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# A Survey of the Amount of Duplication of Courses at the North Dakota Agricultural College and at the University of North Dakota

Kenneth L. Hankerson

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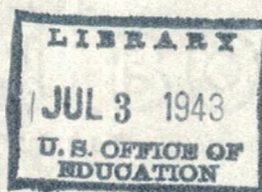
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A SURVEY OF THE AMOUNT OF DUPLICATION OF COURSES AT THE NORTH  
DAKOTA AGRICULTURAL COLLEGE AND AT THE UNIVERSITY OF  
NORTH DAKOTA

A Thesis to the Graduate Committee of the University of North Dakota  
in Partial Fulfillment of the Requirements for the  
Degree of Master of Science in Education.

by

Kenneth L. Hankerson



Grand Forks, North Dakota

July 17, 1943

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Grand Forks, North Dakota  
July 17, 1942.

This Thesis, offered by Kenneth L. Hankerson as a part of the work for the degree of Master of Science in Education, is hereby approved by the Committee under whom he has carried his work.

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The writer wishes to acknowledge his sincere appreciation for the encouragement and guidance of Dr. Eric Selke, Professor of Education at the University of North Dakota.

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## INTRODUCTION

North Dakota, with a land area of 70,183 square miles and a water surface of 654 square miles, is one of the larger states of the union. It ranks sixteenth in size. The state has no navigable waterways, practically no forests, very few rapids and falls capable of generating electrical power, and very little mineral wealth. The western half of the state is underlaid with lignite and valuable clays, though little has been done with these deposits. The 1930 census shows that only 1,088 men or .45 per cent of the working population were employed at extracting minerals.

The state is primarily agricultural. According to the census report of 1930 more people were employed in agriculture than all other industries combined. To be more explicit, out of a total of 240,303 people employed in the state, 134,393, or about 56 per cent, were employed in agriculture. These figures, while overwhelming in themselves, gain significance by comparison with other states and with the nation as a whole. Of the total number of persons employed, 30.6 per cent in Minnesota; 52.8 per cent in South Dakota; 36.2 per cent in Iowa; and 21.4 per cent of the nation as a whole were employed in agriculture. None of the above states had as high a percentage as North Dakota, yet all are considered agricultural states. All this merely points out the enormous influence of the farmers on the welfare of the state and the state institutions.

The character of the land and the rigorous climate limit to a great extent the type of farming to be done. The type of farming, in turn, determines to a great extent the size of the farm. The 1930 census showed that 71.2 per cent of the farms in North Dakota were rated as "cash grain farms" and only 21 per cent of all the farms had an acreage of less than



260 acres, while 43.11 per cent of the farms had an acreage of 260 to 500 acres.

In 1930, the total population of the state was 680,845<sup>1</sup> an increase of about 36,000 over 1920. In several of the age levels there was an actual decrease in population, the most striking of which was the first two levels: from birth to five years and from five to nine years. These two levels had a total of 153,845 persons in 1930 as compared with 176,662 in 1920, or a decrease of 22,417. About 86 per cent of the total number of children attending school were classed as being rural, leaving only about 14 per cent classified as urban. The above figures would seem to indicate a potentially decreasing population. An official return from the 1940 census shows that this is indeed the fact, and places the total population of the state at 639,690<sup>2</sup> or a decrease of 41,155.

With such a small initial population, and with this small number actually decreasing, care must be taken in administering the schools of higher learning or the cost of them might become prohibitive. The recognition of the former fact has led to several surveys of these institutions. Among the most important of these surveys the earliest was the Report of the Temporary Educational Commission to the Governor and Legislature of the State of North Dakota (1912). Among other recommendations given, the following two are of interest in this survey:

"The State University is the highest institution of learning in the state. It is the culmination of a completely organized and properly related system of educa-

1. Fifteenth Census of the United States--Population, U. S. Department of Commerce, Bureau of Census, Vol. III, Part 2, p. 406.
2. Summary of Preliminary Population Figures for the State of North Dakota: Department of Commerce, Bureau Census, No. 16 (6-18) August 17, 1940, 2 pp.

tion. Its standards for entrance and graduation should ultimately be so far in advance of other educational forms as to stimulate and strengthen them, but not to disconnect them or itself from the unity of the whole system. As the culmination of the system of education, it should coordinate, strengthen, supplement, and develop the work of all.

"The Agricultural College is a school of agriculture and mechanic arts. Under the provision of the Morrill Act it may engage in the liberal and practical education of the industrial classes for the several pursuits and professions of life; but when organized as a separate institution, as it is in this state, it should not compete with the University, but should offer a field of work of its own, differentiated from that of the other, but bearing a logical relation to it. In an agricultural state such as this is, it should give special emphasis to agriculture and farm mechanics. As now organized and conducted, there is little conflict or duplication between the University and the Agricultural College, and such can be removed by conference and agreements between the presidents of the two institutions and their board of trustees. Between the institutions of the state there should be such coordination as to permit students to pass from one institution to the other without loss of time and credit."

According to the survey there was relatively little duplication at that time between the University of North Dakota and the Agricultural College. A warning was issued against further duplication and a suggestion was given as to how this duplication could be remedied. The survey specifically states that, while the Morrill Act makes provision for a liberal curriculum in an agricultural college when operated as a separate institution, it should not compete with the University.

The United States Bureau of Education<sup>1</sup> made a much more extensive survey of the higher institutions of North Dakota and arrived at the following conclusions, which are of interest here:

"Education: The Agricultural College should prepare special teachers of agriculture, home economics and industrial subjects. The University should prepare superintendents, high school teachers, and supervisors in all subjects except agriculture, home economics, manual training and other industrial subjects.

1. State Higher Educational Institutions of North Dakota, Department of Education, Bulletin 1916, No. 27. (Washington Government Printing Office), pp. 172-180.

"The graduate schools: Duplication of graduate work would be unwarranted, costly and wasteful.

"Home Economics: Instruction in home economics should be given at both the university and the agricultural college . . . . there should be at the university only such courses in home economics as will fit young women for the duties of intelligent home making, or such as will function as service courses for those taking the course for nurses and possibly some other subjects.

"Music: Instruction in music and especially training in chorus, orchestra, and band, may be given at all the institutions . . . . , but no attempt should be made to give advanced and professional instruction in music except at the university.

"In all these schools there should be a strong cultural spirit, but only at the university should there be offered special or professional courses in the fine arts or degree courses in literature, languages, and pure science.

"Engineering: Agricultural and what may be called industrial engineering, . . . . , should be given only at the agricultural college. Chemical engineering should also be given at the agricultural college when there is a demand for it in the State. Degree courses in other forms of engineering should be given only at the university.

"Instruction in Agriculture: Fully three-fourths of all the people of the State of North Dakota who are engaged in gainful pursuits are employed in agriculture . . . . This fact indicates very clearly the need of instruction and training for large numbers of men and women along agricultural lines. The agricultural college should devote its energies and means to instruction in agriculture and the immediately allied subjects in proportion to the needs herein indicated.

"Architecture: Instruction in these subjects at the agricultural college should be only of an elementary nature and should have special reference to farm buildings, warehouses, school buildings for rural and village communities and other similar buildings.

"Pharmacy: Instruction in pharmacy should be continued at the agricultural college.

"Commercial courses: Commercial courses of higher or lower grade should be given in the university and the agricultural college; courses in farm accounting and rural economics should be given in the agricultural college and

probably also at the university.

"Liberal arts and science at the agricultural college: Courses in liberal arts and science at the agricultural college should be considered only as service courses and no degrees in the liberal arts and sciences should be given here."

"It is the conviction of the Board of Regents that the state should follow as rapidly as practicable the general outline .... as set forth in detail by the Survey Commission."<sup>1</sup> In other words, the Board of Regents not only accepted the 1916 survey, but recommended that the institutions concerned put the ideas set forth to work immediately.

In 1930, W. E. Peik<sup>2</sup> was requested by the Board of Administration to make a survey of teacher training as supported by the state of North Dakota. He found, among other things, that in the School of Education at the University and in the College of Education at the Agricultural College, the following majors or minors were being offered: English Language and Literature, French, Geography, Geology, German, American History, European History, Home Economics, Industrial Arts, Mathematics, Physical Education, Physics, Social Science or Political Science, Public Speaking, Sociology and Spanish. Thus, in only the portion of the two schools dealing with the training of teachers, it was found that there was a duplication in fifteen major or minor courses.

Peik's survey is incomplete for our purposes in that his survey dealt only with the training of teachers. His recommendations<sup>3</sup>, likewise,

1. First Biennial Report of the State Board of Regents of North Dakota to the Governor for the Biennial Period Ending June 30, 1916. (Walker Bros. and Hardy, Fargo, North Dakota), p. 40.
2. W. E. Peik, The Training of Teachers in North Dakota. A Survey Report. (Department of Public Instruction, Bismarck, North Dakota), p. 56.
3. Ibid., p. 69.

deal only with this phase of both schools, but are worth repeating. He recommended that the following majors be offered in Education at the University: English, Mathematics, History and Social Studies, Sciences, Music, Art, Education and Psychology, Languages, Commercial Subjects and Physical Education. His recommendations for the Agricultural College were majors in the following: Agriculture, Home Economics, Industrial Arts, Physical Sciences and Biological Sciences. The above recommendations, as can be seen, allow only a duplication in Physical and Biological Sciences as compared with the fifteen duplications which he found prevailing in 1930.

It appears in these three brief summaries of the surveys made that all three recommended as little duplication as possible. All three offered suggestions for remedying the situations found, and yet each successive survey found more duplication than the preceding survey.

Since 1930 a great deal has happened to the financial support of the University of North Dakota and the Agricultural College. The income per capita in the State of North Dakota in 1937 was \$314 as compared to \$494 in 1929.<sup>1</sup> The former, by way of comparison, is about 59 per cent of the national average. A loss of such staggering proportions to the income of a state predominantly agricultural is bound to have a decided influence on the support given the institutions of higher learning.

The present economic situation in the state can be summarized by the following, taken from the report:

"In point of number, 49 per cent of the farmers of North Dakota have lost their land and are now tenant operators.

1. Special Report to the Governor on Relief and Economic Situation in North Dakota, (mimeographed) 1939, p. 3.

"North Dakota farmers now own only 29 per cent of the total value of farms in this state.

"Approximately 30,000 families are reduced to a relief status."

The State Board of Regents in 1916 adopted the recommendations of the survey made by the United States Bureau of Education, in order to promote efficiency and economy. During the present time "efficiency" is as important as ever, but "economy" is imperative. North Dakota is more than ever in need of higher education, but is in no position financially to support schools which are offering many of the same courses and indulging in wasteful competition.

It is the purpose of this survey to show the extent of the duplication between the University of North Dakota at Grand Forks and the North Dakota Agricultural College at Fargo. It has been pointed out that several surveys have been made along this line. The main object, therefore, of this survey will be to point out how the recommendations of the preceding surveys have been carried out, to bring the results of these surveys up to date, to point out how the duplication has increased over a period of years, and also to show where the courses involved in the duplication were started.

## CHAPTER 1

## SCHOOL OF SCIENCE, LITERATURE AND ARTS

In order to arrive at the exact amount of duplication of courses which these two schools actually have at the present time, the current bulletins<sup>1</sup> of the two schools were examined very closely. Since the two bulletins do not have the same organization of content, it will be easier to get a general picture of the situation by examining first the large divisions of the schools in order to determine whether or not they give a hint as to where the most duplication is apt to exist.

Table I lists the main divisions of the University of North Dakota and the North Dakota Agricultural College. Obviously the divisions in which the most competition arises will be the liberal arts, education, engineering, and the Correspondence Division. The table shows that there is little possibility of the Agricultural College duplicating the work in the University's School of Commerce, School of Law, and School of Medicine. Likewise, the School of Pharmacy and the School of Agriculture at the Agricultural College have no counter-parts in the University. The remainder of this survey will ignore these divisions. However, there may be work offered at the University which compares to the work offered by the Agricultural College's School of Home Economics and the School of Chemical Technology. Other isolated cases of duplication may be found in the various departments which would not come under the above divisions.

1. Bulletin of the North Dakota Agricultural College, Vol. XXXI, April, 1940, No. 2.  
Bulletin of the University of North Dakota, Vol. XXXII, May, 1940, No. 2.

TABLE I

GENERAL DIVISIONS OF THE UNIVERSITY OF NORTH DAKOTA AND THE  
NORTH DAKOTA AGRICULTURAL COLLEGE AS GIVEN IN THEIR  
RESPECTIVE BULLETINS FOR 1940-1941

University of North Dakota	North Dakota Agricultural College
Division	Division
College of Science, Literature and Arts	School of Applied Arts and Science
School of Education	Division of Education
College of Engineering	School of Engineering
Department of Military Science	Department of Military Science
School of Commerce	
School of Law	
School of Medicine	
Division of Correspondence	Department of Correspondence Study
Graduate Division	School of Agriculture
	School of Home Economics
	School of Pharmacy
	School of Chemical Technology



TABLE II

DEPARTMENTS FOUND AT THE UNIVERSITY AND THE  
AGRICULTURAL COLLEGE IN 1940-41

UNIVERSITY OF NORTH DAKOTA DEPARTMENTS	NORTH DAKOTA AGRICULTURAL COLLEGE DEPARTMENTS
Art Bacteriology and Health Biology Physiology Ceramics and Ceramic Engineering Chemistry Chemical Engineering Classical Languages and Literatures English Language and Literature German Romance Languages and Literatures Scandinavian Languages and Lit- eratures Philosophy Geology and Geography American History European History Economics and Political Science Sociology and Anthropology Home Economics	Art Botany Zoology and Physiology  School of Chemical Technology  English and Philosophy  Modern Languages  Geology and Mineralogy History and Political Science  Economics and Sociology  Clothing and Materials Foods and Nutrition Home Economics Education Household Management and Child Training
Journalism Mathematics Music Physics Psychology Education Public Speaking Industrial Arts Physical Education Civil Engineering Engineering Drawing Mechanical Engineering Electrical Engineering	Mathematics Music Physics Education and Psychology  Speech
Mining and Metallurgy Commercial Accounting Military Science and Tactics	Physical Education Civil Engineering  Mechanical Engineering Electrical Engineering Architecture and Architectural Engineering  Military Science and Tactics

The Department of Military Science appears in both schools. This cannot rightly be considered as unnecessary duplication, especially during this present period of national preparation.

It should be borne in mind that some duplication must exist. Every school of higher learning should offer courses in which students are given a general, cultural background. Such a background would certainly include courses in English, history, economics, political science, foreign languages, and mathematics. The above courses are not intended to be all-inclusive, but are given merely as an illustration.

Table II is not complete as it does not contain departments from those schools which have been ignored. The table does point out definite departments which must be examined further to determine in what subjects the duplication is most pronounced.

