

S137

SM 1918/68

General Changes

Mr. H. M. Evans, Registrar,

B. L. Funt,

Secretary of Senate.

Dean of Science.

New Physics Courses for
Approval by Senate.

August 9, 1968

I enclose descriptions of courses Physics 100-3 and 001-3 which I explained in my earlier memorandum are intended to be offered in the Fall Semester and the Spring Semester respectively.

In addition, the Department of Physics has recommended some minor changes in course content of Physics 101-3, 102-3, 211-3 and 221-3. In the opinion of the Executive Committee, on behalf of the Faculty of Science, these changes are minor and essentially of an editorial content and do not merit Senate consideration and approval.

However, if, in your opinion, presentation of this material to Senate would be considered prudent, the relevant course descriptions are included for your information.

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SM 19/8/68

Calendar Changes

NEW PHYSICS COURSES

- I. Physics 100-3 - Introduction to Concepts of Physics
Analysis of problems and synthesis of models in several areas
of physics. Intended, if necessary, as preparation for
Physics 101-3 and 102-3. (3-1-0)

Prerequisite: Mathematics 113-3 must precede or be taken
concurrently.

NOTE: Candidates for degrees in the Faculty of Science may
not use both Physics 100-3 and Physics 001-3 towards
the satisfaction of degree requirements.

This course is to be offered each semester starting with
Semester 68-3 in September. It is intended to prepare students
with little or no high school physics for Physics 101-3 and
102-3.

- II. Physics 001-3 - The Nature of ^{Physical} ~~Physics~~ Laws
The laws of physics and the scientific method in historical
perspective; recent developments in physics and their
implications for society. (3-1-0)

NOTE: Not available for credit to students who have previously
obtained credit for or are concurrently registered in
another course in the Physics Department. Candidates
for degrees in the Faculty of Science may not use both
Physics 100-3 and Physics 001-3 towards the satisfaction
of degree requirements.

This course is to be offered once each year starting with
Semester 69-1 in January. It is intended as a general
education course with no prerequisites or corequisites.

MEMORANDUM

SM 19/8/68

Calendar Changes

To: Undergraduate Curriculum
Committee, Faculty of
Science

From: Leigh Hunt Palmer
Physics Department
Representative

Subject: Changes in the Physics
Curriculum

Date: July 11, 1968

In the past the Physics Department has been severely handicapped in teaching its first course because of the diversity in the high school preparation of entering students. Three groups of students come to us from B. C. schools alone: one with no high school physics, one with Physics 11, and one with both Physics 11 and 12. In the past we had to strike a compromise in teaching to these students because we were unable to offer more than one introductory course with our limited faculty. In September 1968 our faculty will increase by two members. This makes it possible to improve our program in several important ways.

The first improvement in our program is that starting in the Fall Semester of 1968 both of our second year courses, 211-3 and 221-3 will be offered every semester. The next calendar will reflect this change. In addition Physics 221 will have as a normal prerequisite Physics 211, allowing us to eliminate the redundancy which previously characterized the mathematical portions of these two courses.

Secondly we plan to offer each semester starting in September 1968 a new elementary course for those students with little or no high school physics background. The course will carry the following calendar description:

100-3 Introduction to ~~Physics~~ Concepts of Physics
Intended to prepare a student lacking preparation in high school physics for Physics 101-3 and 102-3; analysis of problems and synthesis of models in several areas of physics

(3-1-0)

Prerequisite: Mathematics 113-3 must precede or be taken concurrently.

SM 1918/68 2.

General. Changes

NOTE: Candidates for degrees in the Faculty of Science may not use both Physics 100-3 and Physics 001-3 towards the satisfaction of degree requirements.

The course is intended to be more or less the analog of Chemistry 101-3 in the Physics Department.

Thirdly we plan to offer starting in the 69-1 semester and once each year thereafter a physics course for students in the Arts and Education Faculties. There is a frequently expressed desire in the Arts and Education Faculties for such a course. While the course will not be a snap course, it will require much less sophisticated mathematics and will have no prerequisites or corequisites which is consistent with the type of course referred to as a general education course. The Calendar will bear the following entry:

001-3 The Nature of Physical Laws

The laws of physics and the scientific method in historical perspective; recent developments in physics and their implications for society. (3-1-0)

NOTE: Not available for credit to students who have previously obtained credit for or are concurrently registered in another course in the Physics Department. Candidates for degrees in the Faculty of Science may not use both Physics 100-3 and Physics 001-3 towards the satisfaction of degree requirements.

Minor modifications in course content and prerequisites are deemed desirable in four other courses, and we propose the following calendar entries for them:

101-3 General Physics I

A general survey of mechanics, vectors, statics, dynamics, work, energy, power, elasticity, simple harmonic motion, wave motion, and acoustics. (3-1-0)

Prerequisites: Physics 100-3 or Physics 12 (High School) or first class standing in Physics 11 (High School); Mathematics 113-3 must precede or be taken concurrently.

Agenda 3.

SM 19/8/68

102-3 General Physics II

A general survey of heat, kinetic theory, temperature, heat transfer, introduction to thermodynamics, electricity, magnetism, optics, atomic and nuclear physics.

(3-1-0)

Prerequisites: Physics 100-3 or Physics 101-3; Mathematics 114-3 must precede or be taken concurrently.

211-3 Mechanics I

Kinematics, energy, momentum, free and forced oscillations, motion of rigid bodies.

(3-1-0)

Prerequisites: Physics 101-3 or high standing in Grade 13 (British Columbia High Schools) Physics and Mathematics 120; Mathematics 213-3 must precede or be taken concurrently.

221-3 Electricity and Magnetism I

Electrostatics and Magnetostatics, resistance, capacitance and inductance, laws of Coulomb, Ampere and Faraday, DC and AC circuits, concepts of electric and magnetic fields leading up to Maxwell's equations.

(3-1-0)

Prerequisites: Physics 102-3 and 211-3; Mathematics 214-3 must precede or be taken concurrently.

The implications of these changes for Majors in the other sciences include the following:

Mathematicians may take for credit 100-3 and 001-3 but may not count both towards the requirement of 120 credits for B.Sc. or as fulfilling the 6 credit science requirement. Such people would need a minimum of 123 units and another science course.

Applied mathematicians could, if they so chose, take 101-3 and 211-3, thus bypassing 102-3.

Chemists could take 100-3, 101-3, 102-3, 211-3 and 231-3 or 221-3 to fulfil the 15 unit physics requirement in that department. If it is desired that 100-3 be excluded as a choice for chemists, then such a change in the departmental requirement would be required.

Biochemists now are effectively constrained to take 211-3. Formerly they could elect 221-3 instead.

SM 19/8/68 *Leigh Hunt Palmer*

Bioscience students could satisfy their six unit physics requirement with any of the following sequences: 001-3 and 101-3, 100-3 and 101-3, 100-3 and 102-3, 101-3 and 102-3. The last two alternatives are sound physics courses which could reasonably be taken by bioscience major, and the 100-3, 102-3 sequence is less mathematically sophisticated over all than the 101-3, 102-3 sequence. 001-3, 101-3 is not a terribly good sequence, and anyone who could take it could as well take 101-3, 102-3 or 100-3, 102-3. The Biological Science Department may have to modify its physics requirement if it feels any of these sequences unsuitable.

Leigh Hunt Palmer

Leigh Hunt Palmer
Physics Department
Representative

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