College of Arts and Sciences
Course and Curriculum Changes for AV2001–2002
v. 3.1, 7 March, 2001

Africana 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. (CE 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,
art, and other students with project roles consistent with students’ background. Not
available to students who have taken Mech 10

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. Prerequisite: 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 352, 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 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 62, or permission of instructor.

Des 211: add cross-listings and change title for consistency with cross-listed IPD courses; was Integrated Product Development; reference course description:
Integrated Product Development (IPD) Projects I (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 5 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 (Anh 184): change credits from 3 to 4 (see Sociology and Anthropology)
Asia 187 (Anh 187): change credits from 3 to 4 and change prerequisites (see Sociology and Anthropology)
Asia 371 and 381: change credits from 4 to 1-4 to give students a broader range of options when doing advanced readings and special topics.

Astronomy (ASTR)
Curriculum changes:

Proposed B.S. Degree Program in Astrophysics

Non-Major (Not required of Majors):
Astr/Phy 7              Introduction to Astronomy (3)  
Astr/Phy 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):**  
Phy 11/12, or 10/12      Intro Physics I (5)  
Phy 21/22, or 13/14      Intro. Physics II (4.5)  
Phy 31                   Introduction to Quantum Mechanics (3)  
Phy 212                  Electricity and Magnetism I (3)  
Phy 215                  Classical Mechanics I (4)  
Phy 262                  Advanced Physics Laboratory (2), or  
Phy 352                  Modern Optics (3)  
Chm 21/22                Intro Chemical Prin + Lab (5), or  
Chm 75,76                Concepts, Models, Experiments I & II (8)  
EES 21                   Introduction to Planet Earth (4)  
EES 113                  Palaeontologic 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):**  
Astr/Phy/EES 105         Planetary Astronomy (4)  
Astr/Phy 110             Methods of Observational Astronomy (1)  
Astr/Phy 201             Modern Astrophysics I (4)  
Astr/Phy 202             Modern Astrophysics II (4)  
Astr/Phy 332             High-Energy Astrophysics (3), or  
Astr/Phy 342             Relativity and Cosmology (3), or  
Astr/Phy 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):**  
Astr/Phy 7              Introduction to Astronomy (3)  
Astr/Phy 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):**
Phy 11/12, or 10/12  Intro. Physics I (5)  
Phy 21/22, or 13/14  Intro. Physics II (4-5)

Phy 31  Introduction to Quantum Mechanics (3)  
Phy 262  Advanced Physics Laboratory (2)

Chm 21/22  Intro Chemical Prin + Lab (5), or  
        Concepts. Models Experiments I & II (3)

Chm 75,76  Introduction to Planet Earth (4)

EES 21  Paleontologic Evidence for Earth Evolution: ... (4) or  
        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 Organismal 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 science 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 acclimated 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 DeLclco) 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 7/8, 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 21,...) would be marginal. The effect 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 3xx Eukaryotic Signal Transduction (3)** Signal transduction 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/Chm 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/Psysc 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/Psysc 2yy: was Bios/Psysc 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 3ww: 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 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 Psy 210 (see changes in curriculum) as an alternative. Often prohibited students from taking 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: Chm 21, 22, 51, and one of the following: Chm 31, 194, or Phy 11 to: Chm 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, 393, 394 or college scholar honors project BIOS 110 can not count as a Bios elective.

Rationale for B.A. 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 Bios 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 BA students take Physics or Chm 31 and none take Chm 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 Psyc 1 to collateral course section along with math and chemistry courses.

Eliminate Psyc 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 377 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 Psyc 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 into 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 1 (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, MLL, 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 (MLL 140; Psych 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 Psych.

Curriculum changes.
1. Csc 11 should 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 Psych/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)
See Art and Architecture
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 regrettably 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: was entitled Paleontologic Evidence for Earth Evolution: Life and Climate in the Rock Record; new description:
  Interactions of the biosphere with the solid Earth. Formation and evolution of the physical Earth. How 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, field trips 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 instruction coordinator 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 constituted 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 5 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:
  
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES 303</td>
<td>Active Tectonics (Spring odd)</td>
</tr>
<tr>
<td>EES 326</td>
<td>Geologic Evolution of North America (Spring even)</td>
</tr>
<tr>
<td>EES 351</td>
<td>Limnology (Fall even)</td>
</tr>
<tr>
<td>EES 353</td>
<td>Environmental Microbiology (Fall even)</td>
</tr>
</tbody>
</table>

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 B.A. and B.S. 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 this 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 commitment. 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 282. 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 adviser. 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 adviser.

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 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).

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 IXX Independent Study (1-4)

E&S 3XX Special Topics (1-4)

Rationale: The Environment and Society Interdisciplinary Minor is requesting the addition 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 four 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 keystone 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)

Chose from among the following courses:

Core Courses (minimum of 8 credits):

Anth/Ciss 121 Environment and Culture (4)
Anth 305  Anthropology of Fishing (4)
Eco 311  Environmental Economics (3)
Hist 315  American Environmental History (4)
E&S LXX  Independent Study (1-4)
E&S SXX  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 Polity (4)
PolS 382  Paving Paradise? (Sub)Urban Sprawl and the Public Interest (4)

Elective Courses:

Anth 1  Introduction to Anthropology (4)
Anth 12  Human Evolution and Prehistory (4)
Anth/Ciss 345  Evolution of the State (4)
Jour/STS 124  Politics of Science (4)
Jour 313  Special Topics in Science Writing (1-4)
PolS 115  Technology as Politics (4)
PolS 277  Urban Politics (4)
Rel 6  Religion and the Ecological Crisis (4)
SSF 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 307, History of American Industrial Technology (3-4)

Courses added:
Hist 76, (Asia 76, MLL 76) Understanding Contemporary China; see Modern Languages and Literature

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 Machine 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 fifty 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” or sidebar seminar (Hist 44, 45, 46) to accompany each 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 in 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 assignment(s) that lab students complete, offer the courses for four credits, and eliminate the labs.  
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 (1-4) 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 (4) 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 or 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. Gornick (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
Jour 366: no longer requires Jour 365 as a prerequisite
Jour 212: designate as writing intensive in the catalog

Curriculum Changes:

Journalism major:
Require Jour 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 (Jour 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/science 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 or 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 the 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 with 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 thus 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 Jour 228 Writing for Public Relations in Spring 2001 who were planning to enter the concentration.