Both schools have the following departments: art, chemistry, English, geology, history, economics, home economics, foreign language, mathematics, music, physics, education, speech, physical education, civil engineering, mechanical engineering, and electrical engineering. The names of these departments would indicate that there is bound to be a certain amount of duplication. What is not quite so clear is that there may be duplication in such courses as biology, botany, or zoology. The Agricultural College has nothing to compare with the University's departments of classical languages, Scandinavian languages, ceramics, and mining and metallurgy. The University has nothing to compare with the Agricultural College's departments of architecture and architectural engineering. These departments can then be safely ignored since no duplication is apt to occur in them.

Table II also fails to point out the number of courses offered in

each department, the number of quarter hours of work available in the department and whether the department offers enough work for a major or a minor.

TABLE III

MAJORS AND MINORS AVAILABLE IN THE COLLEGE OF SCIENCE, LITERATURE  
AND ARTS AT THE UNIVERSITY AND THE SCHOOL OF APPLIED  
ARTS AT THE AGRICULTURAL COLLEGE

SUBJECT	UNIVERSITY		AGRICULTURAL COLLEGE	
	Major	Minor	Major	Minor
Accounting	yes	yes	---	---
Art	yes	yes	see	below
Biology	yes	yes	see	below
Chemistry	yes	yes	see	below
Ceramics	---	yes	---	---
Commerce	yes	yes	---	---
Commercial Subjects	yes	yes	---	---
Economics	yes	yes	see	below
Education and Psychology	yes	yes	yes	yes
Engineering	yes	---	---	---
English Language and Literature	yes	yes	yes	yes
French Language and Literature	yes	yes	yes	yes
Geography and Geology	yes	yes	yes	yes
German Language and Literature	yes	yes	yes	yes
Greek and Latin Languages and Literatures	yes	yes	---	---
American History	yes	yes	see	below
European History	yes	yes	see	below
Home Economics	yes	yes	yes	yes
Industrial Arts	Yes	Yes	---	---
Journalism	yes	yes	---	---
Laboratory Technician	yes	---	---	---
Law	yes	---	---	---
Mathematics	yes	yes	yes	yes
Medicine	yes	---	---	---
Military Science	---	yes	---	?
Music	yes	yes	see	below
Applied Music (Wesley College)	---	yes	---	---
Physical Education for Men	---	yes	see	below
Physical Education for Women	yes	yes	see	below
Psychology	yes	yes	see	Education
Physics	yes	yes	see	below
Political Science	yes	yes	see	below
Public Speaking	yes	yes	yes	yes
Religion (Wesley College)	yes	yes	---	---
Scandinavian Languages and Literatures	yes	yes	---	---
Sociology and Anthropology	yes	yes	---	---
Spanish Language and Literature	yes	yes	---	---
Composite Foreign Language	yes	---	yes	yes
Composite Natural Science*	yes	yes	---	---
Composite Physical Science*	yes	yes	---	---

TABLE III (Continued)

MAJORS AND MINORS AVAILABLE IN THE COLLEGE OF SCIENCE, LITERATURE  
AND ARTS AT THE UNIVERSITY AND THE SCHOOL OF APPLIED  
ARTS AT THE AGRICULTURAL COLLEGE

SUBJECT	UNIVERSITY		AGRICULTURAL COLLEGE	
	Major	Minor	Major	Minor
Composite Social Science*	yes	yes	yes	yes
Composite Philosophy and Psychology	yes	---	---	---
Composite Philosophy and Religion	yes	---	---	---
English and Philosophy	---	---	yes	yes
Zoology and Physiology	---	---	yes	yes

Table III shows very clearly that there are duplicate majors offered in Education and Psychology, English, Economics, French, Geology, German, Mathematics, Speech, Foreign Language, and Social Science. These courses will then be investigated more closely. Some of the entries in the table need to be discussed further before one can judge if there is apt to be duplication.

The School of Science, Literature and Arts at the University offers a major in art while the corresponding division at the Agricultural College does not. The School of Home Economics at the Agricultural College does offer a major in art, consequently further study will be necessary in order to determine the amount of duplication.

There may be some duplication arising from the fact that the College of Science, Literature and Arts offers both a major and a minor in biology, while the School of Applied Arts offers a major and a minor in the closely allied field of botany.

Chemistry is offered in the College of Science, Literature and Arts at the University, but is found in the School of Chemical Technology at the Agricultural College; hence it is very probable that duplication will appear in this field.

The University offers majors in both American and European history, while the Agricultural College offers a major in history. This field will have to be examined more closely to determine if duplication does exist, and, if so, how much.

Music, physical education, and psychology all appear in the Division of Education at the Agricultural College and will be discussed in a later chapter.

Physics, at the Agricultural College, is taught in the School of

Engineering while at the University it is taught, as indicated, in the School of Science, Literature and Arts. This survey will follow the lead of the University and discuss it under the present chapter.

The courses marked with an asterisk refer to composite majors offered at the University; these courses offer a major or a combined major and a minor in the indicated subjects.

## ART

The Department of Art at the University is located in the School of Education, while the corresponding department at the Agricultural College is located in the School of Home Economics. Because of the location of the two departments, they should have little in common, aside from the name. The function of the Department of Art at the University appears to be the training of teachers in this field. However, in Table III it was shown that the School of Science, Literature and Arts offers a major and a minor in art; this would lead to entirely different purposes, namely: the teaching of art in general and the teaching of art appreciation.

It will be shown in a later portion of this survey that the University offers considerable work in the field of home economics. Therefore, it is reasonable to suppose that another function of the Department of Art at the University would be to act as a service department for home economics.

The function of the Department of Art at the Agricultural College would appear to be the teaching of art as it is applied to home economics. The Bulletin of the North Dakota Agricultural College<sup>1</sup> gives the following as the purpose of the Department of Art:

"..... develop in the student an appreciative understanding of art, to recognize and develop individual talents, to help the student acquire techniques functionally related to business and to the teaching of art, and to meet the particular need of students in other schools of the college where art is closely related to the major interest."

The above purpose sounds very much like the purpose of any department of art in a liberal arts college.

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1. Agricultural College, op. cit., p. 111.



Table IV was drawn up in order to determine, if possible, the exact amount of duplication in the courses offered. In Table IV, as in the following tables the number of credit hours is given in quarter hours for both the University and the Agricultural College. The University does not offer credits in quarter hours, but in semester hours. The semester hours credit, as listed in the University bulletin, were transposed to quarter hours by multiplying by three-halves. The numbers at the left of the specific subjects are the numbers appearing in their respective bulletins. Numbers 100-300 indicate in general that the courses are designed for junior division (freshman and sophomore) students, while the numbers above this are for senior divisions or graduate division students. All courses over 500 are of graduate level, most courses of 400 or higher are admitted for graduate credit, while in special cases courses numbered 300 may be taken for higher degrees. In other words, courses numbered 300 or higher are specialized or advanced courses.

Table IV shows quite a similarity in names of courses in art, particularly so in courses numbered less than 300. This is to be expected inasmuch as these are fundamental courses. In general, the names of the courses at the Agricultural College point out that they are primarily suited for a school of home economics and not for a school of arts or a school of education. The two possible exceptions to this are Art 309 and Art 405, both of which are technical courses in painting. The names of the courses at the University also point out that they are primarily courses to be used in a school of education or in a college of science, literature and arts. Art 103-4, 119-120, 206 and 321-2 are all either required or are suggested in order to complete a major in

TABLE IV

COURSES OFFERED IN THE DEPARTMENT OF ART AT THE UNIVERSITY  
AND THE AGRICULTURAL COLLEGE IN 1940-1941

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
103-4	Design	6	101-2	Fundamentals of Design	6
119-20	Lettering	6	109	Lettering	3
201-2	Elementary Art	6	103	Composition and Drawing	3
205	Appreciation of Art	3	106-7	Modeling	6
206	Appreciation of Art	3	214	Art Appreciation	2
209-10	Applied Design	6	202	Design	2
			203	Design in Textiles	2
			209	Dress Design and Appreciation	3
309-10	History of Art	9	204	Color and Composition	3
321-2	Advanced Design	12	205	Figure Drawing	3
411-2	Advanced Art	12	302	Residence Architecture	4
429-30	Special Methods in Teaching Art	9	304	Special Problems	2-4
501	Seminar in Art	3	307	Crafts	2
503	Seminar in Art	3	308	Metal Craft	2
505	Seminar in Art	3	309	Water Color	3
			405	Oil Painting	3

home economics.<sup>1</sup> Inasmuch as these courses also may be used to satisfy the requirements for a major in art, they must be considered only as service courses for home economics.

None of the courses in the Department of Art at the University were designed to duplicate the function of the same department at the Agricultural College, while only two of the advanced courses at the Agricultural College seem to duplicate the function of the same department at the University.

It will be pointed out in a later chapter that the Division of Education at the Agricultural College offers a minor in art. In this chapter, however, very little duplication has been found.

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1. University, op. cit., pp. 174, 186.

## BIOLOGY, BOTANY, ZOOLOGY, PHYSIOLOGY

Due to the fact that the two schools are not organized in the same manner, it is necessary to combine some of the departments in order to get a fair picture of the amount of overlapping of subjects.

The departments of biology, botany, zoology, and physiology are in the division of liberal arts at both institutions.

Table V is not complete in that it does not contain courses given in the School of Medicine at the University or courses found in the School of Agriculture at the Agricultural College. The School of Medicine at the University offers advanced work in anatomy, bacteriology, and physiology along with pathology, chemistry, and pharmacology; these courses are specialized and have no counter-part in the Agricultural College. The School of Agriculture at the Agricultural College offers courses in agricultural entomology, agronomy, and bacteriology. Of these, only bacteriology could in any way duplicate courses offered at the University.

It is to be expected that the Agricultural College should specialize in bacteriology, botany, zoology, and physiology, for these courses are connected directly with the School of Agriculture and the School of Pharmacy. It is also to be expected that the University should offer work in the general field of biology, because these courses are essential to the work offered in medicine, for a liberal arts course, or for prospective teachers of science.

The two schools have done just that, with a minimum amount of duplication. The University offers twelve courses of advanced work in phases of biology while the Agricultural College offers twenty-eight advanced courses in botany, zoology, and physiology. Very few of the courses conflict with each other.

TABLE V

COURSES OFFERED IN THE DEPARTMENTS OF BIOLOGY, BOTANY,  
ZOOLOGY, AND PHYSIOLOGY AT THE UNIVERSITY  
AND THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
105-106	Introduction to Biology	12	101-2-3	General Botany	12
263-264	General Biology	12	391-2-3	Plant Physiology	12
302	Genetics and Evolution	4½	441-2-3	Genetics	9
336	Systematic Botany	6	314	Systematic Botany	3
363	Entomology	6	311	Plant Morphology	3
365	Parasitology	6	310	Anatomy of Seed Plants	3
367-368	Comparative Anatomy and Embryology of Vertebrates	12	313	Principles of Plant Pathology	4-5
369	Histology and Micro-technique	6	311-2-3	Microscopical Technique	9
371	Ornithology and Mammalogy	6	323	General Ornithology	4
461	Special Work	1½-6	316	Agrostology	3-5
			318	Identification, Ecology and Control of Weeds	3
			320	Mycology	2-5
			322	Histological Methods	3
			400	Conference	1
			401-2-3	Ecology	9
			406	Range and Pasture Management and Improvement	4-5
			408-9-10	Advanced Plant Physiology	12
			412-13	Advanced Plant Pathology	8
			424	Seed Identification	3
			425	Seed Testing, Principles and Practice	3
			430	History of Botany	3
			499	Special Problems	1-5
			599	Research	1-15
			101-2-3	General Zoology	12
			201-2-3	Morphology of Vertebrates	12

TABLE V (Continued)

COURSES OFFERED IN THE DEPARTMENTS OF BIOLOGY, BOTANY,  
ZOOLOGY, AND PHYSIOLOGY AT THE UNIVERSITY  
AND THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
501	Biology of North Dakota	1½-6	211-2-3	Invertebrate Zoology	12
301	Human Physiology	6	261-2	Nutritional Physiology	6
561	Special Work	1½-6	271	Human Physiology	5
			301-2-3	Vertebrate Embryology and Histogenesis	12
			321-2-3	Animal Ecology	9
			401-2-3	Invertebrate Embryology	12
			431-2-3	Animal Parasitology	12
			421-2-3	Protozoology	12
			501-2-3	Cytology	12
			551-2-3	General Physiology	12
563	Research	1½-6	599	Research	--

## CHEMISTRY

Chemistry at the University is divided into two departments: the Department of Chemical Engineering and the Department of Chemistry. The Agricultural College divides its School of Chemical Technology into the following departments: Inorganic and Qualitative Chemistry, Quantitative and Physical Chemistry, Organic Chemistry, Industrial and Physical Chemistry, and Agricultural and Biological Chemistry. For purposes of clarity this survey will, as far as possible, use the divisions as found at the Agricultural College.

A university must offer a good deal of chemistry in order to be justly called a university. An agricultural college must offer a good foundation course in chemistry in order to be able to offer advanced courses in agricultural and biological chemistry. In other words, the two schools need equipment and space for a thorough course in the first two years of chemistry. There is no need for both schools to offer advanced work in the same special fields. It is certainly the function of a university to offer as much work in organic chemistry as its funds allow, if there is a demand for such courses. It does not follow that this is a function of an agricultural college. An agricultural college, on the other hand, should specialize in agricultural and biological chemistry. It should also offer certain types of industrial chemistry, particularly those which deal with products of value to an agriculturally minded state.

