Lehigh University

MINUTES OF THE FACULTY MEETING

19 March 2001

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

1. Minutes. Professor Bob Folk noted a minor change to page two of the minutes of the February 19, 2001 faculty meeting. Given that change, the minutes were APPROVED.

2. Announcement. President Farrington announced that Professor Marilyn White has been elected to the National Academy of Science. Professor White was given a hearty round of applause.

3. Information Resources. Vice Provost Bruce Taggart provided an extensive review of information resources capabilities and future plans. Following the presentation, he fielded questions.

Professor Rich Arnone asked why it is so difficult to “fill-in” to the Lehigh e-mail system at night. Vice Provost Taggart indicated this was a result of heavy student demand but promised that access would be easier beginning in the fall.

Professor Folk made a few observations. He first noted that the Banner system makes it difficult for faculty to access class lists. He also reflected on the fact that the IR budget - $14 million - is larger than the academic budgets of two colleges and wondered aloud whether technology was taking over. He also questioned whether academic departments were being cut out of the decision making process. Vice Provost Taggart enumerated several of the benefits of IR expenditures including student access, research, and faculty development.

4. R & P Update. Professor Judith Leiker updated the faculty on the progress of changes to R & P. She noted that the trustees mandated a review of R & P. She and Senior Vice President Nelson Markley are working with the R & P subcommittee of the Faculty Steering Committee - Matt Melone, Ron Hatrunt and Al Moe. This process will also include outside reviews by AAUP (a verbal report by the end of the month) and United Educators, an insurance company owned by educators.

Under development is a proposal for how to proceed and for the creation...
of five task forces: EEO/Harassment; Employment Policies; Student Conduct; Athletics; and, Governance. Governance will be the most challenging. That task force will be launched in fall 2001.

She will be working on the charge to the task forces and invites faculty involvement.

Professor Folk questioned the philosophy used to develop current procedures – lots of committees that used to be strictly faculty committees, and committees acting like "mini-administrators." He saw a need for the faculty to act.

Professor Lasker stated that she hopes the Governance subcommittee leads to greater faculty control.

5. 

Introduction. President Farrington introduced Peggy Plympton, the new Vice President for Finance and Administration, who comes to us from Bucknell.

6. Committee Motions. Professor Ed Kay, on behalf of the Educational Policy Committee, brought a number of motions [see Attachment 1].

First, he moved a revision to R & P 3.10.1. The motion was seconded.

Professor Frank Guter inquired about juniors and seniors whose semester GPA falls below a 2.0 and offered a friendly amendment to delete the word "cumulative" from the last sentence of page 1 of the attachment.

With that friendly amendment, the motion passed.

Professor Kay then moved a revision to R & P 1.2.2.3.1 – Standing Sub-Committee on University Writing. The motion was seconded.

Professor Todd Watkins applauded the idea and suggested that the faculty consider broadening the scope to encompass all communications.

The motion passed.

Professor Kay then moved Course and Curriculum Changes for the College of Arts & Sciences. The motion was seconded and passed.

Professor Kay then moved Course and Curriculum Changes for the College of Business and Economics. The motion was seconded and passed.
Finally, Professor Kay moved Course and Curriculum Changes for the
PC Rossin College of Engineering and Applied Science. The motion was
SECONDED and PASSED.

Professor Christine Cole, on behalf of the Graduate and Research
Committee, brought a number of motions [see Attachment 2].

First, she moved a revision to University Audit Policy. The motion was
SECONDED.

Professor Gunter asked that the last sentence of the proposed revision be
deleted.

With that friendly amendment, the motion PASSED.

Professor Cole then moved Course and Curriculum Changes for the
College of Arts & Sciences. The motion was SECONDED and PASSED.

Professor Cole then moved Course and Curriculum Changes for the
College of Business and Economics. The motion was SECONDED and
PASSED.

Professor Cole then moved New Graduate Admission Status for the
College of Business and Economics. The motion was SECONDED and
PASSED.

Professor Cole then moved Course and Curriculum Changes for the
College of Education. The motion was SECONDED and PASSED.

Finally, Professor Cole moved Course and Curriculum Changes for the
PC Rossin College of Engineering and Applied Science. The motion was
SECONDED and PASSED.

7. Announcement President Farrington announced the establishment of
a new Governor's School in Entrepreneurship at Lehigh. It is the first
Governor's School to host international students. The president saw this
as a major step forward.

8. Unfinished Business None.


10. Family and Medical Leave Policy for Faculty Provost Ron
Yoshida moved the revised Family and Medical Leave Policy for Faculty
be taken OFF THE TABLE [see Attachment 3]. The motion was
SECONDED.
Provost Yoshida noted the revision brings the university into compliance with federal law and codifies medical leave policy.

Professor Gunter asked if this represented an addition to R & P 2.7 and whether the Faculty Compensation Committee had been consulted.

Provost Yoshida said no discussion with FCC took place.

Professor Jim Larges said he felt FCC should have been consulted.

Professor Philip Blythe asked about the effects on Workers’ Compensation. ’Toni Lee Febbo from Human Resources, observed that Workers’ Compensation benefits would come first, followed by Lehigh University benefits.

The Family and Medical Leave Policy for Faculty revision PASSED.

11. **Planning for the Next Capital Campaign.** Vice President Bonnie Devlin reviewed the upcoming capital campaign [see Attachment 4]. During the next 18 months, the university will be testing the viability of its anticipated $500 million capital campaign. The preliminary objectives focus on endowment, not facilities, including $150 million for endowed faculty chairs, $100 million for academic programs and infrastructure, $100 million for scholarships, $50 million for student life and athletics, and $100 million for the annual fund.

The timeline includes the abovementioned 18 month testing period followed by a seven-year effort. During the next year, under the leadership of Paul Leitner, the board of trustees will be solicited to pledge $100 million, followed by an effort during the spring and fall of 2002 to present the strategic plan to ‘friends.’ The earliest “official” launch date for the campaign is October 2002.

Professor Bob Thornton asked if $2 million is enough for an endowed chair. Vice President Devlin stated that, since there would not be new positions, $2 million should be sufficient.

Professor Larges asked about the annual fund. Vice President Devlin observed that the goal was to increase annual fund giving to about $15 million per year.

President Ferrington also noted that he hopes to raise additional funds to support academic infrastructure. The goal is to have one in four faculty positions endowed with a chair. Financial aid endowment gives the university tangible funds to work with. He cautioned that the campaign...
was an adventure given the uncertain financial outlook, but the expectation is that the trustees will be extraordinarily generous. He also said the $75 million initiative was going nicely and announced that the state had invested $13 million in an optical greenhouse, optical communications research, and entrepreneurship.

12. Committee Reports. Professor Largay, on behalf of the Faculty Compensation Committee, provided an update on the Phase Retirement Plan Review and Intellectual Property Policy [see Attachment 5].

Professor Bruce Haugreaves, on behalf of the Faculty Financial Planning and Operations Committee, discussed several issues. The committee has engaged discussions with Senior Vice President Merckley regarding intellectual property, is developing benchmarks for valuation of the university, and is working with Scott Knaus on faculty and staff performance, and the development of scaling measures of performance. Specifically, how does Lehigh compare with universities of comparable wealth and resources? How much more money is required annually to have comparable performance to Top 25 research universities? What are realistic goals for Lehigh?

13. President’s Report. President Farrington began his report by noting the $75 million committed to academic infrastructure is an investment and that it was not necessarily a university goal to be ranked in the Top 25. He did say that if Lehigh is to aspire to such a ranking, then our demographics must be comparable. He reiterated the decline in revenue from indirect Cost Recovery and graduate tuition.

Campus Square is on track. Groundbreaking will be in a week or two.

Professor Folk suggested the emphasis on fluctuations in ICR and graduate tuition is stronger than it deserves.

President Farrington said the tail was not wagging the dog. The blunt reality is that declines in ICR and graduate tuition have compelled the university to use all its extra endowment money to maintain faculty numbers.


Provost Yoshiida reviewed the demographics of the incoming freshman class. 49% of applicants offered admission have SAT scores of 1300 or above. Applications and offers of admission are down for the class of 2005; however, the class is the finest set of admissions ever. Competition
from other schools will be great so the university will have to work very
dard to fill the freshman class. He noted that parents of current students
are uniformly ecstatic.

The meeting stood adjourned at 8:01 PM

______________________________
Stephen F. Thode
Secretary to the Faculty
304 Rauch Business Center
(610) 738-4567
FAX: (610) 693-6415
E-mail: sfr02
Memorandum

To: Bruce Correll, Registrar
Ed Kay, Educational Policy Committee chair

From: Carl Moses, Associate Dean

Re: CAS undergraduate Course and Curriculum changes for 2001–2002

The attached documents report undergraduate course and curriculum changes for the College of Arts and Sciences for the 2001–2002 Course Catalog. These changes are those that were approved by the Educational Policy Committee on 7 March 2001. The first document is the complete CAS undergraduate course roster with changes indicated where necessary. The second document is a narrative account of new course descriptions, rationales, program changes and the like.
Standing Sub-Committee on University Writing

The Educational Policy Committee will establish a standing Advisory Sub-committee on Writing, Instruction reporting to the Educational Policy Committee. Its charge will be to discuss issues and devise initiatives concerning the improvement of student writing at the University. It will consist of four faculty members, one from each of the four Colleges, each appointed by the corresponding Dean to three-year staggered terms. In addition, the Director of Writing in the English Department and the Head of the Center for Writing, Math, and Study Skills will serve as ex-officio members of this Sub-committee. The chairperson of this Sub-committee will be elected by its members.

Rationale:
Because writing is done in all of the Colleges and is of such significant importance in so many differing majors, and because writing-related issues can best be addressed through the concerted efforts of different segments of the University community, there should be a single University-wide committee dedicated to the improvement of student writing. With representatives from the four Colleges meeting regularly, studying the writing done across the curriculum and discussing problems from differing perspectives, the University can more effectively and efficiently identify and address student writing needs.
1. The academic requirements for undergraduate students are expressed in terms of the cumulative average, the weighted grade average of all grades received in residence or at institutions specifically approved for grade transfer.

The cumulative average is computed at the end of each semester and the second summer session. The following cumulative average requirements for good standing are in effect:

- Freshmen, first semester: 1.00
- Freshmen, second semester: 1.70
- Sophomores: 1.80
- Juniors and Seniors: 2.00

For purposes of computation, students who have completed fewer than six hours of course work shall be required to achieve a 1.50 cumulative average after their next semester or summer term to remain in good standing. Students who have completed six but fewer than 22 hours shall also be required to achieve a 1.50. Students who have completed 22 hours but fewer than 52 hours shall be required to achieve a 1.80. Other undergraduates will be required to achieve a 2.00 — the average required for graduation — to remain in good standing.

2. Students who do not meet the above requirements will be placed on scholastic probation. This action will be effective at the end of each semester and the second summer session. Any student, regardless of overall cumulative average, who has failed more than eight hours of course work during a semester or Summer Sessions I and II combined, will be placed on probation.

3. Should a student's cumulative grade point average fail to meet the requirements for good scholastic standing, as a result of a conversion of an N, X, or Y grade on the tenth day of instruction, the Committee on the Standing of Students will consider each individual's case to determine the student's status.

Students who, while on scholastic probation, attend either or both summer sessions, will have their status reviewed at the end of each summer session by the Committee on Standing of Students.

4. While there are no hour's requirements for good standing, certain categories of students (e.g., those on financial aid and those playing intercollegiate athletics) will be expected to maintain whatever hours are required for eligibility.
Lehigh University

Memorandum

March 8, 2001

To: University Faculty
From: Bruce Correll, Secretary Educational Policy Committee

RE: Motions for the March 19, 2001 Faculty Meeting

Chair Ed Kay will present the following motions for approval at the next University Faculty Meeting. All of these motions have been passed by the appropriate college governance and faculty.

1. Revision to R&P 3.10.1: Scholastic probation. Motion below. (page R&P 1)
2. Proposal to add R&P section 3.10.1 Scholastic probation to University Writing. (pages R&P 2)
3. Course and Curriculum Changes from the College of Arts & Sciences (pages CAS 1 – 76)
4. Course and Curriculum Changes from the College of Business and Economics (pages CBE 1 – 7)
5. Course and Curriculum Changes from the P.C. Rossin College of Engineering and Applied Science (pages CEAS 1 – 27)

Inclusion of rules:

This revision is intended to replace R&P section 3.10.1: Scholastic probation item 1. Note: Section 3.10.1 item 2, 3, and 5 remain unchanged (item 4 does not exist). Sections 3.10.1 and 3.10.2 remain unchanged.

These allow changes to the regulations are necessary due to the LEWIS implementation and should impact very few students. GED R&P 3.10.1 is below revised copy

R&P 3.10.1: Scholastic probation

1. The scholastic requirements for undergraduate students are expressed in terms of the cumulative average: the weighted point average of all grades received in residence or at institutions specifically approved for grade transfer.

   The cumulative average is computed at the end of each term and the summer session. The following cumulative average requirements for good standing are in effect:

   - Freshmen (0-23 total credits earned): 1.70
   - Sophomores (24 to 52 total credits earned): 1.80
   - Juniors and Seniors (53 total credits earned): 2.00

   For computational purposes students who have completed 32 or fewer earned hours at the end of the most recent graded term shall be required to achieve a 1.70 cumulative grade point average. Students who have completed 33 but fewer than 53 earned hours at the end of the most recent graded term shall be required to achieve a 1.80 cumulative grade point average. Students who have completed 53 earned hours at the end of the most recent graded term shall be required to achieve a 2.00 cumulative grade point average. Offsite undergraduates including all General College Division, Lehigh Valley Association of Independent Colleges, cross registered students, R.O.T.C., students will be required to achieve a 3.0 cumulative grade point average - the maximum average required for graduation - to remain in good academic standing.

Any undergraduate student who achieves a 3.0 or lower cumulative grade point average in a given term is eligible to be reviewed by and may be placed on probation at the discretion of the Committee on the Standing of Students.

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Fax: 610-758-3190
email: beo@lehigh.edu
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**Course Report Summary**

- Course 1: Data Analysis
- Course 2: Programming Basics
- Course 3: Neural Networks
- Course 4: Advanced Algorithms
- Course 5: Machine Learning
<p>| Date       | Item 1 | Item 2 | Item 3 | Item 4 | Item 5 | Item 6 | Item 7 | Item 8 | Item 9 | Item 10 | Item 11 | Item 12 | Item 13 | Item 14 | Item 15 | Item 16 | Item 17 | Item 18 | Item 19 | Item 20 | Item 21 | Item 22 | Item 23 | Item 24 | Item 25 | Item 26 | Item 27 | Item 28 | Item 29 | Item 30 | Item 31 | Item 32 | Item 33 | Item 34 | Item 35 | Item 36 | Item 37 | Item 38 | Item 39 | Item 40 | Item 41 |
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| 2001-01-02 | Value 1| Value 2| Value 3| Value 4| Value 5| Value 6| Value 7| Value 8| Value 9| Value 10| Value 11| Value 12| Value 13| Value 14| Value 15| Value 16| Value 17| Value 18| Value 19| Value 20| Value 21| Value 22| Value 23| Value 24| Value 25| Value 26| Value 27| Value 28| Value 29| Value 30| Value 31| Value 32| Value 33| Value 34| Value 35| Value 36| Value 37| Value 38| Value 39| Value 40| Value 41 |</p>
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200-2023

Conference Group Report
College of Arts and Sciences

Course and Curriculum Changes for AY2001–2002

v. 3.1, 7 March, 2001

African Studies (AAS)

Courses dropped:
  WS 394 (SSP/AAS 394)

American Studies (AMST)

None

Anthropology (ANTH)

See Sociology and Anthropology

Architecture (ARCH)

See Art and Architecture

Art (ART)

See Art and Architecture

Art and Architecture

Courses dropped
  Art 101, Art 102. Courses can no longer be staffed

Courses added:

ARCH 10. Engineering/Architectural Graphics and Design (3) Graphical communication of civil engineering or architectural projects using manual techniques and commercial state-of-the-art computer software. Topics include visualization and sketching, orthographic isometric and other drawings, points, lines and planes in descriptive geometry; site design; overview of geographical information systems and 3-D applications. Team work on design projects with oral and graphical presentations. Open to a limited number of architecture, design arts or other students with project roles consistent with students' background. Not available to students who have taken Mech 30.
Rationale: Replacing Arch 351, which has been taught by adjuncts. CE will staff this new course.

Des 212. (Engr 212) Integrated Product Development (IPD) Projects II (2) Business, engineering and design arts students work in cross disciplinary teams of 4-6 students on the detailed design, fabrication and testing of a prototype of the new product designed in Engr 211 or Des 211. Additional deliverables in planning for production with a detailed base case financial model, and a project and product portfolio. Teams continue to work on industry projects with faculty advisors. Oral presentations and written reports.
Prerequisites: Engr 211 or Bus 211 or Des 211. (ND)

Rationale: Course addition to cross-list with Engineering 212

Des 262. Furniture Design (1-4) Advanced studio in which students, independently or in teams, will create and produce their own original furniture designs. Issues of ergonomics, materials, and design for production will be addressed. Students taking this course should have a working knowledge of drawing, prototyping, and process. Studio.
Prerequisite Des 160. (ND)

Rationale: For furniture design projects as part of Design minor

Des 268. Advanced Design Project (1-4) Advanced studio in Industrial Design. Students will work independently or in teams to generate their own original design solutions. Lectures, readings, and guest speakers will provide students with relevant information to complete the project. It is strongly recommended that students taking this course have already enrolled in several design courses. (ND)

Rationale: For special projects that do not fall under Exhibit Design or Furniture Design

Other course changes:
Arch 107: drop unnecessary Art 1 and Arch 1 prerequisites
Arch 110: was Arch 252. Computer Aided Design II; change prerequisite from Arch 351 to Arch 10
Des 162: change title and description to more accurately reflect course content
Advanced Sketching and Rendering (3) Following on the skills introduced in Des 62, students will learn advanced computer modeling and animation skills as
well as develop advanced marker and presentation rendering skills. Lecture.
Prerequisite: Des 67, or permission of instructor.

Des 211: add cross-listings and change title for consistency with cross-listed EPD courses:
was Integrated Product Development; reference course description:
Integrated Product Development (IPD) Projects 1 (3) Business, engineering
and design students work in cross-disciplinary teams of 4-6 students on
marketing, financial and economic planning, economics and technical feasibility
of new product concepts. Team work on industrial projects with faculty advisors.
Oral presentations and written reports. Prerequisite: junior standing in business,
economics, arts or engineering.

Curriculum changes:
Drop Architecture minor from list of minor programs in CAS; this minor has not been
feasible for several years.

Award 3 credits for Art 99 (Art Elective) to students earning a 4 on the AP Art history
exam. Award 3 credits for Art 73 (Introductory Studio Practice) to students earning a 3
on the AP Studio Art exam. These changes refine the alignment of AP exam and Lehigh
course content.

Art Major: Delete the requirement for Art 101, which is dropped.

Architecture Major: Change the requirement for Arch 351 to Arch 10 and delete Arch
352, reflecting course changes.

Asian Studies (ASIA)

Courses added:
Asia 76. (Hist 76, MLI 76) Understanding Contemporary China; see Modern
Languages and Literature
Asia 2xx. (Rel 2xx) Buddhism and Ecology; see Religion Studies

Other course changes:
Asia 184 (Arth 184); change credits from 3 to 4 (see Sociology and Anthropology)
Asia 187 (Arth 187); change credits from 3 to 4 and change prerequisites (see Sociology
and Anthropology)
Astronomy (ASTR)

Curriculum changes:

Proposed B.S. Degree Program in Astrophysics

Non-Major (Not required of Majors):

Astro/Phys 7  
Introduction to Astronomy (3)

Astro/Phys 8  
Introduction to Astronomy Laboratory (1)

Mathematics (18):  

Math 21-23  
Calculus Sequence (12)

Math 205  
Linear Methods (3)

Math 320  
Ordinary Differential Equations (3), or

Math 322  
Methods of Applied Analysis I (3)

Basic- and Intermediate-Level Sciences (32-39):

Phys 1212, or 10/21  
Intro. Physics I (5)

Phys 2122, or 13/14  
Intro. Physics II (4-5)

Phys 31  
Introduction to Quantum Mechanics (3)

Phys 216  
Electricity and Magnetism I (3)

Phys 215  
Classical Mechanics I (4)

Phys 262  
Advanced Physics Laboratory (2), or

Phys 332  
Modern Optics (3)

Chem 21/22  
Intro. Chemical Principles I (5) or

Chem 75, 76  
Concepts, Models, Experiments I & II (8)

EES 21  
Introduction to Planet Earth (4)

EES 113  
Paleontologic Evidence for Earth Evolution: ... (4), or

EES xxx  
2-4 credits at the 100 level or higher

Intermediate- and Advanced-Level Undergraduate Astronomy and Astrophysics (16):
Astrophy/EEES 105  Planetary Astronomy (4)
Astrophy 110  Methods of Observational Astronomy (1)
Astrophy 201  Modern Astrophysics I (4)
Astrophy 202  Modern Astrophysics II (4)
Astrophy 332  High-Energy Astrophysics (3) or
Astrophy 342  Relativity and Cosmology (3), or
Astrophy 350  Topics in Astrophysics (3)

Approved Electives (12):
Three additional physics courses (minimum of 9 credit hours) at the 200 level or above.
(Astronomy courses cross-listed with physics are acceptable.) One additional science course, but
not physics or astronomy, at the 100-level or above (minimum of 3 credit hours). These electives
are subject to approval by the program director.

Proposed B.A. Degree Program in Astronomy

Entry Level (4):
Astrophy 7  Introduction to Astronomy (5)
Astrophy 8  Introduction to Astronomy Laboratory (1)

Mathematics (15):
Math 21-23  Calculus Sequence (12)
Math 205  Linear Methods (3)

Basic and Intermediate-Level Sciences (25-31):
Phys 11/12, or 10/12  Intro. Physics I (5)
Phys 21/22, or 13/14  Intro. Physics II (4-5)
Phys 31  Introduction to Quantum Mechanics (3)
Phys 262  Advanced Physics Laboratory (2)
Chm 2122         Intro Chemical Prin + Lab (3), or
Chm 75, 76      Concepts, Models, Experiments I & II (3)

EES 21          Introduction to Planet Earth (4)
EES 113        Paleomagnetic Evidence for Earth Evolution: ... (4), or
EES nnn         2-4 credits at the 100 level or higher

Intermediate- and Advanced-Level Undergraduate Astronomy and Astrophysics (9):

Astr/Phy/EES 105 Planetary Astronomy (4)  
Astr/Phy 110   Methods of Observational Astronomy (1)

Astr/Phy 201   Modern Astrophysics I (4), or
Astr/Phy 202   Modern Astrophysics II (4)

Approved Electives (12):

Two additional physics courses at the 200 level or above (minimum of 6 credit hours).
(Astronomy courses cross-listed with physics are acceptable.) Two additional science courses at
the 200-level or above (minimum of 6 credit hours). These electives are subject to approval by
the program director.

Math 12 (Basic Statistics), Phy 212 (Electricity and Magnetism I), and either EES 31
(Introduction to Environmental and Organisational Biology) or BioS 31 (Introduction to Cell and
Molecular Biology) are recommended.

Rationale and Introduction

Astronomical sciences have always excited and continue to excite students with a passion for the natural (particularly, physical) sciences. In fact, many students who eventually pursued other sciences disciplines were first inspired by the space sciences. Therefore, this represents a vehicle by which matriculation might be significantly enhanced for the category of students inclined toward the physical sciences, an area that has overall exhibited declining enrollments nation-wide.

We are well prepared to offer these programs for the following reasons: (1) Two members of the physical sciences faculty (McChesney and Delano) have a direct interest in astronomical research and the implementation of these undergraduate programs. (2) No changes are required for our current collection of astronomy courses. The necessary...
changes to better accommodate the current minor program and an eventual major were approved in last year’s course and curriculum cycle. (3) All other courses required to support either the astrophysics or astronomy programs already exist at Lehigh. This is a natural consequence of the interdisciplinary nature of these programs. In fact, enrollment in these degree programs would tend to improve registration numbers for intermediate- and advanced-level mathematical and physical sciences courses that currently have low enrollments but are required for other majors.

**Impact Statement**

In order to accommodate these proposed major-degree programs, the Department of Physics would need to offer approximately one additional course per semester. For example, in the fall of 2001, we would offer Astr 78A, Astr 201, and Astr 105 (all cross-listed with Physics). This should be compared with the two astronomy courses per semester that have been traditionally offered prior to the changes initiated last year. The impact on large-enrollment courses (Phy 11, Math 211...) would be marginal. The affect on higher-level courses would be positive since the enrollments are often low.

The need for additional resources to operate the elementary astronomy laboratory (Astr 8) was addressed in last year’s course and curriculum change cycle. The additional impact of requiring this laboratory for astronomy majors is minimal. Resources will be sought for the development of an observational facility and the course, Methods of Observational Astronomy (Astr 110), scheduled for a first offering in spring 2002.

**Bioscience (BIOS)**

**Courses added**

Bios 365 Eukaryotic Signal Transduction (3) Signal transmission between cells of multi-cellular eukaryotic organisms examined in the context of specialized functions that include: nutrition, hormones and neurotransmitters, vision, muscle contraction, adhesion, and the immune system. The evolution of cancer based on mutations in these signaling systems. Prerequisite: Bios 367 or 372 (preference for a number above 372)

**Rationale:** This course has typically been offered as a cross-listed course with the graduate course “Eukaryotic Biochemistry.” While the lecture component of the course is the same, expectations for students at the two levels have been different. We have done this using an experimental number the last three times the course has been offered. Therefore, we are regularizing a course that has existed in practice for about 6 years.
Bios 3yy Cell Biology laboratory (2) Basic methods used in cell biology laboratories around the world and the opportunity to carry out an independent research project. Techniques include histology and microscopy (both white and fluorescent light), tissue culture and sterile procedures, cellular fractionation, nuclear import assays, and immunological probing. Co- or pre-requisite Bios 367. Departmental permission required. (Preference for 368 to match the pre/co-requisite course 367)

Rationale: This course has been offered three times already. It was developed with funding from our Hughes grant. This course increases the number of upper level laboratory courses available to our students consistent with the long-range plan of training our Bios majors in laboratory research. A net increase of students isn't predicted rather some students who would have been forced into one of the other existing courses can now select this laboratory course. Therefore, there won't be a significant increase in cost, as the funds to cover this course (and the TA support) would have otherwise been directed to other upper level labs.