Some students currently enrolled in Jour 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 (JPNS)
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: These courses 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. Pavlock. Even students who take those 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. Pavlock 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:

Frnc 223, Love and the French Novel
Germ 165, Introduction to the German Literary Tradition
Germ 202, Survey of German Literature II
Germ 302, Renaissance, Reformation, and Baroque
Germ 315, Translation and Stylistics
Germ 325, 19th-Century German Literature
Germ 344, The Age of Enlightenment and Classicism
Jpns 368, Readings in Japanese I
Jpns 369, 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, J-L. Godard, C. Denis, A. Varda J-J. Beinex, E. Rohmer, and others.

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

Germ 269 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.

MLL 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)

MLL 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 001: new description:
  Multimedia approach to the study of French. Introduction to French conversation, grammar, and culture.

Fren 011: new description:
  Further acquisition of the fundamentals of French conversation, writing, and culture. Multimedia approach. Prerequisite: Fren 2 or appropriate achievement test score before entrance, or consent of instructor.

Fren 012: new description:
  Continuation of Fren 11. 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 Ionesco. 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 twentieth-century literature. Works by Sartre, Camus, de Mandiargues, Robbe-Gillet, Le Clezio, Echenoz, Sallenave, and others.

Fren 323 was 223

Germ 163: 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 201: 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: was entitled German in Daily Usage; 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: was entitled Advanced Composition and Conversation; new description:**
Selected texts in German, as they relate to current debates. Practice in speaking and writing.

**Germ 301: was entitled Medieval German Literature; new description:**
Readings of selected literary texts from the Middle Ages, Renaissance, Reformation, Baroque, Enlightenment, and Classicism.

**Germ 303: was entitled German Romanticism; new description:**
Readings of literary texts from the periods of Romanticism, Realism, and Naturalism.

**Germ 305: was entitled 20th-Century German Literature; new description:**
Topics in German literature of the twentieth century.

**Germ 320: was entitled Berlin in the Twenties; new description:**
Literature, culture, and history of Berlin from the Weimar Republic through reunification.

**Germ 341: was entitled Applied Phonetics, Linguistics, Composition, Conversation, and Translation; new description:**
Writing and speaking Standard High German. Study of regional pronunciation contrasts, dialects.

**M.L.L. 140; see Cognitive Science**

**M.L.L. 231: new description:**
Viewing, discussion, and written 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 finer 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 147.

**Span 152: 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 253: change prerequisite:** Add “or equivalent.”

**Span 255: 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, genres.” Change prerequisite: Add “or equivalent.”

**Span 303: change prerequisite:** Add “or equivalent.”
Span 308: 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 342: change prerequisite: Add "or equivalent."
Span 379: change description: "Spanish-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 out 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).

Courses added:
- Mus 140. Jazz Improvisation (1) (HU) Development of skills in improvising music through practice of scales, chord construction, and patterns of figuration found in jazz. May be repeated for credit.

Rationale: See comments for courses dropped (Mus 141 and 142).
- Mus 321. Conducting I (2) (HU) Fall Beginning study of conducting techniques, including score reading and preparation, analysis, conducting patterns and gestures. Prerequisite: Mus 83 or permission of the instructor.

Mus 322. Conducting II (2) (HU) Spring Continuation of Mus 321. Prerequisite: Mus 321

Rationale: Mus 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:
- Mus 2: change in co/prerequisites: must be taken with Mus 11. Students may test out upon examination.
- Mus 3: change in co/prerequisites: must be taken with Mus 82. Students may test out upon examination.
- Mus 4: change in co/prerequisites: must be taken with Mus 83. Students may test out upon examination.
- Mus 128: change in prerequisites: drop Mus 80; add Mus 10 or equivalent, or permission of the instructor.
- Mus 129: change in prerequisites: drop Mus 80; add Mus 10 or equivalent, or permission of the instructor.
- Mus 233: change in prerequisites: drop Mus 80; add Mus 11 or equivalent, or permission of the instructor.
- Mus 234: change in prerequisites: drop Mus 80; add Mus 11 or equivalent, or permission of the instructor.
- Mus 235: change in prerequisites: drop Mus 80; add Mus 11 or equivalent, or permission of the instructor.
- Mus 236: change in prerequisites: drop Mus 80; add Mus 11 or equivalent, or permission of the instructor.
Mus 245: change in prerequisites: add Mus 83.

**Curriculum changes:**

**Philosophy (PHIL)**

*Courses added:*

**Phil 273. Ariadne: Internship (1-4 credits)** An internship devoted to the construction and maintenance of Ariadne, 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 Dionysos, an externally refereed, on-line, web-based professional journal of the history of philosophy. Prerequisite: Department permission required; previous coursework in philosophy expected. May be repeated more than once for credit. Mendelson and Beam

*Rationale:* 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: Ariadne. In addition they will be involved in soliciting submissions and spreading the word about Ariadne. They will play a leading role in keeping Ariadne 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: Dionysos. 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 (PHYS)**

*Courses dropped:*

Phys 312 and 382 are no longer needed to meet department goals.

