TU (17)

829

PLAN OF WORK FOR ACADEMIC YEAR 1947-1948.

Complete thesis for M.S. on coupling of magnetrons to wave guide.
Continue research on microwave wave guide transmission.
Start preparation for qualifying examinations.
Study function theory (Math. 201A-201B) and philosophy of science (Philosophy 124A-124B or equivalent.)

See attached sheet for general plan (1946-1947).

February 13, 1947 Frederick B. Wood

MY GENERAL PLAN OF GRADUATE STUDY
(1946 - 1949)

1. Objective.- My objective in undertaking graduate study is to prepare myself for the application of our knowledge of electromagnetic phenomena to the meeting of human needs. This program of study consists of three parts.

a. Study of existing knowledge of physics and mathematics.

b. Study of engineering techniques and research on a specific problem.

c. Study of how human needs are determined.

2. Difficulties Encountered.- No direct difficulties are forseen in the study of electromagnetic theory and engineering techniques. However, the different stages of development and relative isolation of the physical and social sciences as they are today, make the study of the determination of human needs rather difficult. This thought suggests that the advancement of the social sciences might be more important than the physical sciences at this stage of the development of our civilization. This idea should be viewed with caution, because there appears to be some unbalance in the field of social thought that may be related to an absence of cooperative contact with developments in the physical sciences. It appears that under present conditions I can probably do more to help clarify problems of the determination of human needs through informal contact with social scientists than by direct study on my part. To refer problems to the appropriate social scientist requires an adequate perspective. The foundations of such a perspective have been established along the lines indicated in my Electrical Engineering 298 seminar paper.[1]

3. Program.- Parts a and b are to be the necessary courses, study for qualifying examinations, and research required for the Ph.D. in electrical engineering. Part c is to be informal study, taking relatively little time during the regular university semesters.

a. Courses in differential equations, theory of probability, function theory, dynamics. A course in the philosophy of science to develop a better understanding of the relationship of physics and mathematics to other fields of science and the nature of the scientific method.

b. Courses in electrical engineering and research. Research for M.S. on coupling of magnetrons to wave guide. More general problem in the field of microwave wave guide transmission for Ph.D. research to be determined later.

c. Informal liaison with social scientists to make certain that questions of human needs arising in connection with electrical engineering work are brought to the attention of the appropriate specialists. Possibly the type of seminar being planned experimentally for Economics 291 on atomic energy control might be a more efficient procedure for bringing about cooperative contact between physical and social scientists. If some social science courses appear important, they can be studied during summer sessions to avoid conflict with the scheduled physical and mathematical work.

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1 "The History Of Electromagnetic Theory," EE298 Seminar, pp 4-7, 42-47, January 10, 1947.

February 13, 1947 Frederick B. Wood

GENERAL PLAN OF GRADUATE STUDY (1946-1950)

My objective in undertaking graduate study is to prepare myself for the application of our knowledge of electromagnetic phenomena to the meeting of human needs. This program consists of three parts.

Formal study program leading to Ph.D. degree:

(1) Study of existing knowledge of physics and mathematics.

(2) Study of engineering techniques and research on a specific problem.

Informal liaison with social scientists:

(3) Study of how human needs are determined.

Mention of "human needs" is made by the Engineers' Joint Council for Professional Development in their pamphlet, Engineering As A Career, (1942), page 5, where engineering is defined as follows: "The engineer may be regarded, therefore, as an interpreter of science in terms of human needs and a manager of men, money, and materials in satisfying these needs."

I have found that parts (1) and (2) are essential to part (3). When conferring with social scientists, the questions most frequently asked of me relate to the techniques, concepts, and philosophic implications of physical science and mathematics. This situation leads me to conclude that the most efficient way for me to assist in the study of human needs, is for me to be prepared to help social scientists on questions involving physics and mathematics. This would leave the direct study of the determination of human needs to the social scientists.

February 9, 1948 Frederick B. Wood