Bios 3zz Physical Biochemistry (3) Topics include: thermodynamics of biological systems; Forces acting on and between biological molecules; Principles of macromolecular structure; Physical methods used to characterize biomolecules; and other topics to be determined. Prerequisite Bios/Chum 371. (Preference for a number above 372 because 371 is a prerequisite)

Rationale: This course was taught in spring '00 and is being offered in spring '01. The course has had high enrollments (more than 25 each semester) including students using it as an alternative to Physical Chemistry for Biologists (not available in 99-00 or 00-01) and students selecting it as an appropriate biology elective for their interests. Since it is a lecture course that is already being taught, no resource impact is expected.

Other course changes:

Bios 2xx: was Bios 134; change reflects the course difficulty and the fact that the course is typically taken junior or senior year
Bios/Psys 177: was entitled Introduction to Behavioral Neuroscience; this change is coupled with the change in name for Bios 375 because the two courses function as a sequence.

Bios/Psys 375 was Bios/Psys 375, entitled Neuroanatomy of Behavior (we prefer either 276 or 278 to fit with Bios 277 lab); these changes reflect the fact that this pair of courses is typically taught as a sequence, where students often take the second course during the spring of their sophomore year. The course difficulty is appropriate for the 200 level, and that level will encourage students to select the course before their senior year.

Bios 300 was Bios 229; this course has consistently drawn students who have little experience beyond Bios 101, which is the prerequisite. However, the course is equally as difficult as most of our 300 level courses and has similar expectations of students. The change would make it clear that the difficulty level is not below the other 300 level courses.

Bios 277: was 4 cr. New description:
This laboratory course examines the specialized properties of the neuron which shape its function within neural networks, the development and structure of the nervous system, and the preparation of neural tissue for microscopic examination. Included are experiments and demonstrations utilizing important biochemical, cellular and molecular techniques used in modern neurobiology.

Rationale: This course retains the content of neuroscience techniques. However, the writing intensive portion has been removed as it has the requirement that the students design and carry out an independent project. While the title is still appropriate, the time spent in class and expectations have been decreased to the equivalent of one credit. The primary reason for this change was the difficulty in finding resources to cover all of the BNS majors in this course. It caused students to try to get into Psys 210 (see changes in curriculum) as an alternative and often prohibited students from getting into BIOS 277 until senior year. Students did not get exposed to the techniques in time to use them in a research setting. Therefore, this change, developed in part with Hughes funding, will ultimately require fewer resources and make it easier to allow all BNS majors and some other Bios majors to take the course. Prerequisite and dept permission remain the same.
Bios 241: change in prerequisite from Bios 134 to Bios 101. This change reflects current practice. It has been difficult for students to take Bios 134 before wishing to take 241. Because of these issues, the course content has already been adjusted slightly to take into account the fact that students have not completed Bios 134. This requirement also makes the prerequisite consistent with most other upper level Bios courses that require Bios 101.

Curriculum changes:

BA Biology program changes:
Change in requirements:
Math requirement from: 51 and 52 to: Math 51 and one of the following: Math 52, Math 12 Bios 110.

Collateral Science requirement from: Chem 21.22,51, and one of the following: Chem 31, Chem 194, or Phys 31 to: Chem 21.22, 51.52, 53, 58 and EES 31 (EES 31 used to be in the BIOS requirement section).

Added stipulations for the 18 cr. of Bios electives listing. No more than 3 cr. of the BIOS electives can be from the following courses: 161, 225, 261, 361, 391, 395, 394 or college scholar honors project. BIOS 110 can not count as a Bios elective.

Rationale for BA Biology program changes:
Changes to the math requirement are designed to encourage students to select a course in statistics which will be more useful than additional calculus for most careers in Biological Sciences. The option to take two semesters of calculus remains for students who have a need for the year of calculus.

Changes to the collateral science requirement include moving the EES 31 course from the Bio5 course listings to the collateral sciences section for clarity. In addition, students will take one year of Organic Chemistry instead of selecting from a range of chemistry and physics courses. This change will increase the consistency between our B.A. majors as all B.A. students in BNS and Molecular Biology must take the two semesters of Organic Chemistry. Not all of these B.A. students take Physics or Chem 31 and none take Chem 194.

Stipulations regarding Bios electives serve two purposes. The exclusion of BIOS 110 as an elective is due to the fact that BIOS 110 is basically an applied math course rather than Biology. The limitation on research and special topics was made to insure that students have at least 15 credits of regular upper level biology courses over the
range of the discipline. An unlimited use of special topics and research cannot occur in any of our other degrees. If they so choose, students may take additional credits in these areas as free electives.

Behavioral Neuroscience (BA and BS) program changes

Program changes

Move EES 31 and Psy 1 to collateral course section along with math and chemistry courses.

Eliminate Psy 210 as an option. This will make Bios 277 a requirement for all students - note the course changes below that impact 277.

List Cell Biology lab (new regular course - below) as a major elective for the program.

BS program only. List the Cell biology lab (which must be taken with BIOS 367 - already an allowed elective) as an alternate to the Biochemistry lab 317 in the BS program.

Reorganize the list of major electives so that all BIOS courses are first. The alternate physics courses will be removed from the list to reduce confusion. Students will still be allowed to select either physics sequence.

Rationale for BNS program changes

The movement of non-BioS courses from the major to collateral course lists is consistent with the program listing for our other degrees.

The removal of the Psy 210 option has two goals. First, we wish to remove pressure from the Psychology dept that arises when BNS students try to take that course instead of Bios 277 which has not always been available. Second, we feel that all BNS majors should be exposed to the neuroscience techniques. Therefore, we have also restructured 277 to make it more available to students (see course changes below).

The addition of another BioS elective is due to the fact that it is a newly listed course. Its addition as an alternative to Bios 377 for an advanced laboratory requirement in the B.S. program was made because it teaches useful techniques for BNS majors, and it may reduce the high demand on the Bios 377 course made by the increasing number of BS BNS students. The net impact should be negligible, moving students from one upper level laboratory course to another one.
Chinese (CHIN)
See Modern Languages and Literature

Chemistry (CHM)
Curriculum changes:
B.S. in Chemistry in CAS:
  Require Chm 371, Elements of Biochemistry I (3)
  Remove 3 credits in the free electives category.

Rationale:
1. A new American Chemical Society (ACS) requirement that will need to be met by the
department during the next ACS certification review is the inclusion of a required
one-semester course in biochemistry in the curricula.
2. In order to prepare our chemistry majors for the present and the future, it is important
that a student have some exposure to biochemistry to function in an effective way both at
Lehigh and at chemical positions taken after graduation.

Classical Studies (CLSS)
None

Cognitive Science (COGS)
Other course changes:
  CogS 7, 140, and 301 were 3 credits.

Rationale: Cognitive Science has long struggled against the limitations of 3 credit hours
because of the broadly interdisciplinary nature of its courses, and the vast breadth
demanded of the only course on linguistics on campus. On the other hand, when 4-credit
hours became possible, it reduced the total number of courses that students would take
and thereby inhibited students from exploring in an interdisciplinary program like
Cognitive Science. Consequently, we held our credit hours at 3, despite the cost in
coverage. At this point, however, the 3 credit hour status of the Cognitive Science
courses is an anomaly that probably hurts our overall enrollment rather than helps it so
we would like to move to 4 credit hours.
Specifically, the current version of Linguistics (Cogs 140) already sacrifices a lecture period in order to schedule exercises. In addition, every department with which this course is cross-listed (Psych, M.L., Anthro) has moved to a 4-credit program, so the Linguistics course is an anomaly in their programs. Introduction to Cognitive Science (Cogs 7) attempts to cover the contributions of six major disciplines (psychology, computer science, philosophy, linguistics, neuroscience, and anthropology) — there is no number of credit hours that would be sufficient. Conversely, an extra credit hour will be very productively devoted to deeper coverage of the interdisciplinary nature of Cognitive Science. The Senior Seminar in Cognitive Science (Cogs 301) is an individual research course; an extra credit hour will make this an even richer experience.

Cogs 140, new description:

Cogs 140 (P/L, 140; Psy 140; Anth 140). Introduction to Linguistics (4)
Relationship between language and mind; formal properties of language;
language and society; how languages change over time. No pass/fail option. (SS)

Rationale: The effect of the new description is to exclude pass/fail grading as an
option in order to discourage students who are not serious about the course (there
is a considerable amount of grading required for homework and other exercises)
and to bring policy for this course in line with comparable offerings in Psy.

Curriculum changes:

1. Csc 11 should be eliminated and Csc 10 and 14 substituted.

   Rationale: Computer science is eliminating Csc 11 and replacing it with Csc 10 and 14.

2. The title of Psy/SSP 314 is now Social Cognition and Social Action. This was
   changed by SSP.

Communication (COMM)
See Journalism and Communication

College Scholar Program (CS)
None

Design (DES)
Earth and Environmental Sciences (EES)

Courses dropped:
- EES 101, Geology for Engineers (3)
- EES 307, Case Histories in Engineering Geology (4)
- EES 319, Environmental Applications of Geographic Information Systems (4)
- EES 376, Geochemistry of Natural Waters (4)

Rationale: EES 101, 307 and 319 have been taught by Prof. Myers, who is retiring at the end of the 2000-2001 academic year. The EES department does not anticipate future offerings of either of these courses. EES 101 is a required component of the BS in CEE program and the dual BS EES/CEE degrees. The Civil Engineering department has been notified of this change. EES 21 was offered as an alternative for CEE students with the caveat that under current EES resource limitations, capacity for CEE students is only 30 students per semester. This is regrettable less than the number of CEE students who require the course. Discussions with CEE continue. EES 376 was taught by Prof. Moses, who is currently with the Dean’s office. A senior seminar is offered every semester, an ecological one each fall and a geological one each spring.

Other course changes:
- EES 113, entitled Paleontologic Evidence for Earth Evolution: Life and Climate in the Rock Record, now describes:
  - Interactions of the biosphere with the solid Earth. Formation and evolution of the physical Earth. How do we know that the Earth is old? The rise of life, its evolution, extinctions, and preservation in the rock record. The Earth’s circulatory system and biogeochemical cycles. The geologic record of past climate change at geologic and human dimensions. Lectures, discussions, lab. fieldtrips to collect fossils. Pazzaglia

Rationale: new title and description reflect changes in course content now that Prof. Pazzaglia is teaching the course.

Curriculum changes:
1. EES Honors.
Revised Catalog Description

Department Honors in Earth and Environmental Sciences
Students in either the B.A. or B.S. degree programs may undertake a program that leads to graduation with department honors. To participate, the student must (1) have a minimum major GPA of 3.25 and an overall cumulative GPA of 3.0, (2) file a written request with the EES undergraduate advisor to receive honors no later than the beginning of the senior year (preferably during the junior year), and (3) complete at least four credits of EES 393 (Supervised Research in Earth and Environmental Sciences). An advisory committee of two EES faculty plus the student’s research supervisor must be continued to supervise and guide the research and to approve the required honors thesis. For the thesis to qualify for department honors, the student must give an oral presentation of its results and conclusions at a department seminar before the last day of classes in the second semester of the senior year.

Rationale: A requirement that honor's recipients have a major GPA of at least 3.25 would bring EES honor's in line with University honor's and honor's programs in other departments.

2. Change in the EES BA major requirements

Proposed revision
Required courses for the major (at least 44 credits):
- Tier 1 introductory sequence: EES 21 and EES 31.
- Tier 2 courses: at least 2 courses for at least 20 credits.
- Tier 3 courses: at least 4 courses for at least 16 credits; one of these courses must be a designated EES senior seminar listed below:
  - EES 303 Active Tectonics (Spring odd)
  - EES 326 Geologic Evolution of North America (Spring even)
  - EES 351 Limnology (Fall odd)
  - EES 353 Environmental Microbiology (Fall even)

Rationale for Programmatic changes:
Removal of the foundation course selection constraint will allow our BA majors broader choice in Tier 2 major electives. Currently, BA majors choose 2 of 4 foundation courses and 3 of 16 additional Tier 2 electives. In the revised major students will choose 5 of 20
tier 2 electives. All BA and BS students will continue to be required to rationalize their selection of major courses prior to completing their third tier 2 class.

Economics (ECO)

Eliminate the International Careers program. Existing IC majors should be advised that they will be able to complete their major degree requirements for graduation. No new majors should be accepted into the program. Interested students should be advised to investigate the BA program in economics with its international economics track or the international relations major.

Rationale

1. The IC program currently lacks identity and focus and needs considerable attention to provide students with the full benefits of an interdisciplinary international program. Students currently take a smattering of courses in economics, international relations and an area concentration with no overall program direction. The identity problem is highlighted by the fact that many students describe themselves as "international business" majors.

2. The Economics Department does not have the resources to develop the program to its full potential. We have new undergraduate and MS-level initiatives in business economics that are more central to the research and teaching interests of the department faculty and that allow us to fill a vital niche in the programs offered by the CBE. In addition we have the BA program in Economics, an extensive minor program for CAS and engineering students and a very heavy service component. As an example of the lack of departmental resources to support IC, we haven't been able to identify anyone willing to relieve Art King of his duties as international careers program director, so he has been acting as advisor to the IC students while serving as senior associate dean of the CBE.

3. We have an international track in our BA major in economics that would better serve CAS students interested in international trade, finance and development topics. This track gives them a better preparation in economics while encouraging them to pursue elective options in international relations, language and area studies. It seems highly inefficient to have a department with limited resources and extremely high enrollments in basic courses servicing two major programs designed to educate students about international economics.
English (ENGL)

Courses added:

English 252 Professional Internship (2-4) Supervised projects, on- or off-campus, in professional, government, or service organizations. An interested student must submit a proposal, demonstrating the project's relevance to the study of language, texts, or communication to the department's internship advisor. May be repeated for a maximum of 4 credits. Internship credits do not count toward major in English. Prerequisites: junior or senior standing and approval by department internship advisor.

Rationale: The department's current internship is a writing internship requiring that each project include extensive writing. Recently students have proposed internships (in publishing and television, for example) that do not involve substantial writing, but provide students with pre-professional experience related to the study of language and texts. This added course will fill a demonstrated need. The Department's practice for awarding internship credits confirms to University criteria (36 contact hours per credit awarded, no credit awarded ex post facto), and the student must register for the internship during the same term that the internship work is actually conducted.

Environment and Society (E&S)

Courses added:

E&S XX Environment and the Consumer Society (4) spring
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; resource 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)

E&S XXX Independent Study (1-4)

E&S XXXX Special Topics (1-4)
Rationale: The Environment and Society Interdisciplinary Minor is requesting the
termination of three courses under a new rubric called Environment and Society (E&S).
This is being done for several reasons. First, a Ventures grant allowed five faculty from
different departments to develop an introductory course for the minor that will be taught every
spring. For Spring 01, it is being taught under as Arts 98, but we think it is appropriate
that this course be the cornerstone of the E&S minor and that it therefore have an E&S
listing.

Second, this course, Environment and the Consumer Society (4), will become a
required course for all students taking the minor. It requires no additional faculty or any
new library resources.

Third, to give students the opportunity to work independently with faculty
members or to develop undergraduate research projects, we would like to add two
courses to the minor that will also bear the E&S listing. They are a 100-level
Independent Study course (1-4) and a 300-level Special Topics course.

Curriculum changes:

Revised Environment and Society Minor

Required Course: E&S XX, Environment and the Consumer Society (4 credits)

Choose from among the following courses:

Core Courses (minimum of 8 credits):

Anth/Cls 121 Environment and Culture (4)
Anth 305 Anthropology of Fishing (4)
Eco 311 Environmental Economics (3)
Hist 211 American Environmental History (4)
E&S 1XX Independent Study (1-4)
E&S 2XX Special Topics (1-4)
Jour 125 Environment, the Public and the Mass Media (4)
Jour/STS 323 Controversies in Science, Health and the Environment (4)
Pols 111 The Politics of the Environment (4)
Pols 271 U.S. Politics and the Environment (4)
Pols 375 Seminar: Green Policy (4)
Pols 382 Dying Paradise? (Sub)/Urban Sprawl and the Public Interest (4)
Effective Courses:

Anth 1  Introduction to Anthropology (4)
Anth 12  Human Evolution and Prehistory (4)
Anth/Class 345  Evolution of the State (4)
Jour/STS 124  Politics of Science (4)
Jour 313  Special Topics in Science Writing (1-4)
PoIS 115  Technology as Politics (4)
PoIS 277  Urban Politics (4)
Rel 6  Religion and the Ecological Crisis (4)
SPP 165  Contemporary Social Problems (3)

Total Number of Hours required for the minor is 16

French (FREN)
See Modern Languages and Literature

German (GERM)
See Modern Languages and Literature

Greek (GRK)
None

Hebrew (HEBR)
See Modern Languages and Literature

History (HIST)
Courses dropped:

Hist 44. United States to 1865; Laboratory (1)
Hist 45. United States 1865-1941; Laboratory (1)
Hist 46. United States since 1939; Laboratory (1)
Hist 507. History of American Industrial Technology (3-4)
Courses added:

Hist 76, (Asia 76, MLL 76) Understanding Contemporary China; see Modern Languages and Literatures

Hist 308 Industrial America since 1945 (3-4) Explores efforts to achieve both prosperity and security in the postwar era. Among the topics discussed: new technologies, consumer culture, disposable products, advertising, defense spending, technical assistance, and multinational corporations. (SS) Cooper

Hist 318 History of North American Indians (3-4) The history of American Indians from before European contact to the present. Emphasis will be placed on the diversity of native peoples of eastern North America and how patterns of interaction between native Americans and Euro-Americans have changed over time. Discussion format, research paper. (SS) Soderlund

Other course changes:

Hist 7, 41, 42, and 43: were three credits

Rationale: In the case of History 7. The Machines in America, the department discussed whether to divide the course into two courses because the amount of material to be covered has increased with developments in the history of technology during the last thirty years. We decided instead to increase the students' workload (number of books, papers) and offer the course for four credits.

In the case of the U.S. history survey courses Hist 41, 42, and 43, we had decided when the College adopted the flexible credit model to offer a 1-credit lab. In a similar manner, we decided to use the 3-credit course. We thought this would allow students who planned to major in history or another CAS discipline to take the survey for 4 credits, while offering the courses for 3 credits to fit the schedules of engineering and business majors. Students have found it difficult to enroll in the lab because it must be scheduled to another time slot than the regular course. We think it would be more beneficial to require all of the survey students to fulfill the equivalent of the additional assignments(s) that lab students complete. offer the courses for four credits, and eliminate the lab.

We recommend dropping Hist 307 because it hasn't been taught in several years and we think the proposed new course, Hist 308, provides a better focus for undergraduates. We would like to add Hist 318 to fill a significant gap in our program.
International Careers
See Economics

International Relations (IR)
Courses added:

IR 391. Independent Study (1-6) Directed course intended for students with special interest in fields of international relations not fully covered by regular course offerings. May be repeated for credit. Departmental permission required. Staff (SS)

Journalism (JOUR)
See Journalism and Communication

Journalism and Communication
Courses added:

Comm 252. Interpersonal Relationships: Private and Public (3) In this class, we study theories about effective communication with other theories in personal, social, and professional settings. Perceptions, self-disclosure, non-verbal cues, language, and listening are some of the communication elements we identify and analyze in films, role-plays, real-life observations, and a case study. Journal of observations, three short papers, choice of project or term paper, and final essay exam. Wills (ND)

Rationale: Comm 252 was previously offered as an experimental course Comm 298, and the department would now like to regularize it.

Jour 325. Special Topics in Public Relations (1-4) Research and writing on performance involving a topic, medium or issue in public relations involving some aspect of professional application or theory that expands on the body of knowledge or covers some material not covered in other courses. Prerequisite: Junior or senior standing and consent of department chair. Gomesy (ND)

Rationale: This course is designed to allow students to pursue areas of interest not covered in other courses.

Other course changes:

Jour 2-10: no longer require Jour 11 or Jour 123 as prerequisites
Your 366 no longer requires your 355 as a prerequisite
Your 212 is designated as writing intensive in the catalog

Curriculum changes:

Journalism major:
Require your 122 Media Ethics and Law

Rationale: Two years ago, we made the course an elective because we could not always staff it. We have now hired a new faculty member with a specialty in media law and can regularly offer this course, which we see as extremely important to students.

Require a third semester of Brown and White (Your 3)

Rationale: The extra semester provides students with more experience in the production of this student publication.

Public Relations

For two years, the journalism major has offered two concentrations: news and public relations, in addition to a separate major in journalism/academic writing. The establishment of the public relations concentration was to be reviewed within 2-3 years for its impact on the resources and the mission of the department. After two years, the department has concluded that it doesn't make good curricular sense to support two completely separate concentrations while trying to move forward in online communication and that the public relations concentration cannot be supported by the resources of the mission of the department.

The Department of Journalism & Communication thus will withdraw the public relations concentration from the University course catalog beginning next year and replace the concentration with a more manageable and pedagogically sound minor (as had been previously offered for more than 10 years)

Rationale

Teaching and advising resources are inadequate to continue offering the concentration in a pedagogically sound manner. Public relations is the academic discipline of only one professor in the department; it has proved difficult to properly advise the number of students in this concentration and to offer sufficient sections of some courses.
Laying aside questions of resources, the public relations concentration does not fit with the department’s mission goals and ongoing initiatives. The Department of Journalism & Communication has made an important initiative in online journalism and communication. This initiative, endorsed by the Dean, Provost, and President, has found some success, including a $1 million grant to establish the Rodale Online Communication Program: the hiring of a new faculty member; student scholarships; a just-awarded Ventures grant to jointly develop a course in online health and society issues; and the Department of Anthropology and Sociology, and a revision of many of our courses to include elements of new technology.

After two years of experimentation, we have found that attempting to support the public relations concentration has greatly distracted the resources, energy, and time of the department in a direction that is simply not in keeping with department goals and initiatives. Future public relations students will be directed to the public relations minor.

No public relations courses are being dropped. They will make up the minor, as they have in the past, allowing any interested student to pursue this area of study. Courses being dropped as part of the concentration are collateral courses, outside public relations selected to augment the concentration.

The result of these actions will be a pedagogically unified department, moving forward in important areas of study.

Impact

Many courses more than 25 were listed as collateral courses for the concentration. No one course in another department that should see an impact from these changes. The changes also have no impact on the library or information resources.

For students, all Journalism majors who have been admitted to the public relations concentration will be allowed to continue and complete the concentration. We will also accommodate students registered for course 228 Writing for Public Relations in Spring 2001 who were planning to enter the concentration.

Some students currently enrolled in course 127 Public Relations Principles (the first public relations course) also might have planned eventually to declare the major and enter the concentration. The department chair will meet with each of these students individually to discuss their options.

Japanese (IPNS)

See Modern Languages and Literature.
Latin (LAT)

Other course changes:

Latin 115 and 115; add to course description: "May be repeated for credit as content changes."

Rationale: There are students who are coming in with AP credit for Latin with Ovid and/or Vergil, but who will not have had anything like the kind of course that offered by Prof. Favlock. Even students who take these two courses here at Lehigh could benefit by taking them a second time since both Ovid and Vergil's epics are long works, and Prof. Favlock never teaches the same books twice in any period of, say, six years. The material covered is so diverse that there would be no repetition of content. Allowing repetition provides the opportunity to include other works from Vergil and Ovid than their epics, which would be encompassed in the same course number.

Mathematics (MATH)

Other course changes:

Math 202: was entitled Actuarial Exams I and II

Rationale: The course no longer covers material related to Actuarial Exam II

Modern Languages and Literature (MLL)

Courses dropped:

Fren 223, Love and the French Novel
Germ 165, Introduction to the German Literary Tradition
Germ 202, Survey of German Literature II
Germ 303, Renaissance, Reformation, and Baroque
Germ 315, Translation and Stylistics
Germ 322, 19th-Century German Literature
Germ 344, The Age of Enlightenment and Classicism
Ipsi 268, Readings in Japanese I
Ipsi 269, Readings in Japanese II
MLL 173, The Literature of the Americas
Span 231, Spanish-American Literature

Rationale: These courses are no longer taught and should be removed from the catalog.
Courses added:

Fren 322 Contemporary French Films (4) French films from the late 1950s to the present. Introduction to cinematic language and exploration of such issues as gender, power, and madness. Films by Truffaut, I-L. Godard, C. Denis, A. Varde, I-I Benencia, R. Rohmer, and others.

Fren 323 Love and the French Novel (4) Representative French novels, such as Tristam at Isset, La Princesse de Cleves, and Bonjour Tristesse. Style, themes, myths, and story patterns are analyzed.

Germ 209 Advanced Professional German (4) A continuation of Business German with an emphasis on specific economic issues affecting contemporary Germany, Switzerland, and Austria. Preparation for the national exam “Certificate for the Professions” and the “International Business German Examination.”

Jpns 390 Special Topics (1-4) Independent study of research under faculty guidance on a literary, linguistic, or cultural topic, not covered in regular courses. This course is for those who have ability to deal directly with original materials in Japanese. May be repeated for credit. Prerequisite: consent of instructor.

MLI 76 (Asia 76, Hist 76) Understanding Contemporary China (4) An overview of recent history, politics, economy, religion, problems of modernization, popular culture, and attitudes. Contemporary Chinese society viewed against the backdrop of tradition and the tumultuous history of twentieth-century China. (SS)

MLI 143 German Literature and Culture in Translation (4) A period or theme in German literature or intellectual and cultural history

Rationale: These new offerings reflect updated faculty and student interest.

Other course changes:

Fren 601: new description:
Multimedia approach to the study of French. Introduction to French conversation, grammar, and culture.

Fren 611: new description:
Further acquisition of the fundamentals of French conversation, writing, and culture. Multimedia approach. Prerequisite: Fren 101 or appropriate achievement test score before entrance, or consent of instructor.

Fren 102: new description: Continuation of Fren 101. Prerequisite: Fren 11 or appropriate achievement test score before entrance, or consent of instructor.

