LSC Use Only
Number_____
Action_____
Date_____

UWUCC Use Only
Number 91-24
Action_____
Date_____

CURRICULUM PROPOSAL COVER SHEET

University-Wide Undergraduate Curriculum Committee

I. TITLE/AUTHOR OF PROPOSAL

Course/Program Title: *PY493 /593: Internship in Physics*

Suggested 20 character course title: *Physics Internship*

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 D. Roberts
Department Curriculum Committee

John N. Tox
Department Chairperson

College Curriculum Committee

W J Cale
* College Dean

Director of Liberal Studies
(where applicable)

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 in catalog 1992/3

CURRICULUM PROPOSAL COVER SHEET
University-Wide Graduate Committee

New Course Proposal

Course/Program Title: PY 493/593: Internship in Physics

Suggested 20 character course title: Physics Internship

Department: Department of Physics

Contact Person: Dr. Devki N. Talwar

APPROVALS

Richard D. Roberts
Department Curriculum Committee

Department Chairperson

College Curriculum Committee

*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.

TIME TABLE

Date Submitted to Graduate Committee: _____

Semester to be Implemented: _____

Date to be published in catalog: _____

IV. DESCRIPTION OF CURRICULUM CHANGE

I. CATALOG DESCRIPTION

PY 493/593: Internship in Physics (var 1-12 sh)

Prerequisites: PY 350/520; Completion of 57 credits with a minimum of 2.5 GPA and approval of the internship education coordinator.

Supervised professional work-experience in physics and applied physics. Location, duties, lengths of internship, and hours are individually tailored to student career goals. A maximum of 3 sh of internship in the student's major may be applied toward the physics major area elective requirements. Additional internship credit must be used as free electives. Evaluation requirements 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 internship education committee.

Course Syllabus

I. CATALOG DESCRIPTION

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II. COURSE OBJECTIVES

1. Student will be given an opportunity to gain a culminating experience prior to his/her graduation but after preliminary classroom work.
2. Students will be given a chance to develop job-related skills and the requirements of employment.
3. Students will be given a chance to apply the concepts and skills he/she has learned in the college classroom.
4. Students will be given access to state-of-the-art technology in physics that in many cases is not available on campus.
5. Students will be given a chance to develop professional communication and interpersonal relationship skills.

III. COURSE OUTLINE

In addition to the stipulated work schedule arranged by the internship employer, the student will submit, at the end of the experience, a major progress report or give an oral presentation before the departmental Internship committee. The student will also research the following topics during the experience and report on them in the final comprehensive report.

A. *Career Awareness:* Interns will study the characteristics of a career in physics, its duties and responsibilities; employment sources and outlook.
B. *Decision-Making:* Studies are made of bases for decision-making; activities to achieve decision making skills; career development processes and goals; interviewing and reporting.
C. *Employment Skill Development:* Learn new technological development effecting physics as a profession and career; occupational adjustment; correlation of in-school educational experiences with work experience.

IV. EVALUATION METHODS

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

1. The work experience of intern student will be evaluated with the consultation of on-site job supervisor. Prior to the end of each 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 internship period, the faculty mentor/coordinator will maintain contact with the student and with the job-site supervisor to monitor student's progress. For an intern student enrolled in three or more credit hours, the faculty mentor/coordinator will make a minimum of one on-site visitation.

3. The student will be asked to complete a description of the Internship Education assignment that discusses how the work experience assisted his/her personal and professional development. The intern will also compile a log of activities in which he/she has participated, and provide a self-evaluation on the degree to which the objectives of the assignment were met. A major progress report submitted by the student to the Departmental Internship Committee at the end of the internship period is a normal part of the assignment.

   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 (A,B,C,D,F) grade for the course.

V. REQUIRED TEXTBOOKS, SUPPLEMENTAL BOOKS AND READINGS

Books and manuals are provided by the physics department or by the internship 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 essence of the internship plan of education is the sharing of teaching-learning responsibility between a professionally trained individual in the college laboratory and an occupationally proficient individual in the work laboratory. Internship education perceives the work place as an extension of the classroom, and experiential education as an academic experience. This experience helps the students to test his/her aptitudes, interests, and competencies against his/her experiences on the job. The most tangible benefit of internship experience is that the student develops special skills, knowledges, and attitudes in order to be able to sell himself in the job market to the perspective employer. 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?

Internship 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 twelve) credits. This course is similar to the Department's other experiential education courses (viz., Cooperative Education PY 299 and PY 399) however, it differs in a number of significant ways. The internship experience in physics provides the student an opportunity to experience job related and operational skills not taught in the academic classroom (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 Computer Science, Hotel Restaurant and Institutional Management, Consumer Services, Accounting, Marketing, Music, English, etc.

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

A6. Is This Course be Taken for Variable Credit?
This course is to be taken for variable credits (one to twelve) and as free electives in the student's undergraduate program.

