11-7-1983

Faculty Senate Monthly Packet November 1983

Portland State University Faculty Senate

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The Faculty Senate will hold its regular meeting on November 7, 1983, at 3:00 p.m. in 150 Cramer Hall.

AGENDA

A. Roll
*B. Approval of the Minutes of the October 3, 1983, Meeting
C. Announcements and Communications from the Floor
D. Question Period
   1. Questions for Administrators
      a. Question for President Blumel, submitted by D. Wrench: "Do you have any comments on the AAUP budget reduction proposals?"
      b. Question for Vice President Dobson, submitted by D. Smeltzer: "Why does it take so long for the printing of the University catalog?"
   2. Questions from the Floor for the Chair

E. Reports from the Officers of Administration and Committees
   1. Registration Update -- President Blumel
   2. Task Force Report -- Dean Toulan
   3. (Concerning Retrenchment and the Provisional Plan) Comments and Recommendations from the Senate

F. Unfinished Business -- none

G. New Business
   *1. Curriculum Committee Course and Program Proposals for CLAS - Gatz
   *2. Graduate Council Course and Program Proposals for CLAS - Dunbar

H. Adjournment

*The following documents are included with this mailing:
   B Minutes of October 3, 1983, Meeting
   G.1 Curriculum Committee Course and Program Proposals**
   G.2 Graduate Council Course and Program Proposals**

**Included for Senators and Ex-officio Members Only

Senators unable to attend the meeting are asked to pass this mailing on their alternates.
PORTLAND STATE UNIVERSITY

Minutes: Faculty Senate Meeting, November 7, 1983
Presiding Officer: Fred Waller
Secretary: Ulrich H. Hardt

Members Present: Becker, Brenner, Burns, Cabelly, Campbell, Carl, Cease, Chapman, Constans, Cooper, Crampton, Cumpston, Dunbar, Dunkeld, Featheringill, Fisher, Forbes, Gatz, Gerity, Harmon, Hillman, Howard, Jackson, Johnson, Karant-Nunn, Kirrie, Koskoff, Kristof, Mandaville, Martinez, Newberry, R. Nussbaum, Olson, Petersen, Pinamonti, Robertson, Savery, Sheridan, Shimada, Smeltzer, Sonnen, Spolek, Swanson, Tang, Tracy, Waldroff, Waller, Walton, West, Williams, Wolk, Wrench, Wyers.


Ex-officio Members Present: Blumel, Bogue, Corn, Dobson, Forbes, Hardt, Harris, Heath, Howard, Leu, Morris, Nicholas, Paudler, Pfingsten, Rauch, Ross, Schendel, Todd, Toulan, Trudeau, Williams.

APPROVAL OF THE MINUTES

FEATHERINGILL indicated that he had arrived after roll call on October 3 and had therefore been present. The minutes were approved without any other changes.

ANNOUNCEMENTS

WALLER mentioned the standing invitation from K-House following the meeting and also reminded Senators to bring the November Senate mailing to the December meeting. Approximately 30 Senators still have not designated alternates for the year.

QUESTION PERIOD

1. Questions for Administrators
   a. In response to Wrench's question regarding the AAUP budget reduction proposals, President BLUMEL assured the Senate that the proposals had been carefully considered, but it was not possible to achieve enough reductions without retrenchment. He took up each of the proposals and commented briefly on them. Administrative FTE reductions have been made as far as is responsibly possible. Sale
of real estate would not benefit the University as those funds would only be available to the State of Oregon. The educational leave policy matter is being pursued and there should be an answer before long; however, monies from that item are inadequate to solve the financial problem. As much as is possible is being done with early and phased retirements. Full-year sabbaticals are being encouraged, but PSU needs to remain sensitive to student needs and to potential enrollment drops resulting from sabbaticals; the University has no legal authority to require them. The DCE budget has been and continues to be under review. He reminded Senators that more than temporary savings are needed to overcome the financial crisis of this biennium.

OLSON asked if closure of the University during August, Thanksgiving week or December had been considered. BLUMEL said he had not seen those proposals -- they were not a part of the AAUP suggestions -- but he knew that students had expressed strong objections to such intimations.

b. BOGUE answered Smeltzer's question regarding the delay of the PSU catalog. Publication had been scheduled for the middle of July but because of many foul-ups did not arrive until the last week of August. The July date allows the expense to be part of the next biennium; the alternative would be to find $40,000 (half of the catalog cost) elsewhere. He pointed out that OSU received its catalog on July 20 and UO on September 7. The goal in 1985 is to have the PSU catalog the second week of July. SMELTZER commented that the catalog is PSU's most effective PR instrument; it is imperative that students have it early. He wondered if anyone could assess the cost this year's delay had in terms of student loss. BOGUE said that he could not.

2. Questions from the Floor for the Chair

WEST asked: "Would the Chairman of the PSU Faculty Senate be willing to inquire if the organizers planning the ceremonies which will take place when the new Pioneer Court House Square is dedicated welcome the presence of the Senators and Officers of PSU, who, wishing to honor the occasion in an appropriate fashion, would be happy to participate as a group in full academic dress?"

WEST also read portions of an October 13 letter to the Oregonian editor which suggested that "it is time for the university to stand on its own feet." The letter writer criticized PSU for "begging for help," having "no enthusiasm," and faculty morale which "seemed to be zilch." He further wrote, "What has PSU done to instill a sense of pride and giving among its graduates?...Where is PSU's ingenuity and marketing?"

WALLER replied he would look into the matter and call Commissioner Jordan's office where the planning is being done. DOBSON pointed out that PSU will be represented on the program through The Company We Keep dance group. BOGUE commented on fund raising activities; last year's Alumni Fund reached almost $100,000; the goal this year is $125,000. Further, a 1250 Club has been instituted for donors of $1,250 scholarships. The goal is to reach 50 donors. Scholarships of $1,000 will go
to students, and $250 will be put into an unrestricted faculty support fund. BOGUE also announced that Vice President Dobson had become the first member of the 1250 Club.

REPORTS FROM OFFICERS OF THE ADMINISTRATION AND COMMITTEES

1. BLUMEL reported that PSU enrollment at the end of the fourth week was up by 6 students over last year. Other institutions in the state system showing enrollment increases are: UO (.7%), SOSC (4.6%), WOSC (7%), OIT (1.3%). EOSC is down slightly, OSU (-3.7%), and OHSU (-10%). WALLER asked if these figures would have any impact on the 1984-85 reductions. BLUMEL responded that it was too early to tell whether there will be additional tuition revenue. He said it didn't look good. COOPER asked about faculty productivity. HARRIS said that since the faculty size was about the same as last year, productivity was also about the same.

2. Dean TOULAN is writing the final report of the Planning Task Force and hoped to have the document on the President's desk later this week. The committee in a long weekend meeting had approved four objectives:

- PSU should aspire to survive as a university
- PSU should try to improve comprehensive research activities, both theoretic and applied
- Recognizing our roots, PSU should continue to serve the clientele of the urban setting
- PSU should not try to be the best in everything but be selective in developing areas of specialty.

The Task Force, TOULAN said, is recommending reducing resources to some programs and the elimination of two or three very small programs. KARANT-NUNN asked if the faculty will see the report. TOULAN said that the President will decide regarding dissemination, but the report is scheduled to go to several University committees.

TOULAN was thanked for the dedicated work with the Task Force, and DOBSON announced that he had accepted one of the most prestigious assignments of this century, heading the planning team of the religious city of Mecca, thus being on leave from PSU.

3. WALLER invited Senators and all others who wished to comment on the President's provisional plan of retrenchment to do so at this time; he pointed out that Article 19, Section 4 of the Agreement provides for this discussion. OLSON asked what was wrong with closing the University between September 15-22; closure then would not hurt the students but would give a loud message to the community. BLUMEL replied that we can consider that, but PAUDLER asked if the University was willing to do that forever, since we must come up with a permanent budget reduction.

CEASE asked if necessary reductions were just a legislative matter. BLUMEL said only a portion was; the new BAS formula accounted for another part, and the significant enrollment drops for another substantial part. CRAMPTON spoke of the need to protect small but dis-
tinctive programs, like the Public Health Studies and Middle East Studies Centers. If small programs such as those are wiped out, we also lose all who would speak for them, and that will change what PSU is in the community. PAUDLER countered by saying the University must protect and maintain the fundamental academic areas, and he compared the importance of the English and mathematics departments with Public Health Studies; the latter serves only about 40 students at a substantial cost. CEASE reminded the Senate of Toulan's earlier points that PSU is an institution serving an urban clientele. We need to concern ourselves with that and not just become another four-year school.

WEST observed that the quality of our students was on the upswing again after dipping for a number of years. He said that PSU should advertise that we are good buy for the money. BLUMEL agreed and said that the external impression of PSU (outside of some colleagues down the valley) is good. His concern was that the University was not able to do more than we are. There is also a hopelessness in the state's inability to do more than it does.

BURNS and OLSON returned to the topic of closing the University, if only for a day. KARANT-NUNN agreed that that action would demonstrate to the public that we are desperate. But CEASE warned that desperation feeds on itself. If we closed the school, we lose students in the short haul because they will go elsewhere for an education; so even though closure might get us long-term help, it may be detrimental. He spoke against it, and HARMON added that closing the University penalizes everyone; he feared that faculty -- especially the best members -- would leave for places where they got full salaries.

MANDAVILLE and BRENNER talked about the need to encourage grant writing activities but also of the need to deregulate the process of grant proposals and the possibility of giving back to the departments some of the overhead monies generated by grants. WALLER responded that that would not help with the problem which the University faces over the long term, but MANDAVILLE countered that it would help PSU's public image to stimulate and attract more grants.

WALDROFF pointed out that support services for faculty and students are already dangerously low and are eroding further. Supply budgets for departments are also suffering. WEST commented that supply budgets in the state are endemic and are perhaps not even related to current budget cuts. A problem exists if, for instance, a TV monitor can only be replaced every 25 years; by then the advancement in technology has left us far behind.

R. NUSSBAUM asked if there was word about what UO was doing. BLUMEL said he had not heard, and ROSS quipped that their coach had said they needed a quarterback.

CONSTANS returned to the topic of the smaller programs; they are being hurt the worst, and she argued that especially these small programs belong in the urban university and make PSU unique. She urged that stop-gap monies be found, rather than lopping off these small
BLUMEL commented that in substantial measure we are using temporary savings for now but have done as much as we can. WALLER additionally pointed out that the provisional plan only proposed a $1.7 million retrenchment rather than the necessary $1.9 million.

BLUMEL said he had received many individual communications and encouraged others up to the November 18 deadline. But CEASE speculated that many faculty would not respond for fear that their own programs might lose if changes were made in the published proposed plan. It was hard for him to see how an urban University could propose cutting the Public Health Services program; if anything, it should become a strong masters program. PSU needs more graduate programs and is the only institution in the state which could develop a viable Public Health graduate program. Great possibilities of research are here. He feared that "suspension" of the program for all purposes meant permanent loss. But BLUMEL reminded the Senate that last time there were changes from the preliminary plan to the final plan and encouraged faculty to comment.