**Political Science (POLIS)**

*Other course changes:*

POLIS 301: was 201
POLIS 302: was 202
POLIS 306: was 206
POLIS 313: was 213
POLIS 314: was 214
POLIS 317: was 217
POLIS 318: was 218
POLIS 321: was 221
POLIS 322: was 222
POLIS 327: was 227
POLIS 328: was 271
POLIS 329: was 229
POLIS 330: was 230
POLIS 331: was 231
POLIS 333: was 233 (cross-listed with Psyc, SSP); was 3 credits (change in number: see Sociology and Anthropology)
POLIS 335: was 235
POLIS 336: was 236
POLIS 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 364 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 (PSYC)**

**Courses dropped**

Psyc 2, Introduction To Psychology Directed Study
Psyc 106, Child Development Directed Study
Psyc 108, Adolescence and Aging Directed Study
Psyc 375, (Bios 375) Neuroanatomy of Behavior

**Rationale:** The content of Psyc 2, 106, and 108 will be incorporated into Psyc 1, Psyc 107 and Psyc 109 respectively. The “host” 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 alternative strategies. In addition, these changes enable our curriculum to be more uniform. The cross-listing of Bios/Psyc 375 is no longer appropriate, because the Biological Sciences Department is changing Bios 375 to Bios 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.**

**Psyc 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: Psyc 117 or Psyc 176 or CogS 7 or consent of instructor. O'Seaghdha (SS)

**Psyc 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: Psyc 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:**

Psyc 1: was 3 credits

**Rationale:** We will incorporate content that is currently assigned in Psyc 2 and appropriate assignments into Psyc 1. Thus we will extend valuable educational experiences to all Psyc 1 students (not just the small subset who currently enroll for Psyc 2).
Psyc 21: was entitled Social Psychology; see Sociology and Anthropology. SSP 21

Psyc 107: was 3 credits; new description:
Survey of theories and research concerning perceptual cognitive, social, and personality development through infancy and childhood. Prerequisite: Psyc 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 Psyc 106 and appropriate writing assignments into Psyc 107. Thus we will extend valuable educational experiences to all Psyc 107 students (not just the subset who currently enroll for Psyc 106). Pass fail grading has proven disruptive to the conduct of the course and will be eliminated.

Psyc 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: Psyc 1 or SSP 1. May not be taken pass/fail. Iyeland (SS)

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

Psyc 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, make 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 Soc/Anth.

Psyc 176: 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 clearer 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
CogS7 and consent of sponsor. (SS)

Psych 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. Students read relevant literature and write reports in APA format. May be repeated for a maximum of 6 credits. Prerequisites: Psych 210 or 161 and consent of sponsor. (ND)

Rationale: Psych 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.

Psych 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.

Psych 3xx Clinical Psychology (4) was Psych 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 psychosocial problems in the light of empirical evidence of validity and effectiveness. Professional issues are also covered. Prerequisites: Psych 153 and Psych 305 or consent of instructor. (SS)

Rationale: This course is more appropriately taught at the 300 level with stiffer prerequisites. The title is accordingly simplified.

Religion Studies (REL)

Courses added:

Rel 2xx (Asia 2xx) Buddhism and Ecology (4) Buddhism as intellectual, ethical, and spiritual resources are reexamined in light of con-temporary 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 counter-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 73: New description:

Judaism is both a textual tradition and a lived religion. Students read basic Jewish texts—Bible, Talmud, Midrash—and study the ways Jews sanctify the life cycle through rites of passage, and the round of the year through the festival cycle. Silberstein, Weissler. (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)
- 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 (Psych 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. Prerequisite: Anth 1, Anth 11, SSP 1 or PSYC 1. Rosenwein.

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 materials 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 confirms 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:*

SSP 21: was entitled Social Psychology  
*Rationale:* Introduction of SSP 121 necessitates a new title for this course. The new title is consistent with SSP 5.

SSP 399: 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 399, was 3 credits; new description:  
Research during senior year culminating in 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 Science  
[Note: The cross-listed rubrics of this course Cogs 140, MLI 140, and Psy 140, are already using the “new” title.]

SSP 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 inexperience.
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 member 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

Collateral 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)
Preferably during the senior year, majors must complete at least four credits of experiential learning on a subject or in a context relevant 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 (1-4)
Anth 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/Social Psychology

Collateral Requirement
One general course in statistics: Math 12, Eco 145, Psyc 110, or equivalent.
(Note: Math 12 fulfills the College of Arts and Sciences' mathematics requirement.)
Introductory (4 credits)
SSP 1. Introduction to Sociology and Social Psychology (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 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 Anth 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 experiential learning on a subject or in a context relevant 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)

Collateral Requirement
One general course in statistics: Math 12, Eco 145, Psyc 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 (8 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 ECEE 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 394 (SSP/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 (2)** 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 **BUS211/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 has about 160 students registered in two sections, approximately half are CBE students. The first course takes students through the product conceptualization and business and technical feasibility stage. Increasingly, we get requests from business students that want to continue beyond and participate in the second course. They are free 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 then there will be additional need for team advisors.
EECS Department Meeting - Proposed Catalog changes
2001

ECE Division.

Proposal for a new course:

**ECE 341 Fundamentals of Wireless Communications (3)**


**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 (in Fall 2000) being offered as ECE 350/712 and ECE 450/714 and has attracted 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 Yener 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 Courses:** 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. Yener 12/06/00

The following courses are in a new thrust area in Photonics (joint with Physics 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

**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 347 for graduate students and it will include research projects and advanced assignments.

**Faculty Load:** Professors Christodoulides and McAnlay 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 Demetris Christodoulides 11/15/00.

