

LSC Use Only
Number _____
Action _____
Date _____

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Number 91-22
Action _____
Date _____

CURRICULUM PROPOSAL COVER SHEET

University-Wide Undergraduate Curriculum Committee

I. TITLE/AUTHOR OF PROPOSAL

Course/Program Title: PY299 Cooperative Education I

Suggested 20 character course title: Physics Co-op I

Department: Department of Physics

Contact Person: Dr. Devki N. Talwar

II. IF A COURSE, IS IT BEING PROPOSED FOR:

- Course Approval/Revision Only
 Course Approval/Revision and Liberal Studies Approval
 Liberal Studies Approval Only (Course Previously Approved by Senate)

III. APPROVALS

Richard A. Roberts
Department Curriculum Committee

Katy
College Curriculum Committee

Director of Liberal Studies
(where applicable)

John L. Fox
Department Chairperson

W. J. Cole
* College Dean

Provost (where applicable)

* EACH COLLEGE DEAN MUST CONSULT WITH THE PROVOST BEFORE APPROVING CURRICULUM CHANGES. APPROVAL BY COLLEGE DEAN INDICATES THE PROPOSED CHANGE IS CONSISTENT WITH LONG RANGE PLANNING DOCUMENTS, ALL REQUESTS FOR RESOURCES IN THE PROPOSAL CAN BE MET, AND THE PROPOSAL HAS THE SUPPORT OF THE UNIVERSITY ADMINISTRATION.

III. TIME TABLE

Date Submitted:
to LSC _____
to UWUCC _____

Semester to be
implemented: _____

Date to be
published 1992/3
in catalog

IV. DESCRIPTION OF CURRICULUM CHANGE

I. CATALOG DESCRIPTION

PY 299 Cooperative Education I (var 1-3 sh)

Prerequisites: PY132; completion of 30 credits with a minimum of 2.0 GPA and approval of the cooperative education coordinator

This program blends classroom theory with practical application through job related experience. Students will work in positions offered by the participating industrial or federal /state work-study program employers under joint supervision of the Physics faculty and the on-site supervisor. A co-op student must be a full-time university student in good academic standing and be planning to return to the campus for completion of his/her degree program. Evaluation requirements may include on-site visitations by the faculty/ coordinator, consultation with the on-site supervisor, and a major progress report by the student or the presentation of a detailed oral report before the departmental cooperative education committee.

Course Syllabus

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II. COURSE OBJECTIVES

1. Students will be given an opportunity to test the work place realities of their chosen profession early enough in their college career to make changes or adjustment possible.
2. Students will be given an opportunity to experience a learning environment based on work experience.
3. Students will be given a chance to develop job-related skills and improve professional preparation.
4. Students will be given an opportunity to enhance placement prospects after graduation.
5. Students will be given access to state-of-the-art technology in physics that in many cases is not available on campus.
6. Students will be able to develop professional communication and interpersonal relationship skills.

7. Students will gain more financial independence through earnings from the cooperative experience.

III. COURSE OUTLINE

In addition to the stipulated work schedule arranged by the cooperative employer, the student will submit, at the end of the Co-op experience, a major progress report or present a detailed oral report before the departmental cooperative education committee. The student will also research the following topics during the experience and report on them in the final comprehensive report .

- A. Policies, procedures and professional practices of the organization where the student participated in the Co-op experience.
- B. Techniques used by the organization to decide on job selection and career advancement of its employees.
- C. Qualifications needed for career options and advancements at this organization.
- D. Technical facilities and techniques in the field available at this organization.
- E. New technological development effecting physics as a profession and a career.

IV. EVALUATION METHODS

The student's progress will be monitored and evaluated from three perspectives: (a) consultations with the on-site job supervisor, (b) the faculty mentor/coordinator, and (c) the student's self-assessment and progress report.

1. The work experience of the Co-op student will be evaluated in consultation with the on-site job supervisor. Prior to the end of the work period, the student's on-site supervisor will review his/her performance to determine the student's competence and fitness for the job. This review will be discussed with the student to get reactions, to learn of any factors that may have affected performance, and to determine the student's interest in future employment with the company or agency.

2. During the Co-op period, the faculty mentor/coordinator will maintain contact with the student and with the job-site supervisor to monitor the student's progress. Faculty will maintain contact by phone and by mail with the on-site job supervisor. In addition, if the student is enrolled for three credit hours, the faculty mentor/coordinator may make a minimum of one on-site visit.

