

# *Bulletin*

SOUTH DAKOTA STATE COLLEGE

1946

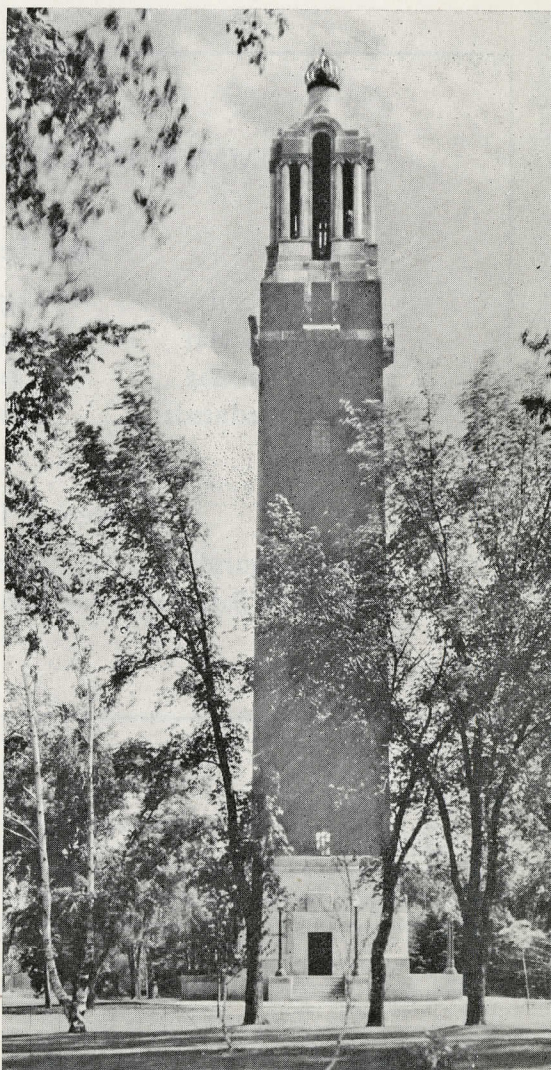
**SUMMER QUARTER**

*First Term*

June 10 to July 17

*Second Term*

July 18 to August 24



SOUTH DAKOTA STATE COLLEGE  
of Agriculture and Mechanic Arts

BULLETIN

1946

*Summer Quarter*

SUMMER QUARTER CALENDAR

First Term

|                    |                                |
|--------------------|--------------------------------|
| June 10, Monday    | Registration Day               |
| June 11, Tuesday   | Class work begins at 8:00 a.m. |
| July 4, Thursday   | A holiday                      |
| July 17, Wednesday | First Term closes at 4:15 p.m. |

Second Term

|                     |                                |
|---------------------|--------------------------------|
| July 18, Thursday   | Class work begins at 8:00 a.m. |
| August 24, Saturday | Second Term closes at noon     |



## SUMMER QUARTER STAFF

HAROLD M. CROTHERS, Ph.D., Acting President  
GEORGE LINCOLN BROWN, Ph.D., President Emeritus  
ALFRED M. EBERLE, M.S., Dean of the Division of Agriculture  
HAROLD M. CROTHERS, Ph.D., Dean of the Division of Engineering  
ALICE ROSENBERGER, M.S., Acting Dean of the Division of Home Economics  
FLOYD J. LeBLANC, Ph.D., Dean of the Division of Pharmacy  
FRANK G. SCHULTZ, Ph.D., Dean of the Division of General Science  
RAYMOND Y. CHAPMAN, M.A., Director of the Junior College  
DAVID BENTON DONER, B.S., Registrar  
RUDOLPH A. LARSON, Secretary  
W. EDWARD SMITH, M.S., Business Manager

\* \* \* \*

OSCAR R. ABEL, B.S., Instructor of Printing  
LEE L. AMIDON, M.S. (M.E.), Professor of Mechanical Engineering  
GEORGE S. BEATTY, (Colonel), Professor of Military Science and Tactics  
HOWARD B. BLODGETT, M.S. (C.E.), Professor of Civil Engineering  
JOHN A. BONELL, Graduate of Stout Institute, Assistant Professor of Engineering Shops  
EDWARD R. BINNEWIES, M.S., Associate Professor of Chemistry  
CARL CHRISTENSEN, B.Mus., Professor of Music  
GEORGE H. DUFFY, Ph.D., Assistant Professor of Chemistry  
BERTRAND A. DUNBAR, M.A., Professor Emeritus of Chemistry  
CLARK T. EIDSMOE, M.S., Professor of Pharmacy  
JAMES EMMERICH, B.S., Instructor in Physical Education  
HELEN ENGBRETSON, M.A., Instructor in Mathematics  
R. ESTHER ERICKSON, R.N., B.S., Professor of Nursing Education  
ALBERT D. EVENSON, B.S., Instructor in Printing  
GILES ROBERTS FLOYD, Ph.D., Associate Professor of English  
WILLIAM H. GAMBLE, M.S., Professor of Electrical Engineering  
JOSEPH ADDISON GIDDINGS, M.A., Associate Professor of English  
ARTHUR R. GRISMER, M.S., Instructor in Bacteriology  
GUILFORD C. GROSS, M.S., Assistant Professor of Pharmacology  
ALBERT S. HARDING, A.M., Professor Emeritus of History  
EDWIN B. HARDING, B.S., Instructor in Printing, Composing Machines Specialist  
NELLE H. HARTWIG, M.S., Assistant Professor of Entomology-Zoology  
REUEL GUSTAV HEMDAHL, Ph.D., Assistant Professor of Political Science  
HOWARD H. HOY, M.S., Professor Emeritus of Engineering Shops  
JOHN A. JOHNSON, B.S., Instructor in Physical Education  
NELLIE G. KENDALL, B.S., Assistant Professor of Physical Education (Women)  
KATHERINE KLEIN, A.M., Assistant Professor of Education and Psychology  
ESTHER ROSS KORSTAD, B.A., Instructor in Typewriting and Shorthand  
CHESTER H. LINSCHIED, M.A., Assistant Librarian  
GABRIEL LUNDY, M.S., Professor of Agricultural Economics  
JAMES B. LUSK, M.S., Associate Professor of Mechanical Engineering  
HERBERT B. MACDOUGAL, M.S., Professor of Mathematics  
CATHERINE F. MACLAGGAN, A.M., Professor of Foreign Languages  
JOHN E. MARTIN, M.S., Assistant in Education  
GEORGE W. MCCARTY, M.A., Professor of Speech  
THURLO E. MCCRADY, M.A., Professor of Physical Education and Director of Athletics  
WARD L. MILLER, Ph.D., Professor of Botany  
CALVIN C. OLESON, M.S., Associate Professor of Civil Engineering  
DONALD D. PARKER, Ph.D., Professor of History  
WILLIAM ALBERT PETERSON, B.Mus., Associate Professor of Music  
RAYMOND E. REINHART, Ph.D., Professor of Physics  
WILLIAM F. REYNARD, (Lt.) A.B., Instructor of R.O.T.C. and A.S.T.P.  
PAUL T. SCOTT, M.A., Assistant Professor of Journalism and Geography  
GEORGE E. SMOCK, Ph.D., Professor of English  
H. DEAN STALLINGS, M.S., Librarian  
WINDSOR A. STRAW, B.S., Assistant Professor of Printing and Rural Journalism; Supt. of Printing Laboratory  
KARL THEMAN, M.A., Assistant Professor of Music (Voice)  
VIVIAN VIRGINIA VOLSTORFF, Ph.D., Dean of Women, Ass't. Dir. of Student Affairs & Associate Prof. of History  
ORLIN E. WALDER, A.M., Associate Professor of Mathematics, Manager of Men's Dormitories  
VICTOR S. WEBSTER, Ph.D., Professor of Chemistry  
CLINTON R. WISEMAN, Ph.D., Professor of Education and Psychology  
HELEN YOUNG, M.A., Assistant Professor of Home Economics