**ECE 448 Lightwave Technology (3)**

**Catalog Description**: Overview of optical fiber communications. Optical fibers, structures and waveguiding fundamentals. Signal degradation in fibers arising from attenuation, intramodal and intermodal dispersion. Optical sources, semiconductor lasers and LEDs. Rate equations 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.

**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 348 for graduate students and it will include research projects and advanced assignments.

**Faculty Load**: Professors Christodoulides and McAulay 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 Demetris Christodoulides 11/15/00.

**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 108.

**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 McAulay and Christodoulides 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. The laboratory in Packard Lab 227 is already in place to support this course.

Prepared by Professor Alastair McAulay 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 photonic components for optical switching, tuning, modulation and amplification; optical interconnection switches and buffering; hardware and software architectures for packet switching and wavelength division multiaccess systems. This course 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 McAulay and Christodoulides 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. The laboratory in Packard Lab 227 is already in place to support this course.

Prepared by Professor Alastair McAulay 11/15/00.

**ECE 373 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. 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 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 optical fiber communications.

**Faculty load**: A faculty knowledgeable in 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 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 interdepartmental (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 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 multimeter, 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 free space optics. The space and equipment resources are being requested as part of a proposed interdepartmental (Physics, Materials Science and ECE) MS in Photonics program.

Prepared by Professors Alastair McAulay and Demetri Christodoulides, 11-14-2000

**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.
Rationale: The course is part of a planned interdisciplinary MS in Photonics to be offered jointly with Physics and Materials Science. This class is the key link between theoretical classes 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 optical fiber communications and will have advanced assignments relative to ECE 3xx.

Faculty load: A faculty knowledgeable in 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 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 interdepartmental (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 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 multimeter, 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 free space optics. The space and equipment resources are being requested as part of a proposed interdepartmental (Physics, Materials Science and ECE) MS in Photonics program.

Prepared by Professors Alastair McAulay and Demetri Christodoulides, 11-14-2000

CS Division - Course and Curriculum Changes

Below are curricular changes proposed by the CS Division

In summary,

we propose to change the descriptions of CSc 109, CSc 252 (including changing the title and cross?listing with STS), and CSc 411,

we propose to add CSc 10, CSc 13 and CSc 14 (the three courses to replace CSc 11),

we propose to change the prerequisite for CSc 17 to reflect our replacing CSc 11 with CSc 10, 13, and 14,

we propose to change the designation of ECE 216 to CSc 216, and

we propose to drop CSc 11 and CSc 418.

Change in Description

1. CSc 109

Prior Description:

CSc 109. Systems Programming (3)

Advanced data structures: hash tables, B?trees. disk files. Design of assemblers, macroprocessors, loaders, interpreters, translators, communication protocols. Use of a high?level language to implement sample systems. Prerequisites: CSc 17 and ECE 33. (ES 1 S). (ED 1 S)

Proposed Description
CSc 109. Systems Software (3)

Advanced programming and data structures, including dynamic structures, memory allocation, data organization, symbol tables, hash tables, B-trees, data files. Object-oriented design and implementation of simple assemblers, loaders, interpreters, compilers, and translators. Practical methods for implementing medium-scale programs.
Prerequisites: CSc 17 and ECE 33. (ES 1.5). (ED 1.5)

Rationale: 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

2. CSc 252

Prior Description

CSc 252. Computers and Society (3)

A general nontechnical survey of the impact of computers on modern society. Special attention is given to the use of large-scale data banks and retrieval systems, the problems of privacy and file security and the impact of automation on everyday life.

Proposed description (including a change in title and a proposal to cross-list with STS) CSc 252. (STS 252) Computers, the Internet, and Society (3)

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.

Rationale: The proposed description more accurately reflects the material covered in the course. We intend the course to potentially satisfy the HSS requirements of our CS students, whose HSS requirement is more substantial than that of other engineering students. Cross-listing with STS makes the course eligible for HSS credit and gives it wider visibility.

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

3. CSc 411

Prior Description

CSc 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: CSc 17 or consent of the division head.

Proposed Description

CSc 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: CSc 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 differential impact on resources
A note on CSc 17 as a prerequisite to CSc 411: CSc 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 the second semester of their first year (CS and CompE 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 CSc 17 is required for admission. Having CSc 17 a prerequisite to CSc 411 makes this requirement explicit.

Change in Designation

Change the designation of ECE 216 Software Engineering (3) to CSc 216 Software Engineering (3).

Rationale: In the last decade at least Computer Science faculty have taught ECE 216. Further, it is required in all three CSc major program. Thus it is more appropriate to list it under CSc.

Note: The catalog listing of various programs which require ECE 216 should be modified to reflect this change in designation.

New Courses

1. CSc 10

CSc 10 Introduction to Computing (2) fall
Survey of topics in computer science including programming as problem solving, programming language translation, software engineering, computer architecture, operating systems and networks, theory of computing, artificial intelligence, and social and ethical issues. Must be taken with either CSc 13 or CSc 14. No prerequisites. (ES2)

2. CSc 13

CSc 13 Multimedia Computing Laboratory (for non-majors) (1)
Multimedia for CSc 10, introduction to programming, and web site development. Must be taken with CSc 10. Credit will not be given for both CSc 13 and CSc 14. (ED 1)

3. CSc 14

CSc 14 Multimedia Computing Laboratory (for majors) (2)
Multimedia for CSc 10 and programming in C++. Credit will not be given for both CSc 13 and CSc 14. Must be taken with CSc 10. (ED 2)

Rationale: CSc 11 currently serves two kinds of students, those taking CSc 11 as an elective (perhaps to partially satisfy the CAAS distribution requirements) and those CAAS students wishing to become CS majors. With the proposed courses, the former students would take CSc 10 and CSc 13, and the latter students would take CSc 10 and CSc 14. The latter students would then get better preparation for CSc 17, the next course in the major, because CSc 14 covers C++ in more depth than does CSc 11. We will be liberal in allowing students to move from CSc 13 to CSc 14 during the semester. We are thinking, in particular, of students who decide on a CS major while taking CSc 13. Those students would need CSc 14 to continue in the major.