3. The student will be asked to complete a description of the Cooperative Education assignment that discusses how the work experience assisted his/her personal and professional development. The Co-op will also compile a log of activities he/she has participated in, and provide a self-evaluation on the degree to which the objectives of the assignment are met. A major progress report submitted by the student to the committee or cooperative supervisor at the end of the Co-op period is a normal part of the assignment. An alternative experience can be a presentation of a detailed oral report before the committee.

From the above information, the faculty mentor/coordinator will evaluate the student by holding a post experience conference and assess the degree to which the objectives of the program/placement were met. Faculty mentor/ coordinator will assign a letter grade (A,B,C,D,F) for the course.

V. REQUIRED TEXTBOOKS, SUPPLEMENTAL BOOKS AND READINGS

Books and manuals are provided by the physics department or by the cooperative employer.

VI. SPECIAL RESOURCE REQUIREMENTS

Students will keep a daily log booklet to compile activities in which he/she participated.

VII. BIBLIOGRAPHY

Readings will be determined as stated in V.

Course Analysis Questionnaire

A. DETAILS OF THE COURSE

A1. *What Academic Need Does This Course Fulfill? How Does this Course Fit into the Program of the Department? State Specifically Whether or not the Course is Proposed for Inclusion in the Liberal Studies Course List.*

The classroom is, and should be, the primary place where higher education disseminates information to educate the student. However, the work place cannot only be used to put this information into practice, but can allow the student to learn in new ways. Cooperative education perceives the work place as an extension of the classroom, and experiential education as an academic experience. This experience helps the students mature and after the Cooperative experience they return to the university better learners. Studies by the Experiential Education Office show that students' QPAs are likely to rise after an experiential education experience. The most tangible benefits of a cooperative experience are that the students develop punctuality, independence, confidence, self-discipline, maturity, co-operation, responsibility, and resourcefulness. This course is taken as a free elective or physics elective in the student's undergraduate program. This course is not being proposed for inclusion in the liberal studies course list.

A2. *Does This Course Require Changes in Content of Other Existing Courses?*

No change in other courses or programs in the physics department is foreseen.

A3. *Does This Course Follow the Traditional Type of Offering by the Department or is it a Novel Approach?*

Cooperative education is quite different from the traditional classroom course offerings. It is also novel due to the fact that, although students will be enrolled in the course, they will receive variable (from one to three) credits. This course is similar to the Department's other experiential

education course (viz., Internship course PY 493) however, it differs in a number of significant ways (see Appendix)

A4. *Has This Course Ever Been Offered at IUP on a Trial Basis?*

Not in the Physics Department, but it has been offered in other departments at IUP such as in Hotel Restaurant and Institutional Management, Consumer Services, Safety Science and Accounting.

A5. *Is This to be a Dual-Level Course?*

No.

A6. *Is This Course to be Taken for Variable Credit?*

This course is to be taken for variable credits (one to three).

A7. *Do other Higher Education Institutions Currently Offer This Course?*

Yes. Over 1000 institutions have cooperative education programs, and most of these place physics' students in industrial, and/or government/state work study programs. Over two hundred thousand higher education students participate in the national and international cooperative education programs each year.

A8. *Is the Proposed Course Recommended or Required by a Professional Society, Accrediting Authority, Law or Other External Agency?*

No. But most employers prefer students for employment who have participated in a work experience such as that which Cooperative Education offers. The Physics professional societies do not require any specific physics course.

B. INTERDISCIPLINARY IMPLICATIONS

B1. *Will This Course Be Taught By One Instructor or Will There Be Team Teaching?*

The course will have an instructor/coordinator of record from the Physics department to help in the placement and an on-site supervisor from the cooperative employer to monitor student's performance and progress.

B2. *Are additional or Corollary Courses Needed With This Course, Now or Later?*

Because cooperative education courses by definition involve at least two work experiences, a corollary course PY 399 cooperative education of Physics (second experience), var 1-3 sh credits, is required and a proposal for the course is being submitted to the UWUCC simultaneously with this proposal.

B3. *What is the Relationship of the Content of This Course to the Content of Courses Offered by Other Departments?*

Although other departments offer a Cooperative Education program, the Physics Cooperative Education program does not relate directly to them.

B4. *Is this Course Possibly Applicable in a Program of the School of Continuing Education Directed to Clientele Other Than Our Full Time Students?*

No.