# General Information

State College is offering its 1946 Summer Session program with the firm conviction that education can make a major contribution to the welfare of the State and the Nation. Men and women prominent in national affairs are insisting that only by continuing such training as the schools and colleges are able to give can this Nation be assured of retaining its high position of leadership in the post-war world. The demand for trained men and women continues unabated and there is every evidence that the need will increase rather than diminish. Under the circumstances there seems to be little doubt that high school graduates of unusual ability can contribute more to the "American way of life" by continuing their education than by engaging in almost any other kind of activity.

In planning the program of courses every effort was made to anticipate the needs of students whose major objective will be that of preparing for the opportunities and responsibilities lying ahead. The two six weeks sessions of the Summer School provide training opportunities in all of the five divisions of the College, namely; Home Economics, General Science, Engineering, Pharmacy, and Agriculture. Students wishing to study courses not listed in this catalog should write to the deans of the particular division to determine whether special provisions for studying these subjects might not be made.

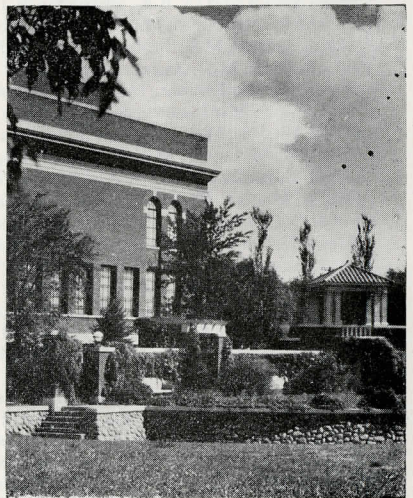
The faculty for the summer terms will be composed almost entirely of members of the regular college staff. The courses offered are intended to accommodate the following groups of students: graduates of high schools just ready to begin their college work; the college students who have been in attendance during the current year, and graduate students and teachers who wish to take advanced work.

Monday, June 10, is Registration Day for the first term. Students should register on that day and be ready to start classes on Tuesday morning. Students should plan to arrive in Brookings in time to arrange for living quarters before school opens. All administrative offices will be open the preceding Saturday forenoon.

## Admission

The requirements for admission to the Summer Quarter are the same as for other quarters of the year. Satisfaction of entrance credits means the completion of a standard high school course. A candidate for entrance to the freshman class of the Junior College must present at least 15\* units of entrance credit by certification or examination, or present at least 12 units of entrance credit together with a recommendation for college work as a special freshman from his superintendent or principal. Others may be admitted as special students to courses they are qualified to pursue. Credit toward a degree will be given only to students who satisfy the entrance requirements. All students entering the College for the first time must submit an application for admission on the official forms and take the entrance examinations for use in guidance and counseling with the students. The examinations are given after classes start and entrance is not based on these examinations. Students entering direct from high schools should have their superintendent or principal send a high school transcript directly to the Registrar's office before registering.

\*Students who present 14 units may be admitted as conditioned freshmen but must earn the additional unit before the close of their first year in college.



Coolidge Sylvan theater, a center for summer social activities



### Graduate Work

A number of the departments of the College will offer courses which may be applied toward graduate credit in the respective fields. Courses carrying a number between 100-200 are designated as senior college and graduate courses, while those with number above 200 are strictly graduate courses. Those interested in graduate work are urged to write to the Chairman of the Graduate Committee for regulations concerning graduate study. Students who are interested in carrying graduate work but who do not find suitable graduate courses listed should write to the head of the department concerned in order to determine whether or not special arrangements might be made.

This year the Department of Education is offering a Master of Science degree in Education without requiring the usual thesis. Under the new arrangement, known as "Plan B," the student will be required to work out a smaller research project (equivalent to three or four credits) or several practical problems within his own school situation in lieu of the thesis. This plan has been, for a number of years, in operation in a considerable number of colleges and universities offering the masters degree in education. It is not intended to replace the customary research degree but is made available to those teachers and administrators who might find it more suitable for their particular purposes.

### Teacher Training Program

Although there is a teacher-shortage in all high school subject-matter areas the shortage

seems to be particularly acute in the fields of science, mathematics, and in the specialized fields generally. Assuming that under these circumstances it will be necessary for certain teachers in certain schools to change from one teaching assignment to another, State College is organizing its schedule to provide opportunities for teachers, who are otherwise qualified, to become reasonably effective teachers in the "critical" fields in one summer quarter.

While it is highly desirable that teachers who wish to take summer work to prepare for teaching in these subjects should have had some previous training in these areas, it is not absolutely essential that they have an extensive college background. Assuming that a teacher has had high school algebra and plane geometry and a reasonable aptitude for mathematics, this individual can acquire enough credits in mathematics in one summer quarter to meet the North Central Association requirements. The North Central Association requirements for teachers of physics, chemistry, or biology, can be met by any high school teacher in one summer quarter provided that teacher has had at least one three credit course in any subject that may be classified as a science. Persons who are interested in teaching commercial subjects can accumulate from 18 to 20 credits in this field.

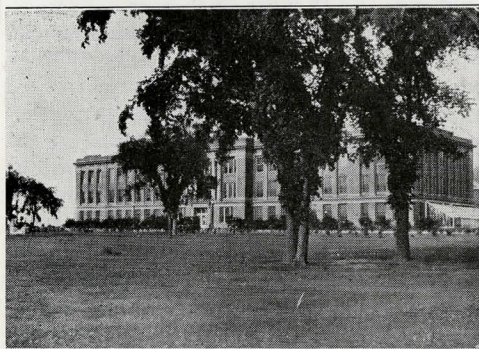
The demand for high school teachers of home economics is as great and possibly greater than that in any of the above mentioned fields and teachers who wish to extend their training in this subject will find excellent opportunity to do so.