Table VI points out that both schools offer a complete course in general chemistry. This procedure is proper. Both schools offer advanced work in physical, inorganic, organic, and industrial chemistry. This practice certainly is not commendable. The table shows very clearly the enormous amount of duplication found in the two schools in the field

TABLE VI  
COURSES OFFERED IN THE DEPARTMENTS OF CHEMISTRY AT  
THE UNIVERSITY AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
103-4	General Chemistry	12	106-7	General Inorganic Chemistry	10
105-6	Advanced General Chemistry	12	108	Qualitative Analysis	4
107-8	General and Analytical Chemistry for Students of Engineering	12	114	Application of Chemistry	3
109	Qualitative Analysis	6	115-216	Qualitative Analysis	10
203 E.	Calculation of Qualitative Analysis	3	305	Inorganic Preparations	3
306	Advanced Qualitative Analysis	6	301	Advanced Qualitative Analysis	3
426	Water Analysis	6	306	Applied Electrochemistry	3
503-4	Graduate Research in Inorganic Chemistry	-	501-2-3	Advanced Inorganic Chemistry	9
204 E.	Quantitative Methods	6	599	Research	--
209-10	Quantitative Analysis	12	230	Quantitative Analysis	3
427	Glass Working	3	221-2	Quantitative Analysis	6
417-8	Physical Chemistry	12	225-6	Quantitative Analysis	10
501-2	Graduate Research in Physical Chemistry	-	320-1-2	Industrial Analysis	6
			361	Elementary Physical Chemistry	5
			599	Research	-
			362	Elementary Physical Chemistry Laboratory	3
			427-8-9	Advanced Quantitative Analysis	6
			430	Food Analysis	4-5
			460-1-2	Physical Chemistry	9
			463-4-5	Physical Chemistry Laboratory	6
			566	Colloids	3
			567-9	Thermodynamics	6



TABLE VI (Continued)

COURSES OFFERED IN THE DEPARTMENTS OF CHEMISTRY AT  
THE UNIVERSITY AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
212	Organic Chemistry	7½	241-2	Elementary Organic Chemistry	10
213	Organic Chemistry	6	351-2-3	Elementary Organic Chemistry	15
311	Organic Chemistry	6	451	Advanced Organic Laboratory	2-5
415	Organic Preparations	-	453	Organic Quantitative Analysis	3
429-30	Undergraduate Research	-	454-5	Organic Qualitative Analysis	6
433-4	The Development of Modern Theories of Chemistry	3	541-2-3	Advanced Organic Chemistry	9
505-6	Graduate Research in Organic Chemistry	-	544-5-6	Theories of Organic Chemistry	9
507-8	Modern Theories of Organic Chemistry	6	599	Research	-
421-2	Industrial Chemistry	9	371-2-3	Industrial Chemistry	9
308 E	Industrial Pyrometric Practice	3	471-2-3	Elementary Protective Coating	12
307 E	Power Plant Chemistry	3	574-5-6	Advanced Protective Coating	12
401 E	Fuels and Combustion	4½	596-7-8	Seminar	3
			599	Research	-
232	Physiological Chemistry for Students of Home Economics	6	290	Elementary Physiological Chemistry	5
306 E	Unit Operations in Chemical Engineering	6	295	Physiological Chemistry	5
313 E	Chemical and Physical Principles	7½	380	Agricultural Chemistry	4
314 E	Chemical and Physical Principles	7½	383	Soils and Feeding of Plants	3
316 E	Inspection Trip	0	386	Chemistry of Soils	3
402 E	Chemical Engineering Thermodynamics	3-4½	389	Dairy Chemistry	3
405 E	Unit Operations in Chemical Engineering	4½	490-1	Bio-Chemistry	5
			599	Research	-

TABLE VI (Continued)

COURSES OFFERED IN THE DEPARTMENTS OF CHEMISTRY AT  
THE UNIVERSITY AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
406 E	Problems in Chemical Engineering Economics	4½			
407 E	Unit Observations Laboratory	4½			
409 E	Electrochemistry	3			
411 E	Chemical Engineering Plant Design	4½			
412 E	Chemical Engineering Plant Design	4½			
415 E	Chemical Engineering Thesis	3			
416 E	Chemical Engineering Thesis	4½			
418 E	Soil Mechanics	3			
420 E	Soil Laboratory	1½			
501-2 E	Research	-			

of chemistry. The Agricultural College offers a total of thirty-three advanced courses (numbered 300 and over), of which only six are in the field of agricultural and biological chemistry and six deal with foods, protective coating and industrial chemistry. The University also offers a total of thirty-three advanced courses. Of these, eighteen are in chemical engineering and the remainder in the Department of Chemistry. In Table VI the subjects taught in the School of Engineering at the University are preceded by an "E". Example: 308 E. Industrial and Pyrometric Chemistry.

In the 1916 survey,<sup>1</sup> the United States Bureau of Education suggested that chemical engineering be given at the Agricultural College. For some reason this suggestion was ignored by the University and the department was introduced into the University's curriculum in 1927. Table VI shows that little or no duplication of courses has arisen from this fact; therefore little harm has been done.

In the preceding portions of this chapter little duplication has been found. However, in the field of chemistry a great deal of duplication has been located. It will be of interest to trace this duplication to its first appearance.

As far back as 1891, the University had a department of chemistry, although at that time it was organized as a department of chemistry and geology. The department offered a total of three chemistry courses (the equivalent of three years' work) with no course in chemical engineering. By 1910 the University was offering nine courses in chemistry and five courses in industrial chemistry and metallurgy. This latter course was

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1. See page 4 of this survey.

evidently a fore-runner of the present-day Department of Chemical Engineering. From 1923 to the present time the Department of Chemistry has grown very slowly from twenty-one courses in 1923 to twenty-three courses at the present time. In contrast to this, the Department of Chemical Engineering has grown from nine courses to twenty-three courses during the same time.

In 1910, the Agricultural College introduced the curriculum which can be considered the basis for the present-day School of Chemical Technology. At that time chemistry was a division of the Department of Chemistry and Pharmacy. The division of chemistry included six subdivisions, namely: general and organic, agricultural, physiological, industrial, food and sanitary, and pharmaceutical chemistry. Thirty courses were offered.

Prior to 1910 the Department of Chemistry and Pharmacy offered only three subdivisions of chemistry, including agricultural, physiological, and industrial chemistry.

Little change occurred from 1910 to 1917. In 1917 the Department of Chemistry and Pharmacy was reorganized into a School of Chemistry and Pharmacy. Forty subjects were offered in chemistry. In 1919 the School of Chemistry and Technology was formed. There was, however, no other change aside from one of administration. Since 1919 a few courses have been added and a few have been dropped, but the total number of courses has remained practically unchanged. In 1928, nine distinct graduate courses were listed. It is of interest to note that in 1932 the Department of Agricultural Chemistry was reduced to a portion of the Department of Agricultural and Biological Chemistry.

The 1940 Bulletin, as shown in Table VI, offers a total of forty-

three courses in chemistry. Of these, eight are in the Department of Agricultural and Biological Chemistry, nine are in the Department of Inorganic and Qualitative Chemistry, eight are in the Department of Organic Chemistry, twelve are in the Department of Quantitative and Physical Chemistry, and five are in the Department of Industrial and Physical Chemistry.

In view of the fact that a large majority of the specialized subjects are in the fields of physical, organic, and inorganic chemistry, it would appear that the Agricultural College does not specialize in the type of chemistry one would expect from this type of school. As previously mentioned, the Report of the Temporary Educational Commission (1912)<sup>1</sup> stated that the Agricultural College should give special emphasis to agricultural and farm mechanics. By "special emphasis" one would be led to think that the Agricultural College would spend the greater amount of time on subjects dealing directly with agriculture. This is not the case in the field of chemistry, for only twelve advanced courses deal with subjects allied to agriculture, whereas twenty-one deal with other phases of chemistry.

The 1940 Bulletin of the Agricultural College<sup>2</sup> gives the following as goals for the students in the School of Chemical Technology:

"The proper selection of electives during the junior and senior years may lead to opportunities as (a) teacher of chemistry, mathematics or physics in a first class high school, (b) teacher of chemistry in a junior college or a normal school, (c) industrial chemist of productive coating, (d) laboratory assistant in consulting laboratories, (e)

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1. See page 3 of this survey.

2. Agricultural College, op. cit., p. 86.

civil service, state or national, (f) research chemist, (g) graduate work in other branches of chemistry."

Upon completion of his work, the undergraduate is given the degree of bachelor of science in chemistry. In addition to the undergraduate work, graduate courses and research are offered in all departments. It will be recalled that the 1916<sup>1</sup> survey specifically stated that the Agricultural College "should prepare special teachers of agriculture, home economics and industrial subjects." It also states that "duplication of graduate work would be unwarranted, costly and wasteful." Yet in its aims the Agricultural College states that one of the primary functions of the School of Chemical Technology is the preparation of teachers not only for high schools, but for junior colleges as well. Also Table VI points out that both schools are training graduate chemists, in spite of the very forceful suggestion made in the 1916 survey.

The Agricultural College was the first school to offer a considerable choice of subjects in the field of chemistry, and according to Table VI is now offering a more extensive program than is the University. The above two facts may, or may not, point to a solution of this great amount of duplication in the field of chemistry. It seems perfectly obvious that a state of this size does not need two schools to supply it with chemists, and that if two schools are performing this function there must be a certain amount of needless expenditure of state money.

Both schools have set up expensive equipment and buildings. Both schools have the required faculties. It will, therefore, require a great deal of study before this duplication can be cut to a minimum, if not eliminated entirely.

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1. See page<sup>3</sup> of this survey.

## ENGLISH AND PHILOSOPHY

At present the Agricultural College offers a total of thirty-four courses in English. Of these, thirteen are in the junior division, and twenty-four are in the senior division, but none are intended primarily for graduate work. Table VII points out that the Agricultural College is offering forty-eight quarter hours in the junior division and sixty-nine quarter hours in the senior division, or a grand total of 117 quarter hours. The University is offering twelve junior, twenty-one senior, and four graduate division courses. These divisions offer fifty-one, 120, and twenty-four quarter hours, respectively, or a grand total of 195 quarter hours of English.

In Table III it was pointed out that both the University and the Agricultural College offer majors in English. It will be shown later that both also offer teaching majors.

The above facts point out very definitely that there is a decided amount of duplication in the field of English. In view of this fact, it will be of interest to trace this duplication from its origin.

In 1903 the Agricultural College included English in the Department of English, Modern Languages and Philosophy. At that time, five subjects were offered, namely: grammar, English composition and rhetoric, literature, elocution, and oratory. English was a pure service course, since degrees were offered only in agriculture, mechanical and general science.

In 1907 the Department of Modern Languages was introduced, leaving English as a portion of the Department of English and Philosophy. There was no change in the aims of the department and there were very few changes in the courses offered. Indeed there was little change, except in the

TABLE VII

COURSES OFFERED IN ENGLISH AND PHILOSOPHY AT THE  
UNIVERSITY AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
100	Foundation English	0	A	Sub-Freshman English	0
101-2	Freshman Rhetoric	9	101-2-3	Freshman English	9
103-4	Advanced Freshman Rhetoric	-			
121	Introduction to Fiction	3			
123	Introduction to Poetry	3	121	Library Usage	1
125	Introduction to Biography	3	201	Principles of News Writing	3
127	Introduction to Drama	3	203	Editing	3
201	Commercial Correspondence	3	202	Practice in News Writing	3
203-4	Advanced Composition	6	322	Advanced English Composition	3
205-6	Composition and Literature	6	320	Advanced English Composition	3
221-2	Survey of English Literature	9	209-10-11	Survey of English Literature	9
231-2	The English Novel	6	316	The Novel	3
301-2	American Literature	9	226-7-8	Survey of American Literature	9
			212	The American Short Story	3
307	Technical and Business Writing	3	350	Business Letters	2
309	Composition for Teachers	3	242	Country Life in American Literature	2
311-2	Short Story Writing	9	241	Country Life in English and European Literature	2
315	Shakespeare's Comedies	4½	329	Comedies and Romantic Plays of Shakespeare	3
316	Shakespeare's Tragedies	4½	338	Tragedies of Shakespeare	3
321-2	Contemporary Literature	9	319	Modern Essay	3
323-4	Elizabethan Drama	9	331	Modern Drama	3
326	Chaucer	4½	332	Modern English Drama	3
332	Studies in English Prose	4½	333	Modern Continental Drama	3



TABLE VII (Continued)

COURSES OFFERED IN ENGLISH AND PHILOSOPHY AT THE  
UNIVERSITY AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
403-4	Milton and His Contemporaries	6			
411	Dryden and the Transition Period	4½			
421	Romantic Poets	4½	313	The Poetry of the Romantic Period	3
422	The Victorian Poets	4½	314	The Poetry of the Victorian Period	3
			315	The Essay	3
			317	The American Novel	3
			324	English Grammar	2
			330	American Drama	3
432	Browning	4½	318	General Studies in Biography	3
441	Old English	4½			
442	The History of the Language	4½			
451-2	Literature of the Nineteenth Century	9			
461-2	The Later English Drama	9	337	English Drama	3
471-2	Elizabethan Literature	9	351	Advanced English Composition	3
513-4	Seminar in English Literature	9	352	Advanced English Composition	3
515-6	Seminar in American Literature	9	353	Advanced English Composition	3
523	Research	1½-6	418	Contemporary American Criticism	2
			340	Modern English and American Poetry	3
	(Philosophy)			(Philosophy)	
303	Aesthetics	4	301	Introduction to Reflective Thinking	3
305-6	History of Philosophy	9	302	Introduction to Philosophic Problems	3
308	Logic	4½	303	Introduction to Ethics	3
313	Introduction to Philosophy	4½			
401	Ethics	4½			
404	Great English Philosophers	4½			
406	Pragmatism	-			

TABLE VII (Continued)

COURSES OFFERED IN ENGLISH AND PHILOSOPHY AT THE  
UNIVERSITY AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
412	Character and Personality	4½			
455-6	The Philosophy of Education	9			
501-2	Seminar in Philosophy	-			

number of courses offered, from 1903 to 1920.

In 1920 the Agricultural College was reorganized into the following schools: Agriculture, Chemistry and Technology, Education, Home Economics, Mechanical Arts, and Science and Literature. There were two basic curricula--biology, and science and literature--offered in the School of Science and Literature. A student wishing to graduate from the latter of these two curricula could specialize or major in English. This, then, is the beginning of the duplication between the two schools in the field of English. Twenty courses were available.

Since 1920 the Agricultural College has gradually increased the number of courses, until the present thirty-three are offered. During this same period, the University has increased the number of subjects in the Department of English from twenty-seven to thirty-six.

In the field of philosophy neither school offers very many subjects. The University offers ten courses, and the Agricultural College offers three. Neither school has increased the number of courses during the past few years; in fact, both schools have shown a slight decline in this field. As an example: in 1905 the Agricultural College offered five courses in philosophy and shortly thereafter reduced the number to the present three courses; in 1915 the University offered eleven courses in philosophy and shortly thereafter reduced the number to the present ten courses.

## LANGUAGES

The languages at the University are divided into the following departments: classical languages, German, romance languages, and Scandinavian languages and literatures. French and German are the only languages taught in the Agricultural College's Department of Modern Languages. One Latin course, pharmaceutical Latin, is taught in the School of Pharmacy. However, since this is a technical course offering one quarter hour of credit, it does not duplicate courses offered at the University. Obviously French and German, being the only languages offered at the Agricultural College, need only be considered here.

Table VIII points out that both schools offer a very similar curriculum in French. Each school gives a choice of sixteen courses. The University, however, offers a total of 105 quarter hours to the Agricultural College's seventy-three. The University offers thirteen advanced courses, three of which are intended primarily for graduate students. The Agricultural College offers eleven advanced courses, none of which are intended for graduate students. Both the College of Science, Literature and Arts at the University and the School of Applied Arts at the Agricultural College offer a major and a minor in French. It will be pointed out later that both the University and the Agricultural College offer teaching minors in this field.