C. IMPLEMENTATION

C1. *What Resources Will Be Needed to Teach This Program and How Adequate Is The Current Situation?*

- (a) No new faculty will be needed to offer this course. The Co-op coordinator will be responsible for recruiting, advising and placing students and evaluating the Cooperative Education Experience.
- (b) No additional space is necessary to offer this course
- (c) No additional supplies are necessary for this course
- (d) No additional equipment is needed for this course
- (e) Available library materials are adequate for this course
- (f) Travel funds for on-site visitation and site development by the faculty member of record will be necessary.
- (g) Cover document provides a detailed statement about funding.

C2. *Are There Any Type of Grant Funds Associated With This Course?*

None of the resources required are currently funded. External funding from corporations will be sought.

C3. *How Frequently Do You Expect This Course To Be Offered?*

The course will be offered every semester if student demand warrants.

C4. *How Many Sections Do You Anticipate Each Time It Is Offered?*

One.

C5. *How Many Students Do You Plan to Accommodate In A Section of This Course?*

As many as apply, qualify and are selected.

C6. *Is That Planned Number Limited by the Availability of Specific Facilities?*

Number of sites developed and number that those sites can handle.

C7. *Will This Course be a Curriculum Requirement?*

No.

D. MISCELLANEOUS

The first work experience of two required in the cooperative education program may allow one of two forms (see Appendix).

1. *Alternating Periods*

Alternating periods will permit the participant to work at an approved site during the summer full-time (a minimum of 40 hours) or full-time (30-40 hours a week) during one entire semester following the completion of 30 credits and all other prerequisites.

2. *Parallel Periods*

Parallel periods permit the participant to be enrolled at the University for formal course work and work at the approved site part-time (15-20 hours per week) during two semesters following the completion of 30 IUP credits and all other prerequisites. Only one summer work experience is permitted in cooperative education. If PY 299 is taken as a summer experience then PY 399 must be taken during the fall or spring semester.

Appendix

Cooperative Education

History:

Cooperative Education in the United States started in 1906 at the University of Cincinnati. At that time, it was primarily for engineers but has since expanded to include other majors. The most rapid expansion occurred after 1970 when federal grants from the U.S. Department of Education enabled many colleges and universities to develop such programs. Today, approximately 1,000 colleges and universities have cooperative education programs. It was through a U.S. Department of Education grant that IUP received federal funds to develop a cooperative education program here on campus, but cooperative education is no longer receiving external funding.

Like internships, cooperative education programs have as their central purpose the development of occupational competence, using employment in a real-life job as a source of learning. In both cooperative education and internship programs, the college selects as a training agency a firm which provides the occupational experience needed by the student, and the coordinator supervises the student's experience. Class work in the college provides learning that is basic to employment and to the occupation sought. The occupational experience is expected to be a source for gaining knowledge as well as a vehicle for applying and testing what has been learned in college.

There is no need here to describe in detail the difference between the internship and the cooperative programs. However, the distinction is subtle and important, because it affects matters such as placement, supervision and timing of the experience, credit, pay, and decisions. For example, cooperatives involve at least two placements at the work site separated by periods of traditional academic study on campus. One of these placements occurs early in the student's academic career - usually during or at the end of the sophomore year - and the other takes place during the student's junior or senior year. On the other hand, the internship is a capstone work experience and it is designated as a transition to professional practice wherein the neophyte applies learned theory to actual practice, adapting himself to the demands of the employer and to those of his fellow employees. The objective of the multiple placement in

cooperatives is two-fold: to give the student a chance to evaluate career options early in his/her college career as well as to have the opportunity to practice more advanced professional skills at a later stage in his/her college preparation.

There are two basic types of cooperative education plans, *alternating* and *parallel*. The alternating plan allows students to alternate between semesters of full-time cooperative work experiences and at least one semester as a full-time student. Students in these positions normally work thirty-five to forty hours per week. The parallel plan permits students to attend classes and work during the same semester. Students usually work between fifteen and twenty-five hours each week while carrying a moderate course load. In addition to these options, employers may explore *one-time-only plans*. These positions fill short-term needs for a semester at a time throughout the year.

Unlike internships, cooperative experiences must be paid by the cooperative employer, giving the student some measure of professional status and a way to defray educational expenses.