Fren 151: was entitled Survey of French Literature I; new description: Readings from the Middle Ages to the Eighteenth Century. From the Chanson de Roland to Rousseau. Prerequisite: Fren 143 or 144 or consent of instructor.

Fren 152: was entitled Survey of French Literature II; new description: Representative works from the nineteenth and twentieth centuries, including Baudelaire, Gide, and Jouhandeau. Prerequisite: Fren 143, 144 or 151, or consent of instructor.

Fren 302: was entitled Medieval French Literature; new description: Stories of love, death, revenge, murder, and mayhem.

Fren 321: new description: Examination within the framework of short fiction of the major literary currents that have made up nineteenth-century literature. Works by Sartre, Camus, de Mandiargues, Robbe-Grillet, Le Clercq, Echenoz, Sallenave, and others.

Fren 323 was 223

Germ 165: was entitled Introduction to German Culture; new description: Cultural, historical, and political evolution of German and German-speaking countries in Europe. Prerequisite: Germ 12 or equivalent, or consent of instructor.

Germ 167: new description: Intensive practice in spoken and written German. Prerequisite: Germ 12 or equivalent, or consent of instructor.

Germ 169: new description: German in business, the professions, international, and social relations. Letter writing, comprehension of technical texts, specialized vocabulary, and grammar review. Prerequisite: Germ 12 or equivalent, or consent of instructor.

Germ 301: new description: Representative works of German literature from the Middle Ages to the present.

Germ 211: was entitled Introduction to German Drama; new description: Drama as a literary genre; plays from various periods of German literature.

Germ 218: new description:
Study of Goethe's play with an introduction to the Faust tradition and Faustian themes in modern literature, music, art.

Germ 231: new description:
Viewing, discussion, and written analysis of selected German films.

Germ 240: new description:
Readings and conversations in German about topics including the social and natural sciences, technology, the environment, politics, daily life, and sports.
Practice in spoken and written German.

Germ 241: new description:
Selected texts in German, as they relate to current debates. Practice in speaking and writing.

Germ 301: new description:
Readings of selected literary texts from the Middle Ages, Renaissance, Reformation, Baroque, Enlightenment, and Classicism.

Germ 303: new description:
Readings of literary texts from the periods of Romanticism, Realism, and Naturalism.

Germ 305: new description:
Topics in German literature of the twentieth century.

Germ 310: new description:
Literature, culture, and history of Berlin from the Weimar Republic through reunification.

Germ 311: new description:
Applied Phonetics, Linguistics, Composition, Conversation, and Translation.
Writing and speaking Standard High German. Study of regional pronunciation and contact dialects.

MILL 145: see Cognitive Science

MILL 231: new description:
Viewing, discussing, and writing analysis of German films with English subtitles.

Span 012: changed description: Add: One hour of independent work.

Span 141: new description:
Intensive review of Spanish grammar with stress on error points. Analysis of syntax and style. Improvement of grammar through composition. Prerequisite: Span 12 or equivalent. Dept. permission required.

Span 151: change description: Delete "two 2-hour sessions." Change prerequisite: Delete Span 141.
Span 153: change description: Delete "two 2-hour sessions." Add "dept. permission required." Change prerequisite: Add Span 141.

Span 211 was entitled Practical Business Spanish.

Span 212: change description: Delete "plus independent writing hour."

Span 269: change prerequisite: Add "or equivalent."

Span 268: change description: Delete "three contact hours and two lab hours." Add "dept. permission required" Delete "fall" from catalog entry. Change prerequisite: Delete Span 142; add Span 141.

Span 323: change description: Delete "Discussion of problems raised by the social function of intellectuals and of literature as they relate to themes, modes of writing."

Span 503: change prerequisite: Add "or equivalent."

Span 508: change prerequisite: Delete "permission of the instructor." Add "equivalent."

Span 320: change prerequisite: Add "or equivalent."

Span 321: change prerequisite: Add "or equivalent."

Span 322: change prerequisite: Add "or equivalent."

Span 325: change description: Delete "dept. permission required." Change prerequisite: Add "or equivalent."

Span 542: change prerequisite: Add "or equivalent."

Span 379: change description: "Span 111-speaking countries or [add "U.S."] agencies..."

Change prerequisite: Delete Span 142

Music (MUS)

Courses dropped:

Mus 141, Jazz Improvisation I
Mus 142, Jazz Improvisation II

Rationale: Mus 141 and 142 are being dropped in order to offer one course repeatable for credit (Mus 140, see below). Experience has taught the instructor that there is no way to break our separate courses, and that the work being done is cumulative for however many semesters a student participates. It is more analogous to a performing ensemble than to a sequential course (e.g., Composition I and II).
Course added:

Music 140. Jazz Improvisation (1) (EU) Development of skills in improvising music through practice of scales, chord construction, and patterns of figures found in jazz. May be repeated for credit

Rationale: See comments for courses dropped (Music 141 and 142).

Music 321. Conducting I (2) (EU) Fall Beginning study of conducting techniques, including score reading and preparation, analysis, conducting patterns and gestures. Prerequisite: Music 85 or permission of the instructor.

Music 322. Conducting II (2) (EU) Spring Continuation of Music 321. Prerequisite: Music 321.

Rationale: Music 321 and 322 are new additions to the course offerings. Over the years a number of students have studied conducting as independent studies with one of our directors. We have now reached a critical mass in which there are enough students who want this experience to form a small upper-level class.

Other course changes:

Music 2: change in co/prerequisites: must be taken with Music 11. Students may test out upon examination.

Music 3: change in co/prerequisites: must be taken with Music 32. Students may test out upon examination.

Music 4: change in co/prerequisites: must be taken with Music 33. Students may test out upon examination.

Music 128: change in prerequisites: drop Music 80; add Music 10 or equivalent, or permission of the instructor.

Music 129: change in prerequisites: drop Music 90; add Music 10 or equivalent, or permission of the instructor.

Music 223: change in prerequisites: drop Music 80; add Music 11 or equivalent, or permission of the instructor.

Music 234: change in prerequisites: drop Music 80; add Music 11 or equivalent, or permission of the instructor.

Music 255: change in prerequisites: drop Music 80; add Music 11 or equivalent, or permission of the instructor.

Music 266: change in prerequisites: drop Music 80; add Music 11 or equivalent, or permission of the instructor.
MUS 245: change in prerequisites: add MUS 83.

Curriculum changes:

Philosophy (PHIL)

Courses added:

Phil 273. Aristote: Internship (1-4 credits) An internship devoted to the construction and maintenance of Aristote, an on-line, web-based undergraduate journal of philosophy. Responsibilities will include research, publicizing the project nationally and locally, reviewing, selecting, and formatting manuscripts for publication; and various other administrative and editorial activities. Some students may also be involved in the initial stages of constructing Dionean, an externally refereed, on-line web-based professional journal of the history of philosophy. Prerequisite: Department permission required; previous coursework in philosophy, expanded. May be repeated more than once for credit.

Mendelsohn and Bearn

Rattenste: This course gives our philosophy students a chance to exercise their philosophical judgment in selecting papers for inclusion in the Web Journal for student philosophy papers: Aristote. In addition they will be involved in soliciting submissions and spreading the word about Aristote. They will play a leading role in keeping Aristote moving. They will also play a subsidiary role in helping the faculty initiate a peer-reviewed web journal for professionals in the history of Philosophy: Dionean. Together, this is a chance to produce a philosophical product working closely with faculty on philosophical, electrical, and economical problems outside the classroom. The Department's practice for awarding internship credits conforms to University criteria (80 contact hours per credit awarded, no credit awarded ex post facto, and the student must register for the internship during the same term that the internship work is actually conducted).

Other course changes:

Phil 364 and 367: see Political Science

Physics (PHY)

Courses dropped:

Phy 312 and 383 are no longer needed to meet department goals.
Political Science (POL S)

Other course changes:

- PolS 301 was 201
- PolS 302 was 202
- PolS 306 was 206
- PolS 313 was 213
- PolS 314 was 214
- PolS 317 was 217
- PolS 318 was 218
- PolS 321 was 221
- PolS 322 was 222
- PolS 327 was 227
- PolS 328 was 271
- PolS 329 was 229
- PolS 330 was 230
- PolS 331 was 231
- PolS 333 was 233 (cross-listed with Psy. SSP); was 3 credits (change in number; see Sociology and Anthropology)
- PolS 335 was 235
- PolS 336 was 236
- PolS 337 was 237
- PolS 342 was 239 (cross-listed with WS)
- PolS 347 was 258
- PolS 351 was 251
- PolS 352 was 252
- PolS 354 was 254
- PolS 359 was 259
- PolS 360 was 260
- PolS 361 was 261
- PolS 354 was 264 (cross-listed with Phil)
- PolS 367 was 267 (cross-listed with Phil)
- PolS 368 was 268

Rationale: These course number changes will permit Political Science graduate students to take these courses for credit. These changes necessitate corresponding changes to cross-listed courses. All PolS 300-level courses, except those offered for 1–4 credits
(371, 372, 381, 382, 383, 384) will be offered for 3 credits to graduate students and 4 credits to undergraduate students.

Psychology (PSTC)

Courses dropped:
- Psy 2, Introduction to Psychology Directed Study
- Psy 106, Child Development Directed Study
- Psy 108, Adulthood and Aging Directed Study
- Psy 275 (Bio 375), Neuroanatomy of Behavior

Rationale: The content of Psy 2, 106, and 108 will be incorporated into Psy 1, Psy 107, and Psy 109 respectively. The "hotel" courses will expand to four credits (see below). The Directed Study options have been unsuccessful for a variety of reasons including insufficient resources to serve all students and under-enrollment when they are optional. Therefore, until resources (especially TAs) are available we will pursue other strategies. In addition, these changes enable our curriculum to be more uniform. The cross-listing of Bio/Psych 375 is no longer appropriate, because the Biological Sciences Department is changing Bio 375 to Bio 2xx. With that change, the course will no longer fulfill a 300-level requirement for Psychology majors. They may of course still take it as a free elective.

Courses added:
- Psy 3xx, Memory (4) The paradoxical power and fallibility of memory in the light of observational, experimental, clinical, and neuroscientific evidence. Potential topics include: expert memory; false memory; recovered memory; social transmission; amnesia; memory and personal identity. Prerequisite: Psy 117 or Psy 176 or Cog 57 or consent of instructor. O'Shaughnessy (SS)

- Psy 3xx, Educational Psychology (4) Overview of historical, contemporary, and emerging issues in the field of educational psychology. Implications of various social, cognitive and behavioral educational-psychological theories for teaching and learning in the classroom. Prerequisite: Psy 107 or 109 or 117. (SS)

Rationale: These courses will be added to our rotation of 300 level courses to cover important curricular gaps.
Other course changes:

Psych 1: was 3 credits

Rationale: We will incorporate content that is currently assigned in Psych 2 and appropriate assignments into Psych 1. Thus we will extend valuable educational experiences to all Psych 1 students (not just the small subset who currently enroll for Psych 2).

Psych 21: was entitled Social Psychology; see Sociology and Anthropology SSP 21

Psych 107: was 3 credits; new description:
Survey of theories and research concerning perceptual cognitive, social, and personality development through infancy and childhood. Prerequisite: Psych 1 or SSP 1. May not be taken pass/fail. (SS)

Rationale: New prerequisite (SSP 1) due to changes in Soc/Anth. We will incorporate content that is currently assigned in Psych 106 and appropriate writing assignments into Psych 107. Thus we will extend valuable educational experiences to all Psych 107 students (not just the subset who currently enroll for Psych 106). Pass/fail grading has proven disruptive to the conduct of the course and will be eliminated.

Psych 109 (SSP 109): was 3 credits; new description:
Social science approaches to the latter two-thirds of life. Cognitive and personality development; attitudes toward aging; social behavior of older adults; widowhood; retirement. Prerequisite: Psych 1 or SSP 1. May not be taken pass/fail. Hyland (SS)

Rationale: New prerequisite (SSP 1) due to changes in Soc/Anth. We will incorporate content that is currently assigned in Psych 108 and appropriate writing assignments into Psych 109. Thus we will extend valuable educational experiences to all Psych 109 students (not just the subset who currently enroll for Psych 108). Pass/fail grading has proven disruptive to the conduct of the course and will be eliminated.

Psych 117: new description:
The architecture and dynamics of the human mind. How we acquire knowledge through perception, represent and activate it in memory and use it to communicate...
decisions, solve problems, and reason creatively. May not be taken pass/fail.
Prerequisite: Psyc 1 or CogS 7 (SS)

Psyc 153: change prerequisites from "Psyc 1 or SSP 21/Psyc 21" to "Psyc 1 or SSP 1" due to changes in Sci/Art.

Psyc 160: new description:
Perception and cognitive neuroscience as the link between mental processes and their biological bases. Visual and auditory perception; the control of action; neuropsychological syndromes of perception, language, memory and thought; neural network (connectionist) models of mental processes. May not be taken pass/fail
Prerequisite: Psyc 1 or CogS 7 (NS)

Rationale: In conformity with our other 100-level core curriculum courses, we wish to eliminate pass/fail grading in Psyc 117 and 176 to improve course quality. Justification for this option in introductory courses appears to be lacking.

Psyc 140; see Cognitive Science.

Psyc 153 (SSP 153); clarify prerequisites with "or" new description:
Review and critique of theories of personality and their associated systems of psychotherapy. May not be taken pass/fail. Prerequisite: Psyc 1 or SSP 21/Psyc 21. (SS)

Rationale: Pass/fail grading has proven disruptive to the conduct of the course and will be eliminated. Replacing the "Comma" with "or" in the prerequisites reflects the intent of the department in a cleaner fashion.

Psyc 161: new description:
Apprenticeship in ongoing faculty research program. Literature review, experimental design, data collection and analysis, and professional writing under faculty sponsor supervision. May be repeated for a maximum of 6 credits.
Prerequisites: Psyc 1 or CogS 7 and consent of sponsor. (SS)

Psyc 393: new description.
Individual research projects designed and executed in collaboration with faculty sponsor. Regular meetings with sponsor to give progress reports and receive feedback. Student reads relevant literature and writes report in APA format. May be repeated for a maximum of 6 credits. Prerequisites: Psy 210 or 161 and consent of sponsor. (ND)

Rationale: Psy 161 and 393 are taken for less than 3 credits by some students. The intent of the restriction is reflected by a limitation on credits instead of number of times enrolled.

Psy 301: 373: were 3 credits

Rationale: These courses will be moved from 3 to 4 credits to bring them in line with all of our other 300 level content courses. The workloads will be adjusted accordingly.

Psy 3xx Clinical Psychology (4) was Psy 154 entitled Introduction to Clinical Psychology, 3 credits; new description:

The science and profession of helping people overcome psychological problems.

Theories of human personality and abnormality in relation to techniques for assessing and treating psychological problems in the light of empirical evidence of validity and effectiveness. Professional issues are also covered. Prerequisites: Psy 153 and Psy 305 or consent of instructor. (SS)

Rationale: This course is more appropriately taught at the 200 level with stiffer prerequisites. The title is accordingly simplified.

Religion Studies (REL)

Courses added:

Rel 2xx, (Asia 2xx) Buddhism and Ecology (4) Buddhism's intellectual, ethical, and spiritual resources are reexamined in light of contemporary environmental problems. Is Buddhism the most green of the major world religions? What are the moral implications, the "eco-karma," of actions that affect the environment? Will Buddhist environmentalism have an impact on the wider world? Prerequisites: One prior course in Religion Studies, Asian Studies, or Earth & Environmental Sciences. Kraft (HU)
Rationale: The Religion Studies visiting committee report (fall 2000) suggested that the department offer more upper-level courses that would allow majors, minors, and other motivated students to pursue advanced work in the field. The proposed course would be an effective follow-up to at least three existing courses: "Religion and the Ecological Crisis" (Rel 6), "Engaged Buddhism" (Rel 167), and "Buddhism in the Modern World" (Rel 168). We intend this course as a Humanities Center offering.

Other course changes:

Rel 78: new description:

Judaism is both a textual tradition and a lived religion. Students read basic Jewish texts—Bible, Talmud, Mishnah—and study the ways Jews sanctify the life cycle through rites of passage, and the round of the year through the festival cycle. Silberman, Weisler. (HU)

Rationale: New description more accurately represents the content of the course, especially the emphasis on lived religion.

Russian (RUSS)
See Modern Languages and Literature

Spanish (SPAN)
See Modern Languages and Literature

Social Relations (SR)
See Sociology and Anthropology

Sociology/Social Psychology (SSP)
See Sociology and Anthropology

Sociology and Anthropology

Courses dropped:

Anth 392: Field School in Archaeology (6)
SSP 384: (AAS 394, WS 394), Historical Sociology: Identity and the Social Problems of Generations (6)
SR 331: Social Perspectives on Death and Dying (3)
SR 363: Seminar in Social Relations (1-4)
SR 365, Internship in Social Relations (1-4)

Courses added:

SSP 1. Introduction to Sociology and Social Psychology (4) Patterns of social interaction, group behavior and attitudes provide a focus on the relationship of the individual to society. Social structure and social change within the institutions of society provide a focus on the relationship of society to the individual. The influences of social class, gender and race are explored at each level of analysis. Theories, methods and research results provide micro and macro models for understanding society. Students who received a C or better in SSP 5 or SSP 21 may not take SSP 1 for credit. Staff

Rationale: The new course represents a collaboration between social psychologists and sociologists in the department. The overlap between the two separate courses has been noted regularly by faculty and students and provides the foundation for the new course. While certain research strategies are unique to one of the disciplines or the other, the intrinsic properties of research are the same for both fields. Substantive material from each of the former introductory courses was broad and repetitive enough to allow us to eliminate certain subjects. The result of our planning of this first course required for our major is that students will see immediately the close relationship between the disciplines, obtain a grasp of basic concepts and ideas in each and will be able to move to higher level courses sooner. Because of the overlap in material, students who took SSP 5 or SSP 21 may not take SSP 1 for credit unless they are doing so to replace a grade in SSP 5 or SSP 21.

SSP 121 (Psyc 121). Social Psychology (4) Theories, methods of investigation and results of research on the way social and psychological processes interact in human behavioral settings. Topics include analysis of self and relationships, dynamics of small groups, attitudes and persuasion, prejudice, prosocial and antisocial behavior. Prerequisites: ANTH 1, ANTH 11, SSP 1 or PSYC 1. Rosenweig

Rationale: As part of a shift to four-credit courses, the department is revising its curriculum. The two introductory courses in SSP (21, Social Psychology" and 5, "Introductory Sociology") will be combined into a single course, SSP 001, Introduction to Social Psychology & Sociology. Since the course is listed at the 100 level and requires one of the two introductory courses from the two disciplines, we believe the course will allow us to teach more difficult material than had previously been the case.
SSP 394. Field School (1-8) Field school in sociology/social psychology. Maximum of eight credits for a single season or field experience. May be repeated once for credit.

SSP 395. Internship (1-4) Supervised experience involving non-paid work in a setting relevant to sociology/social psychology. May be repeated once for credit. Prerequisite: open only to the department's majors.

Anth 175. Archaeology of Classical Cultures (4 credits)
Course introduces the student to an overview of the archaeology of ancient Greece and Rome from Iron Age to Late Antiquity. Emphasis on aspects of cultural development and change. Small.

Anth 312. The Anthropological Signature of the Past (4 credits)
Course covers the basic tenets of different anthropological analyses of premodern cultures. Emphasis on the archaeological traces of different social constructions in the past. Small.

Rationale: These new courses (Anth 175, Anth 312) reflect the Department's decision to raise the credits of all our courses to four. They reflect material currently covered in some three-credit courses that will be dropped in the very near future. For example, Anth 175 brings two Mediterranean cultures under the rubric of one course. Anth 312 is an "anthropology course" for students stressing archaeology within the anthropology major.

Anth 394. Field School (1-8)
Field school in archaeology or ethnography. Maximum of eight credits for a single season or field experience. May be repeated once for credit.

Anth 395. Internship (1-4)
Supervised experience involving non-paid work in a setting relevant to anthropology. May be repeated once for credit. Prerequisite: open only to the department's majors.

For SSP 395 and Anth 395, note that the Department's practice for awarding internship credits conforms to University criteria (80 contact hours per credit awarded, no credit awarded as post facto, and the student must register for the internship during the same term that the internship work is actually conducted).
Other course changes:

SPP 21: was entitled Social Psychology.

Rationale: Introduction of SPP 121 necessitates a new title for this course. The new title is consistent with SPP 5.

SPP 299: was 3 credits; new description:

Research during the senior year culminating in a senior thesis. Required for sociology/social psychology majors seeking departmental honors. May be repeated up to a total of 4 credits. Prerequisite: consent of department chairperson.

Anth 395, was 3 credits; new description:

Research during senior year culminating in a senior thesis. Required for anthropology majors seeking departmental honors. May be repeated up to a total of 4 credits. Prerequisite: consent of department chairperson.

Anth 140, was entitled Introduction to Descriptive Linguistics. 3 credits; see Cognitive Sciences.

[Note: The cross-listed rubrics of this course: Cogs 140, M.I. 140, and Psy 140, are already using the "new" title.]

SPP 393, was entitled Research Apprenticeship.

Anth 393, was entitled Research Apprenticeship.

All courses: The Department of Sociology and Anthropology proposes to make all of its current courses four (4) credits. This includes courses that offer a range of credit hours (1-3). They will now be 1-4 credits.

Rationale: Several factors have dictated this move on our part. The pedagogical strategy of encouraging "hands-on learning experiences" has permeated the curriculum at all levels. Where our department has always provided research opportunities for upper class majors, we want to extend this experience to first and second year students. The opportunity for "learning from doing" has been a positive experience for students at all levels. In our introductory courses the enthusiasm for an opportunity to engage in data...
collecting and/or analysis has enhanced the students' performances even with the restrictions of inexperienced.

Admittedly requiring an introductory student to master a discipline and carry out a research project in a three credit class has created unwanted stress. The additional credit will allow us to both introduce our disciplines, not only in terms of subject matter, but in what we do, as well. It is an efficient expression of learning to do and doing to learn.

On various occasions, members of the department have offered special one hour courses to be “piggy-backed” on a three hour course. Not all students are able to participate in the activity and we have inadvertently created a two-tiered learning system that sometimes is awkward. Making the research exercise a part of a course eliminates this difficulty.

The additional hour will allow additional reading material to be used. This is particularly advantageous for some of our high enrollment courses. The extra hour justifies augmenting textbooks with research monographs and utilizing the electronic journals available on the web. The typical textbook offers the student the broad overview found in this genre while the monograph permits focusing on specific topics. The combination provides a better educational experience.

In our upper division courses taken by our majors and other interested students, the extra hour of credit justifies a deeper exploration of specific subject matter as well as directed research. In our core curriculum, we require social theory for both anthropology and sociology majors. The difficulty of offering a balanced review of theory in each discipline will be eased by the extra hour of credit.

Curriculum changes:

B.A. major in Anthropology

Cofential Requirement

One general course in statistics: Math 12, Eco 145, Psy 110, or equivalent.
(Note: Math 12 fulfills the College of Arts and Sciences' mathematics requirement.)

Introductory (4 credits)

Anth 11. Sociocultural Anthropology (4) or
Anth 12. Human Evolution and Prehistory (4), or
Anth 1. Introduction to Anthropology (4)

Theory and Methodology (8 credits)

SR 111. Research Methods and Statistics (4) fall
SR 381. Development of Social Theory (4) spring
Major Electives (20 credits)

Five additional courses in anthropology, at least two of which must be at the 300-level (individualized study courses—300, 393, 394, 395, and 399—cannot be used to fulfill this requirement; however, one SSP course can be substituted as an "anthropology" elective.)

Research, Internship, or Thesis (4 credits)

Research (4 credits)

Preferably during the senior year, majors must complete at least four credits of research on a subject of interest to their major. Students may fulfill this requirement in a variety of ways—research, field school, internship, or thesis:

- Anth 393: Supervised Research (1-4)
- Anth 394: Field School (1-8)
- Anth 395: Internship (1-5)
- Anth 399: Senior Thesis (2-4)

Students who intend to graduate in spring of their senior year are strongly encouraged to do their senior thesis option, and a senior thesis is required for departmental honors.

B.A. major in Sociology/Social Psychology

Collateral Requirement

One general course in statistics: Math 12, Eco 145, Psy 110, or equivalent.

(Not: Math 12 fulfills the College of Arts and Sciences' mathematics requirement.)

Introductory (4 credits)

- SSP 1. Introduction to Sociology and Social Psychology (4)

Theoretical and Methodological (8 credits)

- SR 111. Research Methods and Statistics (4) fall
- SR 381. Development of Social Theory (4) spring

Major Electives (20 credits)

Five additional courses in sociology/social psychology, at least two of which must be at the 300-level.

(Individualized study courses—300, 393, 394, 395, and 399—cannot be used to fulfill this requirement; however, one Anthropology course can be substituted as an "sociology/social psychology" elective.)

Research, Internship, or Thesis (4 credits)

Preferably during the senior year, majors must complete at least four credits of research on a subject of interest to their major. Students may fulfill this requirement in a variety of ways—research, field school, internship, or thesis:
SSP 393. Supervised Research (1-4)
SSP 394. Field School (1-8)
SSP 395. Internship (1-4)
SSP 399. Senior Thesis (2-4)

Students who intend going on to graduate or professional school are strongly encouraged to do the senior thesis option, and a senior thesis is required for departmental honors.

B.A. major in Sociology and Anthropology
(new title & revision of B.A. major in Social Relations)

Colloquium Requirement
One general course in statistics: Math 12, Eco 145, Psych 110 or equivalent.
(Note: Math 12 fulfills the College of Arts and Sciences' mathematics requirement.)

Introductory (8 credits)
SSP 1. Introduction to Sociology and Social Psychology (4)
Anth 11. Sociocultural Anthropology (4)

Theory and Methodology (6 credits)
SR 111. Research Methods and Data Analysis (4) fall
SR 381. Development of Social Theory (4) spring

Major Electives (24 credits)
Three additional courses in sociology/social psychology, one of which must be at the 300-level or above, and three additional courses in anthropology, one of which must be at the 300-level.
(Individualized study courses—300, 393, 394, 395, and 399—cannot be used to fulfill this requirement.)