Table IX lists thirteen courses in German offered by the Agricultural College. Of these, six are advanced courses, none being intended primarily for graduate students. The University offers sixteen courses in the same field, of which twelve are courses for advanced students, two of these are intended primarily for graduate students. Each school offers two courses in scientific German. Both schools offer a major and

TABLE VIII

COURSES OFFERED IN FRENCH AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101-2	Elementary French	9	101-2	Elementary French	8
105-6	Intermediate French	9	103	Intermediate French	4
201-2	Second Year French	9	204	Elementary French Composition and Conversation	4
301-2	Third Year French	9	205	Modern Prose Readings	4
304	Scientific French	4½	206	French Comedies	4
305-6	Conversation and Composition	6	307	Dramas of Corneille	3
307	French Pronunciation and Phonetics	3	317	Phonetics and Conver- sation	3
309-10	Eighteenth Century Literature	6	308	Dramas of Racine	3
311-2	Seventeenth Century Literature	6	309	Dramas of Moliere	3
401-2	History of French Literature	9	310	French Lyrics	3
403-4	French Drama	6	314	Advanced French Conver- sation and Composition	3
405-6	Advanced French Composition	6	316	Scientific French	4
434	Special Methods in Teaching Modern Languages in Second- ary Schools	4½	411	Twentieth Century French Drama	3
501-2	Sixteenth Century Literature	6	412-3-4	History of French Novel	9
503-4	Old French	6	415-6-7	History of French Literature	9
505-6	Seminar in French	6	418-9	Nineteenth Century Dramas	6

TABLE IX  
COURSES OFFERED IN GERMAN AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101-2	Beginning Course in German	9	101-2	Elementary German	8
201-2	Reading and Composition	9	103	Intermediate German	4
301	German Conversation	4½	204	Elementary German Composition and Conversation	4
208	Science German for Medical Students	6	214-5	Scientific German	8
209-10	Chemical German	9	216	Conference in Scientific Readings	4
303-4	Advanced Reading Course	9	205	Modern Prose Reading	4
306	German Literature in English Translation	4½	206	German Plays	4
307	Advanced German Composition	6	313	German Lyrics	2
309	Introduction to German Literature	4½			
401	Hauptmann and the Modern German Writers	4½			
413	Schiller	4½	307-8-9	Introduction to Schiller	9
414	Goethe	4½	310-2-3	Introduction to Goethe	9
401	Lessing	4½	410	Modern German Drama	3
411-2	World Literary Masterpieces	9	412	Deutsche Aufsatz	3
501	German Romanticism	3	413	Modern Fiction	3
502	Modern German Literature	4½			

a minor in German. The Agricultural College offers a teaching minor in German, while the University does not.

The 1916 survey stated that courses offered in liberal arts at the Agricultural College should be "service courses". It would be ridiculous to state that seventy-three quarter hours of French and sixty-five quarter hours of German are needed as "service courses". In a school of this sort it is logical to assume that a minor in French or German may be needed. However, according to the 1940 bulletin<sup>1</sup> of the Agricultural College, only twenty-four quarter hours are necessary for such a minor.

In view of the preceding facts, it is correct to infer that the Agricultural College has over-stepped its original function and is competing with the University in the fields of French and German.

The Agricultural College introduced the Department of Modern Languages in 1907, at which time the department offered nine courses in German and three courses in French. Previous to 1907, German and French were taught in the Department of English, Modern Languages and Philosophy. In organizing the department, no new courses were added. The following year, 1908, three courses were added in French. In 1916, seventeen courses were available in German and twelve in French. Seven courses in Spanish were introduced in 1922. Spanish, however, was dropped from the curriculum in 1934. At the present time the department of Modern Languages at the Agricultural College is no longer growing. In fact the number of courses has decreased from a high of forty-nine courses in 1932 to twenty-nine courses in 1940. This sharp decline is due, in part, to the discontinuation of the teaching of Spanish.

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1. Agricultural College, op. cit., p. 70.

Courses in French and German were listed in the first catalog published by the University. It was, however, not until 1891 that the University catalog definitely mentioned a department of French and German. The catalog for the year 1898-1899 was the first one to mention specific courses in French and German. At this time three years work was offered in the two fields. In 1900 the Department of French and Spanish and the Department of German and Scandinavian were organized but there was no increase in the number of courses. The present Department of Romance Languages (French, Spanish, and Italian) was organized in 1908 and six courses in French were available. The 1909-1910 catalog listed German as a separate department.

The University and the Agricultural College have both had French and German in their respective curricula since the two schools were established. The University, however, was the first to establish French and German as separate departments. The Agricultural College, therefore, not only over-stepped its original function to compete with the University in French and German, but did so long after the University had established a strong department.



## HISTORY

The University divides history into two departments: the Department of American History and the Department of European History. The Agricultural College combines history and political science into one department. For purposes of clarity, this survey will use the method of the University in differentiating between the courses. That is, this survey will take up American history and European history as separate topics. Political science will be discussed in a subsequent portion of this survey.

It would appear that because the University has divided the field of history into two different departments, the University offers a much more complete course in history than does the Agricultural College. This fact cannot be assumed, however, without further study.

Tables X and XI bear out the above contention to an even greater degree than might be expected. The University offers a total of 126 quarter hours in American history as compared to the Agricultural College's thirty-nine. The University offers  $109\frac{1}{2}$  quarter hours in European history, while the Agricultural College offers thirty-three. Thirty-five of the forty courses offered by the University are of advanced standing. Nine of the fourteen courses offered by the Agricultural College are of advanced standing.

The above facts point out that the University is offering a much more extensive course in the field of history. It is not altogether true, however, that there is no competition between the two schools in the field of history, for not only does the Agricultural College's School of Applied Arts offer a major in history, but the Division of Education offers a major in social science.

TABLE X  
COURSES OFFERED IN AMERICAN HISTORY AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101-2	Social Forces and Problems in United States History	9	106-7	Economic History of the United States	6
201	Colonization of North America	4½			
302	History of Pacific West	4½	323	History of the West	4
303	Economic Development of the United States	4½			
305	Economic Development of Latin America	4½			
306	United States and the Caribbean	4½			
309-10	History of Latin America	9			
311-2	Constitutional and Political History of the United States	9			
405-6	History of the Northwest	9	324	History of North Dakota	4
410	History of Canada	4½	325	History of Canada	4
401-2	Contemporary American History	9	327	Contemporary History	3
408	Recent American History	4½	411	History of Agriculture	3
403-4	The Middle Period	9	417-8	Political and Social History of the United States	8
411	Survey and Review of American History	4½	420	Political and Social History of the United States	4
501-2	History of the Slavery Controversy	12	433	Conference	3
503-4	Constitutional and Political History of the United States	12			
505-6	History Seminar	12			

TABLE XI  
COURSES OFFERED IN EUROPEAN HISTORY AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101-2	History of England and Modern Europe	9	104	Economic History of Europe	3
105	Industrial and Social History of England	4½	224-5-6	Constitution and Social History of England	9
408	British Overseas Empire	4½	316	History of British Empire	3
201-2	History of Ancient Orient, Greece, and Rome	6			
301-2	History of Western Europe	9			
303	Industrial and Social Development of Modern Europe	4½			
308	History of Scandinavian People	3			
309	Era of Reformation	3			
310	The French Revolution and Napoleonic Era	4½			
313	Europe 1815-1870	4½			
315	History of Modern France	3			
316	History of Modern Germany	3			
317	Problems of the Far East	3			
318	History of the Near East	3			
401	Europe 1870-1919	4½			
402	Current European Problems	4½			
403-4	Recent History of England	6			
405	Medieval Civilization	4½	130-1-2	History of Civilization	9
407	Expansion of Europe	4½			
409-10	European News of the Week	3	217-8-9	Modern European History	9
412	Survey and Review of European History	4½			
413	History Bibliography	1½			
501-2	Seminar	6-12			

That the Agricultural College did not originally intend to make history a field of major concentration is evidenced by the following citation, taken from the 1909-1910 catalog:<sup>1</sup>

"It is the object of this department to acquaint the student with the social and economic development of the race. To this end courses are offered in history, civics, economics and sociology. In the selection of material, social conditions, industrial systems and economic theories receive special emphasis in order that the student, becoming familiar with the experience of the past, may be able to understand and intelligently aid in solving the many and complex social and economic problems of his own day."

When the above was written (1909), the Agricultural College was offering only six courses in history. This was not greatly changed until 1920 when three courses were added. In the period of 1920-1926 eight more courses were added, bringing the total to twenty-two courses. Tables X and XI show that since 1927 the number of courses has dropped to fourteen.

The Agricultural College, while not offering as much history as the University, is still teaching more history than is needed for a purely "service" course. It is very evident that the Agricultural College and the University, to some extent at least, are doing the same work. The amount of duplication has been reduced during the last few years, but there is still more reduction that could and should be done.

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1. North Dakota Agricultural College, Catalog, 1909-1910, p. 113.

## MATHEMATICS AND PHYSICS

The Department of Mathematics at the University is found in the College of Science, Literature and Arts. The corresponding department at the Agricultural College is found in the School of Applied Arts. Both departments are influenced a great deal by the fact that both schools stress engineering. The mathematics departments of the University and of the Agricultural College are very similar. In fact, as Table XII indicates, the courses offered are almost identical. According to the table, the University lists twenty-four courses, or 132 quarter hours of mathematical work, while the Agricultural College lists twenty-seven courses for a total of eighty-five quarter hours. The University offers twelve advanced courses with a total of forty-six and one-half quarter hours credit; the Agricultural College lists thirteen advanced courses totaling forty-four quarter hours. Both schools have always had mathematics in their curricula.

As was pointed out in the preceding paragraph, both of the departments are influenced a great deal by the fact that both schools specialize in engineering. As a consequence, both schools need a great deal of mathematics merely to satisfy the needs of their respective schools of engineering. But if the duplication in engineering could be avoided, much of the duplication in the departments of mathematics would automatically stop. Since mathematics is not an expensive subject to teach, no considerable amount of money is involved. Neither school under the present setup offers a very complete course in mathematics, whereas if one of the schools would specialize in mathematics, it could offer a much more rounded program.

The department of physics at the Agricultural College is located

TABLE XII

COURSES OFFERED IN MATHEMATICS AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101	College Algebra (A)	7½	109	Higher Algebra	5
103	College Algebra (B)	4½	110	Higher Algebra	4
105	Trigonometry	4½	111	Plane Trigonometry	4
106	Analytic Geometry	4½	112	Analytic Geometry	4
111	College Algebra (A) and Trigonometry	7½	56-7	Plane Geometry	0
112	Trigonometry and Analytic Geometry	7½	59	Solid Geometry	0
113	College Algebra (B) and Trigonometry	7½	116	Slide Rule	1
114	Trigonometry and Analytic Geometry	7½	205	Descriptive Astronomy	4
116	Spherical Trigonometry	1½	213	Differential Calculus	4
122	The Mathematical Theory of Investment	4½	214	Integral Calculus	4
201-2	Differential and Integral Calculus	12	217	Graphs	2
298	Elementary Mathematical Statistics	4½	236	Practical Astronomy	3
301	Theory of Equations	4½	135	Spherical Trigonometry	2
302	Teacher's Course in Mathematics	4½	219	Mathematics of Investment	4
312	Advanced Analytic Geometry	4½	328	Statistics for Education	3
321-2	Reading Course in Mathematics	-	329	Elementary Statistics	3
331	Theory of Probability	3	331	Statistics	3
332	Method of Least Squares	3	322-3	Theory of Equations	3
404	History of Mathematics	4½	330	Construction of Index Numbers	3
410	College Geometry	4½	411-2-3	Advanced Theory of Statistics	9
412	Differential Equations	4½	423-4	Mathematics of Finance for Engineers	4
422	Projective Geometry	4½	437	Mathematics of Insurance	3
501	Advanced Calculus	4½	438	Analytic Geometry of Space	3
504	Theory of Functions of a Complex Variable	4½	433	Theory of Errors and Least Squares	3
			439	History of Mathematics	3
			432	College Geometry	3
			318-9	Differential Equations	3

TABLE XIII

COURSES OFFERED IN PHYSICS AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101-2	Introductory College Physics	12	102	Elementary Mechanics	4
105-6	General Physics	12	103	Heat and Electricity	4
203-4	General Physics	15	204	Mechanics of Solids, Liquids and Gases	4
207-8	Supplementary General Physics	3	205	Heat, Sound and Light	4
311	Mechanics	6	302	Light and Thermodynamics	3
312	Electricity and Magnetism	6	301	Mechanics	3
314	Heat and Molecular Physics	6	303	Electricity	3
315	Light	6	206	Electricity and Magnetism	4
319	X-Rays	3			
321	Electrical Measurement	3			
330	Household Physics	3	207	Household Physics	3
431-2	Modern Physics	9	402	Modern Physics	3
436	Advanced Radio	3	403	Modern Physics	3
541-2	Mathematical Theory of Electricity	9			
543	Kinetic Theory	4 $\frac{1}{2}$	401	Thermodynamics and Kinetic Theory	3
544	Thermodynamics	4 $\frac{1}{2}$			
545	Analytical Mechanics	4 $\frac{1}{2}$			
547-8	Research	-			
546	Physical Optics	4 $\frac{1}{2}$			
549-50	Seminar	3			

in the School of Engineering, while at the University the Physics department is located in the College of Science, Literature and Arts.

As shown in Table XIII, the University offers twenty courses, with a total of 117 quarter hours credit. Sixteen of these courses are of advanced standing, giving the advanced student an opportunity to earn seventy-five quarter hours. In this respect the University offers a more complete course in physics than it does in its allied subject, mathematics. The Agricultural College offers twelve courses, with a total of forty-one quarter hours of work in physics. Of these only six are of advanced standing, and offer only eighteen quarter hours of credit.

The departments of physics in the two schools, therefore, have almost no duplication of courses. These departments offer a suggestion for improving the department of mathematics in one of the schools. It is apparent that at present the Agricultural College is offering little more than an elementary course in physics, making it more or less a "service" course.



## ECONOMICS, POLITICAL SCIENCE AND ACCOUNTING

Economics is of interest to almost everyone; consequently it seems that courses in this field should be available to the students of both the University and the Agricultural College. There is a vast difference between the economics which an ordinary student taking a course in engineering would need and the economics which a student of commerce would require. The student who is not specializing in commerce of economics has neither the time nor the need for more than a few elementary courses in this field.

The University has, as one of its major divisions, a School of Commerce; the Agricultural College does not. The University, then, should offer an extensive course in economics. The Agricultural College should offer a few general economics courses, but should specialize in agricultural economics.

The Department of Economics and Political Science at the University is found in the School of Commerce. The department is divided into three parts, namely: Economics and Business, Marketing and Management, and Political Science. Table XIV lists the courses of the department along with the quarter hours of credit which can be earned. In the following discussion no distinction is made between Economics and Business, and Marketing and Management. Political Science will be discussed as a separate topic.

The Agricultural College has a Department of Agricultural Economics in the School of Agriculture. It also has a Department of Economics and Sociology in the School of Applied Arts and Science. Table XIV lists the courses in economics as found in the Department of Economics and Sociology.