WOLK talked about retirements and wondered if, especially in small departments, those faculty close to retirement might feel pressure to phase out earlier than planned in deference to a younger faculty member. He feared that it may be uncomfortable for people not to retire. WALLER commented that exerting that kind of pressure would be unconscionable.

COOPER wanted to know if departments could overrealize savings through retirements and if they could then keep the allocations. BLUMEL said that he had no sense of what effect the improved phased retirement options will have. He emphasized that the provisional plan did not look at specific positions in departments but was drawn up on the basis of FTE. Departments do not keep the money of retired faculty, and replacement of positions will be determined according to FTE. HARRIS added that extra funds from retirements go to promotions, etc.

NEW BUSINESS

The Curriculum Committee and Graduate Council jointly brought course and program proposals from CLAS to the Senate. GATZ and DUNBAR moved "approval of the program change for the basic certificate in integrated science and the MAT/MST in Science and MA/MS in General Speech Communication." The motion was seconded.

FORBES asked why General Biology was being replaced with Principles of Biology. He wanted to know where the proposal had originated and why the Biology Department had not been advised at all. GATZ replied that BI 251, 252, 253 has a lab while BI 101, 102, 103 does not. HEATH added that the argument had been used that the 200-level course was more appropriate for those teaching science. FORBES observed that most integrated science majors take the non-biology major course. GATZ also pointed out that the Teacher Education Committee needed to review this change. MANDAVILLE amended the motion to exclude the Biology Courses.

The amendment was passed, and the main motion was passed.
GATZ and DUNBAR moved "approval of the departmental proposals, including undergraduate Biology, Chemistry, Computer Science, English, Foreign Languages, History, and Philosophy, and graduate Biology, Geography, History, Sociology, and Speech Communication."

The motion was seconded and passed. (CHEM 443 was not included in this motion).

GATZ moved "approval of the program change in departmental degree requirements in Physics," and DUNBAR moved "approval of graduate course proposals in Physics."

The motion was seconded and passed. (Action on the remaining undergraduate Physics proposals was deferred until the December meeting).

GATZ and DUNBAR moved "approval of undergraduate proposals in Political Science, Psychology, Sociology, and Women's Studies, and graduate courses in Psychology and Sociology."

The motion was seconded and passed. (Action on SOC 489 was deferred until December).

DUNBAR moved "approval of SP 535 and 522."

The motion was seconded and passed. (Action on SP 524 was deferred until December).

ADJOURNMENT

The meeting was adjourned at 4:22 p.m.
To: Faculty Senate  
From: University Curriculum Committee  
   Carole Gatz (Chair), Carl Abbott, James Bentley, Stephen Best, Catherine Evleshin, Kathleen Greey, David Guzman, Nan-Teh Hsu, Sheldon Maron, Anthony Wolk, Helen Youngleson  
Consultants: Forbes Williams, Don Gardner  

The Curriculum Committee has reviewed the following proposals for program changes, new courses, and changes in existing courses for The College of Liberal Arts and Sciences.

College of Liberal Arts and Sciences - program change for basic certificate in integrated science - approved
   --new courses: Anth 399, AA 399, Bi 399, BSt 399, CS 399, Ec 399, Wr 399, Lat 399, GL 399, Chn 399, Jpn 399, Fr 399, It 399, Port 399, Span 399, SmL 399A, SmL 399H, UAL 399, SL 399R, SL 399S, Geog 399, G 399, Hst 399, Mth 399, Ph 399, PS 399, Psy 399, PHS 399, Sp 399, Sch 399, WS 399, Hum 399, Sc 399, SSc 399 -- approved.

Biology -- new course-approved
   -- course changes -- approved

Chemistry -- program change for standard certificate -- approved
   -- new course -- approved

Computer Science -- program change in departmental degree requirements -- approved
   -- new course -- approved
   -- course changes -- approved with editorial change in prerequisites for CS 358 to read CS 249 or CS 253; CS 251 and MTh 325.

English -- new courses -- approved

Foreign Languages -- new courses -- approved

History -- new courses -- approved
   -- course changes -- approved

Philosophy -- new course -- approved

Physics -- program change in departmental degree requirements -- approved with deletion of CH 216 and the corresponding 1 credit.
   -- program change in catalogue description of secondary education program -- approved
   -- new courses -- approved with the following revisions: Ph 423: add "Prerequisites: Ph 321 and MTh 321". Ph 440, 441, 442: change prerequisites to "Ph 311-313 and Ph 314-316".
   -- course changes -- approved with the following revisions. Ph 316: change prerequisites to "Ph 311, 312, 315". Ph 432, 433 grad.: delete "undergraduate" from course description and add "Prerequisites: Ph 321 and Mth 321".

Political Science -- program change in departmental degree requirements -- approved

Psychology -- new courses -- approved with the following editorial changes.
   Psy 206: change title to "Psychology as a Natural Science:"
Laboratory" and delete the words "special" and "are covered" from the course description.
Psy 210: change course description to "Instruction in techniques for the improvement of memory, reasoning, creative thinking and decision making. Includes practice in their application".
Psy 466: change course description to begin "An experimental approach to methodological and ethical issues..."
Psy 485: change course description to "The technology of self-change developed within the framework of behavior modification theory, including relevant ethical and theoretical issues, specific techniques of change and the application of these techniques within a systematic program development model. Prerequisites: Psy 340, Psy 346, or Psy 484.

Sociology -- new courses -- approved with editorial change in course description for Soc 372: change second sentence to "The primary emphasis of the course is upon drugs other than alcohol in American society".

Women's Studies -- program change in requirements for certificate -- approved
## Summary of Course Requests from CLAS

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<th>Department</th>
<th>Additions</th>
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<tr>
<td>Biology</td>
<td>Bi 412 (3)</td>
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<td>Bi 104,105,106 (1,1,1)</td>
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<td>Bi 455 (+1)</td>
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<td>Chemistry</td>
<td>Ch 443 (2)</td>
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<td>Computer Science</td>
<td>CS 253 (1)</td>
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<td>English</td>
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<td>Wr 211 (3)</td>
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<td>Foreign Languages</td>
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<td>Jpn 314,315,316 (3,3,3)</td>
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<td>History</td>
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<td>Hst 391,392,393 (3,3,3)</td>
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<td>Philosophy</td>
<td>Phl 208 (3)</td>
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<td>Physics</td>
<td>Ph 322 (3)</td>
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<td>Ph 423 (3)</td>
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<td>Ph 440, 441,442 (3,3,3)</td>
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<td>Ph 314,315,316 (+1,+1,+1)</td>
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<td>Ph 367,368,369 (2,2,2)</td>
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<td>Ph 426 (+1)</td>
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<td>Ph 451,452,453 (+1,+1,+1)</td>
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<td>Ph 416 (2)</td>
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The Graduate Council has reviewed the following proposals for program changes, new courses; changes in existing courses, and dropping of existing courses and has taken the action as indicated:

Programs

MAT/MST in Science -- approved
MA/MS in General Speech Communication -- approved with change in next to the last sentence in catalog description to read "Each student shall complete a thesis and pass a final oral examination on the thesis."

Courses

- **Biology**
  - Bi 412 -- approved with deletion of P/NP option for graduate credit
  - Bi 455 -- approved

- **Geography**
  - Geo 511 -- approved
  - Geo 513 -- Drop approved

- **History**
  - Hist 483, 484, 485 -- approved
  - Hist 474, 475 -- approved

- **Physics**
  - Ph 440, 441, 442 -- approved with deletion of P/NP option for graduate credit and addition of supplemental statement to replace #11 page 31 of course proposal.
    (See attached)
  - Ph 414 and 415 -- approved
  - Ph 424 to Ph 323 -- approved
  - Ph 425 and Ph 426 -- approved
  - Ph 431 to Ph 321 -- approved
  - Ph 432 and 433 -- approved with addition of "Prerequisites: Ph 321 and Math 321."
  - Ph 451, 452, 453 -- approved
  - Ph 416 Drop approved
  - Ph 465 Drop approved

- **Psychology**
  - Psy 485 -- approved with deletion of P/NP option for graduate credit
  - Psy 518, 519, 526 -- approved

- **Sociology**
  - Soc 413 and 446 approved with deletion of P/NP option for graduate credit

- **Speech Communication**
  - Sp 535 and 522 -- approved

The following courses were referred back to departments because clarification was needed:
- Chem 443
- Soc 489
- Sp 524
October 17, 1983

Supplement: Proposal for new course

RE: Ph 440, 441, 442
Physics of Solid State Devices (3,3,3) grad.

11. Students will be graded on the basis of examinations, assigned homework problems and projects. Examinations and homework problems will be common to both categories of students. Students taking this course for graduate credit will be given more complex projects requiring additional efforts. We estimate that these efforts will represent, on the average, additional 2 hours/week out of class work. The weighting factors determining the course grade will be distributed in the following way: written examinations: homework problems: projects 60:20:20.
Subject: Summary - 1984-85 Proposed Changes in Existing Programs

I. COLLEGE OF LIBERAL ARTS AND SCIENCES

A. The Department of Chemistry requests the following change for the Standard Certificate in Chemistry: to delete the requirement for 2 credits of seminar. The requirement was introduced in error when the Department supplied updated documents to the Teachers Standards and Practices Commission.

B. For the Bachelor's degree in Computer Science, the Department of Computer Science proposes to require CS 253 (a one credit course in FORTRAN), because a background in FORTRAN is needed for the required course CS 358; to add CS 485 (a three credit computer programming laboratory) to the elective list and delete it as a required course (with a resulting decrease of 3 required credits and an increase of 3 elective credits). The names of CS 351 and CS 358 are also being changed. The net change in credits required is plus one.

C. The College of Liberal Arts and Sciences proposes the following change to the Integrated Science Endorsement: replace BI 101, 102, 103 (9 credits) with BI 251, 252, 253 (12 credits). The latter sequence is recommended for programs such as agriculture, dental hygiene, dentistry, and forestry. BI 251, 252, 253 is more appropriate for students planning to teach science than BI 101, 102, 103.

D. The College of Liberal Arts and Sciences requests the addition of the following sentence to the existing catalog statement for the MAT/MST in Science program:

"The College of Liberal Arts and Sciences offers MAT/MST Degrees in Science in Science/Biology, Science/Chemistry, Science/Geology, Science/Physics, and in Mathematics."