Enrollment and Faculty Load:

Each cooperative or intern student will be assigned to the coordinator or faculty mentor who helps the student identify and achieve the learning objectives during his/her assignment, and evaluates educational outcomes and work performance. Supervisory faculty must be in compensable status during the internship. The load formula for faculty supervision for cooperative education will be determined by stipulations set forth in the CBA governing the supervision of interns. Workload is one-third (1/3) of an academic credit hour for each intern/cooperative education student. Unlike internships, some cooperative experiences carry no credit and no grade. If the student taking a no credit cooperative education completes all the requirements established for the experiences as certified by the cooperative employer, the completion of the experience will be noted on the student's transcript. The Physics department proposal is for variable (1-3 sh) credit courses. A maximum of 3 s.h. of cooperative education credit in the student's major may be applied toward the physics major area elective requirements. Additional cooperative education credit may be used as free electives only.

Credit and Length of Placement:

For each credit granted for cooperative education, the student must spend a minimum of one and a half weeks working at the cooperative placement site. This means that a student will spend about *sixty* hours in cooperative placement for each credit earned. The physics department requires that the student should spend a semester (or summer) in placement for a three-credit cooperative education, and so on. The course proposal in Items D1 and D2 of the course analysis questionnaire explains the credit granted and on-site work experience required in the Physics proposals. The department's requirements are considerably higher than the general requirements for cooperative education and university's requirements for an internship.

Eligibility and Requirements:

Eligibility requirements for cooperative education participation are established jointly by Experiential Education office of the university and individual academic departments. The minimum requirement for students is the completion of 30 credits and a grade point average no less than 2.0. Students participating in cooperative education work assignment have to be full-time students and be planning to return to campus for completion of their degree programs. International students with F-1 visas who are referred through regular channels by the cooperative education program are eligible assuming U.S. citizenship is not required as a condition of employment.

The first experience of the two cooperative placements will be orientational and gives the student an opportunity to conduct an independent research study covering the following topics: (A) policies, procedures and professional practices of the organization where the student participated in the Co-op experience. (B) Techniques used by the organization to decide on job selection and career advancement of its employees. (C) Qualifications needed for career options and advancements at this organization. (D) Technical facilities and techniques in the field available at this organization. (E) New technological developments affecting physics as a profession and a career; and whatever other topic seems reasonable and appropriate to the student and the supervising faculty member. The program coordinator has responsibilities to measure the student's performance in the occupational laboratory. This responsibility is quite unlike that faced by his other teaching colleagues at the

college laboratory. A major progress report submitted by the student to the departmental committee at the end of the cooperative experience is, therefore, a normal part of the assignment. This report will become a substantial factor in determining the grade for credit bearing experiences. To complete the report, interns and co-op students will maintain a daily log summarizing their activities as they relate their cooperative education experience to the academic program. The student will also be required to successfully compare a set of tasks set forth in the job description agreed to by the employer, student and advisor.

The second cooperative placement, the one taken at the end of the student's junior year or during the senior year, will focus more intensely on the quality of the advanced professional activities performed by the student. During this placement, the student will be expected to practice skills roughly comparable to those expected of an entry level professional. Such skills and attended tasks will be carefully spelled out by the instructor of record and the employer and closely monitored and evaluated by the instructor. In addition the student will perform an independent research study similar to that expected in the first placement. The second research study should reflect the student's increased maturity and depth of knowledge and experience.

Resources:

Since the cooperative program will grow at a moderate rate, no dramatic new demands will be placed on faculty or other resources. But since most of the cooperative placements will generate credits and tuition, any growth experienced by the program will be matched by a growth in the resource base. Although, in the Physics Department no additional faculty is needed to accommodate student cooperative supervision in the near future, travel money for on-site visitations for the faculty mentor will be required.



Curricular Offering/Change Authorization

Please Check One For Each Form

List only one entry per form.

Submit this form to College Dean.

- New Course Addition
 - Course Deletion
 - Course Number Change
 - Course Descriptive Title Change
 - Semester Hours Change
- Department _____
- Physics _____
- Undergraduate
 - Graduate

Please list below the full information requested for the course to be added/dropped or changed.

Action	Dept.	Number	Descriptive Title	Semester Hours	Remarks
Add	PY	299	Cooperative Education I	1-3	
Drop					
Change From					
To					

My signature on this form signifies that I, or the approving agency which I chair on the following date approved the inclusion/deletion or changes listed above to the appropriate Master Course File.

Sign and route as follows

1. Scheduling - White
2. Chairperson - Canary
3. College Dean - Pink



 _____ Chairperson
 Date 4/11/91

_____ Dean of College
 Date 5/3/91

_____ Chairperson of Curr. Comm/Grad Council
 Date