TABLE XIV

COURSES OFFERED IN ECONOMICS AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
201	Principles of Economics	4½	261-2	Principles and Problems of Economics	8
202	Economic Problems	4½	103	Accounting	3
303	Money and Banking	4½	151-2-3	Introductory Economic Geography	9
304	Public Finance and Taxation	4½	210	Advertising	3
307	Principles of Transportation	4½	241-2-3	Accounting	9
308	Transportation Problems	4½	263	Consumer Economics	3
315	Business Law	4½	322-3	Business Law	3
316	Business Law	4½	271-2	Principles of Economics	6
401	Labor Problems	4½	301	Principles of Business Administration	3
405	Risk and Riskbearing	4½	309	Principles of Cooperation	3
406	Insurance Problems	4½	311	Labor Problems	3
409	Corperation Finance	4½	313	Money and Banking	4
410	Public Utilities	4½	315	Business Finance	3
415-6	Advanced Business Law	6	328	Salesmanship and Sales Management	3
427	Business Cycles and Forecasting	4½	331-2-3	Foreign Trade	9
430	Investments	4½	351-2-3	Advanced Accounting	9
438	Agricultural Economics	4½	412-3	Public Finance	6
440	Government and Business	4½	418	Advanced Economics	3
507	History of Economics Thought	4½	429	Social-Economic System	3
510	Economics of Consumption	4½	450	Honor Examination	2
517-8	Seminar in Economic Problems	4½			
311	Marketing	4½			
312	Principles of Retail Merchandising	4½			
321	English of Commerce	4½			
325	Office Management	4½			
331	Salesmanship	3			
332	Advertising	4½			
333	Marketing for Consumer	1½			
346	Commercial Organization	4½			
412	Credits and Collections	3			
413-4	Problems in Marketing and Merchandising	7½			
418	Personnel Administration	4½			

TABLE XIV (Continued)

COURSES OFFERED IN ECONOMICS AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
420	Cooperative Marketing	3			
422	Secretarial Practice	3			
424	Business Organization and Management	4½			
435	History of Commerce	4½			
437	Foreign Trade and Exchange	4½			
503	Trade in Latin America	4½			
504	Trade in the Orient	4½			
	(Political Science)			(Political Science)	
101	American Government and Politics	4½	205	State Government	3
102	American Government and Politics	4½	203	Federal Government	3
203	Introduction to Political Science	4½	221	Municipal Government	3
209	Government in Europe	4½	324	International Relations	3
301	Political Parties and Electoral Problems	4½	405	American Diplomacy	3
308	Current Political Problems	4½	422	Comparative Governments	3
404	Municipal Government and Administration	4½			
408	American Diplomacy	4½			
409	International Relations	4½			
504	International Public Law	4½			
508	International Organiza- tion	4½			

Sociology will be discussed later in this survey.

Table XIV shows that the Agricultural College offers twenty courses (ninety-five quarter hours) in economics. The table fails to point out that the Agricultural College also offers thirty courses in agricultural economics. It should also be noted that three of the courses, involving twelve quarter hours, listed in Table XIV are definitely accounting courses. Among other courses the reader will find such names as advertising, salesmanship, advanced economics, public finance, and labor problems. On the surface these names appear to agree with the criteria which has been set up. This is not the case, for it has been previously shown that the Agricultural College has a Department of Agricultural Economics in which thirty courses are offered. Obviously these thirty courses would be all the economics necessary in an agricultural college. The twenty courses offered in the Department of Economics and Sociology must be considered as duplicating the work of the University and are most certainly exceeding the function of the Agricultural College.

In 1919 the Agricultural College offered one course, aside from the Department of Agricultural Economics, in economics. This course was offered in the Department of History and Social Science. In 1920 four courses were offered, two of which were agricultural economics. It will be recalled that in 1920 the School of Science and Literature was formed at the Agricultural College. The Department of Social and Economic Science was one of the divisions of this school. By 1923 the number of courses had doubled. Eleven courses were offered in 1925, of which six were intended for advanced students. In 1929 the greatest number of courses was added--six--to bring the total number from twelve of the year before to eighteen. By 1931 the number of courses had in-

creased to the present twenty. In a period of approximately twelve years, the amount of economics offered at the Agricultural College has increased from one course in 1919 to twenty courses in 1931. Thus the Agricultural College, by its practice of gradually increasing the number of courses, has led to extensive duplication in a relatively short period of time.

The Department of Economics and Political Science at the University was first mentioned in the bulletin for 1891. This fact merely indicates that the University had established courses in this department long before the Agricultural College.

The Agricultural College offers six fundamental courses in political science, three of these being advanced work. The University offers eleven courses in political science, of which seven are advanced work. It appears from these two facts that the amount of duplication in the field of political science is negligible.

The University has a complete department of accounting with a total of thirteen courses. The Agricultural College has no accounting department, but offers three courses in accounting in the Department of Economics and Sociology. The University offers a major in accounting. The Agricultural College offers only the first two years of college work in accounting. Here again the amount of duplication is negligible. It does, however, indicate the normal procedure of adding a few courses and then gradually expanding until a department is organized and extensive duplication of courses exists.

## SPEECH

The Department of Speech at the Agricultural College is located in the School of Applied Arts and Sciences. The aims of the department are set forth in the following paragraph, as found in the bulletin for the Agricultural College.<sup>1</sup>

"The aim of the department is to develop a spirit of leadership which is essential in building a genuine community or country neighborhood. Its work is broad and comprehensive. In resident instruction the department embraces courses in club organization and procedure, community programs, forms of address, drama and the supervision of public programs..... In the field of social research it tries out such programs as can easily be presented in a school house, the basement of a village church, in the sitting room of a home, in a community hall, or any place where people assemble for social betterment. A country life laboratory known as the Little Country Theater is used for this particular purpose. It is a typical community center consisting of an auditorium, stage, committee rooms, exhibit halls and dining room with all the necessary equipment."

The above aims certainly indicate that speech as taught at the Agricultural College is intended to be a "service" subject. The aims are in line with the functions of a school of agriculture. Table XV clearly indicates that the choice of subjects offered should give the student valuable aid in becoming a leader in a rural community, and in addition seem to be so planned as to carry out the aims of the department. The descriptive paragraphs which accompany the names of the courses bring this out even more clearly. As an example of this, course numbered 212 has the following descriptive paragraph:<sup>2</sup>

"Designed especially for community leaders. Presentation of short talks on subjects of interest in the field of

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1. Agricultural College, op. cit., p. 82.

2. Ibid., p. 83.

TABLE XV  
 COURSES OFFERED IN SPEECH AT THE UNIVERSITY  
 AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101-2	Fundamentals of Speech	6	108-9-10	Fundamentals of Speech	9
103	Fundamentals of Speech for Engineers	3	101	Club Organization and Procedure	2
104	Essentials of Argumen- tation and Debate	4½	210	Argumentation and Group Discussion	3
203	Persuasive Speaking	4½			
305	Advanced Argumentation and Debate	4½			
204	Forms of Public Address	4½	209	Addresses for Special Occasions	3
307-8	Orators and Oratory	4½	212	Extempore Speech	3
223-4	Interpretation	6	307	Play Production	4
225-6	Play Presentation	9	405	Pageantry	4
327-8	Dramatic Interpretation	6	407	Advanced Play Production	3
331-2	Teachers Course	9			
439-40	Contemporary Drama	9	412	Radio Speech and Drama	4
			114	Story Telling	2
			202	Community Programs	3
			204	Festivals	4

agriculture, applied arts and sciences, home economics, and engineering. Preparation and delivery of after-dinner addresses, auction sales, briefs, demonstration talks, illustrated lectures."

The foregoing does not point out the fact that the Agricultural College not only offers a major<sup>1</sup>, but also offers a graduate major in speech. Thus, while the aims of the Department of Speech lead one to the conclusion that the department is intended as a "service" department, in actual practice it has outgrown the original intention.

The Agricultural College offers a total of forty-five quarter hours of speech. The University offers seventy and one-half quarter hours. The University offers thirty-three quarter hours of advanced work, while the Agricultural College offers but fifteen. These facts show that, while the University is offering a more extensive course in speech, the Agricultural College is duplicating to some extent the work of the University.

Though no aims are listed in the Department of Public Speaking at the University, it requires no great amount of thought to see why such a department is an absolute necessity. The College of Science, Literature and Arts, School of Law, College of Engineering, and School of Education all require public speaking in their respective curricula. The reasons are obvious.

From the preceding discussion it appears that both the Agricultural College and the University need a certain number of courses in public speaking as "service" courses. Only one of the schools need specialize to the extent of offering a major. Since both schools are offering majors,<sup>2</sup>

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1. Ibid., p. 71.

2. See Table III, p. 13.



there is a certain amount of duplication which can and should be avoided.

The University, with its large College of Science, Literature and Arts, must offer its students as many courses in public speaking as possible. The Agricultural College, in order to fulfil its function, need offer only a service course.

The aims and selection of courses at the Agricultural College indicate that public speaking is being offered as a service course, but in actual practice the school is going much further than this, by offering undergraduate and graduate majors. The conclusion to be drawn is that the Agricultural College is exceeding its original function and the aims of the Department of Speech. In so doing it is competing directly with the function of the Department of Public Speaking at the University.

## GEOLOGY, MINEROLOGY, AND GEOGRAPHY

Neither the University nor the Agricultural College has a separate department of geology, minerology, or geography. The University has a Department of Geology and Geography, while the Agricultural College has a Department of Geology and Minerology. Table XVI indicates that the University does offer courses in minerology. An example of this is Geology 301-2, Minerology.

The Agricultural College offers one course in geography in the Department of Economics and Sociology. This course (Economics 151-2-3, Introductory Economic Geography) is of interest to almost every student. The University offers twelve courses in geography. The University bulletin states that "a student may major or minor in geography, either in undergraduate or graduate work."<sup>1</sup> Therefore, the amount of duplication in geography is so trifling that it may be disregarded.

In Table XVI, the courses in geology and minerology are listed as if they were one group. This practice was carried out in the bulletins from both schools. In the remaining discussion of the table, geology will refer to the combination of geology and minerology.

The University offers fourteen undergraduate courses, for a total of seventy-six and one-half quarter hours, in geology. The University also offers six graduate courses, for which the number of credit hours are not listed in the bulletin. The Agricultural College offers twelve undergraduate courses, sixty-eight quarter hours, and no graduate courses.

Since both schools have a department of geology, one might immediately come to the conclusion that a certain amount of unwarranted

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1. University, op. cit., p. 104.

TABLE XVI

COURSES OFFERED IN THE DEPARTMENT OF GEOLOGY AT THE  
UNIVERSITY AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
201-2	General Geology	12	101-2-3	General Geology	12
203	General Geology	4½	121	Agricultural Geology	3
204	Engineering Geology	4½	171	Engineering Geology	3
301-2	Minerology	9	201-2-3	Minerology	9
311	Physiography	6	213	Glacial Geology	3
312	Regional Physiography	6	301-2-3	Structural and Regional Geology	12
			272	Engineering Geology	3
401-2	Geologic and Geographic Literature	1½-3	313	Lithology	2
405	Non-Metallic Mineral Deposits	3	361	Sedimentation	4
406	Ore Deposits	3	381	Oil Deposits	2
410	Petrology	6	421-2-3	Optical Minerology	6
413	Petrography	4½			
414	Structural Geology	4½			
415	Paleontology	6			
417	Water Geology	4½			
519-20	Research Work in North Dakota Geology	-			
530	Field Geology	-			
531-2	Physiography	-			
533-4	Structural Geology	-			
535-6	Petrology	-			
537-8	Economic Geology	-	401-2-3	Economic Geology	9

duplication exists. This need not be the case. A great deal will depend upon the use made of the departments.

The courses in geology at the University are, according to the bulletin, intended for two classes of students: (1) "those who wish geology as a part of their general education; (2) those who intend to become professional geologists in the field of education, in the employ of federal or state geological surveys, or in connection with economic geology."<sup>1</sup>

No aims or objectives are given for the courses in geology at the Agricultural College. Geology could reasonably be offered by the Agricultural College as a part of the student's general education. In other words, a few elementary courses in geology would be entirely in order. The Agricultural College should also offer a few courses in geology as it pertains to agriculture.

A glance at Table XVI is enough to show that the University is fulfilling the aims of the department of geology. The twenty courses offer not only a general course but also enough work for the specialist. On the other hand, it will be necessary to scrutinize the courses offered by the Agricultural College in order to see how well the criteria previously mentioned are being followed. Geology 121-2-3 evidently fulfills the criterion set up, for it is a general course. This first course in geology offers twelve quarter hours. Geology 213 and 313 might also be regarded as fulfilling this first criterion, for these courses are of general interest. Geology 121, 361, and mineralogy 201-2-3 are the only remaining courses which would help fulfill the second criterion. Geology 171 and 172 were evidently inserted to fulfill

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1. University, op. cit., p. 102.

the needs of the School of Engineering. Hence the duplication of these courses with geology 203 and 204 in the University's curriculum can be traced immediately to the fact that both institutions have schools of engineering. The other four courses, Geology 301-3-4, 381, 401-2-3 and 421-2-3, are those which it would be difficult to justify by the criteria set up.

Despite the fact that both institutions have departments of geology, little unnecessary duplication of the courses was found. The University, as might be expected, offers a more extensive course in geology than does the Agricultural College. Six of the twelve courses offered by the Agricultural College do conflict with the courses offered at the University. Two of the above six are duplications because of the fact that both institutions have schools of engineering. Four of the above six courses are difficult to justify under the criteria set up.

## SOCIOLOGY

The University's Department of Sociology and Anthropology is designed to offer graduate and undergraduate work to both those who are interested in sociology as an academic course and to those who are primarily interested in social work as a profession. In Table XVII, Sociology 501-2, 503, 504, and 505 have no credit hours listed in the bulletin. Courses numbered 511 to 535 are professional courses in social work and "are open only to graduate students who have had an adequate pre-professional course of study or who have had experience in social work."<sup>1</sup>

Table XVII shows that the University is offering thirty-six courses, or a total of  $127\frac{1}{2}$  quarter hours credit, in sociology. The table also shows that the Agricultural College is offering nine courses, or a total of twenty-six quarter hours credit in the same subject. This means that the Agricultural College is offering enough courses for a minor in sociology. The courses offered by the Agricultural College are courses which would be of interest to almost all students.

Since the Agricultural College offers so few courses and since these courses are of general interest, it is safe to assume that there is relatively little unavoidable duplication in sociology.

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1. University, op. cit., p. 148.

TABLE XVII

COURSES OFFERED IN SOCIOLOGY AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
201	Introduction to Sociology	4½	203	Contemporary Social Problems	3
202	Social Problems	4½	304	Principles of Sociology	3
210	Criminology	3			
213	Introduction to Statistics in the Social Sciences	4½			
303	Physical Anthropology	4½			
304	Cultural Anthropology	3			
305	Immigration	3	305	Population Problems	3
306	Population Problems	3	417	The Family	3
308	The Family and Family Relationships	4½			
309	Educational Sociology	4½	418	Social Psychology	3
310	Social Psychology	4½			
311	Child Welfare	3	308	Urban Sociology	3
313	Urban Sociology	4½			
401	Tabulation and Graphics	1½	307	Rural Sociology	3
403	Principles of Sociology	4½			
404	Rural Sociology	4½			
405	Social Ethics	4½			
406	Social Legislation	4½			
408	Introduction to Social Work	3			
411	Introduction to Public Welfare	3			
428	Statistical Correlation in the Social Sciences	3			
501-2	Socio-Economic Conditions in North Dakota	-			
503	Theories of Progress	-			
504	Methods of Social Research	-			
505	Social Movements and Social Thought	-	416	Social Security Problems	3
511	Special Case Work	4½	450	Honor Examination	2
512	Advanced Special Case Work	4½			
513	Child Welfare Case Work	4½			
515	Field Practice in Social Case Work	4½			

TABLE XVII (Continued)

COURSES OFFERED IN SOCIOLOGY AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
516	Field Practice in Child Welfare Case Work	4½			
517	Public Welfare Administration	4½			
519	Medical Information for Social Workers	3			
521	Community Organization	4½			
523	County Welfare Organization	4½			
530	Social Work Statistics	4½			
535	Social Security	4½			

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## CHAPTER II

## EDUCATION

The Division of Education at the Agricultural College is made up of the following departments: education and psychology, agricultural education, home economics education, music, and physical education. This survey will include in the present chapter the above departments with the exception of agricultural education.

