered will include electron
optics, electron beam interactions with solids, electron diffraction and chemical microanalysis. Applications to the study of the structure of materials are given. Prerequisite: consent of the department chair.

**Crystallography and Diffraction (3)**
(Mat 333)
Introduction to crystal symmetry, point groups, and space groups. Emphasis on materials characterization by x-ray diffraction and electron diffraction. Specific topics include crystallographic notation, stereographic projections, orientation of single crystals, textures, phase identification, quantitative analysis, stress measurement, electron diffraction, ring and spot patterns, convergent beam electron diffraction (CBED), and space group determination. Applications in mineralogy, metallurgy, ceramics, microelectronics, polymers, and catalysts. Lectures and laboratory work.

**Advanced Transmission Electron Microscopy (4)**
(Mat 423)
The theory and practice of operation of the transmission and scanning transmission electron microscope. Techniques covered include bright field, high resolution and weak-beam dark field, lattice imaging, diffraction pattern indexing and Kikuchi line analysis. The theory of diffraction contrast is applied to the interpretation of electron micrographs. Specimen preparation techniques. Prerequisite: Mat 334 or equivalent.

**Advanced Scanning Electron Microscopy (4)**
(Mat 427)
The theory and practice of operation of the scanning electron microscope and electron microprobe. Techniques covered will include high-resolution scanning, quantitative electron probe microanalysis. Electron beam sample interactions, X-ray spectrometry and electron optics will be discussed in detail. Prerequisite: Mat 334 or equivalent.

4. **Academic Impact Statement**
   a. Interdisciplinary program: This certificate program provides the basis for understanding nanomaterials and nancharcterization. Since the materials and technologies involved may be related to, and students may be drawn from, various disciplines, program may be considered interdisciplinary. We hope, soon, to add courses from other departments to the list of acceptable electives. We also hope that, by bringing in other departments, it will be possible (in the near future) to offer a Master's degree in this area.

   b. Effects on other University programs: This certificate program will support nanotechnology research efforts in various departments across the University.

5. **Resource Impact Statement:**
   a. Library impact statement: Since Lehigh University has in place a strong materials characterization program, there should be little specific impact. There may the need for one or two new "nanomaterials" or "nanotechnology" journals that are not now
in the library. Note: There is an expected need for new nanotechnology-related journals of interest to various disciplines. This need may not yet have been recognized by individual departments. It should be realized that, just because this program has "nano" in its title, this new program must not be considered the only program impacting the library in the general area of nanotechnology.

b. **Computer impact statement:** no new requirements expected.

c. **Faculty impact statement:** no new requirements expected. Several recent hires in various departments may be offering courses that could be included in the list of electives.

d. **Facilities requirement:** no new requirements expected.
Proposed Course Change in ISE

1. Kind of change, e.g., "change in title:" Change in Prerequisite

2. Current course number and course description (from course catalog):

IE 412. Quantitative Models of Supply Chain Management (3)
Analytical models for logistics and supply chain coordination. Modeling, analysis, and computational issues of production, transportation, and other planning and decision models. Logistics network configuration, risk pooling, stochastic decision-making, information propagation, supply chain contracting, and electronic commerce implication. Prerequisite: IE 316 or IE 406 or equivalent; knowledge of mathematical programming.

3. Proposed course number and course description (as it will appear in course catalog):

IE 412. Quantitative Models of Supply Chain Management (3)
Analytical models for logistics and supply chain coordination. Modeling, analysis, and computational issues of production, transportation, and other planning and decision models. Logistics network configuration, risk pooling, stochastic decision-making, information propagation, supply chain contracting, and electronic commerce implication. Prerequisite: IE 362, and IE 316 or IE 406, or equivalent.

4. Description of proposed change(s): Addition of IE 362 as a prerequisite.

5. Rationale for proposed change(s): With the addition of 362, there will be a course that covers the introductory aspects of supply chain models. IE 412 will build upon the introductory material in IE 362 and as a result will cover more advanced material than it presently does.