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

Prior Description

CSc 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. Prerequisite: CSc 11 or Engr 1 or previous experience with programming. (ES 3). (ED 1)

Proposed Description

CSc 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. Prerequisite: CSc 10 and CSc 14, or Engr 1, or permission of the instructor. (ES 3). (ED 1)

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

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

Courses to Drop

1. CSc 11. Introduction to Computing (3)

Rationale: The course will no longer be taught. It will be replaced by CSc 10, CSc 13, and CSc 14, in various combinations.

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

Rationale: The course has not been taught in a number of years.
MEMORANDUM

TO: RICK WEISMAN, ASSOCIATE DEAN
ROSSIN COLLEGE OF ENGINEERING & APPLIED SCIENCE

FROM: FRED STEIN, ASSOCIATE CHAIRMAN
DEPARTMENT OF CHEMICAL ENGINEERING

Attached are two proposed catalog changes by the Chemical Engineering Department.

(1) Addition of ChE 440, Chemical Engineering in the Life Sciences. (The ChE 440 number has been reserved in the Registrar's Office for this course. Reference Associate Registrar Carol Goss.)

(2) Delete the current pre-requisite of ChE 211 from ChE 320, Waste Water Control.

Both of these proposed changes were approved unanimously by the Chemical Engineering faculty at its meeting on 26 October 2000. Would you please take these to the Academic Policy Committee and then move them on through the system for final approval?

attachments
ksp

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 biomolecule structures and characterization, recombinant DNA technology, immunoaffinity 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 13 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.

COURSE CHANGES - CHEMICAL ENGINEERING DEPARTMENT

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

II. Pre-requisite: Delete ChE 211 as the pre-requisite leaving no pre-requisite.

III. Rationale: As ChE 320 is now offered there is no requirement for the pre-requisite information of Reactor Engineering which is ChE 211.


**Department of Materials Science and Engineering**

**Curriculum Revisions**

**Introduction.**

The Department of Materials Science and Engineering has undertaken a yearlong detailed study of its complete undergraduate curriculum. This document embodies the results of that study. It gives the proposed changes. The changes could have been quite sweeping given the thoroughness of the review. In practice the changes are not so major, but they are linked to an overall plan.

The proposed changes have been shown to be compatible with the departmental teaching load, both in the long term and in the transition period. The rationale for the changes then is largely on a global basis, more than on a course by course basis.

The page which follows next has the semester by semester curriculum. Courses that are to be changed are italicized. This includes changes of sequence as well as changes of content. This page is for information only. It is the subsequent pages listing the specific course changes which are up for consideration. The first section is of the core courses. At the end three new elective courses are also listed.

2/16/01

<table>
<thead>
<tr>
<th>Fall Freshman Year</th>
<th>Spring Freshman Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Engl 1</td>
<td>5 Engl 2</td>
</tr>
<tr>
<td>4 Math 21</td>
<td>4 Math 22</td>
</tr>
<tr>
<td>4 Chem 21</td>
<td>4 Phys 11</td>
</tr>
<tr>
<td>1 Chem 22</td>
<td>1 Phys 12</td>
</tr>
<tr>
<td>3 Engr 1</td>
<td>1 Engr 2</td>
</tr>
<tr>
<td>15 credits</td>
<td>3 HSS 1</td>
</tr>
<tr>
<td></td>
<td>16 credits</td>
</tr>
<tr>
<td>Fall Sophomore Year</td>
<td>Spring Sophomore Year</td>
</tr>
<tr>
<td>4 Math 23</td>
<td>3 Math 205 Linear Methods</td>
</tr>
<tr>
<td>5 Phys 21,22</td>
<td>3 Mech 2 Engineering Mechanics</td>
</tr>
<tr>
<td>4 Eco 1</td>
<td>3 MAT 203 Structure &amp; Characterization</td>
</tr>
<tr>
<td>3 MAT 33 (or HSS 1)</td>
<td>3 MAT 205 Thermo &amp; Phase Diagrams</td>
</tr>
<tr>
<td>1 MAT 10</td>
<td>2 MAT 20 Computational Methods</td>
</tr>
<tr>
<td>17 credits (currently 17)</td>
<td>3 HSS 2 (or MAT 33)</td>
</tr>
<tr>
<td></td>
<td>17 credits (currently 17)</td>
</tr>
<tr>
<td>Fall Junior Year</td>
<td>Spring Junior Year</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>3 MAT 201 Intro Electrical, Quantum</td>
<td>3 ENGR 311 IPD #1</td>
</tr>
<tr>
<td>3 MAT 218 Mechanical Properties</td>
<td>1 MAT 2xx Materials Selection in Design</td>
</tr>
<tr>
<td>3 MAT 216 Diffusion &amp; Phase Trans.</td>
<td>3 MAT 204 Polymers</td>
</tr>
<tr>
<td>2 MAT 101 Professional Dev</td>
<td>3 MAT 206 Metals</td>
</tr>
<tr>
<td>3 Free Elective 1</td>
<td>3 MAT 214 Ceramics</td>
</tr>
<tr>
<td>4 HSS 3</td>
<td>2 MAT 210 Macro Processing Lab</td>
</tr>
<tr>
<td>18 credits (currently 18)</td>
<td>3 HSS 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fall Senior Year</th>
<th>Spring Senior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ENGR 312 IPD #2</td>
<td>3 MAT 338 Failure Analysis Reports</td>
</tr>
<tr>
<td>3 MAT 302 Advanced Electronic Mails</td>
<td>3 ChemE 60</td>
</tr>
<tr>
<td>3/4 Phy 198 or ECE 81</td>
<td>3 Approved Elect. 2 (or Math 231)</td>
</tr>
<tr>
<td>3 IE 328/Math 231 (or Approved Elect.)</td>
<td>3 Eng. Sci. Elect. 2</td>
</tr>
<tr>
<td>3 Eng. Sci. Elect. 1</td>
<td>3 Free Elective 2</td>
</tr>
<tr>
<td>3 HSS 5 (or Free Elective if 13 HSS credits have already been earned)</td>
<td>3 Free Elective 3</td>
</tr>
<tr>
<td>17/18 credits (currently 16)</td>
<td>17 credits (currently 18)</td>
</tr>
</tbody>
</table>

