



A GENERAL PHYSICAL SCIENCE COURSE AT THE
COLLEGE LEVEL

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(Abstract)

A general physical science course has been presented for the past two years (1936-37, 1937-38) as part of the general education curriculum at the Oklahoma Agricultural and Mechanical College.* The course is required of students whose major work in the school of science and literature is not in one of the physical sciences or mathematics. In addition to

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these, students in the school of commerce and the school of education use this course to meet science requirements in these schools but it cannot be used to complete a teaching field in physical science.

It must be realized at the outset that this group of students are not "science majors." They have avoided sciences at every opportunity and will only take courses necessary to meet their science requirements. Thus if the sciences are to contribute to their lives, one of the objectives must be an understanding of the social implications of the physical sciences. Further, a survey of several fields, viz., astronomy, physics, chemistry, and geology will be more advantageous, within the allotted time, than a detailed study of one science. The study must begin at the students' level and go beyond the conventional course. There is a danger of over-extension to the point that the course falls under its own weight; but at the same time, harm may be done this group by too little extension. In the latter case, of too great a depth and too little breadth, the structure is overbuilt and cannot make an adequate contribution to the life of the student. Only experience can locate a happy medium between the two extremes.

A syllabus was written to include the specific objectives of the course. No attempt was made to "cover" a conventional course in each of the sciences in six semester hours. Sampling was done on the basis of the following criteria.

1. Importance to science, wideness of application.
2. Importance for clarity in understanding.
3. Value as a cultural aid, the applicability to the students' every day life.

Those items, which in the mind of the writer, stood highest in terms of these criteria were chosen. Thus, many subjects thought indispensable in conventional courses were omitted.

The registration in the course for the first year was approximately 270 each semester. Of these, approximately 44 per cent were from the school of science and literature. The remaining 56 per cent were from commerce and education. The group could be characterized, without doubt, as one of non-science "majors." Some drops and failures during the first semester were balanced by replacements who did not take the course the first semester. This was done as an experiment to determine how vital the mastery of the first semester's work was to the work of the second semester. The results indicate that only the above-average students were able to overcome the handicap.

The course was given according to the plan with the specific objectives as outlined in the syllabus. Throughout the lectures, a definite attempt was made to unify the subject matter of the various sciences. Frequent cross references between chemistry and physics were made. Geology was presented both as a major application of the principles of physics and chemistry and as an introduction to general biology which was to follow during the second year but is taken simultaneously now.

The results of the course cannot be measured objectively. The writer feels that some scientific principles can be taught and casual observation indicates that many of the students have developed an interest in the physical sciences. There is reason to believe that this group will not place the work of the scientist at the level of a conventional elementary course. There is as much evidence of retention of subject matter as there would be in a conventional course.

There is no "follow-up" in this course. There is none in the conventional courses for those who do not take a second year in a science. The standards of the conventional elementary course were not lowered by a group who are not interested in science as a vocation. The science

departments were not burdened with training some three hundred or more uninterested students to perform the tasks of the elementary laboratory. While the group did not make the detailed study of the sciences so vital to a specialist, they did gain a perspective of the sciences of definite value to a layman. Their sensitiveness to the wide applications and social implications of the physical sciences was developed to a point that was not possible by a detailed study of one of the conventional science courses required in most institutions.

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