Table XVIII gives a brief summary of the duplication in the general field of preparing secondary school teachers. It is to be noted that both schools are preparing teachers of art, English, history and social science, home economics, mathematics, music, natural science, and physical education.

In Chapter I it has been shown that a certain amount of duplication exists in art, English, history, mathematics, and social science. It is reasonable to suppose that some of this duplication has arisen because both schools are preparing teachers in these fields.

The Division of Education at the Agricultural College originated in 1907. At this time a three-year teacher's course was offered and completion certificates were granted. The purpose of this teacher's course can best be exemplified by the following citation:<sup>1</sup>

"Under provision of the 'Nelson law' enacted by the Congress in 1907 the following course is offered for the training of teachers, fitting them to teach the Elements of Mechanic Arts and Agriculture. It is also the aim of this course to provide the three terms' work in pedagogy which graduates must have in order to benefit by the statute entitling them to a state certificate in teaching.....

1. North Dakota Agricultural College, Catalog, 1907-1908, pp. 123-125.

TABLE XVIII

MAJOR AND MINOR TEACHING FIELDS OFFERED BY THE SCHOOL  
OF EDUCATION AT THE UNIVERSITY AND THE DIVISION  
OF EDUCATION AT THE AGRICULTURAL COLLEGE

Field of Concentration	UNIVERSITY		AGRICULTURAL COLLEGE	
	Major	Minor	Major	Minor
Agriculture .....	---	---	yes	yes
Art .....	yes	yes	---	yes
English .....	yes	yes	yes	yes
Commercial subjects .....	yes	yes	---	---
History and Social Studies .....	yes	yes	yes	yes
Home Economics .....	yes	yes	yes	yes
Industrial Arts .....	yes	yes	---	---
Mathematics .....	yes	yes	yes	yes
Music .....	yes	yes	yes	yes
Natural Science .....	yes	yes	yes	yes
Biological Science .....	---	---	---	yes
Physical Science .....	---	---	---	yes
Physical Education (Men) .....	yes	yes	yes	yes
Physical Education (Women) .....	yes	yes	yes	yes
French .....	---	yes	---	yes
German .....	---	---	---	yes
History .....	---	yes	---	---
Latin .....	---	yes	---	---
Social Science .....	---	yes	---	---

"During the past three years regular work has been given in Nature Study and Elements of Agriculture in order to meet the rapidly increasing demand for rural teachers to instruct in these subjects..... As there was no desire to duplicate the courses of the normal schools, or to enter on their field of pedagogy, the work was neither emphasized nor given prominence.

"The new law however has marked out a definite field for agricultural colleges in the training of teachers..."

In 1909 the teacher's course was changed to a Department of Education, at which time seven pedagogical subjects were offered. In 1917 the Department of Education was again changed, this time to a School of Education, and sixteen subjects were offered. It was at this time that the Agricultural College started training teachers in subjects not directly allied to agriculture, mechanic arts, and home economics. Since this was done just one year after the 1916 survey had been made, the Agricultural College was disregarding not only the results of the survey, but also the fact that the then Board of Regents recommended "that the state should follow as rapidly as practicable the general outline ... as set forth in detail by the Survey Commission."<sup>1</sup>

The training of secondary school teachers has always been a primary function of the University. The first bulletin of the University, published in 1884, offered a normal course to its students. By 1905 the Normal Course had grown to a Department of Education, offering a choice of twenty subjects. The current bulletin shows that the University is offering forty-five subjects in education and enough majors and minors in teaching fields to supply practically all the subjects<sup>2</sup> for which the University is asked to supply high school teachers.

This brief history points out that the University has always one

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1. See page 5 of this survey.

2. University, op. cit., p. 179.

TABLE XIX

COURSES OFFERED IN THE SCHOOL OF EDUCATION AT THE UNIVERSITY AND IN THE  
DEPARTMENT OF EDUCATION AND PSYCHOLOGY AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
203	Educational Psychology	4½	301	Introduction to Education	3
301	History of Education	4½	302	Educational Psychology	3
303	General Methods of High School Teaching	3	303	Adolescent Psychology	3
305	Principles of Secondary Education	4½	307	Education in the United States	3
311	Educational Tests and Measurements	4½	317	Principles of Methods	3
401	Special Methods and Teaching in English	9	318	Secondary School Methods	3
403	Special Methods and Teaching in Social Studies	9	330	Survey of American Education	2
406	Special Methods and Teaching in Science	9	321	Tests and Measurements	3
407	Special Methods and Teaching in Mathematics	9	429	Methods of Teaching High School English	3
411-2	Special Methods and Teaching in Music	9	436	Methods of Teaching Social Studies in the High School	3
414	Special Methods and Teaching in Industrial Arts	9	426	Methods of Teaching Biology in the High School	2
417	Special Methods and Teaching in Commercial Subjects	9	428	Methods of Teaching High School Mathematics	3
419-20	Supervised Teaching Home Economics	6	412	Educational Sociology	3
421-2	Special Methods in Home Economics	6			
424	Special Methods in Adult Education	3			
425-6	Special Methods and Teaching in Physical Education	9	434	Methods of Teaching High School Physical Education (Men)	4
429-30	Special Methods and Teaching in Art	9	425	Methods of Teaching High School Art	2

TABLE XIX (Continued)

COURSES OFFERED IN THE SCHOOL OF EDUCATION AT THE UNIVERSITY AND IN THE DEPARTMENT OF EDUCATION AND PSYCHOLOGY AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
432	Special Methods in Teaching Latin	4½	410	Student Teaching in Art	3
434	Special Methods in Teaching Modern Foreign Languages	3	420	Methods of Teaching Modern Languages in High School	2
435-6	Special Methods in High School Library Practice	12			
437	Special Methods in Coaching Football	4½			
438	Special Methods in Coaching Basketball	3	400	Senior Education Conference	1
440	Special Methods in Coaching Track	1½	408	Student Teaching in High School	5
451	School Administration	4½	470	Introduction to School Administration	3
452	Supervision of Instruction	4½			
453	Industrial Vocational Education	4½	405	Survey of Vocational Education	2
454	Elementary School Problems	-	499	Problems in Education	2-3
455-6	The Philosophy of Education	9	500	Special Problems	-
457	Statistical Methods in Education	4½			
458	School Finance	4½			
460	High School Curriculum	3	460	Curriculum Building	3
461	Comparative Education	4½			
464	Professional Problems of Teachers	3			
466	Course for Advisors of High School Girls	1½	440	Guidance	3
468	Extra-curricular Activities	3	442	Advanced Guidance	3
473	School Law	4½	441	Administration of Extra-curricular Activities	3
501-3	Seminar in School Administration	-	510	High School Administration	3
503-4	Seminar in Elementary Education	-			

TABLE XIX (Continued)

COURSES OFFERED IN THE SCHOOL OF EDUCATION AT THE UNIVERSITY AND IN THE DEPARTMENT OF EDUCATION AND PSYCHOLOGY AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
506	Advanced Statistical Methods in Education	4 $\frac{1}{2}$			
507	Advanced Psychological Principles of Education	3			
508	Seminar in History of North Dakota Education	3-6			
509	Methods of Educational Research	3			
511	Advanced Principles of Secondary Education	3-9			
513-4	Individual Research	-			

of its main functions to be that of training teachers. The Agricultural College started training teachers originally in response to a demand for trained teachers in agriculture and mechanic arts. It has, at present, far exceeded the original reason for establishment of its teacher training program.

It is undoubtedly a function of the Agricultural College to prepare teachers of agriculture, mechanic arts, and home economics. It might also specialize in turning out teachers of botany and its allied subjects. It has been noted previously that Peik made such a recommendation in 1930.<sup>1</sup> The Agricultural College, however, is now training teachers in art, English, social science, mathematics, music, physical education, and French, in addition to agriculture, home economics, and science. From this fact it appears that the Agricultural College is competing with the University in the training of nearly all types of secondary school teachers.

Table XIX points out that, while the Department of Education at the University is offering many more courses in education than is the same department at the Agricultural College, the latter is still offering a large number of courses. It does not seem necessary for an agricultural college to offer twenty-eight courses in education. Education 410, 420, 425, 428, 429, 434, and 436, as offered by the Agricultural College, are needed if the school is to train teachers in English, social studies, mathematics, physical education, art, and modern languages. It has been shown that this was not originally a function of the Agricultural College. Courses similar to Education 301, 302, 303, 307, 317, 318, 321, 330, 408, and 412 are usually considered a necessary part of every institution which

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1. See page 6 of this survey.

trains teachers. Courses 440, 442, 460, 470, 499, and 501 appear to be courses intended primarily for school administrators. As Peik<sup>1</sup> pointed out, it is a function of the University to train school administrators. Why then, are such courses being offered at the Agricultural College?

Under the present situation, the University is prepared to train secondary school teachers in practically all fields except agriculture. In addition to this it is prepared to train school administrators and to offer work up to and including a doctorate degree in education. In this practice it is carrying out one of the original functions of the school. The Agricultural College is prepared to train secondary school teachers of science, agriculture and home economics. Thus, it is carrying out one of its original functions. However, evidence has already been given to show that the Agricultural College is also training teachers in a number of other fields, and is even offering courses which are primarily of use to school administrators. It has, then, far exceeded its function as an agricultural college.

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1. See page 6 of this survey.



## HOME ECONOMICS

In the survey made by the United States Bureau of Education, as previously referred to,<sup>1</sup> it was pointed out that instruction in home economics should be given at both schools, but that the work at the University should be "such courses as will fit young women for intelligent home-making." Peik,<sup>2</sup> in his survey, also made much the same suggestion. Our problem, then, remains to see how well this has been carried out.

At the Agricultural College, the School of Home Economics is divided into the following departments: art, clothing and textiles, foods and nutrition, home economics education, home management and child training. The University, on the other hand, has only a department of home economics with the various phases of the subject listed under this one department. The fact that the Agricultural College has a school of home economics, whereas the University has only a department of home economics indicates that the suggestions given by the surveys previously mentioned were carried out. However, both the School of Education and the College of Science, Literature and Arts at the University offer majors in home economics, indicating that further study is necessary before any conclusions can be put forth.

Table XX points out that, although the University offers only twenty-five courses in home economics to the Agricultural College's forty-three, the actual discrepancy in the amount of work offered at the two schools is far less than this indicates. The University offers a total of 109½ quarter hours, which, when compared to the Agricultural

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1. See page 4 of this survey.

2. See page 6 of this survey.

TABLE XX  
COURSES OFFERED IN HOME ECONOMICS AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY		AGRICULTURAL COLLEGE	
Course Number	Quarter Hours	Course Number	Quarter Hours
		Clothing and Textiles	
101-2	Clothing 7 $\frac{1}{2}$	125-6	Clothing 6
103	Clothing 4 $\frac{1}{2}$	127	Textiles 3
105	Textiles 3	226-7	Clothing Construction 6
306	Advanced Clothing 4 $\frac{1}{2}$	321	Advanced Textiles 3
307	Clothing Economics 3	325	Children's Clothing 3
411	Special Problems in Clothing 1 $\frac{1}{2}$	326	History of Costume 3
414	Costume Design 4 $\frac{1}{2}$	327	Applied Dress Design 2
		328	Clothing Problems 3
		329	Advanced Clothing 3
		420	Introduction to Retailing 2
		426	Tailoring 3
		328	Decorative Needlework 2
		Foods and Nutrition	
201	Meal Planning and Table Service 4 $\frac{1}{2}$	150	Elementary Nutrition 2
209	Foods 6	151	Nutrition and Food Study 2
210	Advanced Foods 6	242-3-4	Foods 9
401	Nutrition and Dietetics 6	250	Elementary Dietetics 3
402	Nutrition: Diet in Disease 4 $\frac{1}{2}$	344	Food Purchasing 3
403	Large Quantity Cookery 4 $\frac{1}{2}$	347	Meal Planning 3
404	Institutional Management 4 $\frac{1}{2}$	348	Food Demonstration 2
408	Special Problems in Nutrition 3	351-2	Nutrition and Dietetics 6
417	Experimental Cookery 3	353	Child Nutrition 3
		355	Quantity Cookery 5
		440	Advanced Foods 2
		442	Special Problems in Foods 2
		445	Experimental Cookery 2
		451	Advanced Nutrition 4
		452	Readings in Nutrition 2
		453-4	Special Problems 4
		456	Institutional Administration 4
		Home Economics Education	
419-20	Supervised Teaching in Home Economics 6	307	Homemaking Education in the High School 3
421-2	Special Methods in Home Economics 6	470	Methods of Teaching Home Economics 2

TABLE XX (Continued)

COURSES OFFERED IN HOME ECONOMICS AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number		Quarter Hours	Course Number		Quarter Hours
424	Special Methods in Adult Education	3	471	Methods of Teaching Related Science	2
			427	Methods in Adult Home-making Education	3
			473	Methods of Teaching Related Art	2
			474	Methods of Teaching Nutrition	2
			475	Student Teaching	3-6
				Household Management and Child Training	
220	Child Health and Home Nursing	3	100	Home Economics Assembly	0
			280	Consumer Buying and our Markets	3
			180	Household Technology	2
304	Household Management	4 $\frac{1}{2}$	481	Home Management	3
409	Home Management House	4 $\frac{1}{2}$	428	Home Management	4
406	Child Development	4 $\frac{1}{2}$	483	Child Development	4
407	Home Furnishing	4 $\frac{1}{2}$	486	Family Relations	3
301	Home Problems for Men	3			

College's 130 quarter hours, is certainly not a great deal less.

Table XX also indicates that, as might be expected, there is a large amount of duplication of courses, but whether this duplication is harmful or not is a question. Both the survey made by the Bureau of Education<sup>1</sup> and Peik's survey<sup>2</sup> have pointed out that the University should offer some work in home economics. It is questionable if either of the surveys implied that both the Agricultural College and the University should specialize in home economics. To be an "intelligent home-maker" does not mean that a woman must be a specialist in, or that she hold a teaching certificate in, home economics. However, both of the above surveys ignored the fact that the training of dieticians has become an integral part of both home economics and preventive medicine. Since the University has, as one of its main divisions, a school of medicine, it is logical that it should also train dieticians.

It is generally conceded that one of the functions of an agricultural college is to graduate specialists in home economics. It has been shown that the University should offer enough home economics to prepare its students to become "intelligent home-makers" and that in addition it should train dieticians.