Science, Technology, and Society (STS)
Other course changes:
CSc 252. (STS 252) Computers, the Internet, and Society (3); add cross-list; new description submitted from EECE department:
An interactive exploration of the current and future role of computers, the Internet and related technologies in changing the standard of living, work environments, society and its ethical values: Privacy, security, depersonalization, responsibility, and professional ethics; the role of computer and Internet technologies in changing education, business modalities, collaboration, mechanisms and everyday life.
Theatre (THTR)
None

Urban Studies (US)
None

Women's Studies (WS)
Courses dropped:
WS 354 (SHP/AAS 394), Historical Sociology: Identity and the Social Problems of Generations

Other course changes:
WS 271: add to description "May be repeated for elective credit."

WS 41, 42, 123, 310, 341, 351, 364 were 3 credits; see Sociology and Anthropology
The College Policy Committee will bring the following proposal to the faculty at the next CBE faculty meeting on Monday, February 26, 2001:

Proposal to cross-list an existing course, ENGR 212: Integrated Product Development Projects II, as a BUS course (presumably BUS 212).

The current description of the course is as follows (with suggested changes in bold):

BUS 212/ENGR 212: Integrated Product Development (IPD) Projects II (C) Fall Business, engineering and design arts students work in cross disciplinary teams of 4-6 students on the detailed design, fabrication and testing of a prototype of a new product designed in BUS 211/ENGR 211. Additional deliverables include planning for production with a detailed base case financial model, a project and product portfolio. Teams continue to work on industry projects with faculty advisors. Oral presentations and written reports. Prerequisite: ENGR 211 or BUS 211.

Rationale:
The first course in the sequence, IPD Projects I, is already cross-listed as BUS 211/ENGR 211. In spring 2001 the first course had about 130 students registered in two sections, approximately half are CBE students. The first course takes students through the product conceptualization and business and technical feasibility stages. Increasingly, we get requests from business students that want to continue beyond and participate in the second course. They are fine to enroll in ENGR 212, but non-engineering students do not habitually pursue that section of the course catalog. This cross-list would make the course more visible to current and prospective students, and also send a better signal about the multi-disciplinary intent of the course.

Resource Implications:
This course is already offered every year, so no additional computer or library resources would be needed, nor would a new course instructor. If student demand increases significantly, there will be additional need for team advisors.
February 20, 2001

TO:        Prof. Stephen Busell
FROM:      John Stevens
SUBJECT:   Proposed course additions

Please provide College Policy Committee review of the following proposed course additions:

**Mgt 373. Management Internship (1-3)**
A sponsoring faculty member shall direct readings, projects, and other assignments including a comprehensive final report in conjunction with an industry-sponsored internship. The work experience itself, whether paid or unpaid, is not the basis for academic credit. Intellectual development in the context of a field study learning experience will be the determining factor in awarding academic credit. This course cannot be used to satisfy requirements of the Management major.
Prerequisite: Junior standing in the College of Business and Economics and Management major declaration.

**Mkt 373. Marketing Internship (1-3)**
A sponsoring faculty member shall direct readings, projects, and other assignments including a comprehensive final report in conjunction with an industry-sponsored internship. The work experience itself, whether paid or unpaid, is not the basis for academic credit. Intellectual development in the context of a field study learning experience will be the determining factor in awarding academic credit. This course cannot be used to satisfy requirements of the Marketing major.
Prerequisite: Junior standing in the College of Business and Economics and Marketing declaration.

**Beliefs:** The Department of Management and Marketing currently offers Mkt 373 and SCM 373. Establishment of Mkt 373 and Mkt 373 creates within the department a uniform method for registration and documentation of an internship. The Finance Department also offers a "372" internship course. At times, the "372" directed readings and "372" special topics courses have, perhaps incorrectly, been used to award academic credit for a legitimated internship experience. To offer an internship, two conditions must be met: the student must secure an industry-sponsored internship and a faculty member must agree in advance to supervise and evaluate the student's work for academic credit. No incremental faculty resources will be allocated to supervising internships. Eighty contact hours in the work experience per credit hour is required. Credit will not be given ex-post facto. Students must register for the course during the term when they are doing the work experience.
February 20, 2001

To: Professor Kay  
Chair, Educational Policy Committee

From: R.N. Weisman

Re: Course and Curriculum Changes, RCEAS

This is a summary of the course and curriculum from RCEAS for the 2001-2002 catalog. Note that some of the material below has not yet been approved by the faculty in our college because our scheduled college faculty meeting was preempted by the university faculty meeting last Monday (2/19). If any of these items do not pass the faculty at the 2/26 meeting, I will alert EdPol prior to the next meeting at which approval is formally requested.

1. ECE

New courses: ECE 341, Fundamentals of Wireless Communications (3)  
ECE 373, Optical Communications Lab (2)

2. CSC

New courses: CSC 10, Intro to Computing (2)  
CSC 13, Multimedia Computing Lab for non-Majors (1)  
CSC 14, " " " Majors (2)

Description changes: CSC 109, 252

Pre-requisite changes: CSC 17

Designation change: ECE 216 to CSC 216

Drop courses: CSC 11

3. ChemE

Prerequisite change: ChE 320
4. Chemistry

Change in course requirements: Chem 371 required in curriculum for BS through RCEAS.

5. MatSci & Engr

New courses:
- MAT 2XX, Electrons (3)
- MAT 3XX, Materials Selection in Design (1)
- MAI 210, Macro Materials Processing Lab (2)
- MAI 3XX, Light Metals (3)
- MAI 3XY, Physical Metallurgy of Fusion Welding (3)

Description changes: MAT 204, 206, 214

Description and Name changes: MAT 338, Failure Analysis Reports (2)

Dropped course: MAI 325

6. CEE

New courses:
- CE 10, Engineering/Architectural Graphics and Design (5)
- CE 122, Civil Engineering Materials (2)
- CE 142, Fundamentals of Soil Mechanics (3)
- CE 242, Principles and Practices of Geotechnical Engineering (3)

Dropped courses: CE 15, 143

Prerequisite change: CE 203, 244 341 342, 344, 345, 346, 347

7. BS in Bioengineering

New degree program
EECS Department Meeting - Proposed Catalog Changes

ECT Division

Proposal for a new course:

ECT 341 Fundamentals of Wireless Communications (3)


Prerequisites: ECE 108 or permission of instructor.

Rationale: Wireless communications is one of the fastest growing areas, and engineers who are equipped with the fundamental understanding of wireless system concepts are highly sought after by the industry. This course is intended for seniors or first year graduate students and it furnishes the students with the required knowledge of wireless systems such that they are qualified to work in wireless industry, or start graduate research in wireless communications. It is currently (Fall 2000) being offered in ECE 320-12 and ECE 420-14 and has received considerable attention. We expect the high enrollment to continue in the future. It is also going to be one of the core courses of the MS program in Wireless and Networking that is being currently planned.

Faculty Load: Professor Yager is currently teaching the course. Professor Blum has taught a similar course before and can teach it in the future. New hires in the communications/wireless communications can teach the course.

Library Impact: The library already subscribes to most of the relevant journals and will have to continue to do so and add more of them as they become available. The library also will have to continue to purchase new books in the "wireless communications" area.

Computer and Laboratory Course: No new resources will be required.

Note: The textbook used for the course in Fall 2000 is "Wireless Communications: Principles and Practice" T. S. Rappaport, Prentice Hall, 1996.

Prepared by Prof. Yager 1/30/00
Catalog Description: Fundamental optical parameters and their measurement in optical communications. The theoretical principles of operation of the instruments and the significance of the parameters measured in optical communications will be covered. Fields of measurement include optical power, optical spectrum analysis, wavelength measurement, laser diode characterization, polarization analysis, modulation analysis, insertion loss measurements, optical reflection for components, characterization, optical fiber loss measurement and backscatter measurements, dispersion measurement, and characterization of fiber amplifiers. Prerequisite: ECE 347 or ECE 348 or ECE 371 or ECE 372 or equivalent.

Rationale: Given the explosion of jobs in the field of fiber optic communication, we would expect this class to have large enrollment. The number of students will be limited by resources in a weekly three hour laboratory part of the course to approximately 20. A lecture part of the course will be one hour per week. The course focuses on optical fiber communications.

Faculty: A faculty knowledgeable to optical communications is required to teach the class. Professors McAulay and Christodoulides can teach the lecture part of the course. Other teachers include anticipated new faculty members in optics and physical optics faculty. A qualified full-time technician or assistant is needed for the laboratory part of the course and is being requested as part of a proposed interdisciplinary (Physics, Materials Science and ECE) MS in Photonics program.

Library Impact: The course is not expected to have a large impact on library resources assuming the library purchases new books on this topic as they become available.

Computer and Laboratory Resources: Current equipment includes an HP 1.5 GHz processor and a 10 Gbps signal analyzer, 10 Gbps digital communications analyzer and some basic equipment that needs replacing or replacing such as an optical time domain reflectometer and an optical waveform. Several important instruments needed such as an optical time domain reflectometer and an optical waveform. Several important instruments needed such as an optical time domain reflectometer and an optical waveform.
The proposed description more accurately reflects the material covered in the course. Impact on Resources: The change in description should have no differential impact on resources.
Change in Designation

Change the designation of ECE 116 Software Engineering (2) to CSE 116 Software Engineering (3).

Rationale: In the last decade at least Computer Science faculty have taught ECE 116. Further, it is required in all three CSE major programs. Thus it is more appropriate to list it under CSE.

Note: The catalog listing of various programs which require ECE 116 should be modified to reflect this change in designation.

New Courses

1. CSE 10
   
   Introduction to Computing (3) Fall
   
   Survey of topics in computer science including problem solving, programming languages, computer systems, operating systems and networks, theory of computing, artificial intelligence, and social and ethical issues. Must be taken with either CSE 13 or CSE 14. No prerequisite. (ES2)

2. CSE 13
   
   Multimedia Computing Laboratory (for non-majors) (3)
   
   Multimedia for CSE 10, introduction to programming and website development. Must be taken with CSE 10. Credit will not be given for both CSE 13 and CSE 14. (ES2)

3. CSE 14
   
   Multimedia Computing Laboratory (for majors) (2)
   
   Multimedia for CSE 10 and programming in C++. Credit will not be given for both CSE 13 and CSE 14.

Students that have credit for CSC 11 (4 cred) may not take CSE 010, 013, 014.
CSE 14. Must be taken with CSE 10. (ED 3)

Rationale: CSE 11 currently serves two kinds of students, those taking CSE 11 as an elective (perhaps to partially satisfy the CSE distribution requirement) and those CSE students wanting to become CS majors. With the proposed courses, the former students would take CSE 10 and CSE 12, and the latter students would take CSE 10 and CSE 14. The latter students would then get better preparation for CSE 17, the next course in the major, because CSE 14 covers C++ in more depth than does CSE 11. We will be liberal in allowing students to move from CSE 12 to CSE 14 during the sessions. We are thinking, in particular, of students who decide on a CS major while taking CSE 12. These students would need CSE 14 to continue in the major.

Impact on Resources: We assume that more non-majors will take the CSE 10-CSE 13 combination than take CSE 11. The combination is 3 credits and CSE 11 is 4 credits, so we believe the change will have no differential impact on resources.

Change in Prerequisites

Prior Description

CSE 17, Structured Programming and Data Structures (4)

Algorithmic design and implementation in a high level, object-oriented language such as C++.

Recursion, lexical, programs, pointers, data structures, and their applications. Prerequisites: CSE 11 or ENG 11 or previous experience with programming. (ES 3) (ED 1)

Proposed Description

CSE 17, Structured Programming and Data Structures (4)

Algorithmic design and implementation in a high level, object-oriented language such as C++.

Recursion, lexical, programs, pointers, data structures, and their applications. Prerequisites: CSE 10 and CSE 14, or ENG 11, or permission of the instructor. (ES 3) (ED 1)

Rationale: The proposed description reflects our proposal to replace CSE 11 with CSE 10 and CSE 14.

Impact on Resources: The proposed change should have no differential impact on resources.

Courses to Drop

1. CSE 11, Introduction to Computing (3)

Rationale: The course will no longer be taught. It will be replaced by CSE 10-CSE 12 and CSE 14, in various combinations.
COURSE CHANGES - CHEMICAL ENGINEERING DEPARTMENT

I. **Course:** ChE 320, Waste Water Control (3)

II. **Prerequisite:** Delete ChE 211 as the prerequisite leaving no prerequisite.

III. **Rationale:** As ChE 320 is now offered there is no requirement for the prerequisite information of Reactor Engineering which is ChE 211.
To:       J. Alwyn Eades, APC
From:     Daniel Zereba, Chemistry Department
Re:       Course & Curriculum Changes for 2001-2002 Catalog
Date:     December 07, 2000

As you requested in your recent e-mail which appears below, I will add to the original e-mail information on impact and loss of a free elective as they relate to the proposed curriculum change:

The Chemistry Department offers a B.S. in Chemistry through the College of E&S. A change in curriculum is proposed for the 2001-2002 University Catalog.

Proposed Change:

The Chemistry Department proposes that the B.S. in Chemistry in the College of E&S be modified. The modification is to require Chem 371 Elements of Biochemistry 1 (C). This means the loss of 3 credits in the unrestricted electives category.

Rationale:

The reasons here are twofold:

1. A new American Chemical Society (ACS) requirement that will need to be met by the department during the next ACS certification review is the inclusion of a required one-semester course in biochemistry in the curricula.
2. In order to prepare our chemistry majors for the present and the future, it is important that a student have some exposure to biochemistry to function in an effective way, both at Lehigh and at chemical positions taken after graduation.

Impact:

We have spoken to Prof. Alhadeff who is one of the instructors for Chem 371, a lecture class dealing with biochemistry. The current enrollment in Chem 371 is approximately 90. The addition of 10 more students (an upper limit on our Chemistry majors in a given class over the last 5 years) would increase the course enrollment to 100. Prof. Alhadeff views this increase as something an instructor can easily accommodate. In addition in recent times several of our chemistry majors have opted on their own to take Chem 371 so that increase in student enrollment would in effect be less than 10 students per year.

Loss of a Free Elective:

We feel that there would still be enough freedom in a student's program to allow for exploration of other areas besides chemistry.

Please find as an attachment the catalog entry for B.S. in Chemistry in the College of E&S with the proposed change noted in red. In the event of any questions, please contact me.

[Attachment]
Chemistry

B.S. Degree in Chemistry, College of Eng. & Applied Science

Summary of Requirements

1. College distribution 
   24 credits
2. Physics, math, and computing 
   28 credits
3. Chemistry 
   12 credits
4. Unrestricted electives 
   24 credits
Total credits 
120 credits

Model Course

Freshman year (30-31 credits)
A student should follow the normal freshman year in the College of Engineering and Applied Science and observe the following note.

Note: It is recommended that, where possible, students planning to enter in chemistry take Chemistry 75 in the fall semester and Chemistry 76 in the spring semester of the freshman year. For such students the elective in the spring semester is displaced to a subsequent semester. The Chemistry 71/72/73 sequence may be substituted.

Sophomore year: First semester (17 credits)

Chm 31 Organic Chemistry I (5)
Chm 32 Organic Chemistry Laboratory I (1)
PHY 21 Introductory Physics I (4)
PHY 22 Introductory Physics Laboratory II (1)
MATH 25 Calculus II (4)
Modern foreign language requirement (4)
(See details above)

“Chm 31 Chemical Equilibria will displace this modern foreign language requirement in a subsequent semester if Chm 31 was not taken in the freshman year.

Sophomore year: Second semester (17 credits)

Chm 32 Organic Chemistry II (3)
Chm 33 Organic Chemistry Laboratory II (1)
Chm 187 Physical Chemistry I (4)
Math 255 Linear Algebra (3)
Modern foreign language requirement (4)
(See details above)
Humanities/Social Science requirement (3)

Junior year, first semester (15 credits)

Chm 192 Physical Chemistry Laboratory (2)
Chm 203 Multi Group Elements (3)
Chm 337 Analytical Chemistry (3)
Chm 541 Chemical Physics and Spectroscopy (4)
ECO 2 Economic (3)

Junior year, second semester (17-19 credits)

Chm 207 Intermediate Writing (3) or approved writing-intensive course (5)
Chm 507 Advanced Inorganic Chem. (5)
Chm 515 Instrumental Analysis Lab. (2)
Chm 529 Instrumental Analysis (2)
Chm 533 Organic Analysis Laboratory (5)
Humanties/Social Science requirement (3)
free elective (3)

Senior year, first semester (14 credits)

Chem 111
Biology 111 (or Biology 112)
Advanced Chemistry elective (3)
Humanties/Social Science requirement (3)
free elective (3)

Senior year, second semester (13 credits)
Advanced Chemistry elective (3)**
free elective (10)

*See list of choices for the advanced chemistry elective requirement under the B.S. degree in chemistry/College of Arts and Sciences.
**That becomes a free elective if the advanced chemistry elective requirement was taken in the fall of the senior year.
Modified Courses

Course Changes:

MAT 204. PROCESSING AND PROPERTIES OF POLYMERIC MATERIALS (3) spring
The structure-property relationships in polymers will be developed, emphasizing the glass transition, rubber elasticity, crystallinity, and mechanical behavior. Elements of polymer processing, extraction of plastics, and fiber spinning operations. Prerequisite: MAT 33.

MAT 206. PROCESSING AND PROPERTIES OF METALS (3) spring
The production and purification of metals, their fabrication, and control of their properties. Includes topics such as precipitation hardening, hot and cold working, and casting. Prerequisites: MAT 205, MAT 216.

MAT 214. PROCESSING AND PROPERTIES OF CERAMIC MATERIALS (3) spring
General overview of the compositions, properties, and applications of ceramic materials. The theory and practice of fabrication methods for ceramics and glasses. Methods of characterization. Selected properties of ceramic materials. Prerequisite: MAT 33.

Rationale
These three courses, MAT 204, MAT 206, and MAT 214, each currently have a lab section. The laboratory work is to be removed and incorporated into a new course MAT 210 (see below). This will allow improved coordination and better logistics.

Impact
None.

Course Changes Continued:

MAT 338. FAILURE ANALYSIS REPORTS (2) spring - Application of chemical and mechanical failure concepts, microstructural analysis, and fracture surface characterization to the analysis and prevention of engineering component failures. Conduct laboratory investigations on component failures with written and oral presentations of the results. Prerequisites: Senior standing, and MAT 204, MAT 206, MAT 214, and MAT 218.

Rationale
The existing course is on materials reports in general. By changing the course to use materials failure as the vehicle for teaching report writing, we will include a topic that will be otherwise lost in the change from our own capstone course to joining in IPd.

Impact
There will be an impact on labs and teaching assignments. The labs exist and the teaching load is balanced by the absence of MAT 325: the capstone course.
New Courses

MAT 320: MATERIALS SELECTION IN DESIGN (1) spring
Review of different classes of engineering materials and mechanical stress states
experienced by structural components. Derivation of performance indices. Selection and
design of materials based on materials selection charts and performance indices.
Application of materials selection concepts to ENGR 211 IPD #1 course. Prerequisites:
MAT 218; Engineering 211 taken previously or concurrently.

Rationale.
The existing capstone course MAT 320 is being replaced by participation in the IPD
program. This course is a one-credit complement to the IPD, to introduce students to
materials selection aspects of design (since it is not included in IPD). It is hoped that
students from other departments will find it valuable also.

Impact.
Will need a person to teach it. Included in the departmental teaching plan without
problem.

MAT 210: MACRO MATERIALS PROCESSING LAB (2) spring
Introduction to the practice of fabrication methods for ceramics, metals and polymers.
Includes topics such as melt processing, deformation processing, gas-phase processing,
etc. Contains hands-on processing labs as a reverse engineering design project that
allows students to examine a particular process in depth. Prerequisite: MAT 204, 206, and
214 taken previously or concurrently.

Rationale.
Synthesizes the lab sections of MAT 204, MAT 206 and MAT 214 into a single lab
course (see above).

Impact.
The impact will be minimal since the labs basically exist already in the fragmented form.

MAT 180: ELECTRONICS (3) fall. DC and AC circuits, discrete transistors, operational
amplifiers, oscillators, and digital circuits. Discussion of materials issues in electronics.
Lecture and laboratory. Prerequisites: Phys 21 and 22, or Phys 13 and 14.

Rationale.
The aim is to replace ECE 81 with an alternative course on electronics, but one with a
more practical or experiential focus. Physics 190 would be suitable but they can not
accept the relevant number of students. This course would be modeled on Physics 190
and use the same laboratory. It would be staffed by professors from the Materials
department.

Impact.
Will need one professor. This has been factored onto the departmental teaching plan.
Courses to be Removed

MAT 335 DESIGN, SELECTION AND FAILURE ANALYSIS OF ENGINEERING MATERIALS (4) Fall/Senior Year. After the transition period this course will be removed in favor of the IPD sequence. The content that is not covered in IPD will be covered in Mat 2XX (a new course) and Mat 338 (a modified course).
New Elective Course: Department of Materials Science and Engineering.

A new MAT 260 course is proposed for the 2001/2002 university catalogue under the listing of courses offered by the Materials Science and Engineering Department.

Course description:

MAT 260 Light Metals (3 credits)
Designing mechanical properties of light metals such as aluminum, beryllium, magnesium and titanium through alloying and processing. In depth analysis of strengthening mechanisms and resulting physical properties. Review of typical casting, deformation, powder metallurgy and machining processes applied to these materials. Recent commercial applications in the construction, packaging, aerospace and automotive industries. Prerequisite: MAT 206 or consent of the instructor Mistolek.

Rationale:

Increased use of light metals and their alloys are mainly dictated by the new demands for energy efficient vehicles. A typical automobile produced today has an increased number of parts made of aluminum, magnesium and titanium in order to reduce its weight and improve its energy efficiency. The same metals and alloys are applied to new designs in the aerospace, construction, and packaging applications. It is necessary for our students to be familiar with the existing range of materials and ways of tailoring their properties.

Course history

Wojciech Mistolek and David Williams have already taught this course in the spring semester of 2000. Thirteen undergraduate and graduate students took the course and gave it very good evaluations. The overall course quality and instructor effectiveness (W. Z. Mistolek) were rated 4.6 on a scale from 0 to 5.0.

Impact Statement

This course is offered as one of the electives every other year and therefore will not increase the teaching load for the faculty. Based on our experience from the previous year we can assure that the all necessary scientific journals and related books are available in university library. There is no need for additional computers nor the development of new laboratories.
New Elective Course in the Department of Materials Science and Engineering

MAT-596 - Physical Metallurgy of Fusion Welding - 3 credits

Course Description for Catalog:

Rationale:
A. Welding is currently one of the most widely used fabrication processes in manufacturing, and a detailed understanding of modern welding topics is very useful to undergraduate students entering into the engineering field and graduate students studying the subject. In addition, there is now a large group of graduate students (10) in the department conducting graduate studies in welding and closely related topics that benefit from this course.
B. This course has been offered twice with the following enrollment and overall course evaluations:

<table>
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<tr>
<th>Term</th>
<th>Enrollment</th>
<th>Overall Course Evaluation</th>
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<td>4.5/5.0</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>11</td>
<td>4.6/5.0</td>
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</tbody>
</table>

Impact:
Teaching Load - This new course has been included in the recent departmental teaching plan.

Laboratory Needs - A fully automated welding and laser processing laboratory is available that supports the laboratory demonstrations for the course, and Prof. DuPont's graduate students run the demonstrations.

Library and Computing Needs - not affected.
Add to Catalog

CE 10 (Arch 10) Engineering Architectural Graphics and Design (3) Fall
Graphical communication of civil engineering and architectural projects using manual techniques and computer software. Topics include visualization, sketching, orthographic projection, isometrics, and other drawing: points, lines, and planes; descriptive geometry; design overview of geographical information systems and 3-D modeling. Teamwork on design projects will be used and graphical presentations.

Background and Impact on Resources: CE 10 will be a required CEE course, replacing CE 15, which is being dropped. The main difference is that CE 10 will include a design component, and be more appealing to architectural students. Most resource needs will be similar to CE 15, except as noted below:

The CE 10 course description was written with Bruce Thomas, Art & Architecture chair, and will be cross-listed with a new course Arch 10, currently being considered for approval by the Art & Architecture department and College of Arts and Sciences. It will be open to all CEE students and usually taken full of the sophomore year. A limited number of non-CEE students will be accepted. The CEE faculty made a commitment to staff CE 10 each fall, initially taught by Dr. Gerard Lemen starting Fall 2001. Some course development aid to include architectural topics will be undertaken Spring 2001 with the help from the IPAS program. Desirable but not necessary enhancements of architectural topics will occur if funding is available for instructors from Architecture. In Fall 2001 an enrollment cap of 40 is anticipated based on expected CEE department TA support for two 3-credit sections, each with section cap of 20 students. Additional sections will be added if demand warrants and TA support is available.

Engineering students should register for CE 10, and Arts & Science students, in particular those in architecture and design arts, should register for Arch 10. Students will be assigned project roles consistent with their background. Not available to students who have taken ME 10.

Students with credit for CE 016 may not take
CE 110 for credit

CE 142 Fundamentals of Soil Mechanics (3) Fall
Fundamental principles of physical index properties of soils, water flow through soils, stress and deformation phenomena in soils and strength parameters of soils. Weight-volume relationships, consistency, gradation, and classification. Soil mechanics, composition, and fabric; clay-water electrolyte system. Geological processes, and engineering properties of rocks. Soil compaction, consolidation, shear strength, stress-strain. Mohr-Coulomb failure analysis. Laboratory experiments to measure physical and mechanical properties of soils. Prerequisite: Mech 2

Impact on Resources: CE 142 (3 cr) will cover most of the material in the current CE 143 (4 cr), which will be dropped. The extra credit of material currently taught in CE 143, but not to be included in CE 142, will be moved to CE 242. Included in CE 142 will be approximately 1 credit of lab work (same as currently covered in CE 145). Also see CE 242 below, which does not include a lab. Because this is a replacement course of one less credit, there is no negative impact on resources.

Students with credit for CE 143 may not take
CE 142 for credit.
Proposal for new course:
CE123 Civil Engineering Materials (3 credits)

Catalog Description:
Properties of commonly used civil engineering materials focusing on concrete. Concrete coverage includes cement chemistry and manufacture, cement hydration and microstructure, mixture design, mechanical properties, admixtures, in-service performance, and deterioration mechanisms. Includes some laboratory work.