A reasonably large selection of professional education courses for high school teachers and administrators will also be offered. Courses other than those listed may be made available if there is a sufficiently large demand.

### Commercial, Printing, and Journalism

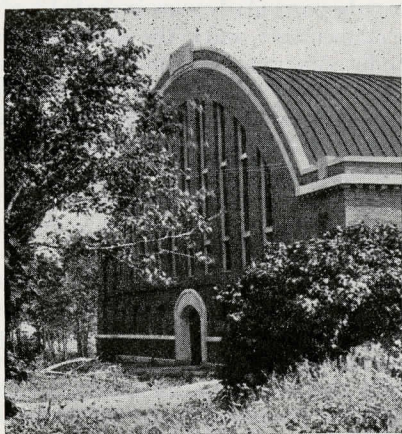
Girls who wish to improve their background for office employment will find an excellent opportunity to do so by enrolling in the "speeded-up" programs in shorthand, typewriting, and office practice.

The man-power shortage in the fields of printing and journalism has prompted the College to organize special intensified courses in the technical phases of printing and newspaper publication. By concentrating on restricted



Administration building serenely overlooks a broad greensward





Physical and health activities are centered  
in state's gymnasium

areas of work a student may learn to operate the linotype or a printing press in a relatively short time. Courses of less than six-weeks duration are also provided for individuals who already have had some training in this field of work.

### Credit

All scheduled courses carry college credit as indicated in connection with the courses. The normal load for a summer term is eight or nine quarter credits.

### Brookings

Brookings is a beautiful city with a population of approximately 5,400 located in the east central part of the state on the Chicago and Northwestern railroad. It also has several bus lines leading into it. Its shaded streets and well-kept lawns make it an unusually attractive place in which to spend the summer. Lake Campbell is but a short distance from the city. The Sioux River is a popular picnic point. Nearby golf courses are available for summer recreation. Brookings has a fine municipal swimming pool, and two beautiful city parks with picnic and recreational facilities; including horse shoe, tennis, music concerts, etc.

### Lincoln Memorial Library

The Lincoln Memorial Library at South Dakota State College is the heart of the summer school activities. Many of the offices of the various departments are located in the library build-

ing and also many of the classes meet there.

The Library itself contains 80,000 volumes and 24,000 pamphlets carefully selected and well-catalogued to facilitate instruction and individual research and also to stimulate general reading. The library receives currently many newspapers and maintains subscriptions to 500 journals and periodicals of both a technical and general nature. It maintains all the necessary reference books and indexes for both periodicals and documents which make the long files of each valuable in the many fields of research.

The library is also a federal and state document depository.

### Pugsley Union

The Pugsley Union is primarily a student enterprise, operated as the college social, recreational, and service center. It is maintained by and for the students, faculty, and alumni as their college club, with facilities for service and pleasure. Every student, by payment of the specified fee, is an active member of the Union and has a voice in its direction.

Pugsley Union will continue to operate as usual during the summer term. Food service and recreational facilities, including the game and card room accommodations, will be available to all eligible persons. There will be no meal service of any kind in rooms other than in the Jungle. Student and faculty lounges will be open and rooms for meetings pertaining to college affairs may be scheduled through the Union Director's Office, Room 202.

### Housing Facilities

Wecota and Wenona Halls have been redecorated and will be available for housing women students during the summer terms. Women who are not residents of Brookings are required to live in these dormitories unless special permission to room elsewhere is granted by the Dormitories Committee. Men students will be able to secure rooms in the men's dormitories.

The charge for rooming in the college dormitories will be \$12.00 per term. Charges for private rooms will range from \$1.75 to \$2.50 per week. Students wishing to live in the dormitories should provide themselves with a mattress pad, two pairs of pillow cases, three sheets, one pair of blankets, and towels.

**Fees Per Term**

|                 |       |               |
|-----------------|-------|---------------|
| Tuition*        | ..... | \$12.00       |
| Library         | ..... | .50           |
| Health          | ..... | 1.25          |
| Union           | ..... | 1.50          |
| Activity Ticket | ..... | 2.00†         |
|                 |       | Total \$17.25 |

\*Fifty percent higher tuition for students who are not residents of South Dakota.

†Plus federal tax

**Other Expenses**

Small laboratory fees are charged for the courses requiring laboratory work. The fee is indicated in each case with the description of the course. A late registration fee of \$2.00 will be collected from all students who complete their registration and pay their fees subsequent to the time announced for that purpose. The cost of books will vary with the course. Used copies may frequently be purchased at reduced cost. Text books and supplies are available at the Union Book Store.

Meals and fountain service are available at the Pugsley Union, as well as at other eating places near the Campus. At the present time the cost of meals at most of these establishments will range between \$5.00 and \$6.00 per week.

**Assembly and Recreation**

The Summer Quarter social and recreational program is organized to give a maximum of entertainment and relaxation without necessitating excessive travel. Assembly programs, consisting of talks by imported and local speakers, professional entertainments, and performances by State College music organization are held. Activities of a more social nature consist of mixer parties, picnics and dances. These activities are organized by a joint committee of faculty members and students.

Organized recreation for both men and women is provided for under the general direction of the Physical Education Department. The College is well equipped with tennis courts, ball diamond, golf course, archery equipment, etc. The recently completed municipal swimming pool and several city parks can, by special arrangement with the city authorities, be made available for student use.

**Teachers' Employment Bureau**

The College maintains a Teachers' Employment Bureau for graduates and students who wish to secure help in locating suitable teaching positions. The Bureau is maintained and operated by the Department of Education and is in charge of a full-time secretary. Complete instructions for registering may be secured at the office of the Bureau at Room 109 Library Building. An annual registration fee of \$1.00 is charged for this service.

There appears to be a shortage of teachers along several high school lines with high school salaries up considerably over those of the last few years. Those who have not taught for a few years, particularly married women, might through summer attendance take refresher work in subject matter courses and education courses and secure teaching certificates.

There is an urgent demand for teachers of science and mathematics. Many teachers who have basic work in those fields may, through refresher course in such work in summer session, become qualified for very good positions in the field in many cases and be assured of a position before they take the work.