Table XX and the foregoing discussion have shown that there is a large amount of duplication of courses on the part of the two schools. Hence it will be of interest to trace briefly how this duplication has grown.

As far back as 1896, the Agricultural College mentions "Domestic Science" in its bulletin for that year. The bulletin does not list the

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1. See page 4 of this survey.

2. See page 6 of this survey.

the subjects offered. In 1903 five subjects were listed in domestic arts and seven in domestic science. In 1905 the Department of Domestic Science was organized, at which time seven courses in domestic arts and a two-year course of eight courses in domestic science were listed. The domestic science course grew very rapidly until 1910, when seventeen subjects were offered. Between 1916-1917 the domestic arts course increased the number of courses from sixteen to twenty-eight; during this same period the domestic science course decreased the number of courses from fifteen to eleven. From 1917 to 1922 little change occurred in the number of courses listed. In 1922 the Department of Domestic Science was reorganized into the School of Home Economics, with four departments: food and nutrition, clothing and textiles, institutional and household management, and applied art. The above departments offered eleven, fifteen, four, and eleven subjects, respectively. It is quite clear from the above figures and from Table XX that few courses have been added since then in these departments. The Department on Home Economics Education was introduced in 1929 and at that time listed a total of four courses as compared to seven offered in 1940.

The University first introduced "Domestic Science" in 1905, at which time three courses were offered. Since that time there has been no decided increase in the number of courses listed in any particular year, but there has been a steady increase of one or more subjects each year.

Both the University and the Agricultural College are turning out specialists in home economics; consequently a great amount of duplication exists. How much of this duplication is necessary is a very difficult question to answer. The University is training dieticians. The Agricultural College is training county agents. Both schools are training teachers of

home economics. Teachers in this field are in great demand at the present time; in fact, the demand has exceeded the supply. It seems, from the preceding conclusions, that both schools are in need of rather extensive departments of home economics.

## MUSIC

The survey made by the United States Bureau of Education<sup>1</sup> stated that: "Instruction in music should be given at all institutions,<sup>2</sup> but no attempt should be made to give advanced and professional instruction in music except at the University." The survey does not attempt to define "advanced and professional instruction", consequently this survey will be forced to its own definitions. "Professional instruction" evidently means instruction of such nature as to provide the student with a means of earning a livelihood and would find its most frequent use in the training of public school teachers, together with a few professional music teachers. "Advanced instruction" is not as easily defined, hence this survey will use the same definition which has been used throughout, namely, courses numbered 300 or over. In brief, the United States Bureau of Education in its survey of 1916 recommended that all institutions give some instruction in music, but that the University be the only institution to offer advanced courses or to train teachers of music.

With the above instructions in mind, Table XXI is indeed startling, for not only does it show that the recommendations of the 1916 survey have been completely ignored, but that the Agricultural College is offering more courses than is the University, with many more hours of credit. Table XXI shows that the University is offering nineteen courses, totaling seventy-nine and one-half quarter hours in music. The Agricultural College is offering nineteen courses, or 132 quarter hours in the same

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1. See page 4 of this survey.

2. "All institutions" included: Teachers' Colleges, State Normal Schools, the Agricultural College, and the University.

TABLE XXI

COURSES OFFERED IN MUSIC AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
101-2	Sight Reading and Ear Training	6	101-2-3	Elementary Harmony and Ear Training	6
104	Introduction to Harmony	3	104-5-6	Music Appreciation	3
201-2	Music Appreciation	3	110-1-2	Sight Singing and Solfeggio	6
203-4	Harmony and Keyboard Harmony	9	121-2-3	Elementary Piano	6
205-6	Advanced Sight Reading	3	131-2-3	Elementary Voice	6
215-6	Madrigal Club	6	141-2-3	Elementary Strings	6
217-8	Women's Glee Club	1½	151-2-3	Elementary Band Instruments	6
223-4	Band Practice and Literature	6	201-2-3	Advanced Harmony and Ear Training	6
225-6	Orchestra Practice and Literature	6	204-5-6	Music Appreciation	3
227-8	Stringed Instruments	0	211-2-3	Music Directing	6
229-30	Voice Class	0	221-2-3	Intermediate Piano	6
241-3	Piano Class	0	231-2-3	Intermediate Voice	6
251-2	Brass and Reed Instru- ment Class	0	241-2-3	Intermediate Strings	6
301-2	Conducting	3	251-2-3	Intermediate Band Instruments	6
303-4	History of Music	6	301-2-3	Harmonic Analysis	6
305-6	Advanced Harmony and Keyboard Harmony	9	304-5-6	History of Music	6
403-4	Harmonic Analysis and Form	6	307-8-9	Counterpoint	6
411-2	Special Methods and Practice Teaching in Music	9	311-2-3	Advanced Music Directing	6
417-8	Music for Teachers	3	321-2-3	Advanced Piano	6
			331-2-3	Advanced Voice	6
			351-2-3	Advanced Strings	6
			351-2-3	Advanced Band Instruments	6
			401-2-3	Composition	-
			431-2-3	Methods of Teaching High School Vocal Music	6



field. Even more significant is the number of advanced courses and their respective hours of credit. The University offers six courses, thirty-six quarter hours; in comparison with the Agricultural College's eleven courses, fifty-four quarter hours. One of the advanced courses at the Agricultural College has no hours listed in the bulletin; evidently the credit hours vary with the student.

The above picture, however, is not complete. The University is affiliated with Wesley College, also located in Grand Forks. Under the terms of this affiliation, "Wesley College alone offers credit hours for work in applied music, commonly known as private studio instruction."<sup>1</sup> This work is transferrable to the University to the extent of eight semester hours or twelve quarter hours. Courses are offered in voice, piano, church music, violin, organ, band and orchestral instruments, ensemble, teaching of voice and violin and orchestration. Wesley College offers a total of thirty-two courses in the above mentioned fields.

One would expect to find no duplication of subjects in the field of music between these two schools, but the foregoing discussion has pointed out the opposite fact. Table XXI clearly indicates that both the Agricultural College and the University, together with Wesley College, are offering very similar music courses.

The University introduced the department of music in 1893. However, no courses were listed in the bulletin until 1915. The first mention made of music in the bulletin from the Agricultural College was in 1904. But it wasn't until 1927 that courses were listed in the bulletin. The above statements point out that the University recognized at an early date its responsibility in providing musical courses for its

1. University, op. cit., p. 151.

students. On the other hand, the Agricultural College, according to its bulletin, did not offer courses in music to its students until 1927.

Both schools have had a number of fine musical organizations for a considerable length of time. This is certainly desirable. It does not necessarily follow that both schools should offer enough musical courses to allow them to train teachers of music. According to the 1916 survey<sup>1</sup> the giving of "advanced and professional instruction" in music is exclusively a function of the University. Since the Agricultural College is now offering advanced and professional instruction in music, it follows that the Agricultural College is performing a function which it was not intended to perform. In so doing it is duplicating the work which the University should, and is performing.

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1. See page 4 of this survey.

## PHYSICAL EDUCATION

Table XXII indicates that both schools are preparing teachers in physical education. The North Dakota Agricultural College Bulletin does not list physical education as one of its major or minor subjects in the Division of Education. However, in describing the purposes of the Department of Physical Education, the following paragraphs are given:

"The program of teacher training courses offered by the department, when combined with a year of required physical education, is the minimum training requirements of a high school physical education director of the schools of this territory."<sup>1</sup>

"After the completion of the two years' work a student may have the privilege of electing in addition other physical education for credit..... A minor of twenty-four hours is recommended for prospective teachers of physical education."<sup>2</sup>

The first of the preceding citations is in reference to the division for men, the latter is in reference to the division for women.

The foregoing, together with Table XXII, shows very conclusively that the Agricultural College is preparing teachers in physical education.

The University definitely offers both a major and a minor in physical education to men and women in the School of Education.<sup>3</sup>

Table XXII shows quite clearly that both schools are offering fundamentally the same courses in physical education. This does not mean that duplication is harmful or unwarranted.

Physical education is a necessary and a popular supplementary course for any school that trains teachers. Well equipped athletic plants

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1. Agricultural College, op. cit., p. 131.

2. Ibid., p. 132.

3. University, op. cit., pp. 191, 192, 194.

TABLE XXII

COURSES OFFERED IN PHYSICAL EDUCATION AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
Men's Division			Men's Division		
101-2	Physical Education	2½	101-2-3	Freshman Physical Education	3
201-2	Physical Education	2½	201-2-3	Sophomore Physical Education	3
215	Tumbling	1½			
216	Calisthenics	1½			
301-2	Personal Techniques and Activities	3			
303-4	Golf	3			
401-2	Personal Techniques and Activities	3			
409-10	Apparatus Stunts	3			
437	Special Methods in Coaching Football	4½	204	Coaching of Football	2
			221	Advanced Football Strategy	2
438	Special Methods in Coaching Basketball	3	205	Coaching of Basketball	2
			222	Advanced Basketball Strategy	2
440	Special Methods in Coaching Track	1½	206	Theory and Training for Participation in Track	2
			223	Advanced Track Technique	2
			301	Principles of Physical Education	3
Women's Division			Women's Division		
101-2	Physical Education	2½	101-2-3	General Physical Education	3
105-6	Beginning Sports	2½	112	Health in the Home	2
107-8	Restricted Exercises	2½			
121-2	Individual Gymnastics	2½	201	Team Sports	1
125	Soccer	1½	204	Team Sports	1
126	Basketball	1½	206	Tumbling and Formal Gymnastics	1
201-2	Physical Education	2½	202	Individual Sports	1
203-4	Tennis	3	220	Elementary Dance Forms and Social Dancing	1
207-8	Beginning Dancing	3	205	Individual Sports	1
209-10	Folk Dancing	3			
211	Principles, Administration, and History of Physical Education	6			

TABLE XXII (Continued)

COURSES OFFERED IN PHYSICAL EDUCATION AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
222	Playgrounds	3	318	Recreational Leadership	3
225	Volleyball	1½	208	Team Sports	1
226	Baseball	1½			
301-2	Physical Education	3	209	Individual Sports	1
303-4	Golf	3			
325-6	Archery	3			
324	Track	1½			
305-6	Advanced Sports	3			
311	Fundamentals and Practice in Rhythms	3	221	Tap and Character Dancing	1
			225	Modern Dance Techniques	1
331-2	Applied Anatomy and Kinesiology	6			
401-2	Physical Education	3			
405-6	Advanced Dancing	3			
415	Physical Education Tests and Measurements	3	310	Camp Leadership	3
425-6	Special Methods and Teaching in Physical Education for Women	9	304-5-6	Principles, Methods, and Practice of Teaching Secondary School Physical Education	9
431	History of Physical Education	4½	408	Senior Teaching in Physical Education	3

will always be maintained at both schools as long as they compete in intercollegiate athletics and intramural sports. It would be a waste of both equipment and trained personnel if these available materials were not utilized.

## PSYCHOLOGY

The Department of Psychology at the University is located in the School of Education. The Agricultural College has no department of psychology, but courses are offered in the Department of Education and Psychology. The University offers both graduate and undergraduate majors in psychology. The Agricultural College offers no major and no minor in psychology.

Table XXIII clearly shows that psychology at the Agricultural College is purely a "service" course. The duplication in General Psychology, Applied Psychology, and Adolescent Psychology is clearly unavoidable. The courses offered by the Agricultural College are courses needed by any agency engaged in training teachers in any field.

TABLE XXIII

COURSES OFFERED IN PSYCHOLOGY AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
201	General Psychology	6	202	General Psychology	3
203	Educational Psychology	4½			
301	Psychology of Vision	4½			
302	Analytic Psychology	4½			
304	Applications of Psychology	6	352	Applied Psychology	3
401	Experimental Study of Learning, Memory, and Association	4½			
402	Experimental Study of Attention and Emotion	4½			
405	Child Psychology	4½			
404	Psychology of Sound	3			
406	Psychology of Adolescence	3	303	Adolescent Psychology	3
407-8	Clinical Psychology	6			
409	Human Behavior	4½			
410	Mental Hygiene and Abnormal Psychology	4½			
411	Mental Tests	4½			
412	Character and Personality	4½			
501-2	Psychology of Learning	6			
503-4	Seminar in Psychology	6			
505-6	Individual Research	-			
507	Advanced Psychological Principles of Education	3			



## CHAPTER III

## ENGINEERING

The teaching of engineering in undergraduate schools is rather unique, since the courses offered in each particular branch do not show much variation between schools. It is not surprising, therefore, to find that in no field are the two schools doing more duplication than in the field of engineering. As shown in Table XXIV, civil engineering, electrical engineering and mechanical engineering are taught in both schools. In addition to the above, the Agricultural College also offers degrees in administrative engineering, agricultural engineering, and architecture. The University offers degrees in chemical, ceramic, mining, and general industrial engineering in addition to those previously mentioned.

Both schools are offering degrees in seven branches of engineering. However, in only three of these is there any great amount of duplication. For this reason this survey will concern itself chiefly with these three, which are civil, electrical, and mechanical engineering. It must be borne in mind that all engineering curricula require practically the same service courses and to some extent lead to duplication in these service courses. The extent of this duplication would be impossible to determine because of its very nature.

Table XXV lists the subjects offered in civil, electrical and mechanical engineering. It should be noted that courses in engineering drawing are not listed under the various departments at the University, but are listed as such at the Agricultural College. The reason for this is that the University offers all of its drawing courses under a separate

TABLE XXIV

CURRICULA OFFERED IN THE SCHOOL OF ENGINEERING AT THE  
AGRICULTURAL COLLEGE AND AT THE UNIVERSITY

CURRICULA	DEGREE OFFERED	
	Agricultural College	University
Administrative Engineering .....	B. S.	None
Agricultural Engineering .....	B. S.	None
Architectural Engineering .....	B. S.	None
Architecture .....	B. of Architecture	None
Civil Engineering .....	B. S.	B. S.
Chemical Engineering .....	None	B. S.
Ceramic Engineering .....	None	B. S.
Electrical Engineering .....	B. S.	B. S.
General Industrial Engineering .....	None	B. S.
Mechanical Engineering .....	B. S.	B. S.
Mining Engineering .....	None	B. S.