The College believes it is important to the student to be able to identify the specific department that comprises the student's area of concentration. A minimum of 24 credits in one department constitutes an area of concentration.
E. The Department of Political Science requests changes in the course requirements for a major. In place of requiring two courses chosen from designated courses in four separate areas, the proposal requires one upper division course selected from designated courses in five separate areas: American Government and Politics, International Relations, Comparative Politics, Political Theory, and Research Methods (the additional area). The other change in the proposal specifies that a minimum of 30 of the 45 required credits must be upper division.

F. The Department of Physics proposes changes in the BA/BS program to add 15 credits of new courses (6 required and 9 elective) designed to modernize the curriculum. The new courses will provide students with experience in the use of computers as a tool in both theoretical and experimental physics and will give greater emphasis to applied solid state physics. Such experience and emphasis is important for students seeking entry level positions in high-tech industry. Fifteen credits in old courses will be dropped, with 11 to be deleted from the catalog. A number of minor changes in existing courses are also included in the revised degree program. Most of these involve renumbering in order to indicate more clearly a course's relative position in the undergraduate curriculum.

G. The Department of Physics proposes changes in wording to the catalog statement for the Secondary Education Program in Physics to state more clearly the requirements in physics and chemistry. The proposed wording, with changes underlined, is as follows:

Students who wish to teach physics, chemistry and/or general science in secondary schools, in addition to satisfying the School of Education requirements and the requirements for graduation (see page 35), need a physical science endorsement. The physical science endorsement can have either a physics or a chemistry option. For the physics option, the student must complete 27 credit hours in approved physics courses (of which 12 hours must be at the upper division level) and 18 credit hours in approved chemistry courses. The chemistry courses must include CH 201, 202, 203 or equivalent. The physics courses must include a general physics sequence (either PH 201, 202, 203 or PH 207, 208, 209), and an undergraduate modern physics sequence, e.g., PH 311, 312, 313. Mathematics through calculus (MTH 203 or equivalent) is also required.

H. The Department of Speech Communication requests changes in the MA/MS in General Speech Communication to require candidates to develop an approved program which must include:

-SP 400, 426, 435, 440, 512 or their equivalent;
-at least three courses from among SP 522, 524, 526, 535, 540;
-at least nine credits from an approved area outside of the Department;
-a thesis topic and a thesis prospectus.
Each student will select an advisory committee during the first two terms of residence. During the third term for full-time students and between 18 and 24 credits for part-time students, the advisory committee will hold a candidacy examination to assess the student's program and the student's written and oral communication skills. At this time or before at least four calendar months prior to the end of the term in which the student expects to graduate, the student will present the thesis prospectus to the advisory committee. All students shall pass a final oral examination. All students working for the MS or pursuing empirical research will be required to show proficiency in statistics or equivalent research methodology.

The proposal reflects both minor procedural changes and substantive changes which incorporate the results of reviews of the Department's graduate program conducted by Department curriculum committees between 1979 and 1982. The main thrust of the proposal is to institute more rigorous requirements.

I. **Women's Studies** requests a change in requirements for a Women's Studies Certificate to: lower the total number of credits from 42 to 33, require WS 315 (Feminist Theory) and either WS 215 (History of Feminism) or WS 415 (Issues in Contemporary Feminism), and set the number of approved elective courses at 18 (minimum of 12 upper division).

Justification for the proposal includes: 42 credits are excessive for an undergraduate Certificate program, especially since duplication among courses has now been eliminated; more theory courses are necessary; and students should be able to use approved elective credits to pursue the study of women within their own major.

III. **SCHOOL OF BUSINESS ADMINISTRATION**

A. The **School of Business Administration** proposes to establish a specific 15 credit upper division option in Information Resource Management for Business majors who select the Business Education option. The courses required for the Information Resource Management option will be: BEd 415 Office Systems (3), BEd 416 Office Management (3), BEd 417 Information Processing Management (3), upper division management or business education courses (6). This option will be valuable for business education students who decide against teaching certification by providing them with specialized training needed for jobs in modern office technology.

B. The **Department of Management** proposes to offer three options—Operations and Materials Management, Human Resource Management, and General Management—for students seeking specialization while obtaining a BA/BS in Business Administration. The Department presently offers only one option, in Management. The three proposed options, or their equivalents, are available at most significant Schools of Business in the United States. The courses required for the options have been available as electives for the past two years. All support courses for the options are required for all majors in Business Administration. Option requirements will be satisfied by taking 15 upper division credits beyond the required business courses, the same number of credits as required for the present Management option. No additional fiscal resources or additional faculty will be needed.
II. SCHOOL OF EDUCATION

A. The School of Education proposes the following changes to the Basic and Standard Counseling curriculum in the Counselor Education program:

- Increase the number of credits required for each endorsement to 30 (from 27 for the Basic and 18 for the Standard).
- Increase, where appropriate, the number of course options available to the student.
- Better delineate the student's educational program.

B. The School of Education requests changes in the catalog description for the MA/MS in Education which will reflect the current organization of the School of Education. The existing catalog statement recognizes neither the existence of departments nor the integrity of specialized professional programs. The existing statement also unnecessarily confuses the academic and professional requirements for the degree with requirements for certification. The proposed catalog statement will remove certification requirements and considerations from the statement of degree requirements. This will eliminate the need to update the catalog statement for the MA/MS degree whenever the Teacher Standards and Practices Commission changes certification requirements.

IV. SCHOOL OF ENGINEERING AND APPLIED SCIENCE

A. In order to stay current with technical trends the Department of Electrical Engineering proposes to increase the course work required in microcomputers and solid state electronics for a BS in Electrical Engineering. EE 170 (Logic Design) and EE 270 (Logic Circuits and Systems) will be added for majors. Additional emphasis in integrated circuit design is also important, and Ph 312 (Solid State Physics) will be added as a requirement to provide such expertise. To make room for the three new courses—Ch 203, 215, and EAS 212 will be dropped as required courses. The changes reduce the total science credits by one, to 25. The net change for the major will be an increase of two credits.

B. The Department of Electrical Engineering proposes to increase course work in solid state electronics required for a BS in Computer Engineering. The change reflects technological trends, particularly in integrated circuit design. Ph 312 (Solid State Physics) will provide grounding in solid state devices, which is essential for integrated circuit design. The additional three credits required for this physics class will be accommodated by substituting Ch 201, 202, 214 (Chemistry for Engineering Majors=7 cr.) for Ch 204, 205, 214, 215 (General Chemistry=10 cr.). The net number of science credits required thus remains the same.
The School of Health and Physical Education proposes changes in the BS/BA degree in Physical Education to the Core Requirements, the Teacher Education option, the Urban Community Physical Education option, and the Research and College Teaching Option. The changes will have no budgetary impact. All majors must complete the core program.

The changes in the core program represent the need for more scientific background in the physiological and biomechanical foundations of fitness. The title change of PE 194 to Basic Biomechanics more clearly defines the content of the course; the Physical Fitness Concepts course has been expanded to a new three credit course, PE 371 Training for Improved Fitness. Other content areas which enhance this area are Care and Prevention of Injuries, CPR and Sports Skill and Fitness Proficiency. It should be noted that PE 490 is the same as PE 409, Major Practicum, a change approved in 1982 which does not appear in current catalog copy. The changes reduce the total number of credits required from 50 to 46.

The changes proposed in the Teacher Education Option involve modifications to courses required which result in an increase in the total credits from 35 to 36. The certification program qualifies graduates to teach kindergarten through grade 12. The changes in this option strengthen the elementary education portion of the degree in a prepackaged form with more emphasis on movement education and perceptual motor problems.

A number of new courses (PE 409 Urban Practicum, PE 409 Urban Internship, 9 credits in related PE courses, Phl 203, Mktg 250, Sp 321, Psy 345) increase the total credits required for the Urban Community PE Option from 58 to 72. When this option was originally designed, placement of graduates was mainly with city/park recreation programs. With the expansion of private enterprises, i.e., fitness centers, sports clubs, racquet centers, etc., the needs of these graduates have changed and are more diverse. Their involvement may span the full range of ages from youth sports to senior citizens. The proposed program allows the students more breadth in choice of elective courses and a chance to pursue an area of interest. More internship is required since this was identified as a very important aspect in the application of principles and in providing easy transition to the job market.

The proposed changes in the College Training and Research Option are intended to meet the needs of students who have interest in the scientific basis of human movement than did the Research and College Teaching Option. Since the old option was designed, a tremendous surge in fitness has emerged and opportunities for employment in business and industry have developed as have opportunities in corrective and adaptive exercise. The American College of Sports Medicine has developed guidelines for national certification for fitness technicians and leaders, and the School has developed a set of graduate courses and internships which students may take leading to certification by the American Corrective Therapy Association. Both of these certification programs require further study at the graduate level, but the option, renamed Exercise Science, begins the process of specialization without undue restrictions as to the options the student may choose at the graduate level.
PORTLAND STATE UNIVERSITY
August 22, 1983

To: Curriculum Committee
   Graduate Council

From: Jim Heath

Re: Summary of 1984-85 Proposed New Programs

I. COLLEGE OF LIBERAL ARTS AND SCIENCES

The College of Liberal Arts and Sciences proposes a new interdisciplinary instructional program leading to a Bachelor of Arts in International Studies. The program will feature five area concentrations or "tracks": four existing certificate programs in Asian Studies, Central European Studies, Latin American Studies, and Middle East Studies plus a new track in Comparative Development/Modernization Studies. Majors will concentrate on one of the five "tracks" and will be required to complete a 3-credit team-taught core seminar; two years of lower division courses in a foreign language plus 9 upper division credits in the language; and 27 credits drawn from economics, geography, history, architecture, political science, anthropology, and sociology in combinations determined according to the particular track chosen. A proficiency test will be required for the language.

The principal objective of the program will be to provide education for professional careers in business, the foreign service, education, and communications that require expertise in international economic, political, social, and cultural affairs. The program will signify an increased awareness on the part of PSU of the nation's and the state's growing involvement in world affairs. In addition to the academic offerings, the International Studies program will provide research and public service dimensions of value to Oregon and the Pacific Northwest.

To mount the program, a total of 39 new credits will be needed (12 in anthropology, 18 in economics, and 9 in sociology). Also required will be a 1.0 FTE coordinator and a 1.0 FTE secretary. Although new faculty members will not be needed to initiate the program, an estimated $23,553 from state funds will be required during each of the first four years.
The Department of Music proposes a new instructional program leading to a Bachelor of Music degree. The BM degree is a professional degree and is neither desirable nor appropriate for all students who major in music. Consequently, the Department will continue to offer the BA/BS in Music. The BM will require substantially more course work in pedagogy and music to prepare students for performance or to engage in studio teaching. At this time, the Department is requesting only a Performance option for the BM. In the future, however, additional options, such as Theory, Composition, History and Literature, Music Therapy, Jazz Studies, Music Education, and Sacred Music, may be requested.

Students completing the BM will take 123 credits in Music courses, including 12 lower division and 12 upper division credits in Applied Music. The Department will need to add the following courses to offer the BM: Mus 341 Pedagogic Studies and Mus 191, 192 Class Instruction (Piano). These 3-credit courses are presently being taught as Mus 199s.