Rationale:
The concrete material and corresponding laboratory work covered in CE123 used to be treated in MAT192. MAT192 was a required course for students in CEE. However, MAT192 is being dropped by the Materials Science and Engineering Department. As a result, CEE students will instead take MAT33 as a required course. Thus CE123 is being added as a new required course to continue the important coverage of concrete materials. This also provides the opportunity to teach other commonly used civil engineering materials that are not covered in MAT33 (e.g., asphalt, geomaterials, etc.).

Faculty Load:
No impact on faculty load. Concrete part of MAT192 has been taught by Professor Mueller and Pessiki. Both continue to be available to teach CE123. Further, as other materials are added to CE123 (e.g., geomaterials) appropriate faculty from that specialty area are available to teach those added materials.

Library Impact:
No impact.

Computer and Laboratory Impact:
No impact. Laboratories performed previously as part of MAT192 will now be performed as part of CE123.

Prepared by Stephen Pessiki
Revised: 2/19/01
CE 242 Principles and Practices of Geotechnical Engineering. (3) spring


Prerequisite: CE 142

Background: Last year during discussions of future teaching plans, the Earth & Environmental Engineering department indicated the possibility of EES 101 (Engineering Geology) being discontinued. In November, 2000, the EES department indicated Dr. Myers would retire at the end of the current academic year (2000-2001), and that EES 101 (required course in fall for CHE sophomores) would not be taught next academic year. The CEE Undergraduate Curriculum Committee met on several occasions to consider several alternatives, including alternate EES courses in place of EES 101. After much discussion, the CEE UCC and CEE faculty unanimously agreed that two added credits of geotechnical engineering topics would be the best alternative to replace the lost engineering geology topics.

Impact on Resources

CE 242 (3 cr) will cover 1 credit of material currently taught in the discontinued CE 143 (4 cr) that is not included in the new CE 142. No lab work will be included in CE 242; the current CE 143 lab will be done in CE 142. Because this adds two credits of geotechnical engineering topics to the CEE degree program, additional teaching duties will be required by CEE faculty to teach these two credits. The CEE department does not anticipate this to be a problem because teaching loads in the CEE department and in the geotechnical engineering group are below the college average and can be readily handled by this course.

Drop from Catalog Listing of CEE Courses
CE 15, CE 143

Change in Required Courses for CE Degree
Require CE 10 (fall sophomore year) instead of CE 15 (spring sophomore year)
Require Mat 33 instead of Mat 192 (fall junior year); Mat 33 has no prerequisite. both 3 cr
Add CE 121 in Spring junior year
Require CE 142 (3 cr fall junior year) instead of EES 101 (3 cr fall sophomore year)
Require CE 242 (3 cr spring junior year) instead of CE 143 (4 cr fall junior year)

Change in Prerequisite
CE 203. Drop "Consent of the department chair"
Change "CE 143" to "CE 242" in the following list of courses in the catalog:
CE 244, CE 341, CE 342, CE 344, CE 345, CE 346, CE 347
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<th>Course</th>
<th>Credits</th>
<th>Course</th>
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<td>Engr 2</td>
<td>3</td>
<td>Math 22</td>
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<tr>
<td>Mech 22</td>
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<td>ECE 201</td>
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<td>ECE 14</td>
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<td>Sophomore Spring, 16 Credits</td>
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<td>Junior Fall, 17 Credits</td>
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Supporting Information, continued (not part of Proposed Catalog Changes)

1. Drop EES 101 (3 cr) from Sophomore Fall (EES not offered after F'00)
2. Mat 192 (3 cr) replaced by Mat 183 (3 cr) in Junior Fall
3. CE 123 added in Junior Spring
4. Replace CE 147 (4) by CE 142 (5) in Junior Fall
5. Add CE 242 (3) in Junior Spring
6. Replace CE 15 Sophomore Spring with CE 10 Sophomore Fall
7. Move CE 270 from Junior Spring to Sophomore Spring
8. Sophomore Spring increased from 17 to 18 cr (3 are HSS)
9. Switch HSS from Junior Fall to HSS in Junior Spring. This makes the Junior Fall 15 credits, but all engineering courses. Overall, this is the same or better balance than the existing program.
10. Inform students that although the recommended Junior Year program has Mat 183 and ESE in the Fall and an HSS Elective in the Spring, but for scheduling convenience, it is acceptable to take any of the two in the fall and the remaining one in the spring.

Proposed to be implemented in 2001-2002, with Class '04 (current freshmen) as first to use new curriculum; thus:
1. CE 10 offered Fall starting Fall 2001 to Class '04 (current freshmen; current sophomores will take S'01)
2. CE 270 Class '05 & Class '04 take together in Spring 2002.
3. CE 142 and 242 would be taught AY 2001-2002 to Class '04 as juniors for the first time.
An Integrated
Biological Science and Engineering Program
Leading to
a BS degree in Bioengineering

to be effective FALL 2002

January 30, 2001

Prepared by the
Biological Science and Technology
Faculty Task Force

- Charged by Dean John C. Chen and Dean Bobb Carson
- Task Force Members (with consultation from the Associate
  Deans Carl Moses and Richard Weisstran)
  - Lyne Cessmeris (Biology)
  - Mohamed S. El-Aasser (Chemical Engineering)
  - James T. Hsu (Chemical Engineering)
  - H. Daniel Cao-Yang (Physics, Task Force co-chair CAS)
  - Neil O. Simon (Biology)
  - Robert V Skubbes (Biology)
  - Jill E. Schneider (Biology)
  - Marvin H. White (EECS, Task Force co-chair, P.C. Rossin CEAS)

approved 3/3/01
Mission

- Lehigh can contribute substantively to a new era of integrated life science with a unique bioengineering program that combines a distinctive bioscience instructional program with historic strength in engineering and the physical sciences to meet the needs of a growing population of prospective students who seek training at the interface of biological sciences and engineering.

Program Goal

- Bioengineering as a convergent discipline, producing students that think at the interface of engineering, life and physical sciences so they
  - know how biological systems work
  - are equipped with analytical skills, advanced tools in experimentation, modeling and simulation
  - can apply their knowledge in design, synthesis, manufacturing and business in health care
  - have strong communication skills
  - can bring innovation and creativity for problem solving
  - are prepared for lifelong learning
Program Scope

- An integrated program, co-managed by the P.C. Rossin College of Engineering and Applied Sciences and the College of Arts and Sciences, that involves facilities from all four Lehigh colleges.
- A Bioengineering BS degree program that attracts top students from engineering, life science, or physical sciences.
- Estimated 25 students per class fully developed by 2005.
- The curriculum will be designed to allow for the satisfaction of premed requirement.

Proposed Program Time Table

- BS Program in Bioengineering (2002)
- MS Programs in Bioengineering (2003)
- Ph.D. Program in Bioengineering (2004)
Curriculum Framework

- Humanity/Social Sciences and undergraduate core (including bioethics) (22 credits)
- Basic Sciences and Mathematics (31 credits)
- Engineering core (21 credits)
- Three Integrated Bioengineering tracks (15-18 credits)
- Longitudinal Experiential Learning (14 credits)
- Free Electives (11 credits)

- Total of 134 - 157 credits

Integrated Bioengineering Tracks (details to be developed)

- Biochemical/Biotechnology
  - genes, proteomics, bioinformatics, recombinant DNA to protein engineering, bioprocessing, drug synthesis and delivery

- Bioelectronics/Instrumentation
  - signal processing, biosensors, MEMs, biochip for DNA sequencing

- Biomaterials/Biomechanics
  - cell/tissue engineering
  - biomaterials/mechanics at the molecular and cellular levels
Longitudinal, Experiential Learning
From Day-One to Commencement

- **Year 1**
  - Bioengineering seminars: from philosophy, ethics, current issues, career choices to practice
- **Year 2**
  - Literature research and proposal preparation
  - Summer internship I (honors program with fellowship)
- **Year 3**
  - Laboratory research, team work project
  - Summer internship II (honors program with fellowship)
- **Year 4**
  - Laboratory research, team work project
  - Honors seminar research thesis presentation

Motion

- We move that the P.C. Rossin College of Engineering and Applied Sciences faculty, and concurrently, the College of Art and Sciences faculty, approve the concept and its framework of a new integrated Biological Science and Engineering program leading to the degree of Bachelor of Science in Bioengineering.

- This approval does not include details of the curriculum, which will be proposed to the faculties at a later date.
Bioengineering/Biomedical Engineering
Programs in the Nation

- 64 programs nationwide and growing
- 22 ABET accredited UG programs:
  - Arizona State, Boston U, UC San Diego
  - Case Western, Catholic U, Duke, U. Illinois (Chicago)
  - U. of Iowa, Johns Hopkins, Louisiana Tech
  - Marquette, U. Miami
  - Milwaukee School of Engineering, Northwestern
  - U. Pennsylvania, RPI, Rutgers, Syracuse
  - Texas A&M, Tulane, Vanderbilt, Wright State
Graduate and Research Committee

Proposed New Course

History
1. Proposed new course number and course description (as it will appear in course catalog):
   Hist 475: Special Topics in History (1–3)

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other)
   and number of credit hours per week:
   Individual study under the direction of a faculty member of a topic in history. May be repeated for credit.

3. Rationale for proposed new:
   The new Summer system will not allow students to register for the same course twice in the same semester.
   As we need to complement the current Special Topics in History offerings (Hist 471/472) for the rare
   instance when a student takes three special topics classes in the same semester.

4. Academic Impact Statement:
   a. Is this proposed new course cross listed?
      No
   b. Is the proposed new course accessible to the affected program?
      N/A
   c. If these 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?
      (2) Is the proposed new course accessible to the affected program?
      (3) Will any changes be required in the affected program? If so, describe
      (4) Identify any known effects of the proposed new course on the University’s commitment
          to diversity.
      N/A

5. Resource Impact Statement: No additional resources required.
   a. Provide each of the following:
      (1) Library impact statement
      (2) Computer impact statement
      (3) Faculty impact statement
      (4) Facilities impact statement
   b. Provide a statement indicating who will assume financial responsibility for any new
      resources required: N/A
Graduate and Research Committee

Proposed New Course

History
1. Proposed new course number and course description (as it will appear in course catalog):
   Hist 481, Teaching History (3)

2. Instructional mode (i.e., lecture, recitation, laboratory, seminar, independent study, or other)
   and number of contact hours per week:
   Focus on the practical aspects of college teaching, including teaching methods, preparation of
   syllabi and exams, grading papers and exams, and dealing with problems such as plagiarism.
   Required for teaching assistants, teaching fellows, and PhD students in the Department of History.

3. Rationale for proposed new:
   We have offered the course in Fall 1999 and will offer it again in Spring 2001. The students found it a
   useful format, so we would like to offer it on a regular basis. The American Historical Association
   recommends that graduate programs provide such a course, as well as teaching experience, to
   graduate students planning an academic career.

4. Academic Impact Statement: N/A
   a. If this proposed new course can be listed? No
   b. If the proposed new course acceptable to the affected program? N/A
   c. If there are know effects, individuals in charge of the affected programs must be
      consulted about the changes and the following information provided: N/A
   d. Who was consulted?
   e. Is the proposed new course acceptable to the affected program?
   f. Will any changes be required in the affected programs? If so, describe.

5. Resource Impact Statement: N/A
   a. Provide each of the following:
   b. Library impact statement
   c. Computer impact statement
   d. Facility impact statement
   e. Facilities impact statement

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

Graduate and Research Committee

Mathematics

1. Proposed new course number and course description (as it will appear in course catalog)
   Math 402. Topics in Analysis (3)
   Intensive study of topics in analysis with emphasis on recent developments. Prerequisites: consent of department chair. May be repeated for credit with the consent of the department chair.

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

3. Rationale for proposed new course:
   These topics would cover the deleted course most of which are in analysis in a broader sense.

4. Academic Impact Statement: N/A
   a. Is this proposed new course cross listed?
      No
   b. Is the proposed new course acceptable to the affected program? N/A
   c. If there are known adverse effects, individuals in charge of the affected programs must be consulted about the changes and following information provided: N/A
      (1) Who was consulted?
      (2) Is the proposed new course acceptable to the affected program?
      (3) Will any changes be required in the affected program? If so, describe.

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

1. Resource Impact Statement: N/A
   a. Provide each of the following:
   b. Library impact statement
   c. Computer impact statement
   d. Faculty impact statement
   e. Facilities impact statement

6. Provide a statement indicating who will assume financial responsibility for any new resources required.
Graduate and Research Committee:

Mathematics

Proposed Course Changes:

1. Current course number and course description (from course catalog):
   Math 414, 419, 456, 484

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

3. Description of proposed change(s):
   Drop all listed courses

4. Rationale for proposed change(s):
   These courses have not been offered for more than eight years. If the need arises, any of these courses can be offered as Math 650 with an appropriate title. Such a change puts more focus on the courses actually being taught.
Graduate and Research Committee

Proposed Program Changes

Mathematics

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

2. Proposed course number and course description (as it will appear in course catalog):
   Progressing course
   Add to the description of the PhD in Applied Mathematics: "Qualifying exam in Analysis" as an
   option to the existing list
   Add to the description of the PhD program: A PhD student is required to have 18 credits of
   approved coursework beyond the Master's level. After completion of 18 credits, a student is required
   to take at least one course per academic year other than Math 699, 940, or 999.
   [Our graduate students typically find positions at places where broad knowledge gives them an edge
   in competing for jobs. This requirement is already met by more than half of our PhD students. This
   policy will mean more students in our graduate courses.]

3. Description of proposed changes:

4. Rationale for proposed changes:
Graduate and Research Committee

Music

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

Proposed New Course

MUS 453: Advanced Choral Conducting and Composition (2)

An intensive, week-long seminar/workshop. Students elect either composition or conducting track for individual study with international faculty in chosen area. Joint seminars and lab choir rehearsals on world choral literature, pedagogy, and practices of student choirs. Additional seminars with the choral director of Berkeley and a guest editor of Oxford University Press. New works and international repertoire presented in final concert conducted by faculty and participants. Same as AMUS 453.

Guidelines: (i.e., lecture, recital, laboratory, seminar, independent study, or other)

and number of contact hours per week

In this course, students will utilize the composition or conducting track for study with international faculty in these fields. Conducting students attend morning seminars and concerts on conducting techniques, repertoire, conducting worldwide music literature, morning and evening rehearsals with students conducting a lab choir; videotapes for review the next day. Composition students have morning seminars, afternoon composition classes, and hear their pieces done with a lab choir in afternoon and evening rehearsals. The final concert of the seminar features student works, student conductors, and faculty works and conductors.

2. Rationale for proposed new course

This week-long seminar is being offered by the Music Department in cooperation with the Zellerba Art Center. Participants will pay to attend the seminar, and fee and board as needed. Zellerba has a budget for the Seminar. In addition, we seek to offer it for graduate credit to those who would want it for graduate transfer credit or for faculty development credit for school boards. In this it follows the model used successfully for many years by Westminster Choir College. Though we do not yet have a graduate program in music, it has been part of our long-range plan for many years. We see this course as a step in the direction of building toward a masters degree or certificate program in Choral Conducting and Composition.

3. Academic Impact Statement

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

b. Is the proposed new course acceptable to the affected program? N/A

c. 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

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

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

2. Resource Impact Statement

a. Provide each of the following:

(1) Library impact statement: Additional CDs and access to contemporary choral works
(2) Computer impact statement: seven computers with composition software (PENVALS) for use of student composers
(3) Facility impact statement: Screen, screen, screen, screen; two guest faculty
(4) Facilities impact statement: Screen, screen, screen, screen, performance space in Zellerba

b. Provide a statement indicating who will assume financial responsibility for any new resources required. The department will provide resources for the Music Library and for several composers. The Zellerba Art Center will provide space, salary for guest faculty, and partial summer salaries for student composers.
Physics

Adv Phy 414, 416

Phy 414: Advanced Laboratory in the Physics of Photonics (3)
Photonic experiments relevant to applications. The first part of the course covers essential photonic components. In the second part, students perform a selection of experiments that illustrate the different physical effects that are essential in photonic applications, and that make use of state-of-the-art photonics instrumentation. Prerequisite: Phy 322 or equivalent background in optics.

Phy 416: Lasers and Nonlinear Optics (3)
See description of Phy 355. Additional material will be required of graduate students who enroll. Prerequisite: Phy 31, Phy 215, or ECE 203, previously or concurrently. Multani
Psychology

Add Psy 4xx 4 credits

Psy 3xx Developmental Theories and Special Populations (3)
Traditional developmental theories focus on normative development. Children with disabilities
have a unique set of experiences that pose special challenges for these theories. In the
development literature, children with disabilities have sometimes been the focus of studies
because they provide a "test case" for specific theoretical predictions. In this course, we will
consider some of these theoretical issues and the insights that have been gained by focusing on
special populations
Prerequisites: Psy 402 or consent of instructor

[This is a special graduate seminar that will be offered periodically by Professor Barrett. It
should be of interest to students in the College of Education, as well as psychology graduate
students. Since the course will most typically be offered in the Summer, or at a time when
Professor Barrett is scheduled to teach a graduate seminar, it does not involve additional
instructional expense. It also does not require additional resources from the library or other
university sources.]
November 17, 2000

To: Graduate and Research Committee

From: Kathleen Tessler
Associate Dean

RE: New Course

On October 30, 2000, the College of Business & Economics faculty approved the following new course:

GECC 4XX  Economic Analysis of Market Competition

Mathematical models based on game theory and industrial organization. Cases are used to analysis the strategic interaction of firms and governments as competitors and partners.

Rationale

The course combines the industrial organization and game theory courses with an additional emphasis on cases. The course is offered in most top undergraduate business and MBA Programs.

Instructional Mode

The instructional mode is primarily lecture and case method.

University Effects

The new course does not have any effects on other programs in the University.

Resource Implications

The course will be offered once each academic year and will replace an industrial organization and game theory offering. Thus, no additional faculty time will be needed to teach this course.

Computer, Library and Facilities Impact Statement

It is not anticipated that this course will have any impact on computer or library resources nor will it affect facilities other than the use of a classroom.
February 2, 2001

To: Graduate and Research Committee

From: Kathleen Tredter
College of Business and Economics

RE: Non-degree graduate student status for the College of Business and Economics

The following proposal was passed by the College of Business & Economics Faculty at their faculty meeting on January 25, 2001.

Proposal for Non-degree Graduate Student Status in the CBE

Proposal:
Approval of non-degree graduate student status for graduate students in the College of Business and Economics.

Rationale:
The College of Business & Economics is the only college within Lehigh University who has not approved non-degree student status for graduate students. However, with the development of the certificate program in Supply Chain Management, non-degree status has become more important. We have received inquiries from prospective students who already have MBAs or other masters degrees, and students with undergraduate engineering degrees who are only interested in the certificate and not the entire MBA. Currently, they would have to apply to the MBA program and complete an entire application including GMAT scores to enroll in the credits necessary. This is often not an attractive option for them. The GMAT exam costs $210. This cost is not a reimbursable expense in most companies. Most students see this as an unwarranted requirement for a certificate program.

Non-degree status would also allow a borderline student the opportunity to take prerequisites at Lehigh for the MBA Program. Currently, students may not even take prerequisites until they have been admitted to a program. This would give Lehigh an opportunity to evaluate their academic work using our own standards.

We often have students who have been transferred to the Lehigh Valley and want to take a course or two for transfer to complete their degree at another school. These students would be well served by non-degree status. Although in this case, we should require a
letter from the school to which they are going to transfer their credits affirming that they are students in good standing and that the credits will be accepted.

Non-degree status will also allow a prospective student who is considering an MBA program but is not quite sure that this is the right degree to take a course or two to give him some insights into the quality and value of the program.

Non-degree status has been implemented successfully in the other colleges. However, since the CBE does not have a non-degree status, non-degree students admitted to other colleges may not enroll in any of our courses. As an example, in Spring '01, a non-degree student in engineering who is taking optics courses and has a Ph.D. in Mechanical Engineering would like to take a business course. There is no doubt that this student is well qualified academically. However, he cannot take any CBE classes because of his non-degree status.
Proposed Changes and Additions

Educational Technology Program
Department of Education and Human Services, College of Education

Summary of Proposed Changes in this packet:

1. Changes in program/degree requirements for the present Masters of Science in Educational Technology and a change in title to Masters of Science in Instructional Design and Development.

2. Addition of a new 30-hour M.S. degree program focusing on technology in school settings to use the now available title of Masters of Science in Educational Technology.

3. Dropping two lab courses and five practice courses and changing the number of hours in the present M.S. program to a minimum of 30.

4. Concomitant changes in course titles, course descriptions, and number of hours.

5. Addition of 3 new courses to accommodate addition of the new M.S. degree.
Educational Technology Program

Change in Present Program Name / Hours

Proposed:

Change the name of the present masters of science degree in the Educational Technology program to a masters of science degree in Instructional Design and Development; reduce to 30 hours.

1. **Rationale for Changing the Name of the Present M.S.**

   For quite some time the present M.S. degree in Educational Technology has been evolving. It originally started in 1990s as a program oriented towards helping teachers learn how to use technology in the classroom. Over the years, however, the program established its own unique focus on design and development of technology-based teaching and learning materials. This made the program unique nationally, and helped to give it a distinctive program signature. At the same time, while the program had been changing its requirements and increasing the extent to which students admitted to the program focused on design and development, it still employed the broader educational technology title for its degree. This created some confusion in the minds of those applying to the program and required that faculty explain more clearly what it is that we do in this program at Lehigh. The proposed new name for the M.S. degree, Masters of Science in Instructional Design and Development, makes much clearer the actual focus of the program and should help in recruiting. In addition, when it comes time to find a job, the new program name should help distinguish our graduates from the graduates of other more generic programs that focus more on the use of technology than on the design and development of technology-based materials.

   The program would still carry the broader Educational Technology name, enabling it to accommodate its main M.S. degree (the newly named Instructional Design and Development), its M.S. degree for the International Schools (the proposed Educational Technology M.S. program), and its doctoral degree (Ed.D. in Educational Technology).

2. **Rationale for Dropping Practica and Labs and Moving to a 30 Hour M.S. Degree**

   Four years ago, the Educational Technology Program moved most of its courses to 4 hours, including a series of practice and labs in which students were asked to do independent learning. Because of that change, the Educational Technology M.S. program moved to a 33 hour minimum degree.

   As a result of incorporating the Shared Core and changing the nature of our course offerings, we no longer need these additional practice and labs. What was originally covered in these separate accompanying courses is now covered through the more integrated approach employed throughout our program. This means that we are once again able to reduce our M.S. degree to a 30-hour minimum degree, enhancing its competitiveness in the marketplace.
3. **Rationale for Changes in Course Titles, Descriptions, and Credit Hours**

The change from requiring accompanying practice and labs requires a change in many course descriptions. In addition, as is often the case when one makes program changes, there are accompanying changes that need to be made in individual course titles and descriptions.

4. **Rationale for New Courses**

The addition of the new M.S. program calls for adding 3 new courses.

5. **Present M.S. Program**

**Core (16 hours)**
- EdT 404 Interactive Multimedia Programming (3)
- EdT 444 Interactive Multimedia Laboratory (1)
- EdT 405 Hypermedia Theory and Application (3)
- EdT 415 Practicum in Hypermedia/Multimedia Learning (1)
- EdT 407 Foundations of Educational Technology (2)
- EdT 415 Practicum in Educational Technology Foundations (2)
- EdT 433 Introduction to Instructional Design (6)
- EdT 434 Practicum in Instructional Design (1)

**College Requirements (6 hours)**
- Educ 403 Research
- Educ 471 Multicultural Issues

**Advanced Coursework and Electives (3-8 hours)**

Taken from:
- Advanced Educational Technology courses
- Educational Technology Special Topic courses
- Non-program elective courses

**Required Integrating Experience (3-8 hours)**
- EdT 458 Integrating Experience in Educational Technology (3-8)

Total credits = 33 hours (minimum)

6. **Impact Statements**

Since this is a change purely in the name of the degree and a reorganization to 30 hours because of the elimination of additional practice and labs, there are no implications for the library, faculty, computing, or facilities.
Requirements for the Masters of Science in Instructional Design and Development

Educational Technology Program, College of Education, Lehigh University

This 30-hour program requires students to take 9-12 hours in 4 semesters (as shown below). Students should take the Shared Core courses as soon as possible after admission. The Core must be taken in sequence; the final course in the Shared Core must be taken after all preceding courses.

Once a student has completed their 27 hours, they can complete the program by taking additional coursework in the 3 technology areas, either in a single design or in a series of design and development courses. Additional coursework must be taken in the 3 technology areas, and the final coursework must be completed after all preceding coursework.

The following courses are mandatory for all students and will be counted in the student's final hour commitment.

Shared Core (6 hours)
- EDU 445: Technology-Based Teaching and Learning: Foundations II (1 hour)
- EDU 446: Technology-Based Teaching and Learning: Problems & Assessment II (1 hour)

Technology Core (12 hours)
- EDU 447: Instructional Design
- EDU 448: Advanced Instructional Design
- EDU 449: Intermediate Design
- EDU 450: Advanced Design
- EDU 451: Programming: Introduction to Programming
- EDU 452: Multimedia Programming
- EDU 453: Web and Digital Resources Development
- EDU 454: Advanced Web and Digital Resources Development

College Core (6 hours)
- EDU 442: Assessment Methods
- EDU 443: Multicultural Issues

Advanced Study in Technology (3-6 hours) — With guidance from advisor, student should take at least one advanced course in one of the 3 strands.

Strand Advanced Course
- Instructional Design
  - EDU 447: Instructional Design
  - EDU 448: Advanced Instructional Design
  - EDU 449: Intermediate Design
  - EDU 450: Advanced Design
- Programming
  - EDU 451: Programming: Introduction to Programming
  - EDU 452: Multimedia Programming
- Web Resources Development
  - EDU 453: Web and Digital Resources Development
  - EDU 454: Advanced Web and Digital Resources Development

Elective/Portfolio Development (6-8 hours)
- EDU 440: Internship in Educational Technology
- EDU 441: Advanced Research in Educational Technology
- EDU 442: Independent Study in Educational Technology
- EDU 443: Research Topics in Educational Technology
- EDU 444: Independent Study in Educational Technology
- EDU 445: Advanced Research in Educational Technology

Total Hours (minimum): 30

Any coursework added after this program is approved will have to remain in the student's program.