**Courses Offered**

In order to provide ample opportunity for those students who are attempting to complete their college education in the shortest possible time, the College is offering a wide range of



Chemistry has its own modern building and laboratories



courses for the summer sessions. Where there is a sufficient demand additional courses not listed in this bulletin may be offered. The College, in turn, reserves the right to withdraw any courses for which there is not sufficient demand to warrant the organization of the class.

Courses listed in this bulletin have the same number as those found in the 1945-46 Annual Catalog and are intended to cover the same material. The student is referred to the Annual Catalog in case the abbreviated course description does not provide sufficient information.

## Division of Agriculture

### Agricultural Economics

- 20 Principles of Economics** 5 Cr. 2nd term  
Analysis of problems of production, consumption and distribution of wealth, money and value; price fluctuations and policies.
- 48 Financial Organization** 4 Cr. 1st term  
Principles of money and credit, major types of financial institutions and their significant functions and policies.

Further information regarding courses may also be had by writing to the Deans of the Divisions.

In general, the courses listed in these pages are classified as follows: Those numbered 1-19 are of Freshman rank; 20-39 Sophomore rank; 40-59 Junior rank; 60-79 Senior rank; 100-199 undergraduate and graduate rank; 200 or above primarily for graduates. The symbol "P," following the course descriptions, refers to the pre-requisites for the course in question. In cases where the student has unusual qualifications the pre-requisites may be waived.

- 141a Statistical Methods** 5 Cr. 1st term  
Collection, organization and interpretation of quantitative data; statistical reasoning and the design of experiments and questionnaires.
- 145 Public Finance** 3 Cr. 2nd term  
Introduction to public finance problems; special emphasis upon tax receipts and expenditures and their administration.

### Botany—Bacteriology

#### BOTANY

- 10ab General Botany** 4 Cr. 10a 1st term  
10b 2nd term  
Botany of seed plants; a consideration of those problems which plants must solve if they are to develop successfully from seed to maturity; problems of germination, nutrition, growth, adjustment, reproduction and dispersal. Laboratory fee \$2, deposit \$2 for each course.
- 10c General Botany** 4 Cr. 2nd term  
The Plant Kingdom; a rapid survey of plant groups more primitive than seed plants. Laboratory fee \$2, deposit \$2.
- 27 The Local Flora** 4 Cr. 1st term  
Principles of taxonomy, and the identification of plants in the vicinity of Brookings. P, 10c. Laboratory fee \$1.

#### BACTERIOLOGY

- 41 Elementary Bacteriology** 5 Cr. 1st term  
Cultural studies of bacteria, principles of enzyme ac-

tion, classification of bacterial organisms. P, Chem 21. Laboratory fee \$3, deposit \$2.

- 142 Principles of Infection and Immunity** 5 Cr. 1st term  
A study of bacterial infection, antibodies, vaccines and blood typing. P, 41. Laboratory fee \$4, deposit \$2.
- 143 Pathogenic Bacteria** 5 Cr. 2nd term  
Morphological and cultural characteristics of the bacterial organisms which cause man's most important diseases. P, 142. Laboratory fee \$3, deposit \$2.
- 152 Virus and Rickettsial Diseases** 3 Cr. 2nd term  
Some attention is given to pathogenic fungi as well as to the disease type mentioned. P, 142.
- 160 Bacteriological Problems** Cr. arranged 1st-2nd terms  
Individually assigned problems in bacteriology, mycology or immunology. An introduction to research techniques. Admission upon recommendation of the instructors. Laboratory fee \$2, deposit \$1.

### Entomology—Zoology

- 20ab General Zoology** 4 Cr. 20a 1st term  
20b 2nd term  
The fundamental principles of animal morphology, physiology, reproduction, embryonic development, genetics, classification, ecology, geographic distribution, paleontology and evolution. Laboratory fee \$1, deposit \$1 per term.

- 22 Human Physiology** 4 Cr. 1st term  
The fundamental physiological processes of the human body. Histological slides are used for the study of tissue while anatomical methods and the organs of the domesticated animals are used for the study of the structure of organs and systems. P, 20ab. Laboratory fee 50c, deposit \$1.





Pugsley Union building is the recreation and social center for all students at South Dakota State College.

**42 Genetics** 3 Cr. 2nd term

A general discussion of genetics, the origin of the germ cells, the germ cell cycle, embryological development as determined by heredity and modified by environment, the cytology of the germ cells, the relation of the chromosome material to genetics, the theory of the gene, linkage, crossing over, non-mendelian inheritance, experimental evolution and related phenomena. P, 20b.

**Rural Sociology**

**20 Principles of Sociology** 5 Cr. 1st-2nd term

A basic introductory course prerequisite to all other sociology courses numbered above 20. A comprehensive

study of society, with an analysis of the forces shaping human behavior in group life.

**162 Criminology** 3 Cr. 1st term

The nature and causes of crime. The making of the criminal. Theories of punishment. Agencies and methods of arrest, conviction, and segregation of criminals. Jails, prisons, and reformatories. Probation and parole. P, 20.

**168 The Family** 3 Cr. 2nd term

The main emphasis is on the typical American family. Consideration is given to the importance of family life, personal relations within the family and social changes affecting it. P, 20.

## Division of Engineering

### Civil Engineering

**3 Plane Surveying** 4 Cr. Full quarter

Theory and practice of surveying; field problems including profiles, cross sections, traverses, and area determinations. P, Math 15, ME 3b. Laboratory fee \$3.

**25 Topographic surveying** 3 Cr. Full quarter

Transit-stadia and plane-table surveys of representative field areas. Preparation of a finished map. P, CE 3, Laboratory fee \$3.

**142a Engineering Mechanics** 4 or 6 Cr. Full quarter

Force systems, motion, moments of inertia, mass and acceleration; work and energy; impulse and momentum. Stress analysis as applied to boilers, beams, columns, riveted joints, springs and other structural members. P, Math 27.

**161b Framed Structures** 4 Cr. Full quarter

Stress analysis, design, detailing, fabrication and erection of structural steel frames and members. Graphical



and analytical methods of determining stress and deflections. Complete designs and drawings for representative structures such as roof trusses, railway and highway bridge trusses, and plate girders. P, 142c.

**163a Reinforced Concrete** 3 Cr. Full quarter  
Reinforced concrete beams, columns, footings, foundations, retaining walls, culverts, bridges and buildings are considered as problems in stress analysis, design and detail. A brief consideration of the methods of analysis of continuous frames. P, 142c.

**172a Sanitary Engineering** 5 Cr. Full quarter  
Principles of development and design of water distribution systems and treatment plants, sewerage systems and disposal plants, and inspection. Analysis of public health problems. P, 170, Bac 31.

### Electrical Engineering

**141 Electricity and Magnetism** 5 Cr. Full quarter  
Electric and magnetic circuits; measurements of electric and magnetic properties. P, Math 26, Phy 21c.