**Modified Courses**

**Change of Course Descriptions:**

**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. Extrusion of plastics and films, and fiber spinning operations. Prerequisites: 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. Prerequisite: Mat 205, Mat 216.

**Mat 214. PROCESSING AND PROPERTIES OF CERAMIC MATERIALS** (3) spring


**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.

**Change of Name and Course Description:**

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 2XX 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 325 is being replaced by participation in the IPD program. This course is a one-credit complement to the IPD to introduce student 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 MAI 204, MAI 206 and MAI 216 into a single lab course (see above).

Courses to be Removed

MAI 325 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).

Note: This course is not to be removed from the catalog this year. The course will be given one more time before the IPD program is phased in. It will be dropped next year.

New Elective Course: Department of Materials Science and Engineering.

A new MAI 3xx course is proposed for the 2001/2002-university catalogue under the listing of courses offered by the Materials Science and Engineering Department.

Course description:

MAI 3XX 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 Misiolek

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 Misiolek and David Williams have already taught this course in the spring semester of 2000. Thirteen undergraduate and graduate students took this course and gave it very good evaluations. The overall course quality and instructor effectiveness (W. Z. Misiolek) 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 3XX – Physical Metallurgy of Fusion Welding – 3 credits

Course Description for Catalog - Operational characteristics of arc and laser welding processes. Use of heat flow equations to understand and predict temperature distributions during welding. Application of solidification and solid state transformation theory in understanding microstructural development in welds, and influence of welding on properties. Identification, mechanism, and remedies of metallurgical defects in welds. Use of modern computational techniques for predicting heat flow and phase transformations in welds of complex engineering alloys. Examples of fusion welding in engineering alloys, including steels, stainless steels, and nickel base superalloys. Laboratory demonstrations. Prerequisites: MAT 206 and 216, DuPont.

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>
<thead>
<tr>
<th>Term</th>
<th>Enrollment</th>
<th>Overall Course Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 1999</td>
<td>7</td>
<td>4.5/5.0</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>11</td>
<td>4.6/5.0</td>
</tr>
</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

New Course: Department of Materials Science and Engineering

Course Description for Listing in the Catalog

MAT 4XX Photonic Materials (3 credits)


Background and Rationale

Photronics 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 optimum 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, over the web or otherwise. 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.
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 inexact methods, performance analysis, fast and greedy heuristics, Lagrangean 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 number in F98 by Prof. Storer. 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. Storer 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. Prerequisite: IE 220 or equivalent.

*Rationale:* This course was taught under an experimental number in S90 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 F98 and F00 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. Tonkay. (b) Laboratory. No laboratory is required. (c) Library. No new library resources are required. (d) Computing. No additional computing facilities are required.

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

**Rationale:** This course was taught under an experimental number in F98 by Prof. Wu and is now being offered again in S01. 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. Emphasis on analytical methods to evaluate the economic desirability of replacement and retirement options in capital investment. Prerequisites: IE 220 and IE 226 or equivalents.

**Rationale:** This course was taught under an experimental number in S99 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 4YZ: Discrete Event Dynamic Systems (3)**
Modeling of Discrete Event Dynamic systems (DDES) 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. Prerequisites: Permission of instructor.

**Rationale:** Production systems are principally event driven. This course serves 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 Summer 99 and S06 by Prof. Odrey. 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. Odrey. (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 42X: Intelligent Manufacturing Systems (3)**
Informational and 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 the area of artificial intelligence and its application 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 provide 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 proposed course have been taught in previous courses under experimental numbers.

**Resources**: (a) Faculty. This course can be taught by present faculty member N. Odrey. (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.
To: J. Alwyne Eades, Course and Curriculum Committee of College of E&AS  
From: Daniel Zaroka, 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&AS. 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&AS be modified. The modification is to require Chm 371 Elements of Biochemistry I (3). 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 curriculum.
(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 Chm 371, a lecture class dealing with biochemistry. The current enrollment in Chm 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 Chm 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&AS with the proposed change noted in red. In the event of any questions, please contact me.

c. Prof. K.J. Schray

Chemistry

B.S. Degree in Chemistry College of Engr. & Applied Science

Summary of Requirements
I. College distribution  24 credits
II. Physics, math, and computing  28 credits
1. Chemistry  12 credits
2. Electrical engineering  12 credits
Total credits  123 credits

Model Roster

Freshman year (20-21 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 major 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 21/22/31 sequence may be substituted.

Sophomore year, first semester (17 credits)
Chm 51  Organic Chemistry I (3)
Chm 53  Organic Chemistry Laboratory I (1)
Phy 21  Introductory Physics I (4)
Phy 22  Introductory Physics Laboratory (1)
Math 23  Calculus III (4)
mod. foreign language requirement (4)
(See details above)

*Chm 51 Chemical Equilibria will displace this mod. foreign language requirement to a subsequent semester if Chm 51 was not taken in the freshman year.