Educational Technology Program—Proposed MS DEGREE
Proposed New MS Program

1. Proposed new masters of science program mission statement:

   The new Educational Technology masters of science program's mission is to enhance the use of technology in teaching and learning, especially in International Schools.

2. Rationale for proposed new M.S. program:

   This proposal emanates from the confluence of three separate vectors: the Educational Technology Program's initiative to begin to offer more of its courses online, the request from teachers and administrators in the International Schools for 1 to 2 years to offer an M.S. degree in educational technology aimed at helping them see how to use technology in teaching and learning, and the chance to help increase the confluence of the Educational Technology Program with the broader mission of the College through a cooperative arrangement with the Technology-based Teacher Education Program.

   The Educational Technology Program has been seeking to increase its online presence. In that vein, it is offering a completely online version of EDT 433: Instructional Design this spring 2001. This online offering is intended to attract learners from the corporate training community as well as learners seeking our present educational technology degrees. Its intended to be the first of a series of courses related to design and development. Likely next courses include EDT 443: Principles of Interface Design and EDT 477: Research Topics—Web-based Learning. Within the next few years, our plan is to offer at least 40 percent of the online courses online.

   Offering a M.S. degree for teachers and administrators in the International Schools calls for the addition of only a few courses. Many of its needs are accommodated by the six-hour Shared Core experience (EDT 4xx/Edu 4xx: Technology-based Teaching and Learning) approved last year by the College of Education and now being offered as an advanced content opportunity taught by faculty from the Educational Technology Program (EDT) and the Technology-based Teacher Education Program (TTEP). Only two additional courses need to be added, one in how to integrate technology across the curricula and one in how to plan for implementing technology in school settings. The latter course is one that the Educational Technology Program has offered previously. Of course, since two courses would need to be offered in the summer in Switzerland, there are staffing implications, but we should be able to accommodate offering these courses with present and soon-to-be-hired (in search now) staff in the two programs.

   Adding an M.S. degree that focuses on the implementation of technology in school settings should enhance the relationship between the Educational Technology Program and the College. It is worth noting, however, that this new M.S. program is an extension of the present collaborative work being done with the Technology-based Teacher Education Program. That is to say, without the cooperation and involvement of the Technology-based Teacher Education Program, this new program would be unlikely to succeed. In fact, while the new program has a very strong technology component, it takes advantage of the existing Shared Core experience to enhance its relationship to traditional areas of study in teacher education. The addition of the course in implementing technology across the
curriculum should further enhance this linkage. Similarly, regularizing the offering of the course on
planning and implementing technology in school settings (and putting it online within four years)
should serve not only the students in this degree, but also students in Educational Leadership
Technology-based Teacher Education, and Special Education.

Non-competitive/Non-Redundant
The proposed Educational Technology M.S. program is more technologically-oriented than the present
Technology-based Teacher Education masters program. While it shares the same core with the
TBTE teaching certification masters, it does not emphasize certification; similarly, it does not focus
on subject-areas specialization, a main feature of the TBTE non-certification masters degree. Of the
80 hours of course work in the new Educational Technology program, 6 are college-wide
requirements and 6 are in the shared core taught jointly by Educational Technology and Technology-
based Teacher Education faculty. This leaves a likely maximum of 7 courses of which as few as 5 or
as many as 7 would be in Educational Technology. For this reason, this M.S. degree should not
compete with existing Technology-based Teacher Education masters degree programs. In addition,
none initial enrollment in the new program is expected to come largely from teachers and
administrators in International Schools who have specifically requested that this degree be offered in
Educational Technology competition with existing TBTE degrees should be further reduced.

3. Description of proposed new program:

a. Admission criteria:

(1) minimum requirements

One or more of the following:

+ 2.75 undergrad GPA
+ 3.0 GPA in final two semesters of undergraduate work.
+ 75% or higher on standardized test
+ 3.0 or higher GPA in minimum of 12 hours of graduate work at other institution

(2) background courses required

None.

(3) examination(s) (e.g., GRE, GMAT, etc.) required

None.

(4) language requirement for foreign students

One or more of the following:

+ minimum TOEFL: 550 (old) / 230 (new)
+ Applicant has previously studied in the United States
(5) **application process for interdisciplinary programs**

Regular admission process. No interdisciplinary application.

(6) **admission deadlines**

March 31 for admission for summer enrollment
August 15 for admission for fall enrollment
December 1 for admission for spring enrollment

b. **Specific degree requirements:**

**Masters of Science Degree:**

a. **course requirements (new or existing)**

(See attached table illustration, page 9 of this document):

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Requirements</td>
<td>6</td>
</tr>
<tr>
<td>Foundations (Technology-based Teaching and Learning)</td>
<td>6</td>
</tr>
<tr>
<td>Technology-based Content Delivery:</td>
<td>3</td>
</tr>
<tr>
<td>Design Skills</td>
<td>6</td>
</tr>
<tr>
<td>Technology Implementations</td>
<td>5</td>
</tr>
<tr>
<td>Advanced Work (advanced seminars research topics)</td>
<td>3</td>
</tr>
<tr>
<td>Minimum hours to receive degree</td>
<td>30</td>
</tr>
</tbody>
</table>

b. **thesis requirement**

Thesis not required.

c. **comprehensive examination requirement**

Comprehensive examination not required.

4. **Academic Impact Statement:**

a. **Is this proposed new program interdisciplinary?**

No.

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

Since the program calls for cooperative staffing of the Shared Core (two-semester team-taught Technology-based Teaching and Learning course), the Technology-based Teacher Education...
(IHE) needed to agree to staff one of the two instructors for that course. In addition, they have agreed to staff one of the two technology implementation courses, Technology Across the Curriculum. The Shared Core course is a requirement of both Ed Tech and IHE. The Technology Across the Curriculum course is a requirement in this new M.S. degree in Ed Tech, but is an elective in IHE.

c. 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:

   (1) Who was consulted?
       All faculty in both Educational Technology and Technology-based Teacher Education: 
       the Department Chair, the College Dean.

   (2) Is the proposed new program acceptable to the affected programs?
       Yes. It was approved by program votes in both Educational Technology and 
       Technology-based Teacher Education programs and by College vote following 
       discussion.

   (3) Will any changes be required in the affected programs? If so, describe.
       The Shared Core is a required course (by program and College vote) in both IHE and 
       Ed Tech. This change is already in effect, so no additional changes are required.

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

       No specific effects are anticipated, although working with teachers from the International Schools 
       may result in increased diversity because of the make-up of those faculties and staffs.

5. Resource Impact Statement:

a. Provide each of the following:

   (1) Library impact statement
   (2) Computer impact statement
   (3) Faculty impact statement
   (4) Facilities impact statement

   See attached pages 10-13 of this document.

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

   The College agrees to assume any financial responsibilities not covered above as part of its 
   normal support of its approved graduate programs.
## Masters of Science in Educational Technology (30 hours)

**Proposed New M.S. Program**

<table>
<thead>
<tr>
<th>Type of Requirement</th>
<th>Course</th>
<th>Hours</th>
<th>How offered</th>
</tr>
</thead>
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<tr>
<td><strong>College</strong></td>
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<td></td>
<td>Educ 463 Research</td>
<td>3</td>
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<tr>
<td></td>
<td>Educ 471 Multicultural Issues</td>
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<td><strong>Foundations</strong></td>
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<td>EET 491/541 Technology-based Teaching and Learning: Foundations &amp;</td>
<td>6</td>
<td>In-person</td>
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<td>Issues</td>
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<td></td>
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<tr>
<td></td>
<td>EET 492/542 Technology-based Teaching and Learning: Methods &amp;</td>
<td>3</td>
<td>In-person</td>
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<tr>
<td></td>
<td>Assessment</td>
<td></td>
<td></td>
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<tr>
<td><strong>Technology-based</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>EET 493 Website and Resource Development</td>
<td>3</td>
<td>In-person</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Design Skills</strong></td>
<td></td>
<td></td>
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<td></td>
<td>EET 443 Principles of Interface Design</td>
<td>3</td>
<td>Online</td>
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<tr>
<td></td>
<td>EET 453 Instructional Design</td>
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<td>Online</td>
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<tr>
<td><strong>Technology</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EET 477 Planning for Technological Change in School Settings</td>
<td>3</td>
<td>Online*</td>
</tr>
<tr>
<td><strong>Advanced Work</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Educ 491.2 Advanced Seminar in Educational Technology (topic changes)</td>
<td>3</td>
<td>In-person or online</td>
</tr>
<tr>
<td></td>
<td>Educ 477 Research Topics in Educational Technology</td>
<td>3</td>
<td>In-person or online</td>
</tr>
<tr>
<td></td>
<td>EET 495 as approved by program coordinator</td>
<td>1-6</td>
<td>In-person or online</td>
</tr>
</tbody>
</table>

* Online courses that may also be offered in-person on occasion
IMPACT STATEMENTS

Impact on the Library

Library collections, systems and services substantially support degree programs in the College of Education, offered now. Core journals and books, curriculum materials and electronic delivery are all sufficient for current programs. There are needs, however, that have been identified. If these objectives and planning needs were met, the anticipated educational technology program would benefit:

There are specific journals that have been requested for the growing technology-based teacher education program. Journals identified for the TBTE program amount to an additional $20 per year. The subject specialists have identified an additional group of journals those journals include related to the use of instructional technology. A second category of existing needs: reference materials, allows a remote learner to consult reference sources online. Resources in this category, and across the College curriculum, include the Mental Measurements Yearbook online and subject encyclopedias or research compendia that have not been available in access-based formats.

In addition to these specific collection improvements, a Master's in Educational Technology delivered on-site will have an impact on the provision of library services. Serving distance graduate students presents particular challenges for access to print and electronic resources. Significant faculty-staff collaboration is required as is a working knowledge of these new issues. Making course readings accessible on CD-ROM area the web, providing reference service and instruction, managing user authentication and proxy configurations, and consulting with individual students can be accomplished with careful planning and sufficient development time. Additional staff will be required to support distance learners. The Library endorses the Association of College and Research Libraries' CACR125 standards on access, collection, and services for remote users.

Jenn Johnson, Librarian/Technical Leader
Client Services Team for the College of Education Information Resources

1 These include: Journal of Interactive Technology for Teacher Education (JTE), Journal of Library Administrative Management and Planning (JLAM), Journal of Information and Instructional Technology (JII), Journal of the American Society for Information Science (JASIS), and Advances in Librarianship and Information Science (AILS)

2 The second group of journals includes: Journal of Distance Education (JDE), International Journal of Distance Education Technologies (IJDET), Journal of Internet Learning and Teaching (JILT), and The Journal of Internet Learning and Training (JILT)

3 The ARL Report for Distance Learning Library Services can be accessed at http://www.arl.org/aries/relserv.html
Impact on Computing & Impact on Facilities

As part of its ongoing commitment to excellence, Franklin College is upgrading the college's IT infrastructure with a focus on enhancing student access to technology and support services.

Support in Switzerland Site

This initiative will include the following:

- A PC lab consisting of 16 PCs, each equipped with 256 MB RAM, network cards, and connected to a LAN. Typical software packages include Microsoft Office 2019.
- A group workroom featuring 16 W725S client workstations with flat-panel monitors and remote control rooms with software. Automatic climate control and security keep the room at the appropriate temperature.
- VCRs, being considered for the video projector, can display computer or video content. Interactive whiteboards will be added to the workstations, allowing for the integration of interactive and multimedia resources.
- Software: MS Office, PowerPoint, CorelDRAW, Acrobat 4.0, and Adobe 3.0. The system will be Windows-compatible and other specialty software will be added for specific courses.
- Classrooms: All classrooms have overheads and VCRs. VCRs are equipped to accommodate video tapes. Some of the classrooms are currently Internet-enabled, but capabilities can be added quickly and easily, if needed.
- Library: The library also has a few PCs, but at least 10 more are planned. Students will have access to the Internet and software through the Ethernet network. Additional CDs and DVDs are available.
- Infrastructure: The campus is connected via a 10 Mbps connection. The campus is wired with 10/100 Ethernet, category 5 wiring.
- Satellite capability: No plans at this time for additional capabilities.
- In-class imports: Each class will include at least 3 people or as many as 30, as work study ensures that the IT director at Franklin College expects to empty.

Educational Technology Program—Proposed Degree Program Changes & Fig. 18
October 12, 2009

TO:    Ray Bell, Associate Dean, College of Education
       Bi Shugle, Chair, Department of Education and Human Services

FROM:  Brent M. Tregay

SUBJECT: Educational Technology On-Line Course Development Support

Based on our recent meeting concerning the proposed development of four new on-line courses for the Educational Technology Program, the estimated salary accurately outlines the instructional design and technology resources required for this initiative. Information Resources is limited for the two new instructional design positions. We will be able to support your proposed need for $90,000 to support the development of four on-line instructional technology courses over the next two years.

If you have any questions or need additional information, please let me know.

Attachment
Proposed Master's Degree in Educational Technology

Impact on Computing & Instructional Design Support

The proposed Master's degree in Educational Technology includes the delivery of at least four on-line courses. Clearly, this has direct impact on resources here at Lehigh. In meeting using Vic Proctor, the Instructional Resources, Robert Young, Raymond Bell, Libertas Davis, the College of Education, and Dr. Shapiro, Chairperson of the Department of Education and Human Services, the need for the needed resources to effectively place four courses on-line over the two-year period from fall 2001 through spring 2003 was discussed.

An estimated 1000-2000 hours of time was determined to be needed to place these courses by the time. A percentage assemblage between the resources provided by the Computing & Instructional Designers and the instructional designers provided by the College was considered. To facilitate this effort, the College of Education has committed the instructional resources of approximately 3 FTE's that would be devoted to this project (approximately $15,000 over a two-year period). It was requested that the instructional plan for the instructional designers who would work as project leads be provided.

Beyond the personnel time, hardware and software resources such as server space, software, access, and technical support are provided through the resources that are dedicated to the support of on-line courses. Some potential partnering with the Computing & Instructional Design support of on-line courses may be required.
Impact on Faculty

This program will be staffed through a combination of in-person and online course offerings. The majority of the courses listed serve double duty. That is, they are offered to both the present M.S. in Instructional Design and Development (new title) and the proposed new M.S. in Educational Technology. The two new courses (EDT 470 and 471) are projected to be shared across the Educational Technology and Technology-based Teacher Education (TBTE) programs, with the former staffed by an Ed Tech faculty member and the latter staffed by a TBTE person. The "Core" refers to the new required two-semester course, Teaching and Learning Using Technology.

In addition, each summer we would offer coursework on-site in Switzerland as suggested below (with additional offering possible). If our own staff were not interested in handling such summer offerings, we would recruit 'adjunct' faculty (most likely highly experienced faculty from other universities) to teach the courses. In order to maintain the integrity of the degree, few non-regular faculty adjuncts would be used and students would complete their degrees working with at least 3 different faculty members. A possible staffing plan is illustrated below. Courses in bold apply to this M.S. degree (excluding electives and college-wide requirements).

Educational Technology Program (with Related TBTE Faculty)
Possible Three-Year Course Staffing Cycle

<table>
<thead>
<tr>
<th>Year</th>
<th>Instructor</th>
<th>Fall Crs. 1</th>
<th>Fall Crs. 2</th>
<th>Spring Crs. 1</th>
<th>Spring Crs. 2</th>
<th>Summer - Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Core</td>
<td>EDT 425</td>
<td>EDT 425</td>
<td>EDT 471</td>
<td>EDT 471</td>
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<tr>
<td></td>
<td>New ET 1</td>
<td>EDT 470</td>
<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New ET 2</td>
<td>EDT 470</td>
<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New TBTE 1</td>
<td>EDT 470</td>
<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New TBTE 2</td>
<td>EDT 470</td>
<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prop. TBTE</td>
<td>EDT 470</td>
<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
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<tr>
<td></td>
<td>Core</td>
<td>EDT 470</td>
<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
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</tr>
<tr>
<td>2</td>
<td>Core</td>
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<td>EDT 470</td>
<td>EDT 471</td>
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<tr>
<td></td>
<td>New ET 1</td>
<td>EDT 470</td>
<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
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<tr>
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<td>EDT 471</td>
<td>EDT 471</td>
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<tr>
<td></td>
<td>New TBTE 1</td>
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<td>EDT 470</td>
<td>EDT 471</td>
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<tr>
<td></td>
<td>New TBTE 2</td>
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<tr>
<td></td>
<td>Prop. TBTE</td>
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<td>EDT 471</td>
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<tr>
<td>3</td>
<td>Core</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>New TBTE 2</td>
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<td>EDT 470</td>
<td>EDT 471</td>
<td>EDT 471</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
New ET 1 = New hire in Ed Tech (in search Spring 2001)
New ET 2 = New hire in Ed Tech (in search Spring 2001)
New TBTE 1 = New hire in Technology-based Teacher Education (in search Spring 2001)
New TBTE 2 = New hire in Technology-based Teacher Education (search Fall 2001)
Proposed Course Changes and Additions
Educational Technology Program

Courses to Be Dropped

EdT 414: Interactive Multimedia Laboratory (1)
Laboratory for location and production of multimedia resources. Must be taken with EdT 404: Interactive Multimedia Programming.

EdT 415: Advanced Interactive Multimedia Laboratory (1)
Advanced laboratory for location and production of multimedia resources. Must be taken with EdT 406: Advanced Interactive Multimedia Programming.

EdT 416: Practicum in Hypermedia/Multimedia Learning (1)
Exploration of learning with hypermedia/multimedia. Must be taken with EdT 409: Hypermedia Theory and Application.

EdT 417: Practicum in Educational Technology Foundations (1-2)
Complementary learning activities and exercises in the use of technology-based learning materials. Must be taken with EdT 407: Foundations of Educational Technology. May be taken for one or two hours of credit.

EdT 434: Practicum in Instructional Design (1)
Technology-based activities to enhance instructional design skills. Must be taken with EdT 433: Introduction to Instructional Design.

EdT 444: Practicum in Interface Design (1)
Use of technology-based learning to acquire additional interface design skills. Application of interface design skills to realistic design projects. Must be taken with EdT 443: Interface Design Principles.

EdT 454: Advanced Practicum in Instructional Design (1)
Use of technology-based learning to acquire additional instructional design skills. Application of instructional design skills to realistic design projects. Must be taken with EdT 453: Advanced Instructional Design.

Rationale

Four years ago, the Educational Technology Program moved most of its courses to 4 hours, including a series of practica and labs in which students were asked to do independent learning. Because of that change, the Educational Technology M.S. program moved to a 30 hour minimum degree.

As a result of incorporating the required two-semester long Technology-Based Teaching and Learning course (described below under new courses) and changing the nature of our course offerings, we no longer need these additional practica and labs. What was originally covered in these separate accompanying courses at now covered through the more integrated approach employed throughout our program. This means that we are once again able to reduce our M.S. degree to a 30 hour minimum degree, enabling the competitiveness in the marketplace.
Courses to Be Changed

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

**EdT 404. Interactive Multimedia Programming (3)**
Introduction to programming interactive multimedia applications in education and training. Emphasis on using event-driven, object-oriented programming to design and create applications utilizing sound, video, graphics, and computer animation. Must be taken with accompanying laboratory (EdT 40x).

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

**EdT 404. Interactive Multimedia Programming (3)**
Introduction to programming interactive multimedia applications in education and training. Emphasis on creating applications utilizing sound, video, graphics, and other digital resources.

3. Description of proposed change(s):

Drop requirement of co-registration in accompanying lab.

4. Rationale for proposed change(s):

Accompanying lab no longer required.

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

**EdT 405. Hypermedia Theory and Applications (3)**
Analysis of the theory of hypermedia and multimedia. Emphasis on the examination of current practices and research in hypermedia. Complementary course to courses on multimedia programming. Must be taken with accompanying practical (EdT 40x).

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

**EdT 405. Website and Resource Development (3)**
Introduction to resource development and HTML editing tools used in the creation of eLearning Web sites. Covers fundamentals of HTML and commercial Web creation software packages; scanners and digital video cameras; and use of digital resource creation and manipulation programs.

3. Description of proposed change(s):

Change in title & description; drop requirement of co-registration in accompanying lab.

4. Rationale for proposed change(s):

Accompanying lab no longer required. Change in focus of course reevaluates new title and description.
1. Current course number and course description (from course catalogue):

EdT 406. Advanced Multimedia Design and Programming (3)
Advanced hypertext programming techniques applied to the design and delivery of technology-based instruction. Application and design of 2-D animation. Digital audio and video. Must be taken with accompanying laboratory (EdT 406L). Prerequisite: EdT 404 or consent of instructor.

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

EdT 406. Advanced Multimedia Programming (3)
Advanced programming techniques applied to the development of technology-based instruction using commercial programming tools. Prerequisite: EdT 404 or consent of instructor.

3. Description of proposed change(s):
Change in title & description; drop requirement of co-registration in accompanying lab.

4. Rationale for proposed change(s):

Accompanying lab no longer required. Change in focus of course necessitates new description.

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

EdT 407. Foundations of Educational Technology (3)
Examines philosophy and practices instrumental in the evolution of the field of educational technology. Current and projected trends in the use of technology in education and training. Topics such as technology-based instruction, computer-based cognitive science for instructional design and technology use, and information infrastructure technologies. Must be taken with accompanying practicum (EdT 407P).

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

EdT 407. Advanced Website and Resource Development (3)
Focus on using more sophisticated Websites and digital resources development and manipulation tools to create multimedia learning materials. Prerequisite: EdT 405 or consent of instructor.

3. Description of proposed change(s):
Change in title & description; change from 2 to 3 hours; drop requirement of co-registration in accompanying practicum.

4. Rationale for proposed change(s):
Accompanying practicum no longer required. Change in focus of course necessitates new title and description.
1. Current course number and course description (from course catalogue):

EdT 433. Introduction to Instructional Design (3)
The systematic design of instruction. Emphasis on the use of instructional design models, both behavioral and cognitive, to create effective instruction. Models and processes used in education and industry. Design of instructional materials employing models used in education and industry. Must be taken with accompanying practicum in instructional design (EdT 4xx).

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

EdT 433. Instructional Design (3)
An in-depth exploration of instructional design models and philosophies and their implications for teaching and learning using technology. Systematic application of design approaches and procedures used in education and industry.

3. Description of proposed change(s):

Change in title & description; drop requirement of registration in accompanying practicum.

4. Rationale for proposed change(s):

Accompanying practicum no longer required. Change in focus of course necessitates new title and description.

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

EdT 443. Principles of Instructional Interface Design (3)
Design principles applied specifically to the creation of technology-based instructional programs. Topics include interface design, interface consistency, principles of screen layout, and attention-getting and retention-enhancing techniques. Special emphasis on multimedia and graphical user interface in education and training. Students design but do not code—technology-based lessons. Must be taken with accompanying practicum in interface design (EdT 4xx).

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

EdT 443. Principles of Interface Design (3)
Design principles applied specifically to the creation of technology-based interfaces. Special emphasis on graphical user interface in education and training, although concepts covered apply to all interfaces.

3. Description of proposed change(s):

Change in title & description; drop requirement of co-requisite in accompanying practicum.

4. Rationale for proposed change(s):

Accompanying practicum no longer required. Change in focus of course necessitates new title and description.
1. Current course number and course description (from course catalogue):

EdT 453. Advanced Instructional Design (3)
Advanced instructional design and interface issues. Design of instructional environments, selection of instructional materials, the impact of the interface on the user and demands of designing for newer learning technologies. Must be taken with the accompanying advanced practicum in instructional design (EdT 463). (Prerequisite: EdT 433 or consent of instructor)

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

EdT 453. Advanced Instructional Design (3)
Advanced instructional design and interface issues. Design of instructional environments, selection of instructional materials, the impact of the interface on the user and demands of designing for newer learning technologies. (Prerequisite: EdT 453 or consent of instructor)

3. Description of proposed change(s):
Change in description, drop requirement of co-registration in accompanying practicum.

4. Rationale for proposed change(s):
Accompanying practicum no longer required. Change in focus of course necessitates new description.

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

EdT 471. Evaluation of Technology-Based Instructional Systems (3)
Examination of current issues and practices related to the design and evaluation of instructional systems, with special consideration to the delivery and management of instruction utilizing educational technology. A case study approach will be used to study both instructional systems and the evaluation of individual learning in technology-based curricula.

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

EdT 471. Planning for Implementing Technology in School Settings (3)
Logistics of implementing technology in educational settings. Covers staffing, budgeting, and facility development and management, school development, and proposal preparation.

3. Description of proposed change(s):
Change in title & description

4. Rationale for proposed change(s):
This course is being modified to meet the needs of the new Educational Technology M.S. program. It satisfies onehalf of the technology implementation requirement of that new program.
New Courses to Be Added:

New course

EdT 4xx/Educ 4xx. Technology-Based Teaching and Learning 1: Foundations and Issues (3)

Proposed Description:
Historical, philosophical, psychological, and curricular foundations of teaching and learning with technology. All students will acquire technical skills for use in this and subsequent courses. (Must be taken in sequence with EdT 4xx Technology-based Teaching and Learning 2: Methods & Assessment).

Rationale:
This is a new course in the two-course "Shared Core" sequence to be required by both the Technology-based Teacher Education (TBTE) and Educational Technology (EdT) programs. It is one of the foundational courses that would now be required of all students in either program. It subsumes content previously taught in multiple courses in both programs. This first course in the sequence focuses on helping students identify learning problems and formulate systematic instructional approaches to address those problems. Using a two-course sequence and requiring it as one of the first courses in the program acts to create student cohorts and increases predictability of course scheduling. The course is cross-listed by program here thus EdT and TBTE prefixes.

New course

EdT 4xx/Educ 4xx. Technology-Based Teaching and Learning 2: Methods and Assessment (3)

Proposed Description:
Second course in a two-course sequence, this course explores ways to determine the effectiveness of technology-based teaching and learning methods and products. Emphasis on identifying best practices in the use of technology. Has a strong research component. (Must be taken in sequence with EdT 4xx Technology-based Teaching and Learning 1: Foundations & Issues).