**161 Alternating Current Circuits** 4 Cr. Full quarter  
Alternating currents, voltages, and power in single-phase and polyphase circuits. P, 141.

**167b Alternating Current Equipment** 3 Cr. Full quarter  
Characteristics of alternating current motors and other equipment used in applying electrical power to mechanical drive. Elementary work on vacuum tubes. For students in Mechanical Engineering. P, 161.

**172a Vacuum Tubes** 4 Cr. Full quarter  
Elementary physics of the vacuum tube. Voltage-current characteristics of the tube and its properties as a circuit element. Use as amplifier, oscillator, or modulator. P, 161. Laboratory fee \$2.00.

**144b Dynamo Laboratory** 2 Cr. Full quarter  
Practical operation of and standard tests on direct current machines, calculations of test results and prepara-

**177 Engineering Economy** 3 Cr. Full quarter  
Methods of estimation of costs of engineering projects. The determination of the most economical arrangement of structural units. The selection of the most economical structural types for given conditions. Problems in the finance of engineering projects. P, senior standing in engineering.

**179 Highway Engineering** 4 Cr. Full quarter  
A continuation of Roads and Pavements with emphasis on economic location and design of highways and city streets. The study of traffic control and super-highway projects is included with laboratory work gathering field information and reduction in office. P, 50, 52. Laboratory fee \$3.

ration of engineering reports. May be taken for one credit each term with less emphasis on report writing by students in Mechanical Engineering. To accompany course 142 or 143. Laboratory fee \$2.00.

**164b Advanced Dynamo Laboratory** 2 Cr. Full quarter  
Measurements in alternating current circuits, including polyphase power, phase angles and phase sequences. Operation and testing of alternating current generators, transformers, and motors. May be taken for one credit each term with less emphasis on report writing, by students in Mechanical Engineering. To accompany courses 163ab or 167ab. Laboratory fee \$2.00.

**166 Central Stations** 3 Cr. Full quarter  
Central Station control and protective equipment; costs including depreciation and methods of providing for the same. P, 163.

### Engineering Shop

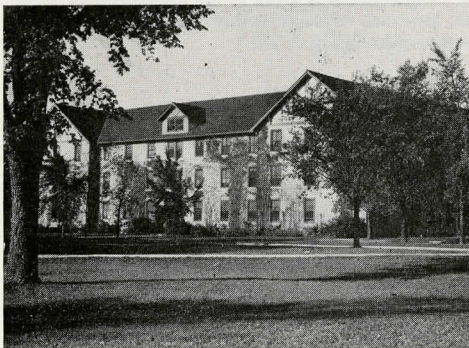
**2 Machine Shop** 2 Cr. Full quarter  
Equipment and tools used in machine shop work, methods of laying out work, elementary principles of machine and bench work, and problems involved in the use of machine tools. Laboratory fee \$3.00.

**3 Advanced Machine Shop** 2 Cr. Full quarter  
Continuation of machine shop 2. Further and more detailed instruction in Machine Shop problems and operations. Laboratory fee \$3.00.

### Mechanical Engineering

**3a Engineering Drawing** 2 Cr. Full quarter  
Development of skill in the use of drawing instruments and in the mechanics of drafting. Open to all students who have had high school mathematics.

**5 Descriptive Geometry** 2 Cr. Full quarter  
The theory of drafting applied to points, lines, planes and solids. Problems relating to solid intersection; sheet metal development; pattern layout; pictorial representations; drainage and mining. P, Plane Geometry.



East men's hall, ivy-entwined, is "home" for many men students



**142a Thermodynamics** 3 Cr. Full quarter

Fundamental principles of equipment, steam machinery, internal combustion engines, air machinery, heat transmission, refrigeration, and air conditioning. P, 45 and Math 26.

**62 Mechanical Laboratory** 2 Cr. Full quarter

Study of laboratory instruments; testing of fuels and lubricating oils, study of engines and boilers. P, 45. Laboratory fee \$2.00.

**161b Engineering Design** 2 Cr. Full quarter

Study of steam engines, steam turbines, internal combustion engines and assembly drawings of machines. Some opportunity is given to select a project of interest to the student. P, 142ab.

**164 Heating, Ventilation and Air Conditioning**

4 Cr. Full quarter

Principles of heating, ventilating and air conditioning

systems in common use; computation of heat loss and gain in buildings; ducts and piping systems for steam and hot water heating; apparatus and control systems. P, 45.

**162c Advanced Mechanical Laboratory** 2 Cr.

Full quarter

Standard tests and analysis of boilers, steam pumps, condensers, engines and turbines; internal combustion engines, including gas, gasoline, oil automotive and aviation; tests and determination of characteristics of fans, steam, air and hydraulic flow devices; heating, ventilating, air conditioning, refrigeration and equipment. P, 142ab. Laboratory fee \$2.00.

**165 Power Plant Engineering** 4 Cr. Full quarter

Design and operation of modern power plants; power units and appurtenances; fuel handling and storage; power generation costs in steam and Diesel plants; economics of design and operation. P, 142ab.

**Physics****1a Elementary Physics** 4 Cr. 1st term

This course is designed to be an elementary course in physics suitable for students with little mathematical background. Since the subject matter is to be presented in an elementary manner, the course is open to freshmen. The course is to be offered in general to all students outside the engineering groups. General topics in mechanics, heat, sound, electricity and light will be considered. P, high school algebra and plane geometry. Laboratory fee \$2.00 per term.

**1b Elementary Physics** 4 Cr. 2nd term

This course is designed to be an elementary course in physics suitable for students with little mathematical

background. Since the subject matter is to be presented in an elementary manner, the course is open to freshmen. The course is to be offered in general to all students outside the engineering groups. General topics in mechanics, heat, sound, electricity and light will be considered. P, high school algebra and plane geometry. Laboratory fee \$2.00 per term.

Advanced courses if demand sufficient.

**21ab General Physics** 4 Cr. each term 1st term

Mechanics of solids and fluids; sound; heat; electricity; magnetism and light. P, Math 11 or 15. Laboratory fee \$2.00 per term.

Advanced courses if demand sufficient.

**Mathematics****10 College Algebra** 5 Cr. 1st term

Review of the fundamental operations, factoring, highest common divisor, least common divisor, least common multiple and solutions of linear simultaneous equations; study of quadratic equations, exponents, radicals, etc.

**11 Trigonometry** 5 Cr. Both terms

The principles of plane trigonometry and their application to the solution of triangles, inverse functions, solutions of trigonometric equations. DeMoivre's theorem. P, 10 or equivalent.