Many students now enrolled in the BA/BS in Music have indicated a preference for the BM. The experience of Music departments at other schools offering the BM has been that it attracted substantially more majors than the BA/BS.
COLLEGE OF LIBERAL ARTS & SCIENCES

ANTHROPOLOGY

New Course

Anth 399. Special Studies. Credit to be arranged.

ART AND ARCHITECTURE

New Course

AA 399. Special Studies. Credit to be arranged.

BIOLOGY

New Courses

Bi 399. Special Studies. Credit to be arranged.

Bi 412. Animal Behavior. (3) (Grad)
An evolutionary approach to the study of animal behavior. The importance of ecological, physiological, and social variables will be examined in relation to the behavior of the individual animal. Prerequisites: 1 year of introductory biology and upper division standing.

Changes in Old Courses

Bi 101, 102, 103. General Biology. (3, 3, 3)
The fundamental principles of life as they apply to both plants and animals. If taken after completing courses with similar materials credit will be restricted. Three lectures.
(Change in lecture hours from (2) to (3) and separation of lecture from laboratory.)

Bi 104, 105, 106. General Biology Labs. (1, 1, 1)
Laboratory to accompany General Biology (Bi 101, 102, 103). Concurrent enrollment in Bi 101, 102, 103 is required. One two-hour laboratory per week.
(Separation of laboratory from lecture.)

Bi 455. Histology. (5) (Grad)
Systematic study, description and identification of histological structures. Three lectures; two 3-hour laboratory periods. Prerequisite: two years of biology.
(Change in credit hours from (4) to (5), change in lecture hours from (2) to (3) and addition of graduate credit.)

BLACK STUDIES

New Course

BSt 399. Special Studies. Credit to be arranged.
CHEMISTRY

New Course

Ch 443. Computational Chemistry. (2) (Grad)
The analysis of experimental data as it pertains to physical chemistry laboratory, Ch 444 and 445. Certain common numerical methods will also be developed together with suitable algorithms. Concurrent or previous enrollment in Ch 440 required. Graduate credit not available for Chemistry majors.

COMPUTER SCIENCE

New Courses

CS 253. FORTRAN. (1)
A brief survey of the FORTRAN programming language, for students with previous programming experience in structured languages. Credit not allowed for both this course and CS 249. Prerequisite: CS 250 or equivalent.

CS 399. Special Studies. Credit to be arranged.

Changes in Old Courses

CS 249. Introduction to Programming in FORTRAN. (3)
Design and construction of computer programs. Use of the FORTRAN language to solve problems over a wide range of applications. The course is introductory in nature and is not intended for students with previous knowledge of FORTRAN. Credit not allowed for both this course and CS 253. Prerequisite: Mth 101, or Mth 114, or equivalent.

CS 349. Advanced Programming FORTRAN. (3)
Features of the FORTRAN language necessary for implementing and maintaining large programs. Topics include numerical accuracy, unformatted and direct access input/output, overlays, unit editing, packaged subroutines and programs, portability issues and preprocessors. Prerequisite: CS 249 or CS 253 or equivalent.

CS 351. Discrete Structures. (3)
Elements of discrete mathematics with applications to computer science. Topics from logic, sets, relations, graphs, functions, tools for algorithm analysis, and universal algebra. Prerequisites: CS 252 and Mth 202 or equivalent.

CS 358. Numerical Methods. (3)
Introduction to numerical methods. Includes topics from elementary discussion of errors, polynomial interpolation, quadrature, linear systems of equations, and solution of nonlinear equations. Credit will not be given after Mth 451, 452 or 453. Prerequisites: CS 249 or CS 253, CS 251 and Mth 325.
ECONOMICS

New Course
Ec 399. Special Studies. Credit to be arranged.

ENGLISH

New Courses

Eng 317. Greek Mythology. (3)
Greek mythology as recorded by Homer, Hesiod, Ovid, and various of the Greek playwrights and philosophers. Special attention is given to the Greek legacy of ideas, themes, figures, and images.

Eng 319. Northern European Mythology. (3)
A study of Nordic (Germanic) and Celtic myths, their literary development, and fusion with Christian themes in Arthurian romance and Beowulf.

Wr 211. Writing Practice. (3)
Writing Practice is a conference-centered writing elective. Students proceed at their own pace through an individualized writing program that emphasizes the writing process and revision. Class time is spent writing and in conference. Prerequisite: WR 121.

Wr 399. Special Studies. Credit to be arranged.

FOREIGN LANGUAGES

New Courses

Latin
Lat 399. Special Studies. Credit to be arranged.

German
Gl 399. Special Studies. Credit to be arranged.

Chinese
Chn 314, 315, 316. Third-Year Chinese. (3, 3, 3)
Intermediate conversational reading practice, writing, vocabulary building.

Chn 399. Special Studies. Credit to be arranged.

Japanese
Jpn 314, 315, 316. Third-Year Japanese. (3, 3, 3)
Intermediate conversation and reading practice, writing, vocabulary building.

Jpn 399. Special Studies. Credit to be arranged.

French
Fr 399. Special Studies. Credit to be arranged.

Italian
It 399. Special Studies. Credit to be arranged.

Portuguese
Port 399. Special Studies. Credit to be arranged.

Spanish
Span 399. Special Studies. Credit to be arranged.
Arabic
SmL 399A. Special Studies. Credit to be arranged.

Hebrew
SmL 399H. Special Studies. Credit to be arranged.

Hungarian
UAL 399. Special Studies. Credit to be arranged.

Russian
SL 150, 151. First-Year Russian. (6, 6)
Two term sequence covering the content of SL 101, 102, 103.

SL 399R. Special Studies. Credit to be arranged.

Serbo-Croatian
SL 399S. Special Studies. Credit to be arranged.

GEOGRAPHY

New Course

Geog 399. Special Studies. Credit to be arranged.

Changes in Old Course

Geog 511. Proseminar. (3)
An introduction to geography as a professional field. The first half of the course will deal with the history of geographic thought and literature. The second half focuses on the role of geography among the arts and sciences and on more recent developments in the field. A research paper is required.

(Change in description.)

Old Course Dropped

Geog 513. History of Geographic Thought and Literature. (3)

GEOLOGY

New Course

G 399. Special Studies. Credit to be arranged.

HISTORY

New Courses

Hst 316. American Family History. (3)
An introduction to the history of the American family from the colonial period to the present. Topics include: Child rearing and the life cycle in colonial America; the demographic transition and the origins of the modern family; women, the family and domesticity in Victorian America; the black family in slavery and freedom; divorce, the science of child rearing, women and work, and the family in the twentieth century.
Hst 328. Oregon History. (3)
This course surveys the history of Oregon from the time of the European discoveries until the present. Topics considered are the era of colonization; the diplomacy of the Oregon Question; the Christian missionaries; the pioneers' migration and their institutions; the formation of the constitution; the Oregon system; minority groups; and modern politics and economics. A biographical approach will be taken where appropriate.

Hst 391. Early Japan to 1600. (3)
History of Japan from the origins of the Japanese people and formation of the early Japanese state through the development of Japanese feudal institutions. Emphasis on the relationship between native ideas and institutions and Chinese influence, culture of the Heian court aristocracy, evolution of Japanese feudalism. Art, literature, and documents in translation used in addition to textbook material.

Hst 392. Tokugawa Japan, 1600-1850. (3)
History of Japan from establishment of Tokugawa rule in 1600 through mid-nineteenth century, prior to "opening" of Japan by the West. Emphasis on Tokugawa political institutions, Neo-Confucianism as political and social ideology, cult of the samurai, and economic changes that laid foundations for modern Japan; cultural developments such as kabuki and bunraku theater, haiku poetry, literature and art of the "floating world".

Hst 393. Modern Japan, 1850-present. (3)
History of Japan from Perry Expedition in 1853 to the present. Emphasis on Tokugawa foundations for rapid transformation of Japan beginning with the Heiji Restoration; Westernization; evolution of modern political institutions; rise of Japanese militaries and imperialism in Asia. Modern literature, postwar social change, and status of Japan as leading industrial nation.

Hst 399. Special Studies. Credit to be arranged.

Hst 483. Classical and Early Imperial China. (3) (Grad)
History of China from origins of civilization in the Yellow River valley through collapse of the T'ang dynasty (c. 850). Emphasis on Confucius and other philosophers of the Classical Age; Legalism and Ch'in Empire; the Han bureaucratic state and adoption of Confucianism; the introduction of Buddhism; reunification and the T'ang Empire. Attention given to art and literature such as Shang and Chou bronzes, Buddhist sculpture, and T'ang poetry.

Hst 484. Late Imperial China. (3) (Grad)
History of China from transformation of Chinese society identified with transition between T'ang and Sung dynasties, c. 750-1050, through Ming (1368-1644) and Ch'ing (1644-1911). Emphasis on maturation of the bureaucratic state, rise of the scholar-official "gentry", evolution of Neo-Confucianism, and patterns of agricultural and commercial development. Considerable attention devoted to art and literature, including painting, poetry, and popular fiction.
Hst 485. Modern China, 1850-Present. (3) (Grad)
History of China from decline of imperial system through century of revolution that culminated in founding of People's Republic of China, to death of Mao in 1976. Course is organized around concepts of imperialism, nationalism, revolution, and modernization analyzed in context of chronological presentation of major events in modern Chinese history, including the 1911 Revolution, the May 4th Movement, the genesis of Chinese Communism, the decade of Nationalist rule from Nanking, and the Sino-Japanese War. History of post-revolutionary state treated in terms of consolidation of power and implementation of revolutionary ideals.

Changes in Old Courses

Hst 291, 292, 293. East Asian Civilization. (3, 3, 3)
Hst 291. East Asia to 1500. Origins of East Asian civilization; formation of first empires in China and state in Japan; Confucianism; Taoism, Shinto, spread of Buddhism; Chinese influence and native Japanese, Korean, and Vietnamese culture; "medieval" China, "feudal" Japan. Hst 292. East Asia, 1500 to 1850. State and society in late traditional China; transformation of "feudal" institutions in Tokugawa Japan; urban culture in China and Japan. Relationship of Korea and Vietnam to China. Hst 293. East Asia, 1850-present. Political institutions, culture, society prior to "opening" of China and Japan by the West; Chinese and Japanese responses to the West; imperialism, nationalism, revolution in East Asia.
(Formerly Hst 391. East Asia, prehistory to 1300 A.D. Hst 392. East Asia, 1300-1800. Hst 393. East Asia, 1800 to the Present. Change in number, title and description.)