Rationale:
This is a new course in the two-course "Shared Core" sequence to be required by both the Technology-based Teacher Education (TBTE) and Educational Technology (EdT) programs. It is one of the foundational courses that would now be required of all students in either program. It subsumes content previously taught in multiple courses in both programs. This second course in the sequence focuses on helping students learn to evaluate technology-based products and identify ways to increase the effective use of such products in educational/practical settings. Using a two-course sequence and requiring it as one of the first courses in the program acts to create student cohorts and increased predictability of course scheduling. The course is cross-listed by program here thus EdT and TBTE prefixes.
EdT 470. Technology Across the Curriculum (3)

New course

Proposed Description:
Curricular issues related to using technology in various school settings. Technology's varying roles in schools. Emphasis on instructional and curricular concerns and how technology affects educational decisions.

Rationale:
This is a new course required to fill one of the requirements of the new Educational Technology program. It satisfies one half of the technology implementation requirement of the new program.
MEMORANDUM

TO: Bruce Carroll
   Registrar

FROM: P. A. Blythe
   Associate Dean for Graduate Studies, RCEAS

DATE: March 8, 2001

RE: Graduate Course & Curriculum Changes, RCEAS

The attached changes are summarized below:

1. Withdrawn
2. MS in Photonics (new program)
3. Graduate Co-op program and course change
4. RCEAS: new Engineering Applied Math course
5. New course in Materials Science & Engineering
6. EECS catalog changes (ECE & CSo)
7. IMSE catalog changes
8. MEM new IPD courses
9. Ch.E. new course
Graduate and Research Committee

Proposed New Program: MS in Photonics

1. Proposed new program mission statement:

   The Masters of Science Degree in Photonics is an interdisciplinary degree that is
designed to provide students with a broad training experience in the various aspects of
photronics, including topics in Physics, Electrical Engineering and Materials Science &
Engineering.

2. Rationale for proposed new program:

   The present situation is extremely favorable for an advanced degree program in
Photonics for two reasons: 1) There is a high level of personnel demand in
telecommunications, many companies are short of people and/or often the current
workforce is not sufficiently trained. 2) Few schools presently offer such an advanced
degree. The program we propose is broad in scope, involving Materials Science and
Engineering, Physics, and Electrical Engineering, which makes it unique amongst other
programs being put together. Lehigh is in a good position to have a successful degree
program because of its close contacts with both Lucent and Corning, and potentially new
contacts with a number of start-ups in our part of the country.

3. Description of proposed new program:

   a. Admission criteria:

      (1) minimum requirements

         B.S. or MS in Physical Sciences or Engineering

      (2) background courses required

         Introductory undergraduate course sequence in physics and mathematics

      (3) examination(s) (e.g., GRE, GMAT, etc.) required

         Depends on admitting department.

      (4) language requirement for foreign students

         Same as the University requirements

      (5) application process for interdisciplinary programs

         Apply to one of the three sponsoring departments (Electrical Engineering,
         Materials Science and Engineering, or Physics). Application procedure and
         admission criteria are the same as that followed by the home department. Process
will be under the supervision of an inter-departmental coordinating committee chaired by the program director.

(e)  admission deadline
Same as the home department's admission deadline.

b. Specific degree requirements:

Master's Degree:

(1) course requirements (new or existing)

Required Courses (15 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phy 325</td>
<td>Modern Optics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(Prerequisite: Math 201, Phy 212 / ECE 202)</td>
<td></td>
</tr>
<tr>
<td>Phy 330/435</td>
<td>Laser and Nonlinear Optics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(Prerequisite: Phy 211, Phy 212 / ECE 201)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>(Must have passed Math 121, ECE 201)</em></td>
<td></td>
</tr>
<tr>
<td>ECE 444/445</td>
<td>Microwave Technology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(Prerequisite: ECE 205)</td>
<td></td>
</tr>
<tr>
<td>ECE 372/472</td>
<td>Optical Networks</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(Prerequisites: ECE 481)</td>
<td></td>
</tr>
<tr>
<td>Mat 496</td>
<td>Photonic Materials</td>
<td>3</td>
</tr>
</tbody>
</table>

*Selected pre-requisites for the required courses may be waived by the program director for students with equivalent background.

A minimum of three courses must be selected from the following list:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 371/471</td>
<td>Optical Information Processing</td>
</tr>
<tr>
<td>ECE 340/447</td>
<td>Introduction to Integrated Optics</td>
</tr>
<tr>
<td>ECE 407</td>
<td>Linear and Nonlinear Optics</td>
</tr>
<tr>
<td>ECE 411</td>
<td>Physics of Semiconductor Devices</td>
</tr>
<tr>
<td>Phy 363</td>
<td>Solid State Physics</td>
</tr>
<tr>
<td>Phy 369</td>
<td>Quantum Mechanics</td>
</tr>
<tr>
<td>Phy 421/422</td>
<td>Electricity and Magnetism</td>
</tr>
<tr>
<td>Mat 362</td>
<td>Electromagnetic Properties of Materials</td>
</tr>
<tr>
<td>ECE 423/427</td>
<td>Electron Microscopy (TEM and SEM)</td>
</tr>
<tr>
<td>Mat 410</td>
<td>Ocean Science</td>
</tr>
<tr>
<td>Phy 412/412</td>
<td>Advanced Laboratory in Photonics</td>
</tr>
<tr>
<td>ECE 573/573</td>
<td>Optical Communications Laboratory</td>
</tr>
</tbody>
</table>
4. Academic Impact Statement:
   a. Is this proposed new program interdisciplinary?
      Yes
   b. Identify any known effects of the proposed new program on other programs at the University.
      Positive impact is expected on other programs in physical sciences and engineering by attracting more students, and by providing more optional courses to their students. The interdisciplinary nature of this program will promote diverse interactions between the departments and colleges.
   c. 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:
      (1) Who was consulted?
          The faculty of the home departments
      (2) Is the proposed new program acceptable to the affected programs?
          Yes. The program has been approved by the faculty of the home departments and the respective colleges.
      (4) Will any changes be required in the affected programs? If so, describe.
          None.
   e. Identify any known effects of the proposed new program on the University's commitment to diversity.
      N/A

5. Resource Impact Statement:
   a. Provide each of the following
(1) Library impact statement

The collection of journals and research monographs in the areas of photonics/ optoelectronics/ optics/ optical materials may need to be enhanced.

(2) Computer impact statement

None.

(3) Faculty impact statement

One new course has already been introduced this semester. The proposed program will benefit from new faculty appointments in the three home departments.

(4) Facilities impact statement

In its first phase, this new program is making use of existing resources. All required courses are already being offered. One of the two optional labs needs upgrading (Advanced Laboratory in Photonics), and the other one (Optical Communications Laboratory) needs to be established. Development of these laboratories would greatly enhance the program. This will require new equipment and one technician (cost for the two labs should be envisaged to be between $400K and $600K and could be obtained from external funding and/or the University investment fund for new programs).

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

Vice Provost of Research
Graduate and Research Committee

Proposed New Program

Graduate Co-op Program

1. Proposed new program mission statement:

Provide a mechanism that allows graduate students to interact with industry, government laboratories, etc., as part of their degree programs. Research/industrial projects should be complementary to the student's research program at Lehigh University.

2. Rationale for proposed new program:

- Attract a broader student population
- Strengthen industrial ties: teach industrial practices
- Generate new funding sources

3. Description of proposed new program:

The P.C. Rossin College of Engineering and Applied Science permits graduate students to spend part of their research experience in industry, business, or a government agency. In general, the external research experience should be complementary to their graduate studies at Lehigh University and can count towards their degree program through Engr 400 (Engineering Co-op for Graduate Students) and through the dissertation credits (see below).

MS/ME/Eng Co-op degrees

- Engr 400 can be taken for a maximum of 6 credits, with at most 3 credits in any registration period.
- A further 6 credits for thesis/project/independent study can be part of the industrial experience.
- Minimum of 18 course credit hours, excluding Engr 400 and AE 490 (thesis, etc.) must be obtained through Lehigh University.
Ph.D. program

- Beyond the master's program, Engr 499 can be taken for a maximum of 9 credits, with at most 3 credits in any registration period.
- In addition to Engr 499, a maximum of 9 dissertation credits (AA 499) can also be obtained as part of the co-op experience.

Work experience

- Subject to university/federal regulations, when enrolled in courses at Lehigh University, a student can work for a maximum of 20 hours at the company/laboratory (co-op partner). If not enrolled in courses other than Engr 490 and for thesis/dissertation credits (AA 490/499), a student will be permitted to work full time at the co-op partner. Full time employment over the summer will also be permitted.

Full-time status

- To maintain full-time status, students must be registered for the minimum number of credit hours as listed in R&D.

a. Admission criteria:

Students have already been admitted for graduate study in a department within RCEAS. All departmental requirements must be satisfied.

b. Specific degree requirements:

Master's Degree:

No changes are made in the requirements of the participating departments in RCEAS.

Doctoral Degree:

No changes are made in the requirements of the participating departments in RCEAS.

4. Academic Impact Statement:

a. Is this proposed new program interdisciplinary?
This will depend on the students/departments/industrial partners involved.

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

It should stimulate industrial interactions.

c. 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:

(1) Who was consulted?

All departments within KCEAS were consulted.

(2) Is the proposed new program acceptable to the affected programs?

Yes.

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

None.

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

None.

5. Resource Impact Statement:

a. Provide each of the following:

(1) Library Impact statement

None.

(2) Computer Impact statement

None.

(3) Faculty Impact statement

None.

(4) Facilities Impact statement

None.
c. Provide a statement indicating who will assume financial responsibility for any new resources required:

   It is expected that the industrial partner/business etc. will finance all industrial aspects of the cooperative work assignment.
Graduate and Research Committee

Proposed New Course

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

   **ENGR 400**: Mathematical Methods in Engineering
   Analytical techniques are developed for the solution of engineering problems described by algebraic systems, and by ordinary and partial differential equations. Topics covered include: linear vector spaces; eigenvalues, eigenvectors, and eigenfunctions. First and higher-order linear differential equations with initial and boundary conditions; Sturm-Liouville problems; Green's functions; Special functions: Bessel, etc. Qualitative and quantitative methods for nonlinear ordinary differential equations; phase plane. Solutions of classical partial differential equations from the physical sciences: transform techniques; method of characteristics.

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

3. Rationale for proposed new course:
   The primary rationale for this Engineering-wide course is to indicate to students in all engineering departments that mathematical methods provide a basic tool that is useful across every engineering discipline. The Engineering number (ENGR 400) is used to show that it provides a necessary background independent of technical specialization. Adoption of the course will lead to a reduction in faculty teaching loads within the Civil and Chemical Engineering Departments. If other departments elect to participate, further reductions in teaching loads will occur.

4. Academic impact statement:
   a. Is this proposed course cross-listed?
      
      The course will use an Engineering designation – i.e., it is a College rather than a departmental course.

   b. Identify any known effects of the proposed new course on other programs at the University. Will reduce the teaching load in departments that participate.

   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?
All departments in RCEAS.

(2) Is the proposed new course acceptable to the affected programs?
Yes.

(3) Will any changes be required in the affected programs? If so, describe.
None.

d. Identify any known costs of the proposed new course on the University's commitment to diversity.
None.

S. Resource Impact Statement:
a. Provide each of the following:
   (1) Library impact statement
   None.

   (2) Computer impact statement
   None.

   (3) Faculty impact statement
   Reduce teaching load in participating departments.

   (4) Facilities impact statement
   None.

b. Provide a statement indicating who will assume financial responsibility for any new resources required:
   New resources will not be required.
New Course: Department of Materials Science and Engineering

Course Description for Listing in the Catalog

MAT 4XX Photonic Materials (3 credits)
Prerequisites: MAT 302 or consent of instructor. Jain.

Background and Rationale
Photonic is a rapidly expanding field of science and technology that exploits light and its interaction with matter. It is becoming critical for a number of applications, particularly in the field of telecommunications and information. Present and future technological advances rely on the development and discovery of optical materials. Clearly, there is need for a course on photonic materials, distinct from traditional courses offered on optics, or the optical properties of materials. The new course will begin with the description of the various optical functions and the corresponding material requirements in telecommunications. The fundamental origin of relevant optical and cross-optical phenomena will be described and connected with the structure and properties of materials. The available choices of existing and new potential materials will be discussed. The issues related to the synthesis and performance of materials will also be covered in the course.

The proposed course will be optimized for graduate students in Materials Science & Engineering, Physics, EE, and Chemistry but can also serve advanced undergraduates interested in the subject. It will be a required course for those intending to obtain MS in Photonics (proposed). An experimental version of the proposed course is being taught currently by Professor Jain. Ten graduate students are taking it for credit; three of them are part-time students from industry.

Impact on University Resources
At present, the course is intended for teaching primarily in the lecture mode; no laboratory is planned. So its major impact will be that the other elective graduate courses by the instructor will have to be offered less frequently. This zero-gain in the variety of graduate curriculum is expected to improve with the hiring of new faculty in the Department. Apparently, no such course is offered anywhere, and thus the proposed course is attractive also for remote teaching. At present, all the lecture material is being made available to the students as a collection of transparencies. Initial support for further "webization" of the presentation is being provided by the Materials Research Center. Support of the Media/Instructional Services will be needed next time when it is actually offered over the web.
The following courses are in a new thrust area in Photonics (joint with Physical and Materials Science) and in Optoelectronics.

New courses:

ECE 447 Introduction to Integrated Optics (3)
Catalog Description: Theory of dielectric waveguides (ray and wave approach). Modes in planar slab optical guides and in waveguides with graded index profiles. Coupled-mode formalism and periodic structures. Coupling of optical beams to planar structures. Switching and modulation of light in dielectric guides. Phase, frequency and polarization modulators; electro-optic, acousto-optic and magneto-optic modulators. Semiconductor lasers. Fabrication of semiconductor components. Recent advances. The course is an extension of ECE 347 for graduate students and it will include research projects and advanced assignments. Prerequisites: ECE 202 and ECE 203.

Remarks: This course is part of a planned interdisciplinary MS in Photonics to be offered jointly with Physical and Materials Science. This course is intended for MS and PhD students. The course is an extension of ECE 347 for graduate students and it will include research projects and advanced assignments.

Faculty Lead: Professor Christodoulides and McNamay can teach this course. Future hires in optoelectronics can also teach this course.

Library Impact: This course will need the library to subscribe to all relevant journals and continue to purchase all new books in the field.

Computer and Laboratory Resources: No new computer or laboratory resources are required.
Prepared by Professor Demetri Christodoulides 1/15/00.

ECE 488 Lightwave Technology (3)
Catalog Description: Overview of optical fiber communications. Optical fibers, structures and waveguiding fundamentals. Signal degradation in fibers arising from attenuation, intermodal and intermodal dispersion. Optical sources, semiconductor lasers and LEDs. Rate equation and frequency characteristics of a semiconductor laser. Coupling efficiency of laser diodes and LEDs to single-mode and multimode fibers. PIN and avalanche photodetectors. Optical receiver design. Transmission link analysis. The course is an extension of ECE 348 for graduate students and it will include research projects and advanced assignments. Prerequisite: ECE 203.

Remarks: This course is part of a planned interdisciplinary MS in Photonics to be offered jointly with Physical and Materials Science. This course is intended for MS and PhD students. The course is an extension of ECE 348 for graduate students and it will include research projects and advanced assignments.

Faculty Lead: Professor Christodoulides and McNamay can teach this course. Future hires in optoelectronics can also teach this course.

Library Impact: This course will need the library to subscribe to all relevant journals and continue to purchase all new books in the field.

Computer and Laboratory Resources: No new computer or laboratory resources are required.
Prepared by Professor Demetri Christodoulides 1/15/00.
ECE 471 Optical Information Processing (3)

Catalog Description: Introduction to optical information processing and applications, interference and diffraction of optical waves, 2D optical matched filters that use lenses for Fourier transforms, Methods and devices for modulating light beams for information processing, communications, and optical computing. Construction and application of holograms for optical memory and interconnections. The course is an extension of ECE 371 for graduate students and it will include research projects and advanced assignments. Prerequisite: ECE 188.

Rationale: This course is part of a planned interdisciplinary MS in Photonics to be offered jointly with Physics and Materials Science. This course is intended for MS and PhD students. The course is an extension of ECE 371 for graduate students and it will include research projects and advanced assignments.

Faculty Load: Professors McAuley and Christodoulides can teach this course. Future hires in optoelectronics can also teach this course.

Library Impact: The course will need the library to subscribe to all relevant journals and continue to purchase all new books in the field.

Computer and Laboratory Resources: No new computer or laboratory resources are required. The laboratory in Packard Lab 227 is already in place to support this course.

Prepared by Professor Alastair McAuley 11/15/00.

ECE 472 Optical Networks (3)

Catalog Description: Study the design of optical fiber local, metropolitan, and wide area networks. Topics include: passive and active photonics components for optical switching, tuning, modulation and amplification; optical interconnection switches and buffering; hardware and software architectures for packet switching and wavelength division multiplexed systems. This class is supported with a laboratory. The course is an extension of ECE 372 for graduate students and it will include research projects and advanced assignments. Prerequisite: ECE 81.

Rationale: This course is part of a planned interdisciplinary MS in Photonics to be offered jointly with Physics and Materials Science. This course is intended for MS and PhD students. The course is an extension of ECE 372 for graduate students and it will include research projects and advanced assignments.

Faculty Load: Professors McAuley and Christodoulides can teach this course. Future hires in optoelectronics can also teach this course.

Library Impact: The course will need the library to subscribe to all relevant journals and continue to purchase all new books in the field.

Computer and Laboratory Resources: No new computer or laboratory resources are required. The laboratory in Packard Lab 227 is already in place to support this course.

Prepared by Professor Alastair McAuley 11/15/00.
ECE 473 Optical Communications Laboratory (2)

Catalog Description: Fundamental optical instrumentation used for test and measurement in optical communications. The theoretical principles of operation of the instruments and the significance of the parameters measured in optical communications will be covered. Fields of measurement include: optical power, optical spectrum analysis, wavelength measurement, laser diode characterization, polarization analysis, modulation analysis, insertion loss measurements, optical reflectometry for component characterization, optical time domain reflectometry and backscatter measurements, dispersion measurement, and characterization of fiber amplifiers. The course is an extension of ECE 373 for graduate students and it will include research projects and advanced assignments. Prerequisite: ECE 347 or ECE 348 or ECE 371 or ECE 372, or equivalent.

Prerequisites: The course is part of a planned interdisciplinary MS in Photonics to be offered jointly with Physics and Materials Science. This class is one of the few courses in the field of optical communications, and the practicality of working in this field. Given the explosion of jobs in the field of fiber optic communication, we would expect this class to have large enrollments. The number of students will be limited by resources in a weekly three hour laboratory part of the course to approximately 20. A lecture part of the course will be one hour per week. The course focuses on practical optical instrumentation and will have assignments relative to ECE 373.

Faculty: A faculty knowledgeable in optical communications is required to teach the class. Professors McAuley and Christodoulides can teach the lecture part of the course. Other teachers include anticipated new faculty hires in optics and physics optics faculty. A qualified full time technician or assistant is needed for the laboratory part of the course and is being requested as part of a proposed interdisciplinary (Physics, Materials Science and ECE) MS in Photonics program.

Library Impact: The course is expected to have a large impact on library resources assuming the library purchases new books on this topic as they become available.

Computer and laboratory requirements: Current equipment includes an HP 1.5 Gbps generator and bit error analyzer, a 20 GHz digital communications analyzer, and some old equipment that needs repairing or replacing such as an optical time domain reflectometer and an optical wavemeter. Several important instruments are needed such as an optical spectrum analyzer, tunable laser, optical amplifier, lightwave multiplexer, lightwave signal analyzer, and polarization controller and analyzer. Approximately 1000 square foot space is required for this laboratory. It needs laboratory benches and a single small size optical table. The department has a separate laboratory with two large optics tables which is primarily devoted to test space optics. The space and equipment resources are being requested as part of a proposed interdisciplinary (Physics, Materials Science and ECE) MS in Photonics program. Proposed by Professors Alastair McAuley and Dimitri Christodoulides, 11-14-2000
CS Division - Course and Curriculum Changes

Below are curricular changes proposed by the CS Division:

3. CSE 411

Prior Description

CSE 411. Advanced Programming Techniques (3) spring.

Deeper study of structured programming, data structures, backtracking, recursion. Applications of basic concepts of automata theory and formal language theory. Fundamental principles of "large program" design. Several major programming assignments using Pascal.

Prerequisite: CSE 17 or consent of the division head.

Proposed Description

CSE 411. Advanced Programming Techniques (3)

Deeper study of programming techniques, data structures, backtracking, recursion. Applications of basic theoretical disciplines such as automata theory and formal language theory. Assignments using a contemporary programming language. Prerequisite: CSE 17 or consent of division head.

Rationale: The proposed description more accurately reflects the material covered in the course.

Impact on Resources: The change in description should have no detrimental impact on resources.

Note on CSE 17 as a prerequisite to CSE 411: CSE 17 is a quite demanding course whose
main audience consists of sophomores and juniors. It is numbered below 100 to give prospective
CS majors in the Arts and Science College the opportunity to take it in the second semester of their
first year (CS and Comp majors in the Engineering College take it in their sophomore year).

Second, a number of our graduate students come to the CS major from other disciplines and
competence equivalent to mastery of the material in CSE 17 is required for admission. Having
CSE 17 as a prerequisite to CSE 411 makes this requirement explicit.

Courses to Drop

2. CSE 418. Uncertainty in Knowledge-Based Systems (3)

Rationale: The course has not been taught in a number of years.
DATE: January 31, 2001

SUBJ: Course changes

I. Course deletions:
   Drop IE 421. Nontraditional Manufacturing Processes (3)
   Drop IE 426. Artificial Neural Networks (3)
   Drop IE 429. Artificial Intelligence Techniques in Combinatorial Optimization (3)

II. Course title changes:
   Change title of IE 409 from "Data Dependent Systems" to "Time Series Analysis". No change in course description.

III. Course additions: Add the following courses.

   IE 4XX. Heuristic Methods in Combinatorial Optimization (3)
   Heuristic methods for solving combinatorial and discrete optimization problems such as routing, scheduling, partitioning and layout. Topics: introduction to NP-completeness theory, exact and intuitive methods, performance analysis, fast and greedy heuristics, Lagrangian heuristics, and various search techniques including simulated annealing, genetic algorithms, Tabu search and iterative constructive heuristics. Prerequisites: IE 316 or the equivalent and good programming skills.

   Rationale: This course was taught under an experimental rubric in F98 by Prof. Stocker. It is similar to the previous IE 429, but since both the title and description are being changed, it is being introduced as a new course. The department would like to add it to our permanent list of offerings to complement our operations research and management science programs.

   Resources: (a) Faculty. This course can be taught by present faculty member R. Stocker or others. (b) Laboratory. No laboratory is required other than existing computer facilities. (c) Library. No new library resources are required. (d) Computing. No additional computing facilities are required. The computing load for this course is moderate.

   IE 4XY. Discrete Optimization (3)
   Discrete optimization methods applied to decision analysis and optimization problems in production, transportation, logistics, and other areas. Modeling, computational and theoretical issues in discrete optimization. Topics: polyhedral theory, theory of valid inequalities, duality and relaxation, computational complexity, computational methods, and special purpose algorithms. Prerequisites: IE 220 or equivalent.

   Rationale: This course was taught under an experimental rubric in S98 by Prof. Wu. The department would like to add it to our permanent list of offerings to complement our operations research and management science programs.

   Resources: (a) Faculty. This course can be taught by present faculty member D. Wu or others. (b) Laboratory. No laboratory is required other than existing computer facilities. (c) Library. No new library resources are required. (d) Computing. No
additional computing facilities are required. The computing load for this course is moderate.

IE 4XZ. Assembly Processes and Systems (3)

Rationale: This course was taught twice under experimental numbers in 98 and 00 by Prof. Groover. The department would like to add it to our permanent list of offerings to complement our manufacturing systems program.

Resources: (a) Faculty. This course can be taught by any of the present faculty members M. Groover, N. Odrey, or G. Tunkay. (b) Laboratory. No laboratory is required. (c) Library. No new library resources are required. (d) Computing. No additional computing facilities are required.

IE 4YY. Quantitative Models of Supply Chain Management (3)
Analytical models for logistics and supply chain coordination. Modelling, analysis, and computational issues of production, transportation, and other planning and decision models. Topics: logistics network configuration, risk pooling, stochastic decision-making, information propagation, supply chain contracting, and electronic commerce implications. Prerequisites: IE 316 or equivalent; knowledge of mathematical programming.

Rationale: This course was taught under an experimental number in 98 by Prof. Wu and is now being offered again in 01. The department would like to add it to our permanent list of offerings to complement our operations research, management science, and logistics engineering programs.

Resources: (a) Faculty. This course is taught by present faculty member D. Wu. (b) Laboratory. No laboratory is required other than existing computer facilities. (c) Library. No new library resources are required. (d) Computing. No additional computing facilities are required. The computing load for this course is moderate.

IE 4YY. Advanced Engineering Economy and Replacement Analysis (3)
Measuring economic worth, economic optimization under constraints, analysis of economic risk and uncertainty. Emphasizes analytical methods to evaluate the economic desirability of replacement and renovation options in capital investment. Prerequisites: IE 220 and IE 216 or equivalents.

Rationale: This course was taught under an experimental number in 99 by Prof. Hartman. The department would like to add it to our permanent list of offerings to complement our operations research, management science, and logistics engineering programs.

Resources: (a) Faculty. This course can be taught by present faculty member J. Hartman. (b) Laboratory. No laboratory is required other than existing computer facilities. (c) Library. No new library resources are required. (d) Computing. No additional computing facilities are required. The computing load for this course is moderate.
IE 472: Discrete Event Dynamic Systems (3)

Modeling of Discrete Event Dynamic systems (DEDS) particularly as applied to industrial systems. Modeling procedures with focus on Petri Nets. Topics: hierarchical Petri Net modeling, performance analysis, behavioral and structural properties, and various synthesis and analytical techniques. Relationships to state space concepts, simulation, and finite state automata are introduced. Emphasis on use of such nets for the control of industrial systems. Prerequisite: Permission of instructor.

