

Routing # 11 70-71

Resolution #11 1970-1971

TO: PRESIDENT ALBERT W. BROWN

FROM: THE FACULTY SENATE

Meeting on December 14, 1970
(Date)

RE: X I. Formal resolution (Act of Determination)
 II. Recommendation (Urging the fitness of)
 III. Other (Notice, Request, Report, etc.)

SUBJECT: Revision to the Undergraduate Curriculum in Physics

"Dr. Getz moved, seconded by Dr. Clune, to approve the Revision of the Undergraduate Curriculum in Physics." Carried unanimously. (Document attached)

Signed *J.P. Bolley* Date Sent: 1/1/71
(For the Senate)

TO: THE FACULTY SENATE

FROM: PRESIDENT ALBERT W. BROWN

RE: I. DECISION AND ACTION TAKEN ON FORMAL RESOLUTION

- a. Accepted. Effective Date _____
- b. Deferred for discussion with the Faculty Senate on 1/28/71
- c. Unacceptable for the reasons contained in the attached explanation

II, III. a. Received and acknowledged

b. Comment:

DISTRIBUTION: Vice-Presidents: Burke Cranhall

Others as identified: Finsky, Gennarino, Bailey, Watts

Distribution Date: 1/29/71

Signed: _____

President of the College

Date Received by the Senate: _____



Department of Physics

12 November 1970

TO: Faculty Senate and Dean K. T. Finley
FROM: Herbert S. Bailey, Chairman, Department of Physics
RE: Revision of Undergraduate Curriculum in Physics

The Department of Physics requests the approval of the Faculty Senate for the course changes in the undergraduate curriculum listed below.

These changes are suggested to make the transition from starting courses to advanced courses easier for the students, to bring the courses more in line with courses at other institutions as an aid to transfer students, to give more time for the development of mathematical concepts necessary for physics courses and to give a more logical sequence to courses. A senior seminar has been added as a requirement. A course in solid state physics has been reinstated.

These changes have Departmental approval.

Catalog course write-ups for all changes are attached.

The title of PHS 203 is changed from Mathematical Physics I to Mechanics I. This has been and will be the intermediate course in mechanics.

The title of PHS 205 is changed from Mathematical Physics II to Electricity and Magnetism I. This has been and will be the intermediate course in electricity and magnetism.

PHS 301, Mathematical Physics III, which is the intermediate course in modern physics will be replaced with PHS 209, Survey of Modern Physics. PHS 209 will be the third semester in the regular physics program, following PHS 202 and normally coming in the first semester of the sophomore year. This course will have an accompanying laboratory.

PHS 207 is a new course offered at the sophomore level to present a variety of mathematical concepts required for the development of advanced physics courses. In the normal sequence students will be able to elect this in either the first or second semester of the sophomore year.

Physical Measurements Laboratory I, II and III which now normally accompany Math Physics I, II and III will be replaced by PHS 307, Physical Measurements Laboratory I, a mechanics laboratory and PHS 308, Physical Measurements Laboratory II, an electricity laboratory.

PHS 303 will be changed to PHS 312, Mechanics II and the title of PHS 314 will be changed to Electricity and Magnetism II.

PHS 401, Senior Seminar, has been added for one semester hour in the senior year. PHS 418, Solid State Physics has been added.

The title of PHS 402 is changed to Senior Laboratory.

The numbering system described on page 57 of the current catalog has been followed. We assume this is still in effect.

The following shows the major and minor patterns:

Major in Physics

PHS 201, 202	College Physics I, II	8 hours
PHS 203	Mechanics I	3 hours
PHS 205	Electricity and Magnetism I	3 hours
PHS 207	Mathematical Methods of Physics	3 hours
PHS 209	Survey of Modern Physics	3 hours
PHS 307, 308	Physical Measurements Laboratory I, II	2 hours
PHS 401	Senior Seminar	1 hour
PHS 402	Senior Laboratory	<u>1 hour</u>
		24 hours
six hours by advisement		<u>6 hours</u>
		30 hours.

Minor in Physics

PHS 201, 202	College Physics I, II	8 hours
PHS 203	Mechanics I	3 hours
PHS 205	Electricity and Magnetism I	3 hours
PHS 209	Survey of Modern Physics	3 hours
PHS 307	Physical Measurements Laboratory I	1 hour
-OR-		
PHS 308	Physical Measurements Laboratory II	<u>1 hour</u>
		18 hours.

PHS 203 Mechanics I

The mechanics of single particle motion are developed fully, employing the concepts of vector calculus. The treatment includes conservation of energy, momentum, and angular momentum, use of moving coordinate systems, and application of these principles to the central force problem. Three hours of lecture.

Prerequisite: PHS 202, MTH 202

Corequisite: PHS 207

3 semester hours.

PHS 205 Electricity and Magnetism I

The theory of electrostatics and magnetostatics is developed using vector calculus. Development includes electric fields in vacuum and dielectrics, magnetic fields in vacuum and in materials, and induced electromotive force. Three hours of lecture

Prerequisite: PHS 202, MTH 202

Corequisite: PHS 207

3 semester hours.

PHS 207 Mathematical Methods of Physics

This course presents a variety of mathematical concepts necessary for the development of advanced physics courses. Topics are selected from vector and tensor analysis, matrix theory and coordinate transformations, complex variables, total and partial differential equations and orthogonal functions. Three hours of lecture.

Prerequisites: PHS 202 and MTH 202

3 semester hours.

PHS 209 Survey of Modern Physics

An introduction to the physics of the twentieth century. Topics include the photoelectric effect, the Compton effect, the Bohr model of the hydrogen atom, atomic physics, nuclear physics, solid state physics and the special theory of relativity. Two hours of lecture and three hours of laboratory.

Prerequisite: PHS 202

PHS 307 Physical Measurements Laboratory I

Students perform a number of experiments in mechanics designed to illustrate physical principles and to introduce specific physical instrumentation and techniques. Emphasis is placed upon student reaction to the experiments being performed and upon clear reporting of results. Three hours of laboratory.

Prerequisite: PHS 202 or consent of instructor.

1 semester hour.

COURSE-WRITE-UPS (cont.)

PHS 308 Physical Measurements Laboratory II

Students perform a number of experiments in electricity designed to illustrate physical principles and to introduce specific physical instrumentation and techniques. Emphasis is placed upon student reaction to the experiments being performed and upon clear reporting of results. Three hours of laboratory.

Prerequisite: PHS 202 or consent of instructor. 1 semester hour.

PHS 312 Mechanics II

The mechanics of particle systems and rigid bodies is developed, including an introduction to Lagrange's and Hamilton's equations. Three hours of lecture.

Prerequisite: PHS 203 3 semester hours.

PHS 314 Electricity and Magnetism II

The theory of time-varying electromagnetic fields is studied using Maxwell's equations. Reflection, refraction, and propagation phenomena are developed and related to optics and microwave theory. Special relativity theory is introduced and developed for the electromagnetic field. Three hours of lecture.

Prerequisite: PHS 205 3 semester hours.

PHS 401 Senior Seminar

Students prepare talks on special topics in physics and present them to fellow students for criticism and discussion. Topics are selected from areas of classical or modern physics. One hour of seminar.

Prerequisite: Completion of 18 credit hours in Physics. 1 semester hour.

PHS 418 Solid State Physics

An introduction to the fundamental theoretical and experimental principles of solid state physics. Topics studied are selected from x-ray diffraction; lattice dynamics; thermal, electrical and mechanical properties; free electron and band theory of solids; semiconductors; dielectric and magnetic properties. Three hours of lecture.

Prerequisite: PHS 411 3 semester hours.