**12 Analytic Geometry** 5 Cr. 2nd term

Co-ordinates, loci, the straight line, circle, ellipse, parabola and hyperbola. P, 10, 11 or equivalent.

**2 Solid Geometry** 2 Cr. Full quarter

Required of freshman engineering students who enter without high school credit in the subject. Not counted towards graduation in the engineering course.

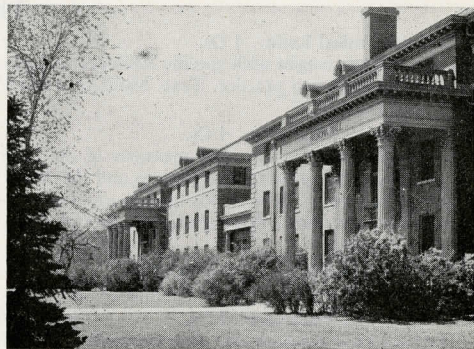
**3 Algebra (1st year H. S. continued)** 5 Cr.

Full quarter

Required of freshman engineering students entering with credit in only two semesters of algebra. Not open to other students.

**14 College Algebra** 5 Cr. Full quarter

Elementary topics, functions and their graphs, review of the quadratic equations, complex numbers, theory of



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equations, permutations and combinations, partial fractions, and determinants. P, three semesters of high school algebra. Required in freshman engineering course. This subject may be taken in place of 10 by general science students of unusual mathematical ability.

**15 Plane Trigonometry** 5 Cr. Full quarter

The functions of acute angles, the solution of the right triangle, the solution of the oblique triangle, general applications of trigonometry. P, one year of plane geometry and one and one-half years of high school algebra. Required in freshman engineering, elective in general science and agricultural courses.

**16 Analytic Geometry** 5 Cr. Full quarter

Co-ordinate systems, loci, the straight line, the general equation of the second degree. P, 14, 15. Required in freshman engineering, elective in general science and agricultural courses.

**25 Differential Calculus** 4 Cr. Full quarter

Formal differentiation with applications to engineering and science. P, 12 or 16. Required in engineering, elective in other courses.

**26 Integral Calculus** 4 Cr. Full quarter

Formal integration with applications. P, 25. Required in engineering, elective in other courses.

**105\* Mathematical Statistics** 3 Cr. Full quarter

The analysis of data by certain elementary principles; curve fitting, measures of correlation, and the meaning and calculation of a number of statistical constants. P, college courses in algebra and trigonometry.

**110ab\* Mathematics of Finance** 3 Cr. Full Quarter

The application of algebra to problems in interest, annuities, amortization, the valuation of bonds, sinking funds and depreciation, building and loan associations, theory of probability and problems in life insurance. P, 14, 15 or 10, 11.

\*105 or 110ab will be given depending upon demand.

## Division of Home Economics

### Home Economics

**30 Clothing** 3 Cr. 1st term

Development of the foundation pattern, flat pattern construction, and the selection and construction of a garment. Emphasis on selection of design and color to express individual personality. P, 11a. Laboratory fee \$1.

**72 Home Management House** 4 Cr. 1st term

Six weeks residence in the home management house with experience in problems that arise in a home.

**144 Advanced Clothing** 3 Cr. 1st term

Application of principles of costume design to promote more independence, initiative, originality and art

in planning and adapting garments for different types of figures. Laboratory practice to include remodeling for a child and the construction of a dress. P, 30. Laboratory fee \$1.

**146 Methods of Teaching Clothing** 3 Cr. 1st term

Analysis of problems; making of illustrative material for clothing courses.

**160 Experimental Cookery** 3 Cr. 1st term

Investigation of factors which affect a standard food product by laboratory experiments and a review of the literature on research in cookery. Laboratory fee \$4.

## Division of Pharmacy

### Nursing Education

Entering Nursing Education students will take Chemistry 1a and English 1a the first term and Chemistry 1b and English 1b the second term. Advanced stu-

dents in Nursing Education will receive their practical training at Sioux Valley Hospital, Sioux Falls, South Dakota.

### Pharmacy

**1 Pharmaceutical Latin** 4 Cr.

The subject is taught with specific reference to Latin titles and prescription practice. Text: Muldoon's Pharmaceutical Latin.

**5a Theoretical Pharmacy** 4 Cr.

A comparison of weights and measures of the various systems, pharmaceutical calculations and the theory of the application of the methods used in pharmaceutical manufacture. Text: Remington's Practice of Pharmacy, with lectures.

**41ab Drug Assaying** 4 Cr. each term

P, Ch 1abc. Laboratory fee \$3, deposit \$3 each term.

**42 Theoretical Pharmacy** 4 Cr.

The medicinal alkaloids and their derivatives, glandular products, vitamins, and biologicals. P, first two years of Theoretical and Practical Pharmacy. Text: Remington's Practice of Pharmacy.

**43 Practical Pharmacy** 2 Cr.

The compounding of the more simple prescriptions, packaging, labeling, and wrapping of the finished product. P, first two years of Theoretical and Practical Pharmacy. Text: Remington's Practice of Pharmacy. Laboratory fee \$3, deposit \$3.

**46 Window Display** 2 Cr.

Work in window display, a combination study of color schemes, and arrangements of material, lighting effects. Laboratory fee \$2, deposit \$3.

**143a Toxicology** 2 Cr.

An introduction to the study of the nature, effects and antidotes of poisons as well as their classification. P, junior standing. Text and references: McNally's Toxicology; Athenrieth's Detection of Poisons; and Sollman's Manual of Pharmacology. Primarily for students electing one term's work in the field.



# Division of General Science

## Art

### 1c Design 2 Cr. 1st term

A foundation course intended to serve as a basic pre-requisite for all other art work. P, lab. Laboratory fee 50c.

### 2 Freehand Drawing 1 or 2 Cr. 1st term

This course is designed to meet the needs of both the beginning and advanced students. Problems will deal with perspective drawing, pictorial composition and

will give experience in the use of different mediums. Laboratory fee 50c.

### 25 Applied Design 2 Cr. 1st term

The design and execution of various problems involving the definite use of various materials, tools, and processes. P, lab or consent of instructor. Laboratory fee 50c.

## Chemistry

### 1ab Inorganic Chemistry 4 Cr. 1a 1st term 1b 1st and 2nd term

A general survey of the field of inorganic chemistry, with emphasis on chemical laws and theories and non-metallic elements. Laboratory fee \$3, deposit \$3 per term.

### 1c Inorganic Qualitative Analysis 4 Cr. 1st term

Analysis of mixtures of common inorganic compounds; systematic study of metals. Laboratory fee \$4, deposit \$3.

### 20 Advanced Qualitative Analysis 4 Cr. 1st term

A continuation of course 1c to meet the needs of chemistry majors. P, 1c. Laboratory fee \$4, deposit \$5.