Rationale: Production systems are principally event driven. This course aims to provide an overview of the techniques to describe such systems and, in particular, on the use of Petri Nets to model the dynamics of such systems. Such nets are commonly used in information technologies and have proved useful to model and control discrete event driven dynamic systems. Our focus is to provide a strong foundation for the use of such nets in a production (manufacturing) environment. The course should also provide strong links to information systems engineering emphasis within the department and college. There currently is no such course offered in the college. This course was taught under experimental numbers in Seminars 99 and 906 by Prof. Oder. The department would like to add it to our permanent list of offerings to complement our manufacturing systems and management science programs.

Resources: (a) Faculty. This course can be taught by present faculty member N. Oder. (b) Laboratory. No laboratory is required other than existing computer facilities. (c) Library. No new library resources are required. (d) Computing. No additional computing facilities are required. Free-ware for modeling and analyzing Petri Nets is available and can be downloaded from the web.

IE 473: Intelligent Manufacturing Systems (3)

Informational control structures, architectures, and analysis techniques for autonomous and semi-autonomous manufacturing systems. Topics: system architectures and techniques; knowledge-based systems in production, and techniques based on fuzzy systems and neural networks. Applications in manufacturing systems control, process planning, and design and management problems in newly developing manufacturing and production systems. Prerequisite: Permission of instructor.

Rationale: Modern manufacturing systems have become increasingly knowledge based and computer integrated. Remarkable growth has occurred in these areas of artificial intelligence and its applications to engineering design and manufacturing planning and control. A purpose of this course is to provide students with the constructs and techniques for what is termed intelligent manufacturing systems, and provides the relationships to the traditional functions of production systems. Emphasis will be on the planning and control issues that occur in such systems. The intent of this course is to provide a foundation for subsequent research that could contribute to efficient and intelligent manufacturing systems. Elements of this course have been taught in previous courses under experimental numbers.

Resources: (a) Faculty. This course can be taught by present faculty member N. Oder. (b) Laboratory. No laboratory is required other than existing computer facilities. (c) Library. No new library resources are required. (d) Computing. No additional computing facilities are required.
Catalog Description (new course)
ME 401. Integrated Product Development (IPD) (3) fall
An integrated and interdisciplinary approach to engineering design, concurrent engineering, design for manufacturing, industrial design and the business of new product development. Topics include design methods, philosophy and practice, the role of modeling and simulation, decision making, risk, cost, material and manufacturing process selection, platform and modular design, mass customization, quality, planning and scheduling, business issues, teamwork, group dynamics, creativity and innovation. The course uses case studies and team projects with international partners. Ochs

Rationale for ME 401:
This course has been taught in its present form for the last two fall semesters under ME 450 Special Topics with 12 and 9 students respectively. It has been selected to be part of the Mechanical Engineering and Mechanics (MEM) core course requirements for Masters of Science and Ph.D. in MEM. It is also a key course for the masters of engineering in MEM with an IPD focus.

Academic Resource Impact Statement for ME 401
A) Instructional Mode: Lecture
   Instructor: Professor John B Ochs
   Contact Hours: 3/week

B) Academic Implications:
   1. Are there any known effects of the proposed course changes on other programs at the university? No
   2. If there are known effects, have the people in charge of the affected programs been consulted? Not applicable
   3. Indicate if any of these courses that are constrained. Not applicable

C) Resource Implications:
   1. Resource requirements
      i) Library (IR) impact: Students will use the on-line IBM patent search, Thomas Registry and Internet access.
      ii) Computer impact: In order to meet the course deliverables, the students will use the MEM CAD lab to create 3D models. Experience has shown that the faculty student use of these facilities has not been a burden. There is often excellent synergy between the graduates and the undergraduates who use these facilities.
      iii) Facility impact: This course is part of Professor Ochs' yearly 3-2 teaching load.
      iv) Facilities impact: In order to meet the course deliverables, the students will use the MEM student shop to create prototypes. Experience has shown that the faculty students' use of these facilities has not been a burden. There is often excellent synergy between the graduates and the undergraduates who use these facilities.
2. Are resources required above available from the Department budget? Yes, no new resources required.

3. If non-budget resources are required, please indicate the magnitude and availability (source timing, terms etc) of these resources. Not Applicable.
Catalog Description (new course)
ME 402. Advanced Manufacturing Science (3) spring
The course focuses on the fundamental science-base underlying manufacturing processes and applying that science base to develop knowledge and tools suitable for industrial utilization. Selected manufacturing processes representing the general classes of material removal, material deformation, material phase change, material flow, and material joining are addressed. Students create computer-based process simulation tools (independently as well as utilize leading commercial process simulation packages). Laboratory experiences are included throughout the course.

Rationale for ME 402:
The course has been taught in its present form for the last two spring semesters under ME 480 Special Topics with 8 and 16 students respectively. It has been selected to be part of the Mechanical Engineering and Mechanics (MEM) core course requirements for Masters of Science and Ph.D. in MEM. It is also a key course for the masters of engineering in MEM with an IPD focus.

Academic/Resource Impact Statement for ME 402
A) Instructional Mode: Lecture and lab
   Instructors: Professor John Coulter and Professor Herman Neid
   Course Hours: 2hrs

B) Academic Implications:
1. Are there any known effects of the proposed course changes on other programs at the university? No
2. If there are known effects, have the people in charge of the affected programs been consulted? Not applicable
3. Indicate if any of these courses that are crosslisted. Not applicable

C) Resource Implications:
1. Resource requirements
   i) Library (LR) impact: Students need Internet access.
   ii) Computer impact: In order to meet the course deliverables, the students will use the MEM CAD lab to create 3D models and various manufacturing simulations in 1-Des and other commercial packages.
   Experience has shown that the graduate students’ use of these facilities has not been a burden. There is often excellent synergy between the graduates and the undergraduates who use these facilities.
   iii) Faculty impact: This course is part of Professor Coulter’s and Professor Neid’s yearly 3-2 teaching loads.
   iv) Facilities impact: In order to meet the course deliverables, the students will use the MEM student shop and other labs. Experience has shown that the graduate students’ use of these facilities has not been a burden. There is often excellent synergy between the graduates and the undergraduates who use these facilities.
2. Are resources required above available from the Department budget? Yes, no new resources required.

3. If non-budget resources are required, please indicate the magnitude and availability (source, timing, terms, etc.) of these resources. Not Applicable
Catalog Description (new course)

ME 461: Industry sponsored Integrated Product Development Project (IPD) project. The student works with an industry sponsor to do a technical and economic feasibility study of new product development. Selection and content of the project is determined by the faculty project advisor in consultation with the industry sponsor. Deliverables include progress and final reports, oral presentations and posters. Prerequisites: Consent of the department chair and faculty project advisor.

Course Description:
The student, faculty advisor and company supervisor must meet to determine a new product development project that meets both the course and company criteria for scale, technical appropriateness and timeline. Technical and business modeling are encouraged throughout. Regularly scheduled faculty-student-industry sponsors meetings with progress reports provide the student with feedback. Students are encouraged to take both ME 461 and ME 462 but they can be taken independently and on different topics.

Course topics include: product classification, selection and rationale for the IPD process. Development team make up, purpose and objectives of the project, strategic importance and projected impact of the product. Customer identification and needs analysis, literature and competitive product search, patent search, market size and potential competitive benchmarks and competitive maps of key performance features, reverse engineering of competitors products, target specifications, constraints and standards, legal issues, target price, market strategies and channels, functional diagram of the overall system, performance models and simulations, industrial design assessment, concept generation and selection, product architecture and geometric layout, application of design for manufacturing and assembly, green product evaluation, identification of competitive manufacturing advantage, bill of materials, prototype cost, build or buy decisions, vendor selection/relationship, base case financial model, break even analysis, investment and risk analysis, sensitivity analysis, final decision and rationale to continue to production.

Catalog Description (new course)

ME 462: Industry sponsored Integrated Product Development Project (IPD) projects. The student works with an industry sponsor to create detailed design specifications, fabricate and test a prototype new product and plan for production. Selection and content of the project is determined by the faculty project advisor in consultation with the industry sponsor. Deliverables include progress and final reports, oral presentations, posters and a prototype. Prerequisite: Consent of the department chair and faculty project advisor.

Course Description:
The student, faculty advisor and company supervisor must meet to determine a new product development project that meets both the course and company criteria for scale, technical appropriateness and timeline. Technical and business modeling are encouraged throughout. Regularly scheduled faculty-student-industry sponsors meetings with...
progress reports provide the student with feedback. Students are encouraged to take both ME 461 and ME 462, but they can be taken independently and on different topics.

Topics include: Geometric modeling of the proposed system, subsystems and components, generation of engineering drawings, collaboration with suppliers, creation of models, parts and prototypes, analysis, optimization, review of key features to be tested, testing objectives and methods, prototype construction and fabrication, description of tests to be performed, test data analysis, critique of prototype(s) by management and customers, changes in the design and rationale, planning for production revisited base case financial model, develop business case to invest in production ramp up, and other production issues, project support issues, product replacement strategies and plan.

Rationale for both ME 461 and ME 462:
Over the past 4 years, the IPD masters program has averaged 6 students per year working on an industry sponsored project or location at the company while under faculty supervision. This was done under ME 460, Engineering Projects. These two new courses would allow us to differentiate between those with industry sponsorship and those without. It would allow the faculty to better differentiate between the many engineering projects and the new product development focus of the MEM department's graduate program in IPD. These courses would be offered in the winter sessions, fall and spring.

Academic/Resource Impact Statement for ME 461 and ME 462
A) Instructional Mode: Independent Study
   Instructor: To be determined
   Contact Hours: 3/wk

B) Academic Implications:
   1. Are there any known effects of the proposed course changes on other programs at the university? These courses will impact the IPD program for travel budget.
   2. If there are any known effects, have the people in charge of the affected programs been consulted? Yes. Professor Ochoa directs the IPD program and has budget travel money for faculty involved in these projects.
   3. Indicate if any of these courses that are consolidated. Not applicable.

C) Resource Implications:
   1. Residence requirements
   1) Library (IR) impact: Students need Internet access.

   i) Computer impact: In order to meet the course deliverables, the students will use the MEM CAD lab to create 3D models and various manufacturing simulations in l-Design and other commercial packages. Experience has shown that the graduate students' use of these facilities has not been a burden. There is often excellent synergy between the graduates and the undergraduates who use these facilities.
(ii) Faculty impact: Graduate projects are expected (and for every faculty member involved with graduate education. Travel to company locations is required.

(iv) Facilities impact: In order to meet the course deliverables, the students will use the MEM student shop and other labs. Experience has shown that the graduate students’ use of those facilities has not been a burden. There is often excellent synergy between the graduates and the undergraduates who use those facilities.

2. Are resources required above available from the Department budget? No, travel expenses for faculty advisors need to be covered.

3. If non-budget resources are required, please indicate the quantity and availability (source, timing, terms, etc) of those resources. The IDD program has a limited travel budget for faculty involved in these projects.
COURSE CHANGES - CHEMICAL ENGINEERING DEPARTMENT

I. **Add:**
   Che 440: Chemical Engineering in the Life Sciences (3)
   
   Introduction of important topics in life sciences to chemical engineers. Topics include protein and biomolecular structures and characterization, recombinant DNA technology, immunofinity technology, combinatorial chemistry, metabolic engineering, bioinformatics.

   **Prerequisite:** Bachelor's Degree in Science or Engineering
   
   (The number Che 440 has been approved and reserved by the Registrar's Office. Reference Carol Goss, Associate Registrar.)

II. **Rationale:** The title of the course clearly shows that it fits well with Lehigh's current effort to build a stronger program in the Life Sciences. More directly, it supports the Chemical Engineering program in biotechnology giving the Department one more active course at the graduate level which directly compliments the two popular undergraduate courses, Che 341, Biotechnology I and Che 342, Biotechnology II.

III. **Clientele:** The students taking Che 440 will be both on-campus students and off-campus students via Distance Education. In the most recent offering, there are 18 Distance Education students and 6 on-campus students.

IV. **Resources:**

   A. **Faculty:** The necessary faculty are in place. Professor James T. Hsu has offered this course twice already on a trial basis, and the Chemical Engineering Department is proposing to make it a permanent offering.

   B. **Laboratory:** No laboratory facilities or equipment are needed; Che 440 is a lecture course.

   C. **Library:** No new library resources are required.

   D. **Computing:** No additional computing facilities are required; the computing load from Che 440 is very light.
Ron Yoshida will be making the following motion regarding this document at the 19 March 2001 faculty meeting:

- To incorporate the Family and Medical Leave Policy for Faculty into R&P Section 2.7, Benefits for Faculty.

Family and Medical Leave Policy for Faculty

Rationale:

By formalizing a Family and Medical Leave Policy for Faculty, Lehigh University is providing a significant enhancement to the benefits package currently available to faculty members. Lehigh benefits have been consistently better than federal government requirements for employees. This FMLA policy does not deviate from that, particularly in that the university is offering paid FMLA leaves for faculty, which is not required by law.

For faculty members who become seriously ill themselves, the implementation of the FMLA policy for faculty does not essentially alter the benefits they receive in any way. Taking FMLA leave does not preclude eligibility for short-term disability. In fact, FMLA and short-term disability run concurrently.

There is currently no written university policy for how to handle short-term disability leaves for faculty. Faculty illnesses have been dealt with mainly through medical leaves of absence, which have been inconsistently administered across the colleges. Given the instructional component of faculty positions, such leaves have often been granted for a semester. However, there is no standardization across the university in terms of time granted for leaves, etc. Leaves are to be granted for the amount of time that the individual faculty member is certified by his or her doctor as unable to work.

General Provisions

It is the policy of Lehigh University to grant up to 12 weeks of family and medical leave during any 12-month period to faculty members meeting the requirements of the Family and Medical Leave Act of 1993 (FMLA).

Eligibility

Upon employment as a member of the faculty at Lehigh University, faculty members are eligible to take family and medical leave under this policy.
Type of Leave Covered

Leaves associated with the following events will automatically be designated as FMLA leave under this policy:

1. The birth of the faculty member’s child for the primary care for that child within 12 months of birth
2. The placement in the faculty member’s home of a child for adoption or foster care
3. The care of the faculty member’s spouse, child, or own parent who has a serious health condition
4. A serious health condition of the faculty member that renders him or her unable to perform the functions of his or her position

In order to qualify for FMLA leave under this policy, the faculty member must be certified by his/her medical care provider as unable to work due to his/her own medical condition, or in the case of a seriously ill family member, the medical certification must include a statement that the patient requires assistance and the faculty member’s presence would be necessary or beneficial. Eligibility for FMLA leave for birth, adoption, or foster care begins when the child is born or placed in the home, whichever is later. Natural mothers whose leave is certified as medically necessary may be eligible for earlier FMLA leave.

Use of Paid and Unpaid Leave

Paid leave is available to faculty members whose leaves are designated FMLA according to the above criteria for the specific period of time (up to 12 weeks) under which the faculty member is certified by his/her medical care provider as unable to work. Paid FMLA leave for the primary care giver in situations of birth, adoption or foster care is available without medical certification for up to 12 weeks beginning when the child is born or placed in the home, whichever is later. For the purposes of this policy, “primary care” is defined as the day-to-day principal responsibility for the care of a child and is not intended to include parents whose newborn or newly adopted child is in the full-time care of either a spouse or a professional care provider. In cases for natural mothers whose leave is certified as medically necessary prior to the birth, the paid FMLA leave period will begin upon certification by her medical care provider.

If a faculty member requests leave to care for a child, spouse or family member and does not meet the FMLA medical certification requirements, he/she is eligible to request a period of unpaid personal leave of up to 12 weeks. Requests for such leaves must be approved by the faculty member’s immediate supervisor (department chair), the dean of the college, and the provost. The faculty member and his/her immediate supervisor must mutually agree to the duration of the leave prior to its approval.
Faculty Member Status & Flexible Benefits During Leave

While a faculty member is on leave, the University will continue his/her flexible benefits during the leave period at the same level and under the same conditions as if he/she continued to be at work.

Under the terms of the Flexible Benefits Plan, the faculty member pays a portion of the cost of the medical coverage premium and the full cost of supplemental life insurance, dependent life insurance, and flexible spending accounts. While on paid leave, the University will continue to deduct his/her share of the premium. While on unpaid personal leave, the faculty member must continue to make these payments. At the faculty member’s option, arrangements can be made with Human Resources to prepay the employee contribution or to be billed for the amount due by the Bursar’s Office. Payment should be received by the Bursar’s due date each month.

Basic life insurance and Long-Term Disability (LTD) coverage will continue at the same level and under the same conditions as if the faculty member continued to be at work.

The University will treat the initiation of an unpaid leave under this policy as a qualifying life event for purposes of suspending or reducing flexible spending account balances or dropping plan coverage.

Questions regarding flexible benefits during paid FMLA leaves or unpaid personal leaves should be directed to Toni Lee Febbo or Tim Hinkle in Human Resources at Extension 83000.

Other Benefits During Leave

The faculty member’s entitlement to other benefits during the leave is based on the terms and conditions of those benefits.

In the event of paid FMLA leave, he/she will continue to receive all benefits to which he/she would be entitled if not on leave, including the retirement program, tuition benefits, FSAP access ID card, and parking hang-tag.

If the faculty member is on an unpaid personal leave not related to his or her own serious health condition, retirement program contributions will cease at the end of the month in which the leave begins and will begin again when the faculty member returns to work. The contribution for the month in which the faculty member returns to work will be prorated based on his/her actual work schedule during that month.
Intermittent Leave or a Reduced Work Schedule

The faculty member may take FMLA leave in 12 consecutive weeks, may use the leave intermittently, or under certain circumstances may use the leave to reduce the work week or work day resulting in a reduced hour schedule. In all cases the FMLA leave will not exceed a total of 12 weeks over a 12-month period.

If a faculty member is taking leave for a serious health condition or because of the serious health condition of a family member covered under this policy, the faculty member should, when possible, try to reach an agreement with his or her immediate supervisor before taking intermittent leave or working a reduced schedule. If this is not possible, the faculty member must provide medical certification that the use of the leave in this manner is medically necessary.

If the need for intermittent leave or a reduced work schedule is foreseeable, faculty may be transferred to alternative teaching schedules or assignments which better accommodate the future intermittent leave or reduced work schedule. Intermittent or reduced work leave will be paid or unpaid as determined under the policies outlined above.

Intermittent or reduced work schedule leave for the birth, adoption, or foster care of a child without medical certification is available only if the faculty member and higher immediate supervisor mutually agree to the schedule before the faculty member begins the leave. All FMLA leaves for birth, adoption, or foster care of a child must be taken within one year of the birth or placement of the child.

Impact of Leave on Probationary and Review Periods

Consistent with Section 3.2.5.6.2 of the Rules and Procedures of the Faculty, "semesters on leave of absence for impaired health, maternity, or other personal reasons" may be excluded from the pre-tenure probationary period. If a faculty member utilizes FMLA rights during the summer, the time spent on FMLA leave of absence may be excluded from the pre-tenure probationary period. These provisions are also extended to tenured associate professors who are being reviewed for promotion. The amount of additional time extended must be approved by the provost.

Certification of Serious Health Condition

The University will ask for certification of a serious health condition. The faculty member should respond to such a request within 15 days of the request or provide a reasonable explanation for the delay. Failure to provide certification may result in a delay or denial of the leave. Medical certification may be provided by using the Leave Request Form.
Certification of the serious health condition shall include the date when the condition began, its expected duration, diagnosis, and a brief statement of treatment. For medical leave for the faculty member's own medical condition, the certification must also include a statement that the faculty member is unable to perform the essential functions of his/her position. For a seriously ill family member, the certification must include a statement that the patient requires assistance and that the faculty member's presence would be necessary or beneficial.

The University has the right to ask for a second opinion if there is a question concerning the need for, or duration of, the leave or other information contained in the certification. The University will pay for the faculty member to get a certification from a second doctor of the University's choice.

If it is necessary to resolve a conflict between the original certification and the second opinion, the University will require the opinion of the third doctor. The University and the faculty member will jointly select the third doctor and the University will pay for the opinion. This third opinion will be considered final.

Procedures for Requesting Leave

Except where leave is not foreseeable, all faculty members requesting leave under this policy must submit a "Leave Request Form" to their immediate supervisor for approval. The department chair shall then forward the requests to the Dean's Office for consideration. The Dean's Office will forward approved requests to the Provost's Office for review and processing. The Provost's Office will notify the faculty member via letter regarding official approval of the leave.

If a faculty member is taking FMLA leave, he/she should inform the appropriate department chair and dean as soon as possible to permit them the maximum amount of time to address instructional issues and faculty assignments for the leave period. If the leave is for the birth of a child, the faculty member should inform the appropriate department chair and dean of the pregnancy and the anticipated leave dates as soon after the first trimester as possible.

When possible, faculty members should provide at least 30 days advance notice of their plans to take leave. If it is not possible to give 30 days notice, the faculty member should provide as much notice as possible. A faculty member undergoing planned medical treatment is expected to make a reasonable effort to schedule the treatment to minimize disruptions to departmental operations.
If a faculty member fails to provide 30 days notice for foreseeable leave with no reasonable excuse for the delay, the leave request may be denied until at least 30 days from the date the University receives notice. Where the faculty member is unable to provide 30 days notice because of unforeseeable circumstances, the faculty member is required to provide notice of the need as soon as it becomes known.

FMLA leaves that fall within the semester will be handled in such a way that ensures minimum disruption to the instructional mission of the university. To ensure continuity in instruction in such cases, the faculty member may be assigned to work in a capacity other than teaching for the period immediately prior to and/or following the FMLA leave. Such assignments will be made by the department chair, pending the approval of the dean. The faculty member will be required to report back to the chair and dean regarding his/her accomplishments during the period in which other work assignments replaced teaching to accommodate the FMLA leave.

While on FMLA leave, faculty members are to report every 30 days regarding the status of the medical condition and their intent to return to work.

**Returning to Work after a Leave**

If the faculty member is on a leave related to the faculty member's own serious health condition, permission to return to work must be provided by the faculty member's attending medical care provider.
### CURRENT POLICY

<table>
<thead>
<tr>
<th><strong>Faculty Member's Own Illness</strong></th>
<th><strong>Birth or Adoption</strong></th>
<th><strong>Family Member's Illness</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short Term Disability or “Medical Leave”</strong></td>
<td>Up to 26 weeks (first 12 counted as FMLA) with full pay and full benefits</td>
<td></td>
</tr>
<tr>
<td><strong>Long Term Disability</strong></td>
<td>After 26 weeks -- 2/3 pay and full benefits</td>
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<td></td>
<td>Offset by Social Security disability benefits</td>
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<tr>
<td><strong>Unpaid Personal Leave</strong></td>
<td>If approved</td>
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</tr>
</tbody>
</table>

### PROPOSED POLICY

<table>
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<tr>
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<td>Up to 13 weeks with full pay and full benefits</td>
<td>Up to 12 weeks with full pay and full benefits</td>
</tr>
</tbody>
</table>
Lehigh University’s Agenda for Academic Leadership
Preliminary Projections:
Campaign Objectives in support of the Strategic Plan
As of March 2001
$500M Goal

Faculty:
Attract and retain outstanding faculty through strategic hiring in key growth areas and in other intellectual areas essential to the strength of the university by providing prestigious endowed chairs and by providing resources for new academic programs and facilities.

**Endowed Chairs**
$150 million
- Represents 75 new fully endowed chairs @ $2M per chair
- Enables 1 in 4 Lehigh faculty to hold chairs compared to 1 in 20 now
- May also be used creatively to launch young faculty

**Academic Programs and Infrastructure** $100 million
- Make permanent the University’s initial $75M investment in key academic initiatives through program endowment
- Support necessary renovations and/or construction to house interdisciplinary research and teaching laboratories related to top academic priorities.
Students: $100 million

Attract and retain the finest students to Lehigh, enhance the campus community and the quality of the Lehigh Experience for students:

**Endowed Scholarships** $100 million

- Provide competitive scholarships to recruit high-achieving students in new distinctive programs like IBE, Choral Arts, Computer Science/Business and College Scholars/Dean Scholars and to address diversity goals.
- Ensure that 750 more students receive named scholarships, to incite that desire to give back among more future alumni.
- Make a Lehigh education more attainable for students from middle-income families and for first-generation college students.
- When fully funded, will add $5 million a year to the operating budget, increasing the percentage of the annual financial aid budget from gift income from 24% to 33% and raising up million dollars for other needs.

**Student Life & Athletics** $50 million

- Enhance the Lehigh Experience and the campus community through improved extracurricular programs and facilities.
- Send globalization efforts.

**Annual Funds** $100 million

- Continue providing annual operating support through Annual Fund programs to give Lehigh flexible, spendable funding yearly to fund priority needs.
- Ensure that the campaign objectives include an accessible way for all alumni, parents, faculty and staff to participate in the campaign.
- Build the Annual Fund participation rate to 50% by the end of the campaign.
- Provide continuous and measurable increases in unrestricted support throughout the campaign years.
March 19, 2001

TO: Lehigh University Faculty Colleagues
FROM: Jim Longy
SUBJECT: Joniec Faculty Compensation Committee Report

This report has two components: FCC input into Phased Retirement Plan Review, and opening conversations about the Intellectual Property Policy being developed by Nelson Marksley.

**Phased Retirement Plan Review**

We prepared and mailed an 11-page survey on various aspects of the Phased Retirement Program to the 17 colleagues participating in the program; nine of those were returned. After reviewing these responses the FCC recommends (1) that the Phased Retirement Program be continued for at least another three years, (2) that the process be made more friendly and its conditions—such as no raises and the availability and cost of fringe benefits during the phased period—be made more transparent and (3) that a mechanism be devised to address any issues/concerns that arise during administration of the Phased Retirement Program.

**Intellectual Property Policy**

About two weeks ago Nelson told me he is presenting his draft of the University’s new policy on Intellectual Property to certain individuals likely to be impacted by it and to the principal faculty committees. After Nelson and I discussed the proposals before Spring Break, I read the document and made various substantive and editorial suggestions. Nelson will present this to the entire FCC at our meeting on Thursday, March 22. I believe that eventually everyone will have the opportunity to comment on the proposed policy. Please contact me with any specific concerns as it is best to address them as soon as possible.