Account

CHESTNUT BOND

TABLE XXV

COURSES OFFERED IN ENGINEERING AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
	Civil Engineering			Civil Engineering	
102	Elementary Surveying	3	101	Elementary Surveying	2
222	Analytical Mechanics	3	100	Conference	0
231-2	General Surveying	6	102	Drawing	3
303-4	Mine Surveying	6	103	Elementary Surveying	3
305-6	Materials Testing	6	116	Engineering Problems	4
321	Strength of Materials	4 $\frac{1}{2}$	200	Conference	0
322	Analytical Mechanics	4 $\frac{1}{2}$	201	Surveying and Mapping	3
331	Elements of Sanitary Engineering	3	204	Engineering Equipment and Construction Methods	2
332	Municipal Engineering	3	251	Route Surveying	3
			300	Conference	0
341	Hydraulics	3	308	Hydraulics	6
342	Hydraulics Laboratory	3	303	Advanced Surveying	3
352	Structural Engineering	6	306	Graphic Statics	3
401-2	Engineering Astronomy and Geodesy	3	305	Roads and Streets	4
403	Descriptive Astronomy	3	307	Elementary Structural Design	3
404	Mathematical Astronomy	3	312	Plain Concrete	2
405-6	Railway and Highway Engineering	6	404	Highway Engineering	3
407-8	Topography	6	315	Hydrology	3
421	Structural Engineering	6	352	Transportation Engineering	2
424	Structural Design	3	405	Structural Design	2
431-2	Water Purification and Sewage Disposal	6	400	Conference	1
441	Hydrography and Water Supply Engineering	3	413	Sewerage	3
451-2	Reinforced Concrete and Masonry Construction	10 $\frac{1}{2}$	401	Reinforced Concrete	4
			402	Reinforced Concrete	4
			409	Masonry Arch Design	2
			411	Bridge Stresses and Details	2
			412	Bridge Design	5
			414	Engineering Contracts and Specifications	3
			415	Water Supply Engineering	3
			417	Elements of Hydraulic Engineering	3
			418	Water Purification and Sewage Disposal	4
			419	Structural Design	5

TABLE XXV (Continued)

COURSES OFFERED IN ENGINEERING AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
			421	Irrigation and Drainage Engineering	3
			431	Reinforced Concrete	3
			432	Reinforced Concrete	3
			433	Foundations	3
			455	Structural Design	4
			499	Research	3-6
	Electrical Engineering			Electrical Engineering	
101-2	Radio Code Instruction	0	346	Direct Current Machines	4
202	Electric and Magnetic Circuits	3	351	Electric Wiring	2
301	Principles of Electrical Engineering	4½	345	Electric and Magnetic Circuits	5
302	Principles of Electrical Engineering	4½	347	Alternating Current Circuits	4
303	Electrical Machinery	3	355	Electric Design	2
304	Electrical Machinery	3	360	Industrial Electrical Equipment	3
305	Electrical Laboratory	3	448	Alternating Current Machines	6
307	Direct Current Laboratory	1½			
308	Direct Current Laboratory	3	449	Electrical Laboratory	2
309	Electrical Equipment	3	450	Principles of Illumination	2
310	Illumination and Photometry	4½	452	Electric Power Transmission	4
311	Electrical Communication	3	453	Communication	3
312	Electrical Communication	3	454	Transients	4
314	Electric Traction	3	456	Electrical Design	2
401	Theory of Alternating Currents	4½	457	Electrical Design	2
402	Theory of Alternating Currents	4½	458	Special Problems	2
403	Electrical Design	3	459	Electric Railways	3
405	Alternating Current Laboratory	3	461	Vacuum Tubes	4
406	Alternating Current Laboratory	3			

TABLE XXV (Continued)

COURSES OFFERED IN ENGINEERING AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
408	Electrical Engineering Seminar	1½			
410	Electric Power Transmission	4½			
413	Communications Engineering	4½			
414	Communications Engineering	4½			
415	Radio Station Operation	1½-3			
417	Electric Circuits	3			
418	Electric Circuits	3			
421	Electrical Communication	4½			
425	Communications Laboratory	3			
426	Communications Laboratory	3			
428	Communications Networks	3			
	Mechanical Engineering			Mechanical Engineering	
211	Heat Treatment and Welding	3	102	Oxy-Acetylene Welding	1
212	Pattern Making and Foundry	3	101	Forge Shop	2
214	Machine Shop	3	103	Electric Arc Welding	1
215	Machine Shop	3	203-4	Machine Shop	4
216	Advanced Machine Shop	3	107	Mechanical Drawing	2
217	Machine Shop and Welding	3	209	Advanced Machine Shop	2-4
219	Advanced Machine Shop	1½	108	Descriptive Geometry	3
242	Heat Engines	4½	110	Working Drawings	2
301	Mechanical Laboratory	3	112	Simple Aerodynamics and the Airplane	2
304	Mechanical Laboratory	3	126	Gas Engine	2
321	Mechanisms	4½	205	Aeronautics Ground School Training	4
322	Machine Design	4½	211	Working Drawings	2
323	Mechanisms	3	213	Patterns and Moulding	2
324	Elements of Machine Design	3	217	Statics for Students in Architecture	3
341	Thermodynamics	4½	218	Strength of Materials	-
			224-5	Engineering Laboratory	4

TABLE XXV (Continued)

COURSES OFFERED IN ENGINEERING AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
342	Thermodynamics	4½	228	Mechanism	3
402	Hydrodynamics	4½	229	Statics of Mechanics	4
404	Seminar	1½	232	Materials of Construction	2
405	Mechanical Laboratory	3	301	Mechanical Equipment of Buildings	3
406	Mechanical Laboratory	3	318	Machine Design	3
423	Machine Design	7½	319	Machine Design	2
424	Internal Combustion Engine Design	6	323	Materials Testing Laboratory	2
426	Advanced Machine Design	6	330	Dynamics of Mechanics	3
444	Steam Turbines	4½	331	Mechanics of Materials	6
445	Power Plants	4½	334	Prime Movers	4
447-8	Railway Mechanical Engineering	-	335	Thermodynamics	5
449	Internal Combustion Engines	4½	337	Combustion Engineering	4
450	Oil Engines	4½	406	Heating and Ventilating	2
452	Heating and Ventilation	4½	425	Internal Combustion Engines	4
454	Refrigeration	4½	414-5	Advanced Aerodynamics and Airplane Design	6
460	Industrial Management	3	416	Airplane Design	2
461	Industrial Management	4½	421	Shop Methods	3
482	Elements of Aerodynamics	9	433	Machine Design	2
485	Aero Engines	4½	436	Prime Mover Design	3
487	Transport Aviation	3	438	Pneumatic Machinery	2
488	Screw Propellers	4½	439	Power Plant Equipment	3
			440	Refrigeration	4
			441	Heating, Ventilating and Air Conditioning	3
			442	Water Power Engineering	4
			444	Heating Design	2
			470	Principle of Industrial Organization	3
	Engineering Drawing				
101	Engineering Drawing	4½			
102	Descriptive Geometry	4½			
201	Engineering Drawing	3			
202	Advanced Engineers Drawing	3			
301-2	Architectural Design	-			
303-4	Architectural History	6			
305-6	Working Drawings	9			

TABLE XXV (Continued)

COURSES OFFERED IN ENGINEERING AT THE UNIVERSITY  
AND AT THE AGRICULTURAL COLLEGE

UNIVERSITY			AGRICULTURAL COLLEGE		
Course Number	TITLE	Quarter Hours	Course Number	TITLE	Quarter Hours
401-2	Architectural Design	12			
403-4	Architectural History	6			
406	Specifications and Estimates	3			

department, while the Agricultural College does not. This will lead to a discrepancy in the total number of credit hours offered in each department at the University, since each of the departments in question requires eleven quarter hours of engineering drawing.<sup>1</sup> The eleven quarter hours are junior division courses.

According to Table XXV the University is offering twenty-two courses of  $100\frac{1}{2}$  quarter hours credit in civil engineering. Only three of these courses, twelve quarter hours, are in the junior division. The Agricultural College is offering thirty-eight courses of 111 quarter hours in the same department. Nine of these, or twenty quarter hours, are in the junior division, leaving twenty-nine courses, totalling ninety-two quarter hours, as advanced work. Because of the nature of this particular course, the subjects offered at the Agricultural College and those offered at the University must parallel each other to a great extent. In other words both schools are offering complete courses in civil engineering.

Both schools introduced the department of civil engineering at the same time, 1907. By 1910 the University was offering thirteen courses, while the Agricultural College listed twenty. Between 1910 and 1935 the Agricultural College introduced only eight courses. Since 1935, the department of civil engineering at the Agricultural College has increased the number of courses offered from twenty-eight to thirty-eight. The University, on the other hand, has gradually increased the number of courses from thirteen in 1910 to twenty-two in 1940.

Table XXV also points out that in 1940 the University offered

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1. University, op. cit., pp. 200, 202, 203, 205.



thirty courses in electrical engineering with a total of ninety-seven and one-half quarter hours credit. The table shows that during the same time the Agricultural College offered a total of seventeen courses with fifty-four quarter hours credit. These courses, with two exceptions, are all advanced work and require expensive laboratories. Electrical engineering is a comparatively new addition to the Agricultural College, as the first mention of an electrical department appears in the bulletin for 1927. On the other hand, the University bulletin mentions electrical engineering as early as 1910. From the preceding, it is obvious that the University is offering a more extensive choice of courses in electrical engineering. It also seems quite obvious that the duplication which does exist can be traced directly to the Agricultural College, since that institution did not start a department of electrical engineering until seventeen years after it was started at the University.

In 1940 the University offered thirty-six courses with 145 quarter hours credit in the department of mechanical engineering. During the same year the Agricultural College listed forty-two courses with 122 quarter hours of credit. These courses, as pointed out in Table XXV, are very similar.

The Agricultural College's original department of mechanics dealt almost entirely with farm mechanics. It was not until 1905 that this department began the change which resulted in the present day department of mechanical engineering. The Bulletin of the University mentions a college of mechanical engineers in 1900, but this was more or less of a general engineering course. Again, it was not until about 1905 that the department of mechanical engineering began to take shape. Both departments offer many quarter hours of work, and both departments were

started at about the same time.

In brief, the two institutions are offering approximately the same work in three departments of engineering. This means that both schools are maintaining similar faculties and laboratories for three expensive types of engineering. Engineers are a vital requirement in modern society and will very likely take an even more prominent role as years go by. This does not mean that in a predominantly agricultural state of about 640,000 people, two state-supported schools are required to turn out enough engineers to fulfill the needs of the people. If two are needed, then they are justified; but if two schools are not needed there is bound to be an unjustifiable amount of duplication between these two schools.

### SUMMARY

Before summarizing the results of this survey it might be well to review its purpose. For the past several years the economic situation of the state of North Dakota has been extremely bad. Only during the past two years has business improved. In addition to this, the population of the state has decreased about 40,000 during the period 1930-1940. Thus, early in 1940 the state was faced with a decreasing population and a very poor financial situation. These unfavorable circumstances would naturally be reflected in the financial support of the institutions of higher learning. The two largest state supported institutions of higher learning were the University of North Dakota and the North Dakota Agricultural College. It was brought to the attention of the author that these two schools were offering a great many of the same courses. The object of this survey was to locate and determine the extent of the duplication of courses at these schools. In those departments in which any appreciable amount of duplication was found to exist, the survey gave a brief history of the departments in order to find where the duplication made its first appearance.

Before this could be done the survey first made a comparison of the general divisions of the two institutions. From this comparison the School of Pharmacy and the School of Agriculture at the Agricultural College were eliminated from further study, as there was nothing at the University which could duplicate the work offered by these two schools. Likewise, there was little possibility of duplication by the Agricultural College of the University's School of Law and School of Medicine.

The survey next compared the names of the remaining departments at the two schools. From this comparison, it was found that the

Agricultural College had nothing to compare with the University's departments of classical languages, Scandinavian languages, ceramics, and mining and metallurgy; and that the University had nothing to compare with the Agricultural College's departments of architecture and architectural engineering.

The remaining departments were rather arbitrarily assigned to the following three divisions: science, literature and arts; education; and engineering. Art, biology, botany, zoology, physiology, chemistry, English, philosophy, foreign languages, history, mathematics, physics, economics, political science, accounting, speech, geology, mineralogy, geography, and sociology were all discussed under the division of science, literature and arts. This arbitrary assignment was made necessary by the fact that the College of Science, Literature and Arts at the University and the School of Applied Arts at the Agricultural College did not contain the same departments.

In comparing the amount of duplication between the departments at the two institutions, the 1939-1940 bulletins of the two schools were examined very closely. Tables were made of the courses listed under the various departments. The author realized that most departments list more courses in the bulletins than are offered in any one year, but no other sources dating back over a period of years were available.

Little or no duplication was found in art, biology and its allied field, philosophy, physics, political science, accounting, geology, and sociology. Varying amounts of duplication were found in the remaining departments.

An enormous amount of duplication was found in the field of chemistry. This was rather to be expected inasmuch as the Agricultural

College has a School of Chemical Technology composed of five departments; and the University has two separate departments of chemistry, one in the College of Science, Literature and Arts and one in the College of Engineering. Both the University and the Agricultural College are offering thirty-three advanced courses<sup>1</sup> in chemistry. The Agricultural College was the first to enlarge its curriculum in chemistry, but it is not devoting even a majority of its courses to agricultural chemistry and fields closely allied to it.

There was also found to be a great deal of duplication in English, French, German, history, mathematics, economics, and speech. Most of this duplication can be traced back to the establishment, in 1920, of the School of Science and Literature (the present-day School of Applied Arts) at the Agricultural College. This is particularly true for economics, as the Department of Economics and Sociology at the Agricultural College has grown from one course in 1919 to twenty courses at the present time. The same is true in varying degree to most of the other departments.

Both institutions are training teachers in art, English, history and social science, home economics, French, mathematics, music, natural science, and physical education. The survey pointed out that it was the function of the Agricultural College to train teachers of agriculture, mechanic arts, home economics, and science. The Agricultural College has not limited itself to this function, and in so doing is duplicating the work of the University.

Duplication also exists in the departments of home economics, music, and education. In home economics a great deal of duplication was

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1. Advanced courses were defined as being courses primarily intended for senior division and graduate division students.

found. This was due, in part, to the growing demand for teachers trained in this field, and for trained dieticians. The Agricultural College was the first to establish a course in home economics. As far back as 1896 the Agricultural College mentions "Domestic Science" in its bulletin for that year. The University did not introduce "Domestic Science" into its curriculum until 1905. Both institutions are, at present, in need of rather extensive courses in home economics. Therefore, it was difficult to determine how much of the duplication was necessary.

Both the University and the Agricultural College are training civil, electrical, and mechanical engineers. Both institutions introduced civil engineering into their respective curricula in 1907. Both schools are offering complete courses in civil engineering. The University introduced electrical engineering in 1910. The Agricultural College did not introduce electrical engineering until 1927. Both schools are offering complete courses in mechanical engineering, and both introduced them in their present form at about 1905. In brief, a great deal of duplication was found in these three engineering courses.

Both institutions are offering degrees in liberal arts, education, and engineering. The duplication, except in special cases, has arisen since 1916. In practically all cases the duplication has been brought about by the Agricultural College's practice of introducing one or two courses a year in each subject until a department could be organized and extensive duplication of courses existed.

The results of the survey show that the Agricultural College is no longer primarily interested in teaching agriculture, but is expending most of its effort in other fields. This is clearly shown in the summary of the registration of the Agricultural College for the school year

1939-1940.<sup>1</sup> The total school enrollment for the regular school year was 1899 students. Of these only 464 were enrolled in agriculture. In other words, only 24.4 per cent of the students of the Agricultural College were receiving their training in agriculture.

1. Agricultural College, op. cit., p. 157.