Hst 356. Early Medieval Europe: 300-1100. (3)
A survey of political, cultural, intellectual, religious, social, and economic aspects of this 800-year period, including among other topics the decline of Roman power in Western Europe, the spread of Christianity, the rise of the Franks, the Carolingian Empire, the growth of feudal ties, and the gradual creation of a high-level civilization.
(Formerly Medieval Europe: 300-1300. Change in title and description.)

Hst 357. Late Medieval Europe: 1100-1550. (3)
An examination of the second half of the Middle Ages including the transition from medieval to early modern characteristics. Among subjects discussed will be the renaissance of the 12th century and the forging of Gothic civilization; the "calamitous 14th century" with the Black Death and the Hundred Years' War; the special place of the Italian cities and their Renaissance; the triumph of nominalism; and the Protestant Reformation.
(Formerly Early Modern Europe: 1300-1550. Change in course title and description.)

Hst 474, 475. Russian Cultural and Intellectual History. (3, 3) (Grad)
Russian social, cultural and intellectual history, including economic structure and the role of the masses, the bureaucracy, and the intelligentsia. Various approaches to this subject will be studied as well as the factual data. Hst 474: 1700-1900. Hst 475: 1900-present including Marxism from its origins.
(Formerly Hst 439, 440. Change in number.)
MATHEMATICAL SCIENCES

New Course

Math 399. Special Studies. Credit to be arranged.

PHILOSOPHY

New Course

Phil 208. Contemporary Moral Issues. (3)
Philosophical examination of selected moral issues of the day, such as racism, capital punishment, affirmative action, nuclear deterrence, sexual morality and abortion.

PHYSICS

New Courses

Phys 322. Computational Physics. (3)
Formulation and numerical solution of physics problems. Use of computers and graphical displays to enhance intuition and supplement analytical procedures. Approaches to complex physical situations, especially those involving dissipative, nonlinear and stochastic phenomena. Recommended prerequisite: CS 250 or equivalent.

Phys 399. Special Studies. Credit to be arranged.

Phys 423. Classical Field Theory. (3)
Scalar and vector fields and field equations in physics. Geometrical and mathematical properties of fields, physical interpretation; singularities and symmetries. Formulation and solution of field equations (including gravitational and electrostatic fields) with sources and boundaries.

Phys 440, 441, 442. Physics of Solid State Devices. (3, 3, 3) (Grad)
This is a survey intended to provide the foundation necessary for understanding of function, technology and design of solid state devices, rather than their application. Topics will include: introduction to and application of concepts of quantum physics to solids, effect of periodicity in solids on electron energy states, electron statistics, metals, insulators, semiconductors and superconductors, thermionic and field assisted electron emission, electron scattering and mobility of charge carriers, intrinsic and extrinsic semiconductors, quantitative treatment of p-n junction, diffusion and recombination of excess carriers, quantitative treatment of electron injection, majority and minority components of the junction current, breakdown, quantitative treatments of bipolar junction transistor, field effect transistor and tunnel diodes, physics of metal-semiconductor and metal-insulator-semiconductor junctions and devices, superconductivity and superconducting devices, DC and AC Josephson effects, Josephson junctions, superconductive quantum interference devices. Prerequisites: Ph 311-316 or consent of instructor.
Changes in Old Courses

Ph 204, 205, 206. Physics Laboratory. (1, 1, 1)
Introductory laboratory for students in General Physics. One 3-hour laboratory period. Prerequisites: concurrent enrollment in Ph 201, 202, 203 or in Ph 207, 208, 209. Pass/No Pass only.
(Change to Pass/No Pass only.)

Ph 314. Methods of Experimental Physics I. (2)
Experimental techniques in basic electrical measurements emphasizing transient and sinusoidal signals. One 4-hour laboratory period. Prerequisite: concurrent enrollment in Ph 321.
(Formerly Ph 314, 315, 316. Advanced Physics Laboratory. Change in title, description, credit hours from (1) to (2), prerequisites, laboratory hours from (3) to (4) hours, and separation of sequence.)

Ph 315. Methods of Experimental Physics I. (2)
Experiments in digital logic circuits with applications to experimental control and computer interfacing. One 4-hour laboratory period. Prerequisite: Ph 314.
(Formerly Ph 314, 315, 316. Advanced Physics Laboratory. Change in title, description, credit hours from (1) to (2), prerequisites, laboratory hours from (3) to (4) hours, and separation of sequence.)

Ph 316. Methods of Experimental Physics I. (2)
Students will perform several experiments illustrating quantum and relativistic effects. The emphasis will be on computer-assisted experimentation and data analysis. Experiments will include instrumentation and counting in nuclear physics, measurement of band gap in semiconductors, measurement of ratio of electron charge to electron mass, speed of light, Frank-Hertz experiment and electron spin resonance. One 4-hour laboratory period. Prerequisite: Ph 311, 312.
(Formerly Ph 314, 315, 316. Advanced Physics Laboratory. Change in title, description, credit hours from (1) to (2), prerequisites, laboratory hours from (3) to (4) hours, and separation of sequence.)

Ph 321. Current Electricity. (3)
Electric potential and current; Kirchoff's Laws and equivalent circuits. Transient and A.C. behavior of circuit elements. Theory of operation of diodes and transistors. Prerequisites: Ph 203 or Ph 209; concurrent enrollment in Ph 314.
(Formerly Ph 431. Electricity and Magnetism. Change number, title, description, prerequisites, and drop graduate option.)

Ph 323. Classical Mechanics I. (3)
The Newtonian formulation of mechanics. Kinematics and dynamics of particles in inertial and accelerated reference frames. Conservation principles. Central forces, gravitation, and celestial mechanics. Free and forced vibrations. Prerequisites: Ph 203 or Ph 209; Mth 321 previously or concurrently.
(Formerly Ph 424. Analytical Mechanics. Change in number, title, description, credit hours from (4) to (3), and lecture hours from (4) to (3).
414. Methods of Experimental Physics II. (2) (Grad)
Advanced applications of solid state devices in physics instrumentation. One 4-hour laboratory period. Prerequisite: Ph 315.
(Change in description, prerequisites, and separation of sequence.)

415. Methods of Experimental Physics II. (2) (Grad)
Advanced experiments in physical optics. One 4-hour laboratory period. Prerequisite: concurrent enrollment in Ph 464.
(Change in description, prerequisites, and separation of sequence.)

425. Classical Mechanics II. (4) (Grad)
Advanced formulation of mechanics. Lagrange's and Hamilton's equations. The inertial tensor, free rotations, and rigid body dynamics. Theory of small oscillations, coupled oscillations and normal modes. Prerequisites: Ph 323 and Mth 322 previously or concurrently.
(Formerly Analytical Mechanics. Change in title, description, and prerequisites.)

426. Thermodynamics and Statistical Mechanics. (4) (Grad)
Concepts of temperature, work, and heat; first and second laws of thermodynamics and applications; thermodynamic potentials; heat engines, Carnot cycle, and ideal gases; entropy and its statistical interpretation; kinetic theory of gases; classical and quantum statistics; introduction to statistical mechanical ensembles. Prerequisites: Ph 203 or 209, Mth 203, Ph 311 or 411.
(Formerly Introduction to Statistical Mechanics. Change in title, description, credit hours from (3) to (4), lecture hours from (3) to (4), and prerequisites.)

432, 433. Electricity and Magnetism. (3, 3) (Grad)
Advanced undergraduate study of electricity and magnetism covering field and potential of charge arrays, electrostatic field energy, images, multipoles, Laplace's equation, Biot-Savart and Ampere's laws, magnetic field energy, vector potential, displacement current, dielectrics and their microscopic models, electromagnetic wave equations, boundary conditions, energy radiation, magnetic materials and their microscopic models.
(Change in description.)

451, 452, 453. Electron Microscopy. (3, 3, 3) (Grad)
Electron optics theory, specimen preparation and experimental work with transmission and scanning electron microscopes. Microchemical analysis with an energy dispersive spectrometer. Specimens from all the sciences. Two lectures, one 3-hour laboratory period. Prerequisite: one year of general physics and one year of any other science.
(Change in description, credit hours from (2, 2, 2) to (3, 3, 3), and lecture hours from (1) to (2).)

Courses Dropped

457, 368, 369. Methods of Experimental Physics I. (2, 2, 2)

416. Methods of Experimental Physics II. (2)

465. Thermodynamics. (3) (Grad)
POLITICAL SCIENCE

New Course

PS 399. Special Studies. Credit to be arranged.

PSYCHOLOGY

New Courses

Psy 206. Psychology as a Natural Science Laboratory. (1)
Special demonstrations of phenomena in areas of physiological psychology, sensation and perception, learning and memory, cognition and reasoning, and motivation are covered. Requires concurrent enrollment in Psy 205.

Psy 210. Improving Cognitive Skills. (3)
Instruction in techniques for the improvement of memory, reasoning, creative thinking, and decision making and practice in their application.

Psy 313. Psychology of Play. (3)
A survey of the study of play in human and animal behavior. Definitions of play in studies of animal behavior. Developmental, cognitive, communicational and cultural aspects of play in humans. Prerequisites: Psy 205 or equivalent and Bi 101 and 102 or equivalent.

Psy 399. Special Studies. Credit to be arranged.

Psy 466. Methods of Psychological Research with Children. (3)
This course is experimental and focuses on methodological and ethical issues in conducting psychological research with children including principles of experimental design, evaluation of research methods, use of naturalistic observations and formulation and testing of original hypotheses. Prerequisites: Mth 364, 365 and Psy 460.

Psy 485. Self-Modification of Behavior. (3) (Grad)
This course presents the technology of self-change that has been developed within the framework of behavior modification theory. It includes an examination of relevant ethical and theoretical issues, specific techniques of change and the application of these techniques within a systematic program development model. Prerequisite: Psy 340, Psy 346 or Psy 484.

Psy 518. Field Observation Methods. (3)
Applied experience in the major methodological techniques of field observation, as well as the key problems of validity and reliability as they arise while developing a behavioral observation system. Prerequisite: Graduate status in Psychology or Urban Studies or consent of instructor.

Psy 519. Field Experimental Methods. (3)
Problems of designing an experimental investigation of psychological phenomena in a naturalistic field setting. Course requirements include the design of a realistic research proposal. Extensive use is made of instructor experience with field experimental studies in the field of mental health. Prerequisites: Graduate status in Psychology or Urban Studies or consent of instructor.
changes in Old Course

Soap 526. Intellectual Assessment of Young Children. (3)
Didactic instruction and supervised practice in the assessment of the
intellectual capabilities of the younger elementary and pre-school child.
Includes the administration and interpretation of the Stanford Binet
Intelligence Scale, McCarthy Scales of Children's Abilities and Kaufman
Assessment Battery for Children. Prerequisite: Mth 364 or equivalent.
(Formerly Stanford-Binet Intelligence Scale. Change in title,
description, and prerequisites.)