A7. Do other Higher Education Institutions Currently Offer This Course?
Yes. Over 1000 institutions have Internship Education programs, and most of these place physics students in industrial, government/state work study programs. Over two hundred thousand higher education students participate in the national and international internship/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 an Internship 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 Internship employer to monitor student's performance and progress.

B2. Are additional or Corollary Courses Needed With This Course, Now or Later?
No

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

Although other departments do offer Internship Education program, the Internship Education for Physics 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 Internship coordinator will be responsible for recruiting, advising and placing students and evaluating the Internship 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 corporation 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?
No.

C7. Will This Course be a Curriculum Requirement?
No.

D. MISCELLANEOUS
None.

Appendix

Internships

Background:

The term "internship" is well known to college personnel because of its wide spread inclusion in baccalaureate curricula preparing for professional positions. The term is also used to describe the activity of a person who has completed all the academic requirements for admission to a profession, but who must undergo a period of occupational experience in the profession prior to his "certification" as a recognized practitioner. In a number of situations it is used in educating teachers, physicians, social workers, engineers, scientists and various business personnel such as accountants, salesmen, and retail managers. The internship occurs either just prior to graduation and the receipt of the academic degree (as in social work and teacher education) or afterwards in those academic areas where licensing examinations are given after a period of satisfactory experience (such as in medicine, law and accounting).

Both internship and cooperative education programs are educational plans which integrate classroom experience into industrial, business, government or community-service work situations. There is no need here to describe in detail the difference between the internship and the Co-op program. However, the distinction is subtle and important, because it affects matters such as placement, supervision and timing of the experience, credit, pay, and decisions. The internship, for example, is a capstone experience while the cooperative education is a multi-experience work program. The internship is also 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 fellow employees. The Co-op student, on the other hand, is a student-employee who is learning part of the procedures of the profession on the job and is supervised by senior employees or unit supervisors. From the cooperative student's experience comes not acceptance by the profession but increased skills and knowledge of the job, a better understanding of actual practice, and hopefully, a motivation for increased performance back on campus, a background which can sharpen classroom questioning and discussion and produce a more insightful self-understanding of strengths and

weaknesses. On the other hand, an intern during his/her period of experience is treated as a member of the profession albeit a beginner. He/she serves his/her internship under the direct supervision of a practicing member of the profession. From the internship evaluation is derived the recommendation for his/her acceptance and employment in the profession. Unlike cooperative experiences, internships may or may not be paid by the employer.

Enrollment and Faculty Load:

Faculty load equivalency for internship education will be determined by stipulations set forth in the CBA governing the supervision of interns. Work load is one-third (1/3) of an academic credit hour for each intern student. The Physics department proposal for internship is for a variable (1-12 sh) credit course. However, a maximum of 3 sh of internship in the student's major may be applied toward the physics major area elective requirements. Additional internship credit may be used as free electives only.

Credit and Length of Placement:

For each credit granted for internship education, the student must spend a minimum of one and a half weeks working at the placement site. This means that a student will spend about *sixty* hours in internship placement for each credit earned. Thus a student can earn maximum of twelve-credit internship by spending a semester (or summer) in placement. The course syllabus explains the credit granted and on-site work experience required in the proposals. The physics requirements are considerably higher than for the internship education in other disciplines and the university's requirements.

Requirements:

The internship/cooperative plan of education is a sharing of the teaching-learning responsibility between a professionally trained individual in the college laboratory and an occupationally proficient individual in the work laboratory. This sharing, in a sense, is analogous to the team effort in any sport or activity where each party relates closely to the other and adapts to the common goal agreed upon. The intern is one who has mastered the basic academic content of his profession and who has been screened for entry into the profession. At the time of applying for internship he/she must have completed a minimum of fifty seven credits with at least a 2.5 GPA. The intern will learn the specialities

provided within the physics profession from practitioners. He/she will also experience the conditions and demands of employment and is able to engage in self-evaluation to test his/her own capacities and motivations against those of the profession. The internship coordinator arranges an experience germane to the student's interest, schedules interviews with the student to discuss experiences, and evaluates written observation reports submitted by the student and assigns grade for the internship experiences.

Resources:

Since the internship program in the physics department will grow at a moderate rate, no dramatic new demands will be placed on faculty or other resources. But since most of the internship/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 internship/cooperative supervision in the near future, travel money for on-site visitations for the faculty mentor will be required.

IUP

Curricular Offering/Change Authorization

Please Check One For Each Form

List only one entry per form.
Submit this form to College Dean.

- [X] **New Course Addition**
- [ ] **Course Deletion**
- [ ] **Course Number Change**
- [ ] **Course Descriptive Title Change**
- [ ] **Semester Hours Change**

Physics
Department

- [X] **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	493	Internship in Physics	1-12	
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	4/11/91 **Date**
Dean of College	5/3/91 **Date**
Chairperson of Curr. Comm/Grad Council	**Date**