Impact Statement: This change will require no additional library, computing, or faculty resources beyond those that it presently needs.

Proposed Course Change in ISE

1. Kind of change, e.g., "change in title:" Minor change in description and change in Prerequisite

2. Current course number and course description (from course catalog):

IE 419. Sequencing and Scheduling (3)
Systematic analysis of models for production planning and scheduling. Resource planning techniques, hierarchical planning, static and dynamic scheduling of production resources, and resource constrained project scheduling. Prerequisites: IE 251 or equivalent.
3. Proposed course number and course description (as it will appear in course catalog):

IE 419. Sequencing and Scheduling (3)
Systematic analysis of models for the planning and scheduling of systems that produce goods or services. Resource planning techniques, static and dynamic scheduling methods and algorithms. Prerequisites: IE 352, and IE 316 or IE 406, or equivalent.

4. Description of proposed change(s): Change in prerequisite from IE 251 to IE 362 and addition of IE 406 as an alternative to IE 316.

5. Rationale for proposed change(s): IE 362 has IE 251 as a prerequisite. The additional topics covered in IE 362 are needed as a prerequisite. The addition of 406 as an alternative was missed last year when IE 406 was created. Finally, the minor change in description is required due to the topical coverage in IE 362.

Impact Statement: This change will require no additional library, computing, or faculty resources beyond those that it presently needs.

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Proposed Course Change in ISE

1. Kind of change, e.g., "change in title": Change in title, minor change in description and change in Prerequisite

2. Current course number and course description (from course catalog):

IE 425. (MSE 425) Production Planning and Resource Allocation (3)
Advanced study of heuristic, algorithmic, and analytical methods for production planning, scheduling, and distribution models and systems. Forecasting, job shop and just-in-time scheduling, single stage and multi-tier inventory control, and facility location. Prerequisites: IE 121 or IE 328 and IE 220 or equivalent, or consent of instructor.

3. Proposed course number and course description (as it will appear in course catalog):

IE 425. Inventory Management and Production Planning (3)
Advanced study of heuristic, algorithmic, and analytical methods for inventory, production planning, and distribution models and systems. Forecasting, scheduling of production facilities, single stage and multi-tier inventory control, and facility location—production allocation models. Prerequisites: IE 362 and IE 339, or equivalent.

4. Description of proposed change(s): The change in title shifts the emphasis from resource allocation to inventory management. The change in description removes the topics now covered in IE 362. The change in prerequisite adds the additional material in IE 362. The previous prerequisites are still maintained because they are required for IE 362 and IE 339. The removal of cross-listing occurs because MSE will now require IE 362.
5. Rationale for proposed change(s): IE 425 will have a change in emphasis away from resource allocation to inventory management. Both of these topics are covered in an introductory way in IE 362 and its prerequisite IE 251. MSE is adopting 362 as a core course in its degree in place of MSE 425. MSE is also dropping MSE 425 so the cross-listing is no longer needed.

**Impact Statement:** This change will require no additional library, computing, or faculty resources beyond those that it presently needs.

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**Proposed Program Changes for ISE**

**Name and summary of current program:**

Master of Science in Information and Systems Engineering and
Master of Engineering in Information and Systems Engineering

**Proposed program changes (as they will appear in the catalog):**

**M.S. in Information and Systems Engineering**

The master of science program in ISE requires a minimum of 24 credit hours of approved coursework and completion of a satisfactory thesis or 27 credit hours of approved coursework and completion of a 3 credit hour project. Four core courses are required: IE 316, IE 341, IE 362, and IE 404. In addition, 4 courses are chosen from a list of approved courses that covers the areas of information economics, quantitative systems analysis, and information technology and applications.

**M.Eng. in Information and Systems Engineering**

The master of engineering program in ISE requires a minimum of 30 credit hours of approved coursework. No thesis or project is required. Four core courses are required: IE 316, IE 341, IE 362, and IE 404. In addition, 4 courses are chosen from a list of approved courses that covers the areas of information economics, quantitative systems analysis, and information technology and applications.