SOCIOLOGY

New Courses

372. Drugs in Contemporary Society. (3)
Sociological analysis of the social context within which drug usage occurs.
The primary emphasis of the course is upon American society and drugs other
than alcohol. Prerequisites: Soc 204, 205 or consent of instructor.

413. Alcohol in Society. (3) (Grad)
A sociological examination of the behavior and belief patterns relative to
alcohol in society. Major focus is on patterns of behavior in the United
States, with lesser attention to other cultures. Alcoholism intervention
strategies are briefly reviewed. Prerequisites: Soc 204, 205 or consent of
instructor.

489. Sociology of Law. (3) (Grad)
Study of law as an instrument for social order and change. Sociological
features of law and the legal order will be assessed. Major principles of law
as a social control, but especially, state control, are examined.
Prerequisite: Soc 204, 205 or consent of instructor.

SPEECH COMMUNICATION

New Courses

524. Organizational Communication. (3)
Application of communication theory to the study of face-to-face interaction
in the organizational context. Examination of the relationships between
structural variables in the organization and informal communication channels,
including analysis of leadership style, decision-making, conflict management,
and other interpersonal and group communication events.

535. Research Methods in Interpersonal Communication. (3)
Research methods germane to empirical studies in interpersonal communication.
Assumptions and research designs associated with the covering laws and rules
research perspectives; measurement; prospectus development, implementation,
and reporting. Research projects assigned.
Changes in Old Course

Sp 522. Theory of Communication in Groups. (3)
A survey of theories of group communication and recent research to discover and explicate specific group development skills such as leadership functions, facilitation, conflict management, cohesion-building, analysis, and evaluation. Application of theory to various group settings, which may include Task/Decision Making, Discussion/Learning, Encounter/Growth, and Cults/Conversion and Belief Maintenance.
(Formerly Discussion Theory. Change in title, description, and clock hours from (3) to (3) lecture and (1) field work.)

UNIVERSITY SCHOLARS' PROGRAM

New Course

Sch 399. Special Studies. Credit to be arranged.

WOMEN'S STUDIES

New Course

WS 399. Special Studies. Credit to be arranged.

GENERAL ARTS & LETTERS

New Course

Hum 399. Special Studies. Credit to be arranged.

GENERAL SCIENCE

New Course

Sc 399. Special Studies. Credit to be arranged.

GENERAL SOCIAL SCIENCE

SSc 399. Special Studies. Credit to be arranged
Changes in Old Courses

BEd 415. Office Systems. (3)
A course in office systems and ergonomics which includes the study of the effect of technological changes on the office environment, equipment, workflow, materials and supplies and the corresponding effect on the office worker, careers, and productivity. Prerequisite: upper division standing or consent of instructor.
(Formerly BEd 311. Change in number, description, and prerequisites.)

BEd 416. Office Management. (3)
The information manager has the responsibility for planning, organizing, and controlling information processing activities and for leading people in attaining the objectives of the organization. More specifically this course deals with the following topics: Principles of Office Management, Managing Human Resources, Job Analysis, Writing Responsibilities, Measuring Office Productivity, Labor-Management, Budgetary Control and Reproduction Control. Prerequisite: upper division standing or consent of instructor.
(Formerly BEd 335. Change in number and description.)

BEd 417. Information Processing Management. (3)
Management of the word, voice, and image processing systems of the office. Analysis of information processing requirements including various hardware configurations, sophistication of equipment needs, and control techniques for monitoring system efficiency. Prerequisite: BEd 415 or consent of instructor.
(Formerly BEd 312 Office Procedures. Change in number, title, description, and lecture hours.)

BEd 418. Records Management. (3)
Management of the creation, maintenance, and disposition of records. Includes classification systems, equipment, and media pertinent to a range of systems from manual to electronic; organization and management of records centers; retention schedules; production standards; micrographics. Prerequisite: BEd 415 or consent of instructor.
(Formerly BEd 313. Change in number, description, and prerequisites.)

New Courses

Mktg 4XX. Advertising Campaigns. (3) (Grad)
Emphasis is on the development of the total advertising campaign from a marketing perspective. Integrates elements of the advertising process such as setting objectives, selection of target markets, budget development, media selection, message creation, production and placement into a plan for action. Prerequisite: Mktg 340, Mktg 4XXG Advertising Copy and Layout or 4XXG Media Decisions.
Mktg 4XX. Advertising Copy and Layout. (3) (Grad)
Examine the creative process in advertising with an emphasis on developing effective copy and layout. Attention is given to effective advertising design in an applications environment. Prerequisite: Mktg 340.

Mktg 4XX. Media Strategy. (3) (Grad)
Examines the media process from the perspective of the advertisers' marketing strategy, the characteristics of advertising media and the role of the advertising agency in the planning and implementation of the basic function between media and client. Prerequisite: Mktg 340.

Mktg 4XX. Sales Management. (3) (Grad)
Analysis of the sales management function with attention to sales force selection, allocation of sales effort, and motivation and reward of sales force, plus the integration of sales with other marketing activities. Prerequisites: Mktg 366.

Mktg 409. Practicum. (3)

Changes in Old Courses

Mktg 415. Marketing Research. (3)
Studies aspects of consumer and industrial research techniques, including sampling, questionnaire design, primary and secondary data sources, experimentation, and techniques of data analysis. Prerequisites: Mktg 366, Mth 364, Mgmt Ill.
(Formerly Marketing Forecasting Information. Change in title, description, prerequisites and deletion of graduate credit.)

Mktg 416. Market and Data Analysis. (3) (Grad)
Emphasis will be placed on the analytical aspects of marketing research situations and the analysis of the data for decision making. In addition to using the case method, primary and secondary data bases are analyzed and research results interpreted. Prerequisites: Mktg 415 and Mth 365.
(Formerly Consumer and Survey Research. Change in title, description, prerequisites, and addition of graduate credit.)

Mktg 478. Computer-Based Marketing Management. (3) (Grad)
Explores use of microcomputers and the design of corporate data bases to provide decision support for market managers. Included are case problems in areas like sales forecasting, pricing, advertising and product attributes. These cases provide practice in the use of microcomputer simulation and data analysis to support decision recommendations. Prerequisites: Mktg 366 and BA 335.
(Formerly Marketing Information Systems. Change in title, description, and prerequisites.)

Old Courses Dropped

Mktg 450. Advanced Advertising Strategy. (3) (Grad)

Mktg 460. Purchasing. (3) (Grad)
New Courses

EdAd 550. Research Designs and Data Analysis in Education I. (3)
Initial course in a three course sequence which presents an in-depth, integrated treatment of the application of research methods and data analysis in the interpretation of educational data, such as student achievement, attitudes, values and demographic information, with special consideration of the research paradigm, measurement in research, data descriptors, relationship among variables, sampling, and designing research studies. Prerequisite: Admission to doctoral study or permission.

EdAd 551. Research Designs and Data Analysis in Education II. (3)
The second course in a three course sequence which presents an in-depth, integrated treatment of the application of research methods and data analysis in the interpretation of educational data, such as student achievement, attitudes, values and demographic information, with special consideration of various single factor designs. Prerequisite: EdAd 550 or permission.

EdAd 552. Research Designs and Data Analysis in Education III. (3)
The third course in a three course sequence which presents an in-depth, integrated treatment of the application of research methods and data analysis in the interpretation of educational data, such as student achievement, attitudes, values and demographic information, with special consideration of two factors, multiple-group designs, validity and reliability problems in research, and selected data collection techniques and devices. Prerequisite: EdAd 550, 551.

EdAd 553. Doctoral Research Design Seminar. (3)
Critical evaluation and development of research studies, with an emphasis on the development of appropriate research problems and the translation of these problems into research plans. The student is expected to prepare a research proposal and present it to the class for a critical analysis. Students are encouraged to field test components of the proposal. Prerequisite: EdAd 550, 551, 552 or permission.

EdAd 555. Evaluation of Educational Programs. (3)
A study of selected theories of and models used in the evaluation of educational programs, components of an evaluation plan, and the design and execution of evaluative studies.

EdAd 565. School Business Management. (3)
An in-depth analysis of the major areas of responsibility of school business administrators with emphasis on contemporary problems and issues. Focuses on school plant planning, operations and maintenance; purchasing and supply management; school accounting and reporting; transportation; food services; data processing; central office management; emerging technologies and research technologies. Prerequisite: EdAd 595 or equivalent.
EdAd 566. Economics of Educational Programs. (3)
The application of economic thought to educational decision making with
emphasis on: the economic returns of education, public rationality in
educational decision making, sources and distribution of resources,
educational reform movements, the effects of governmental fiscal
mandates and contemporary problems and issues. Prerequisite: EdAd 595
or equivalent.

Change in Old Course

ED 414. Student Teaching: Kindergarten-Primary (2-15)
Observation and teaching under the direction of a supervising teacher.
Students will be provided with opportunities for assuming direct
responsibility for the learning activities of children, for developing
skill in the techniques of teaching and schoolroom management, and for
participating in the life of the school. Weekly seminar.
Prerequisites: Admission to teacher education program, 30 credit hours
in residence, ED 310, ED 312, 9 credit hours of methods including ED 356
and, in addition, 3 lower division and 3 upper division credit hours in
Early Childhood Education. Cumulative 2.50 GPA and a 2.50 GPA in
professional courses. Admission by approved application, one full
academic term in advance.
(Formerly Student Teaching: Kindergarten (2-15). Change in title
and prerequisites.)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

CIVIL ENGINEERING

Changes in Old Courses

CE 384. Design of Steel Structures. (4)
Fundamental principles necessary in the design of steel members and
connections subject to various combinations of loads; application of
principles to design problems consistent with current design codes:
introduction to plastic analysis and design. Three lectures: one
2-hour design or laboratory period. Prerequisite: CE 383 taken
concurrently, or consent of instructor.
(Change in description.)

CE 479. Unit Operations of Sanitary Engineering. (3) (Grad)
Unit operations of water and wastewater treatment; pretreatment;
sedimentation, filtration, aeration, disinfection, sludge treatment and
disposal, advanced wastewater treatment processes. Graduate credit
allowed for non-civil engineering majors with approval of graduate
advisor. Prerequisite: CE 368 or consent of instructor.
(Change in prerequisite.)
CE 481. Principles of Reinforced Concrete. (4)
Principles of ultimate strength analysis; design of simple and continuous beams for flexure, shear and torsion; one way slabs, cantilever retaining walls; working stress theory, serviceability and detailing requirements with reference to current codes. Three lectures; one 2-hour design or laboratory period. Prerequisite: CE 383 or consent of instructor.
(Change in prerequisite.)

CE 484. Timber Design. (3)
Design of solid and glued-laminated structural members including arches, connections, plywood components, and diaphragms; design provisions for lateral forces. Prerequisites: CE 383 or consent of instructor.
(Change in lecture hours from (2) to (3) and change in laboratory hours.)