### 21 Elementary Organic Chemistry 5 Cr. 1st term

The compounds of carbon with emphasis on those of special interest to students in agriculture and general science. Laboratory fee \$6, deposit \$5.

### 23 Gravimetric Analysis 4 Cr. 1st term

Theory and practice of elementary gravimetric analysis. P, 1c. Laboratory fee \$5, deposit \$4.

### 24 Volumetric Analysis 4 Cr. 2nd term

Theory and practice of elementary volumetric analysis. P, 1c. Laboratory fee \$5, deposit \$4.

### 28ab Stoichiometry 1 Cr. 28a 1st term 28b 2nd term

Methods of calculations in quantitative analysis. Should accompany courses 23 and 24. P, 1c.

### 173 Undergraduate Research Cr. Arranged

Both terms  
Special problems requiring original research. P, consent of instructor. Laboratory fee \$1, deposit \$1 per credit hour.

### 174 Biochemical Research Cr. Arranged

Both terms  
Research problems in applied biochemistry. P, 141. Laboratory fee \$1, deposit \$1 per credit hour.

### 190ab Seminar 1 Cr. 190a 1st term 190b 2nd term

Required of all students majoring in chemistry. Presentation of topics based on reference reading or original research. P, minor in chemistry.

## Education and Psychology

### EDUCATION

### 45 Educational Psychology 3 Cr. 1st term

Nature of learning curves, economic learning, rates and limits of improvement. The retention of learning, differences in learning capacity, transference and interference of learning. Required for certification. P, Psy 25 or equivalent.

### 47 High School Methods 3 Cr. 2nd term

A general methods course. Deals with standard and newer classroom procedures. Required for certification. P, 40, 45 or equivalent.

### 71 Organization and Management of Vocational Agriculture 3 Cr. 1st term

Various phases of work of the vocational agriculture teacher are taken up for analysis and for program construction. P, 70. Required for certification of teachers of agriculture.

### 137 Educational and Vocational Guidance 3Cr. 1st term

Deals with both educational and vocational guidance; needs, aims and functions, means and methods. Considerable attention to testing and counseling. P, 40, 45, 47 or equivalent.

### 160 Public School Administration 3 Cr. 1st term

Organization and administration of the school system in state, county, and various types of local school districts. Considers financial problems. P, 40, 45, 47 or equivalent.

### 168 Educational Statistics 3 Cr. 1st term

Exercises in tabulation, geographical representation, and calculation of statistical constants. Practice in the analysis of data drawn from education and psychology. Some attention paid to statistical inference. P, 40, 45, 47 or equivalent.

### \*220 Organization and Administration of Elementary Education 3 Cr. 1st term

The problems of the superintendent in organizing and administering the work of the elementary school. P, 160 and graduate standing.

### \*260 Principles of Supervision 3 Cr. 2nd term

Organization for supervision; studies in supervisory functions; procedures for classroom visitation and conferences; rating of teachers; in-service training of teachers. P, 160 and graduate standing.

**\*272 Adult Education in Vocational Agriculture**

3 Cr. 1st term

Deals with part-time and evening-school work. How to organize and manage a rural adult-education program through the agriculture department. P, senior or graduate in Agricultural Education.

**\*273 Supervised Farm Practice and Future Farmer Program Building**

3 Cr. 2nd term

Analyzes the various problems of the agriculture instructor in making supervised farm practice and Future Farmer organization integral parts of the program of a vocational agriculture department. P, graduate student in Agricultural Education.

**295 Thesis** Credit arranged Both terms**PSYCHOLOGY****25 Elementary Psychology** 3 Cr. 1st term

An introduction to the fundamental principles of human behavior, with laboratory study of the student's own abilities, interests and personality traits. Prerequisite for all Education courses. P, sophomore standing or consent of instructor. Laboratory fee \$1.

**36 Business Psychology** 3 Cr. 1st term

A scientific approach in predicting and influencing human behavior in business. P, 25.

\*Graduate students who wish to qualify for the Master's degree under Plan B may elect research projects in areas covered in starred courses, thereby earning four instead of three credits. Consult Department Head.

**English****1abc English Composition** 3 Cr. Both terms

Drill in grammar, punctuation, and vocabulary. Study of the principles of rhetoric. Training in accurate, intelligent reading. Required of all freshmen.

**20a Introduction to Literature** 3 Cr. 1st term

A study of the principle literary types—fiction, drama, essay, biography, and poetry. P, 1abc.

**21 Fiction** 3 Cr. 2nd term

A study of narrative writing with emphasis on the novel and short story. P, 20.

**56 The English Language** 3 Cr. 2nd term

The development and structure of language. Special emphasis on grammar treated with historical perspective. P, 30abc, or consent of instructor.

**102 Social Ideals** 3 Cr. 1st term

The literature of the last two centuries with emphasis on the concept of liberty, democracy, and totalitarianism. May be counted toward a major or minor in history when consent is obtained from the history department. P, 30 or English History.

**Foreign Languages**

Instruction in French, German, Italian, Portuguese, and Spanish will be offered if there is sufficient demand.

Anyone interested in studying these languages should consult with the head of the Language Department.

**History and Political Science****23ab The American Nation** 4 Cr. 23a 1st term

23b 2nd term

Standard courses in American history. Special emphasis upon political development and constitutional growth. Course 23a covers period of 1783 to 1850; 23b, 1850 to end of century. P, sophomore standing.

**26ab Economic History of the United States** 3 Cr.

26a 1st term, 26b 2nd term

Course 26a covers period through 1860; 26b, 1860 to present time. P, sophomore standing.

**34 American Government** 4 Cr. 1st term

The National government; genesis of the American federation; the Constitution, its formation, principles, and development; party organization and activities; the President as chief executive; the Cabinet, Congress, and the judiciary. P, sophomore standing.

**44 State and Local Government** 4 Cr. 2nd term

The State and the Nation; constitutional basis of state government; organization, functions, and popular control; rapid survey of county, city, and township organi-

zation. Emphasis upon South Dakota constitution and government. P, sophomore standing.

**60 Political Geography** 4 Cr. 1st term

Geographical foundations of national power and international relations in terms of the material and human resources of the major countries; the United States, the United Kingdom, France, Germany, Italy, Japan, Russia, China and Latin America. P, Junior standing or consent of instructor.

**142c Contemporary Europe—Second World War**

4 Cr. 1st term

**143b Latin America and the United States** 4 Cr. 1st term

International relations of Latin America with special reference to the United States. P, one year of college history and junior standing. Miss Young.

**160 Comparative Government** 4 Cr. 2nd term

A comparative study of the governments of the leading modern nations. P, 34, 44 and junior standing.