Sophomore year, second semester (17 credits)
Chm 52  Organic Chemistry II (3)
Chm 58  Organic Chemistry Laboratory II (1)
Chm 187  Physical Chemistry I (3)
Math 205  Linear Methods (3)
mod. 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 205  Main Group Elements (2)
Chm 332  Analytical Chemistry (3)
Chm 341  Chemical Physics and Bonding (4)
Eco 1  Economics (4)

Junior year, second semester (17-18 credits)
Chm 201  Technical Writing (2) or approved writing-intensive course (3)
Chm 307  Advanced Inorganic Chem. (3)
Chm 338  Instrumental Analysis Lab (2)
Chm 339  Instrumental Analysis (2)
Chm 355  Organic Analysis Laboratory (2)
Humanities/Social Science requirement (3)
free elective (3)

Senior year, first semester (14 credits)
Chm 371  Ph.D. colloquium (4)
advanced chemistry elective (5)
Humanities/Social Science requirement (3)
free elective (6)

Senior year, second semester (13 credits)
advanced chemistry elective (3)
free electives (10)

*See list of choices for the advanced chemistry elective requirement under the B.S. degree in chemistry/College of Arts and
See list of choices for the advanced chemistry elective requirement under the BS degree in chemistry/College of Arts and Sciences.

*This becomes a free elective if the advanced chemistry elective requirement was taken in the fall of the senior year.
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 practica 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; restore 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 1980's as a program oriented towards helping teachers learn 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 unusual 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 renamed Instructional Design and Development), its M.S. degree for the International Schools (the proposed Educational Technology M.S. program), and its doctoral degree.
(EdD 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 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 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 practica 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 practica 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 414 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 417 Practicum in Educational Technology Foundations (2)
EdT 433 Introduction to Instructional Design (3)
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 Topics 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 merely in the name of the degree and a restoration to 30 hours because of the elimination of additional practica 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 (minimum) masters of science program requires the student to take 27 hours in 4 clusters (as shown below). Students should take the Shared Core courses as soon as possible after admission. That Core must be taken in sequence; the first course meets in the fall and the second course meets in the spring.

Once a student has completed these 27 hours, he or she completes the program by taking 3 additional hours. These 3 hours may come from additional courses in the 3 technology core areas, from electives focusing on key issues and skills, or from internships, fieldwork, or independent studies intended to enrich the student's portfolio.

The expectation is that students in the program are actively seeking to become designers or developers of technology-based teaching/learning materials and will work to make the transition in competence from "student" to "professional" as quickly as possible. This means students will be expected to work on projects throughout their program and will work outside class settings to maintain and enhance their skills.

Shared Core (6 hours)

EdT 4XX/Edc 4xx Technology-Based Teaching and Learning: Foundations & Issues (3. Fall only)

EdT 4XX/ Edc 4xx Technology-Based Teaching and Learning: Methods & Assessment (3. Spring only)

Technology Core (12 hours)

<table>
<thead>
<tr>
<th>Strand</th>
<th>Advanced Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Design</td>
<td>EdT 453: Instructional Design (3) — In-depth exploration of instructional design models and philosophies and their implications for teaching and learning using technology</td>
</tr>
<tr>
<td>Interface Design</td>
<td>EdT 443: Principles of Interface Design (3) — Designing interfaces with a focus on effectiveness and ease of use</td>
</tr>
<tr>
<td>Programming</td>
<td>EdT 404: Multimedia Programming for Instruction (3) — Introduction to programming for both Web-based and standalone learning materials</td>
</tr>
<tr>
<td>Web Creation</td>
<td>EdT 405: Website and Digital Resource Development (3) — Introduction to commercial HTML and other methods to create resource-rich e-learning sites; special emphasis on multimedia development skills and tools</td>
</tr>
</tbody>
</table>

College Core (6 hours)

Educ 403: Research Methods (3)

Educ 471: Multicultural Issues (3)

Advanced Study in Technology (3-9 hours) — With guidance from advisor, student should take at least one advanced course in one of the 3 strands.

<table>
<thead>
<tr>
<th>Strand</th>
<th>Advanced Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Design</td>
<td>EdT 453: Advanced Instructional Design (3) — Exploration of newer models for teaching and learning with a focus on designing materials for distributed learning</td>
</tr>
<tr>
<td>Interface Design</td>
<td>EdT 403: Advanced Multimedia Programming (3) — Advanced programming for Web-based and stand-alone educational applications</td>
</tr>
<tr>
<td>Web Creation</td>
<td>EdT 404: Advanced Web and Digital Resource Development (3) — Advanced Website creation, particularly development and use of digital resource-development software to create highly-interactive e-learning sites</td>
</tr>
</tbody>
</table>

Topics include streaming media development and broadcasting
Electives/Portfolio Development (0-6 hours)
  With guidance from advisor. Student may take related electives or work to expand his/her portfolio.
  Edu 493: Internship in Educational Technology (3)
  Edu 494: Fieldwork in Educational Technology (3)
  Edu 496: Independent Study in Educational Technology (1-6)
  Edu 477: Research Topics in Educational Technology (3)
  Edu 491, 492: Advanced Seminars (special topics in educational technology) (1-6)
  Other EdT courses as appropriate Other non-EdT courses as appropriate.

Total Hours (minimum): 30

Any student admitted after this program is approved will come in under these guidelines. Present students can, with the consent of their advisor, choose this program in preference to their present program or they may complete their present program with its present requirements and receive a Masters of Science in Educational Technology.