ELECTRICAL ENGINEERING

New Courses

EE 337, 338. Machinery and Electromagnetics Laboratory. (1, 1)
Combined engineering electromagnetics and electrical machines laboratory. Experiments in static and time varying electromagnetic phenomena, transformers, and electrical machines will be performed. Prerequisite: EE 330, corequisite EE 341 for EE 337; prerequisite EE 331, corequisite 342 for EE 338.

EE 512. Advanced Topics in Solid State Devices. (3)
Advanced p-n junction theory. Special function semiconductor devices (tunnel diodes, photodiodes, light-emitting diodes) and their applications. Optical properties of semiconductors. Design of integrated circuits and devices: fabrication, design and analysis. Applications of switching devices. Prerequisite: Senior level solid state electronics.

EE 530, 531. Electromagnetics I, II. (3, 3)
Advanced courses in electromagnetics dealing with Maxwell's equations. Static boundary value problems, Green's functions. Propagation and reflection of waves in guided and unguided systems. Radiation from linear, array and aperture antennas, pattern synthesis. Scattering from boundaries, edges, rough surfaces and inhomogeneous media. Prerequisite: Graduate standing in Electrical Engineering.

EE 541. Energy Systems Analysis. (3)
EE 542. Energy System Dynamics and Control. (3)

EE 543. Energy Control Center Design. (3)
Primary objectives and functions of the energy control center such as display of desired information, system security monitoring and contingency analysis, and corrective strategies as an aid to system operation. Real time data acquisition and relevant communication subsystems. Power system state estimation. Hardware and software requirements for the energy control center. Man/machine, Interface Subsystem. Prerequisite: EE 542.

EE 560. Signals and Noise. (3)
The intention of this course is to prepare students for applications of probability and stochastic processes in signal processing and communication theory. Topics covered include basic probability theory, random variables and their functions, general concepts of stochastic processes, correlation and power spectrum and introduction to estimation theory. Prerequisite: Graduate standing in Electrical Engineering.

EE 561. Advanced Signal Processing. (3)
Basic concepts of digital signal processing covering topics of discrete time signals and systems, the z-transform, discrete fourier and fast fourier transforms, flow graph, matrix representation and design of digital filters. Prerequisite: EE 560.

EE 562. Advanced Communication Theory. (3)
As an advanced course in communication theory, topics of statistical decision theory, M-ary transmission and error detection/correction schemes, digital communication (PAM, PCM, Delta modulation), multiplexing, and different modulation techniques are covered. Prerequisite: EE 560.

EE 575. Computer Memory Systems. (3)
Advanced topics in the operation, design and testing of memory systems is discussed. One third of the course is devoted to the discussion of memory organizational strategies and hierarchies. Prerequisite: EE 371 or equivalent.

EE 576, 577. Computer Architecture. (3, 3)
An introduction to the problems involved in designing and analyzing current machine architectures. Included are stack, MIMD and SIMD machines and the use of pipeline, parallel and associative processing. Some advanced I/O and interfacing techniques are discussed and the completion of a substantial design project is required. Prerequisite: EE 575 (must be taken in order).
EE 580. Computational and Research Tools in Electrical Engineering. (3)
Incoming graduate students are introduced to the major computer and computational research tools in electrical engineering. Included is an introduction to the Unix, RXS-IIM and Xenix operating systems and instruction in the use of SPICE, PSU-EE Control library and an assortment of software packages. Prerequisites: graduate standing in EE, programming experience in a higher level language is assumed.

EE 581. Computational Methods in Electrical Engineering. (3)
Students are introduced to optimization methods used in electrical engineering including methods from linear, non-linear, integer and dynamic programming. A number of numerical methods for solving non-linear and partial differential equations are discussed. Prerequisite: EE 580.

EE 582. Interactive Computer Graphics. (3)
An introduction to the principles of interactive computer graphics including logical devices, physical devices, transformation, viewing and clipping in two and three dimensions. Prerequisite: EE 581.

Changes in Old Courses

EE 221, 222. Electrical Circuit Analysis. (4, 4)
Experimental laws, network theorems, and useful computer analysis techniques of electrical circuit analysis. Solution of electrical network response to various forcing functions of time by phasor methods. Three lectures: one three-hour laboratory period. Prerequisites: Mth 201 for EE 221, Mth 202 and EE 221 for EE 222.
(Formerly EE 251, 252. Change in number and prerequisites.)

EE 250. Introduction to the Frequency Domain. (4)
Impulse and step response of electrical circuits, introduction to the frequency domain. Laplace and Fourier transforms, spectra, Bode plot and passive filter design. Block diagrams and transfer functions. Prerequisite: EE 222 with Mth 321 taken concurrently.
(Formerly EE 265. Change in number and prerequisite.)

EE 321. Electronic Devices. (4)
Introduction to physical properties and characteristics of electrical devices. Application of matrices and computers in electronic circuits. Three lectures: one 3-hour laboratory period. Prerequisite: EE 222.
(Formerly EE 357. Change in number and prerequisite.)

EE 322. Electronic Circuits. (4)
Study of basic logic circuits, amplifier configurations, and models of electronic devices. Computer aided design. Three lectures; one 3-hour laboratory period. Prerequisite: EE 321.
(Formerly EE 358. Change in number and prerequisite.)

EE 323. Electronic Amplifiers. (4)
Analysis and design of multistage amplifiers and feedback amplifiers, and stability criterion for amplifiers. Computer aided design. Three lectures: one 3-hour laboratory period. Prerequisite: EE 322.
(Formerly EE 359. Change in number and prerequisite.)
EE 330. Engineering Electromagnetics I. (4)
Review of vector algebra; study of Coulomb's law, electric field intensity, electric flux density. Gauss's law, divergence theorem, electrostatic potential, conductors, capacitance, solution of Laplace and Poisson's equations, magnetic fields, Ampere's law, magnetic flux and flux density, vector magnetic potential, magnetic forces and magnetic circuits; applications to electrical engineering problems. Four lectures per week. Prerequisites: EE 250, Ph 208.
(Formerly EE 350. Change in number and prerequisites.)

EE 331. Engineering Electromagnetics II. (3)
Time varying Maxwell's equations. Plane wave propagation and refraction. The theory of transmission lines, waveguides, and antennas is studied. Practical applications are stressed. Prerequisite: EE 330. Corequisite: EE 337.
(Formerly EE 351. Change in number, credit hours from (4) to (3), prerequisite, and deletion of laboratory.)

EE 341. Electrical Machinery I. (4)
Review of Ampere's and Faraday's law; magnetic circuits, inductance. Study of analysis of high efficiency transformers, principles of electromechanical energy conversion, general torque equation, three-phase induction motors; equivalent circuit and steady-state analysis (both three phase and single phase). Prerequisite: EE 330 or consent of instructor. Corequisite: EE 337.
(Formerly EE 352. Change in number, lecture hours, prerequisite, and deletion of laboratory.)

EE 342. Electrical Machinery II. (3)
Three-phase synchronous machines, D-C machines; equivalent circuit and steady-state analysis, dynamics of electrical machines, introduction to direct energy conversion methods. Prerequisite: EE 341. Corequisite: EE 338.
(Formerly EE 353. Change in number, credit hours from (4) to (3), prerequisite, and deletion of laboratory.)

EE 350. Principles of Feedback Control System Design. (4)
Stability concepts for linear time invariant networks, Routh Horwitz criterion. Stability through feedback, Nyquist and Root locus design methods. Compensation methods derived from Bode plots. Introduction to state space system analysis. Prerequisite: EE 250.
(Formerly EE 365. Change in number and prerequisite.)

EE 354. Fundamentals of Electrical Circuits. (3)
(Change in credit hours from (4) to (3) and deletion of laboratory.)

EE 355. Electrical Energy Conversion Fundamentals. (4)
Electronic amplifiers, equivalent circuit analysis and operating characteristics of transformers and rotating machinery. Basic theory of magnetism and magnetic circuits. Three lectures; one 3-hour laboratory period. Prerequisite: EE 354 or equivalent.
(Change in credit hours from (3) to (4) and addition of laboratory.)
EE 371. Introduction to Computer Architecture. (4)
Introduction to the macro-level components of computers: ROM/RAM memory units, CPU/Arithmetic units, micro/macro control of computer operations, von Neumann and Harvard machines. The interrupt system and global operational properties of computers. Prerequisites: CS 251 and EE 270.
(Change in prerequisites.)

EE 411. Solid State Electronic Devices. (4)
Solid state theory leading to an understanding of the PN junction. Solid state devices are stressed. These include diodes, bipolar and field effect transistors, integrated circuits and optoelectronic devices. Prerequisites: EE 322, Ph 312.
(Formerly EE 460. Change in number and prerequisites.)

EE 441. Electrical Engineering Systems I. (4) (Grad)
Concepts of complex power; parameters of transmission lines; equivalent circuits of transmission lines, transformers as control devices (tap changing and regulating transformers); salient pole generators and automatic voltage regulators, per unit representation of impedances, currents, voltages and powers and their application to power systems. Four lectures per week. Prerequisite: EE 342.
(Formerly EE 454. Change in number and prerequisite.)

EE 442. Electrical Energy Systems II. (4) (Grad)
Power networks, equations: incidence, bus admittance and impedance matrices, load flow problem from the power system design point of view, its computational aspects (i.e., Gauss, Siedel and Newton Raphson methods), design of control systems for power systems (p-f and Q-V control), design of steady-state optimum operating strategies of power systems. Four lectures per week. Prerequisite: EE 441.
(Formerly EE 455. Change in number and prerequisite.)

EE 443. Electrical Energy Systems III. (4) (Grad)
Concepts of symmetrical components of unbalanced currents and voltages, power system transients: Symmetrical and Unsymmetrical faults on Synchronous machines and power systems and their computational aspects, power system stability, basic concepts of direct current transmission. Four lectures per week. Prerequisite: EE 442.
(Formerly EE 456. Change in number and prerequisite.)

EE 451, 452. Automatic Control Processes. (4, 4) (Grad)
State space description of systems, criteria for controllability, observability and stability for time invariant linear systems, both continuous and discrete; sample data systems; use of analog and digital computer in control systems. Prerequisite: EE 350.
(Formerly EE 452, 453. Change in number and prerequisite.)

EE 461. Communication System I. (4) (Grad)
An introduction to signals and noise in electrical communication; signal spectra and filters, noise and random signals, baseband transmission of analog and digital signals, linear modulation and exponential modulation. Prerequisite: EE 250.
(Formerly EE 425. Change in number and prerequisite.)
EE 462. Communication Systems II. (4) (Grad)
Study of the relative merits of communication systems, noise in
continuous wave and pulse modulation, information theory, digital data
systems, and advanced topics. Prerequisite: EE 461.
(Formerly EE 426. Change in number and prerequisite.)