**Library Study****60a Library Administration** 2 Cr. 1st term

A general course stating the problem of school libraries. Objectives and methods of service in the small high school libraries, organization, budget and ordering, classification and cataloguing, student library club, housing and equipment, records to be kept, reports to make, and methods of publicity. P, senior classification.

**60b Book Selection and Reference** 2 Cr. 1st term

Standards of criteria which may be used in appraising books for school libraries. P, senior classification.

**60c Cataloguing and Classification** 2 Cr. Both terms

This course is to teach students how to catalogue and classify books for high school libraries. P, senior classification.



## Music

The Summer term provides opportunity for study in piano, pipe organ, voice, and wind or stringed instruments. Individual instruction will also be given in sight reading and ear training, choral techniques and interpretation, conducting (Band, Orchestra or Choral), orchestration and harmony. All members of the staff will be available for individual lessons. Credit may be earned toward a minor in music.

A summer school band and orchestra by Mr. Christensen. Students in conducting will be given an opportunity to conduct summer school groups.

### Fees per Term

Instrumental, Pipe organ, Voice, One individual lesson per week, \$7.50. Two individual lessons per week, \$15.00.

Piano, One individual lesson per week, \$6.00. Two individual lessons per week, \$12.00.

## Physical Education and Recreation

### MEN

1a,b, or c Physical Education 1 Cr. 1st term

Laboratory fee, including towel service, use of equipment, etc. \$1.50. Required of all freshmen. Emphasis on physical fitness.

20a,b, or c Physical Education 1 Cr. 1st term

Laboratory fee, including towel service, use of equipment, etc. \$1.50. Required of all sophomores.

Sp Swimming 1 Cr. Both terms

NOTE: Special consideration will be given to men who may need additional courses to qualify for coaching position, etc.

### WOMEN

1a,b, or c Physical Education 1 Cr. 1st term

Laboratory fee, including towel service, use of equipment, etc., \$1.50. Required of all freshmen.

20a,b, or c Physical Education 1 Cr. 1st term

Laboratory fee, including towel service, use of equipment, etc., \$1.50. Required of all sophomores.

40 Physical Education 1 Cr. 1st term

Laboratory fee, including towel service, use of equipment, etc. \$1.50. Theory and practice of organized play.

Sp Swimming 1 Cr. Both terms

NOTE: Special consideration will be given students who need additional courses to qualify for positions as instructors of physical education, etc.

## Printing and Rural Journalism

16a Typewriting 1 Cr. Both terms

Graded exercises to learn "touch method" are first given. Care of machines; correspondence and various forms; billing and tabulating. Laboratory fee \$1 per term.

18ab Beginning Shorthand 5 Cr. 18a 1st term  
18b 2nd term

The Gregg system is taught. Complete theory. Some dictation.

19ab Advanced Shorthand 2 Cr. 19a 1st term  
19b 2nd term

An intensive review of shorthand with special emphasis on dictation and development of speed. P, 18abc.

66 Publicity Methods 3 Cr. 1st term

A course for students expecting to become county agents, home economics leaders, or vocational teachers. Not open to journalism majors or minors.

67 Journalism for Teachers 2 Cr. 1st term

A course for high school journalism instructors or advisers; includes journalism course work, instruction in various types of school publications, and school relations. P, Engl labc.

68 History of Journalism 2 Cr. 2nd term

A study of the development of journalism in the United States. Includes ethics of the profession of journalism.

## PRINTING

Shop Course for Printers Both terms

Special shop courses are offered during the summer session in presswork, typography, and composing machines for men and women of the printing trades who wish to develop their skill in the various shop phases of printing. No entrance requirement is necessary other than previous experience in one of the printing trades. Tuition and laboratory fee \$5 per week.

Typography Both terms

Principles of typography are given to beginning students, including all the elements of hand composition. Laboratory fee \$1.50 per unit.\*

Composing Machines Both terms

The course in composing machines includes practice and study in the repair and mechanical adjustments of all the composing machines including both Linotype and Intertype. Laboratory fee \$2.50 per unit.\*

Press Work Both terms

The student may take either platen presswork or cylinder presswork, or both. Laboratory fee \$2 per unit.

\*Six hours per week for each unit.

## Speech

22 Extempore Speaking 3 Cr. Both terms

This course, required for graduation, may be taken during any term of the year. To assist the student in acquiring an effective oral style—simple, clear, direct. Attention to the selection, organization and presentation of material. P, Engl labc.

23a Oral Reading and Interpretation of Literature 3 Cr. Both terms

Intended to develop skill in oral interpretation of emotional and imaginative literature. Voice training with exercises and selections.

41 Advanced Extempore Speaking; Speech Composition 2 Cr. 1st term

The principles of practical effective speech. P, 22 or by special permission.

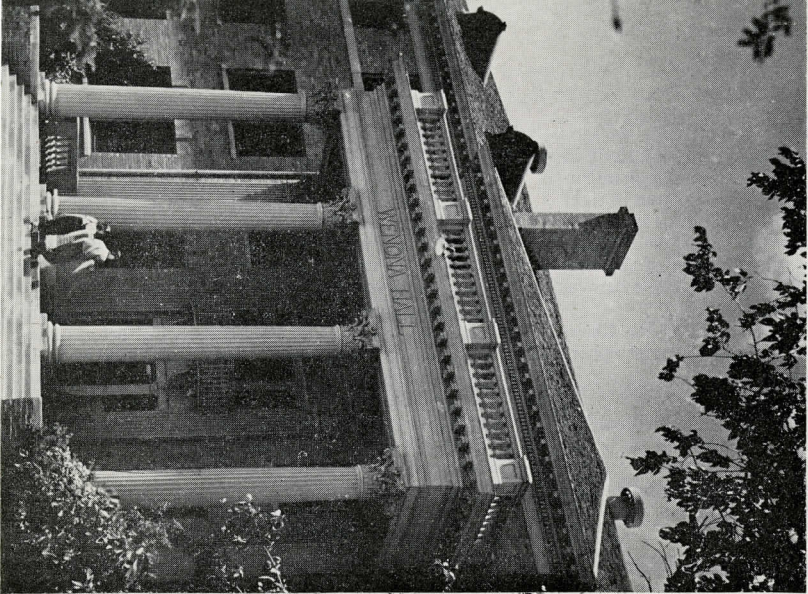
43 Public Address; Practical Persuasive Speech 2 Cr. 2nd term

The various forms of public address and public discussion; the elements of persuasive speech. Original work by members of the class. P, 22.

South Dakota State College  
of Agriculture and Mechanic Arts

# Bulletin

Brookings, South Dakota



Entered as  
Second Class  
Matter