Graduate and Research Committee

Educational Technology Program

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 Lehigh 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 conformance of the Educational Technology Program with the broader missions 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. It is 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 four years, our plan is to offer at least 50 percent of degree requirements for the M.S. degree 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/Educ 4xx: Technology-based Teaching and Learning 1 & 2) approved last year by the College of Education and now being offered as an advanced seminar jointly taught by faculty from the Educational Technology Program (EdT) and the Technology-based Teacher Education Program (T3TE). Only two additional courses need to be added, one in how to integrate technology across the curriculum 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 some 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
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 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 technically-oriented than the present Technology-based Teacher Education masters program. While it shares the Shared Core with the TBTE teaching certification masters, it does not emphasize certification; similarly, it does not focus on subject-area specialization, a main feature of the TBTE non-certification masters degree. Of the 30 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, since 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 undergraduate 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):

College requirements: 6 hours
Foundations (Technology-based Teaching and Learning): 6 hours
Technology-based Content Delivery: 3 hours
Design Skills: 6 hours
Technology Implementation: 6 hours

Advanced Work (advanced seminars, research topics): 3 hours

Minimum hours to receive degree: 30 hours

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 (TBTE) 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 TBTE. The Technology Across the Curriculum course is a requirement in this new M.S. degree in Ed Tech, but is an elective in TBTE.
      
      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 TBTE and Ed Tech. This change is already in effect so no additional changes are required.
         
         a. 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.

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**

<Initially aimed at Students in International Program>

<table>
<thead>
<tr>
<th>Type of Requirement</th>
<th>Course</th>
<th>Hours</th>
<th>How offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>Edu 405 Research</td>
<td>3</td>
<td>In-person</td>
</tr>
<tr>
<td></td>
<td>Edu 471 Multicultural Issues</td>
<td>3</td>
<td>In-person</td>
</tr>
<tr>
<td>Foundations</td>
<td>EdT 4xx/Educ 4xx Technology-based Teaching and Learning 1: Foundations &amp; Issues</td>
<td>3</td>
<td>In-person</td>
</tr>
<tr>
<td></td>
<td>EdT 4xx/Educ 4xx Technology-based Teaching and Learning 2: Methods &amp; Assessment</td>
<td>3</td>
<td>In-person</td>
</tr>
<tr>
<td>Technology-based</td>
<td>EdT 465 Website and Resource Development</td>
<td>3</td>
<td>In-person</td>
</tr>
<tr>
<td>Content Delivery</td>
<td>EdT 463 Principles of Interface Design</td>
<td>3</td>
<td>Online</td>
</tr>
<tr>
<td></td>
<td>EdT 433 Instructional Design</td>
<td>3</td>
<td>Online</td>
</tr>
<tr>
<td>Design/Skills</td>
<td>EdT 470 Technology Across the Curriculum</td>
<td>3</td>
<td>Online*</td>
</tr>
<tr>
<td></td>
<td>EdT 471 Planning for Implementing Technology in School Settings</td>
<td>3</td>
<td>Online*</td>
</tr>
<tr>
<td>Technology</td>
<td>Edu 491.2 Advanced Seminar in Educational Technology (topic changes)</td>
<td>1-6</td>
<td>In-person or online</td>
</tr>
<tr>
<td>Implementation</td>
<td>Edu 477 Research Topics in Educational Technology (topic changes)</td>
<td>3</td>
<td>In-person or online</td>
</tr>
<tr>
<td>Advanced Work</td>
<td>Electives as approved by program coordinator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Online courses that may also be offered in-person on occasion
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 suited 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).

**Notes:**

New ET1= New hire in Ed Tech (in search Spring 2001)

New ET2= New hire in Ed Tech (in search Spring 2001)

New TBTE1= New hire in Technology-based teacher Education (in search Spring 2001)

New TBTE2= New hire in Technology-based teacher Education (search Fall 2001)

Graduate and Research Committee

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 416: Advanced Interactive Multimedia Laboratory (1)

Advanced laboratory for the location and production of multimedia resources. Must be taken with EdT 406: Advanced Interactive Multimedia Programming.

EdT 415: Practicum in Hypermedia/Multimedia Learning (1)

Exploration of learning with hypermedia/multimedia. Must be taken with EdT 405: 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 33 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 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.
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 4xx).

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

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 practicum (EdT 4xx).

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 Websites. 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 necessitates new title and description.
1. **Current course number and course description (from course catalogue):**

EdT 406. **Advanced Multimedia Design and Programming (3)**

Advanced hypermedia programming techniques applied to the design and delivery of technology-based instruction. Application and design of 3-D animation, digital audio and video. Must be taken with accompanying laboratory (EdT 4xx). 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)**

Events, philosophies, 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 school restructuring, computer-based cognitive science for instructional design and technology use, and information infrastructure technologies. Must be taken with accompanying practicum (EdT 4xx).

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 Website and digital resource 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 behaviorist 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)**

   *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 learner versus program control, interface consistency, principles of screen layout, and attention-getting and retention-enhancing techniques. Special emphasis on multimedia and graphical user interfaces 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 to the creation of technology-based interfaces. Special emphasis on graphical user interfaces 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-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 453. Advanced Instructional Design (3)**

Advanced instructional design and interface issues. Design of instructional environments, selection of instructional metaphors, 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 4xx) (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 metaphors, impact of the interface on the user, and demands of designing for newer learning technologies. Prerequisite: EdT 433 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 facilities development and management, staff 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 suit the needs of the new Educational Technology M.S. program. It satisfies one half 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.

-----------------------------------------------

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

New course

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/training settings. 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.

==================================

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 that new program.

==================================

3/19/01 10:53 AM