EE 471, 472, 473. Microprocessor System Design. (4, 4, 4)
Introduction to microprocessor technology. Hardware requirements,
software fundamentals, computer aids to software design, intermediate
software design and introduction to hardware design. Courses must be
taken in sequence. Three lectures; three hours of laboratory.
Prerequisite: EE 371 or consent of instructor.
(Formerly EE 457, 458, 459. Change in number and prerequisite.)

EE 511. Quantum Electronics. (3)
Linear and nonlinear optics, propagation of gaussian beams, optical
cavities, electro-optic and magneto-optic effects, modulation, optical
networks. Prerequisites: EE 331 or Ph 432; Ph 311 or 411.
(Formerly EE 525. Techniques of Quantum Electronics. Change in
number, title, description, and prerequisites.)

EE 520, 521, 522. Electronics and Electronic Systems. (3, 3, 3)
Network analysis and synthesis, VLSI design techniques and methodology,
testing of VLSI circuits. Prerequisite: EE 423 or equivalent.
(Formerly 521, 522, 523. Change in number, description, and
prerequisites.)

EE 532. Laser Systems. (3)
Optical communications, holography, optical information processing,
atmospheric effects on optical propagation, other systems.
Prerequisite: EE 531 or equivalent.
(Formerly EE 526. Change in number and prerequisite.)

EE 550, 551, 552. Feedback Control Systems. (3, 3, 3)
Advanced topics in modern feedback control theory and systems, including
nonlinear analysis, computer control systems, statistical concepts and
adaptive control systems. Prerequisite: EE 453 or equivalent.
(Formerly EE 551, 552, 553. Change in number, description, and
prerequisite.)

SCHOOL OF HEALTH AND PHYSICAL EDUCATION

New Courses

PE 395. Basic Kinesiology. (1)
The study of basic functional movements in human performance.
Prerequisites: PE 194 Basic Biomechanics; Bi 301, 302, 303.

PE 451. Youth Sports Organizations. (3)
Presentation and examination of the theory and practice of youth sports
and youth sport organization; their purpose, nature, scope,
organization, administration, problems and issues. Prerequisite: upper
division standing.
PE 452. Coaching of Youth Sports. (3)
Designed to make an analysis of the role and responsibilities of the coach, the relationships of the coach to others, the growth and development characteristics of youth, and the effect of sports participation, factors affecting safety of the participant, teaching methods and strategies and issues and problems associated with the coaching of youth and sport. Prerequisite: PE 451 Youth Sports Organizations or consent of instructor.

PE 521. Legal Aspects of Physical Education. (3)
Course is designed to acquaint the prospective physical education teacher with legal principles, rights and responsibilities in the area of contract, constitutional law and tort liability. Course is open to all graduates and may, with consent, be taken by undergraduates.

PE 522. The Law and Athletics. (3)
Course is specifically designed to acquaint coaches, athletic trainers and athletic directors with legal concepts of contract, constitutional and tort liability. Course is open to all graduates and may, with consent, be taken by undergraduates.

PE 541. Physical Education for High Risk Youth. (3)
Goals, instructional strategies, curriculum concepts, and evaluation procedures for alienated and disruptive youth in public, diversion, and detention physical education and sports programs. Focuses on both specific discipline and motivation problems in physical education and the prevention of disruptive behavior for a variety of high risk youth categories.

PE 542. Teaching Ethics in the Gym. (3)
Analysis of sportsmanship and other ethics issues in sport and physical activity settings to include major theories and strategies for implementation.

PE 562. Kinesiotherapy - Upper Limb. (3)
Course introduces concepts and principles pertaining to kinesiotherapy. Specific examination is made of the clinical kinesiology pertaining to the neck and upper limb with emphasis on developing effective kinesiotherapy exercise techniques. This course is required for candidates for the American Corrective Therapy Association Certification Examination. Prerequisite: PE 472 or consent of instructor.

PE 563. Kinesiotherapy - Lower Limb. (3)
Course develops concepts pertaining to kinesiotherapy. Specific examination is made of clinical kinesiology pertaining to the low back and lower limb with emphasis on developing effective skills in executing kinesiotherapy exercise techniques. Course is open to all graduates and is required for candidates for the American Certification Examination. Prerequisite: PE 472 or consent of instructor.
PE 564. Organization and Administration in Therapeutic Physical Education. (3)
Course examines the administration and planning of corrective therapy and adapted physical education programs including history, staffing, facilities and program content. Opportunities are provided for students to assist with the organization and administration of outdoor leisure-time pursuits for candidates for the American Corrective Therapy Association Certification Examination and is open to all graduates.

PE 565. Exercise Biomechanics. (3)
Course is for those interested in the mechanical basis of human performance. Body mechanics is analyzed for proper and improper technique while using exercises for strength, muscular endurance, power and flexibility. The mechanics of exercise machines in relationship to human performance is also analyzed. Course is required for candidates for the American Corrective Therapy Association Certification Examination. Prerequisite: PE 472 or consent of instructor.

PE 574. Exercise and Nutrition. (3)
The physiological processes which govern the digestion and use of essential nutrients, the modifications which are needed as a result of exercise, and the role that exercise and nutrition play in the diseases of overabundance. Prerequisites: Sc 214, PE 473, or consent of instructor.

PE 594. Advanced Teaching/Coaching Activities. (3)
Instruction and practice in advanced skill progressions, strategy, conditioning, teaching methods and techniques in selected activities.

Changes in Old Courses

PE 194. Basic Biomechanics. (2)
A lecture and laboratory experience in the basic mechanical principles of movement and an application of these to human performance and one’s own skill ability.
(Formerly Fundamentals of Movement. Change in title and description.)

PE 233. Movement and Rhythms. (2)
Instruction and participation in exploratory movement and rhythmic activities applicable to elementary school children including movement patterns; movement in space; rhythmic manipulative activities; basic forms of locomotion; and simple singing games, folk, and square dance.
(Formerly Rhythms. Change in title, description and credit hours from (1) to (2).)

PE 234. Basic Skills and Lead-ups. (2)
Instruction and participation in games, stunts, manipulative and creative activities. Progression for all sports taught at elementary school to include skill drills, relays and lead-up activities for each sport.
(Formerly Stunts, Tumbling, and Games. Change in title, description, and credit hours from (1) to (2).)
PE 235. Perceptual Motor Foundations. (1)
Instruction in the principles of perceptual motor learning as they pertain to the elementary school child. Emphasis will be on screening techniques and prescriptive activities.
(Formerly Lead-up Games & Sports Skills for Teaching Sports. Change in title and description.)

PE 340. Sports and Fitness Administration. (3)
Exploration of the administration, organization and program of sport and fitness programs.
(Formerly Sports Administration and Programming. Change in title and description.)

PE 371. Training for Improved Fitness. (3)
An overview of the methods of training the components of physical fitness. Lectures will cover training principles while laboratory sessions will be experiential. Students will be expected to write and engage in a supplemental training program. Lecture: 1 hr./week. Lab: 4 hrs./week. Prerequisite: HPE 298.
(Formerly PE 194 Physical Fitness Concepts. Change in number, title, description, credit hours from (1) to (3), lecture and laboratory hours, and prerequisite.)

PE 420. Physical Education in the Grades. (2)
(Change in credit hours from (3) to (2).)

PE 561. Neurology and Pathology. (3)
Course considers construction and function of central, autonomic and peripheral nervous systems. The effect of pathologies on neuromuscular function is determined, together with the suitability of physical activities for selected pathologies. Course is required for candidates for the American Corrective Therapy Association Certification Examination. Prerequisite: graduate standing.
(Formerly Physical Growth and Development. Change in title, description, and prerequisites.)

PE 573. Physiology of Training.
Exploration of the physiological basis of training the components of physical fitness. Topics include: methods of improving fitness, chronic adaptations to training, application to specific sports and the co-variables of age, sex, environmental conditions, and non-nutritive ergogenic aids. Prerequisites: PE 371, PE 473, or consent of instructor.
(Formerly Analysis of Training Programs. Change in title and prerequisites.)

Old Courses Dropped

PE 212. Aesthetics of Human Movement. (2)

PE 244. Physical Growth. (2)

PE 295. Professional Activities:
Fall: Soccer and Volleyball (1-2)
Winter: Men's Gymnastics Events (1-2)
Spring: Aquatics (1-2)
PE 334, 335. Physical Education Techniques. (2, 2)

PE 395. Professional Activities.
Fall: Softball and Basketball (1-2)
Winter: Social, Folk, and Square Dancing (2)
Spring: Badminton and Tennis (1-2)

PE 421. Principles of Perceptual Motor Learning. (3) (Grad)

PE 513. Human Perspectives of Physical Education. (3)

PE 554. Administration of Athletics. (3)

PE 555. Organization and Administration of Intramurals. (3)

SCHOOL OF PERFORMING ARTS

DEPARTMENT OF DANCE

New Courses

D 193. Dance Laboratory - Modern I, II, III. (2)
Beginning modern dance technique, emphasis on body alignment, strength, flexibility and development of basic technical skills. Maximum: 12 credits.

D 196. Dance Laboratory - Ballet I, II, III. (2)
Beginning ballet technique, emphasis on body alignment, development of basic technical skills, and understanding of basic ballet vocabulary. Maximum 12 credits.

D 197. Dance Laboratory - Jazz I, II, III. (2)
Beginning laboratory in jazz dance technique emphasizing body alignment, contraction, and isolation technique of Latin, West Indian, and American rhythms. Maximum 12 credits.

D 199. Special Studies. (Credit to be arranged.)

DEPARTMENT OF MUSIC

New Courses

Mus 191, 192, 193. Class Instruction. (3)
Class instruction in instruments or voice.

Mus 198. Jazz Lab Band. (1)
Performance of jazz literature in a big band setting. Maximum 6 credits.
Mus 341, 342, 343. Pedagogical Studies. (3)
Methods, materials, curriculum, and philosophical bases for teaching in a private studio with focus on individual and group instruction.

Mus 398. Jazz Lab Band. (1)
Performance of jazz literature in a big band setting. Maximum 6 credits.

Mus 548. Advanced Secondary Methods: Music. (3)
Advanced methods, materials, and curriculum of the music program in the secondary school. Prerequisite: ED 448.

Changes in Old Courses

Mus 332, 333, 334. Stringed Instruments and Vocal Techniques. (1, 1, 1)
A study of stringed instruments (Mus 332, 333) and vocal and guitar techniques (Mus 334). For students in the teacher education program.
(Formerly Stringed Instruments. Change in title and description.)

DEPARTMENT OF THEATER ARTS

Changes in Old Courses

TA 352. Makeup II. (2)
(Formerly Advanced Makeup. Change in title.)

TA 421. Costume Design. (3) (Grad)
An in-depth study of costume design principles. Emphasis is placed on the design of costumes for specific plays, using a variety of styles and rendering media. Special project required for graduate credit. Prerequisites: TA 321 and TA 325 or consent of instructor.
(Change in prerequisites.)