**Core Courses (Four courses required of all ISE students):**

- IE 316 Advanced Operations Research Techniques (3)
- IE 341 Data Communication Systems Analysis and Design (3)
- IE 362 Logistics and Supply Chain Management (3)
- IE 404 Simulation (3)

**Description of proposed change(s):**

All references to IE 412 as a core course will be replaced with IE 362.

**Rationale for proposed change(s):**

A new course, IE 362 Logistics and Supply Chain Management, has been created. IE 412 Quantitative Models of Supply Chain Management (3) will now be a follow-on course. Therefore, the masters degree will use IE 362 instead of IE 412 as a core requirement.

**Academic Impact Statement:**
Is this proposed program change interdisciplinary? No

Identify any known effects of the proposed program change on other programs at the University.
None

If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided:

Who was consulted? N/A

Is the proposed program change acceptable to the affected programs? N/A

Will any changes be required in the affected programs? If so, describe.

Identify any known effects of the proposed program change on the University's commitment to diversity. None known

Resource Impact Statement:
Provide each of the following:
- Library impact statement — No effect
- Computer impact statement — No effect
- Faculty impact statement — No effect
- Facilities impact statement — No effect

Provide a statement indicating who will assume financial responsibility for any new resources required: The ISE Department will assume financial responsibility for this change.

Proposed Course Changes for MSE

Kind of change, e.g., "change in title" — Drop course from catalog

Current course number and course description (from course catalog):
MSE 425. (IE 425) Production Planning and Resource Allocation (3)
Advanced study of heuristic, algorithmic, and analytical methods for production planning, scheduling, and distribution models and systems. Forecasting, job shop and just-in-time scheduling, single stage and multi-echelon inventory control, and facility location. Prerequisites: IE 121 or IE 328 and IE 220 or equivalent, or consent of instructor.

Proposed course number and course description (as it will appear in course catalog):
None

Description of proposed change(s):

Drop the course MSE 425 from the catalog

Rationale for proposed change(s): A new course, MSE 362 Logistics and Supply Chain Management will replace MSE 425 in the MSE program core. It will be provide students with knowledge in an area of interest for companies dealing with manufacturing systems.

Impact Statement: The faculty and resources normally assigned to offer MSE 425 will instead be used to offer MSE 362
Proposed Program Changes for MSE

Name and summary of current program:
Master of Science in Manufacturing Systems Engineering

Proposed program changes (as they will appear in the catalog):
The list of core courses does not currently appear in the catalog, so this will not change

Description of proposed change(s):
MSE 362 Logistics and Supply Chain Management will replace MSE 425 Production Planning and Resource Allocation (3) as a core course.

Rationale for proposed change(s):
MSE 362 is a new course that is being added to the department offerings. MSE 425 is being dropped from the curriculum. Logistics and supply chain management are important topics in industry that have received much focus in recent years. Some of the material in MSE 425 will be covered in MSE 362

Academic Impact Statement:
Is this proposed program change interdisciplinary? No

Identify any known effects of the proposed program change on other programs at the University.
N/A

If there are known effects, individuals in charge of the affected programs must be consulted about the proposed program change and the following information provided:

Who was consulted?

Is the proposed program change acceptable to the affected programs?

Will any changes be required in the affected programs? If so, describe.

Identify any known effects of the proposed program change on the University’s commitment to diversity.

Resource Impact Statement:
Provide each of the following:
Library impact statement Change in courses will have no impact on library usage
Computer impact statement Change in courses will have no impact on computer usage
Faculty impact statement Change in courses will have no impact on faculty loads as both MSE 362 and MSE 425 are cross-listed with IE and part of their curricula.
Facilities impact statement Change in courses will require no additional facilities

Provide a statement indicating who will assume financial responsibility for any new resources required: The MSE program and ISE departments will assume financial responsibility.