NEW BEDFORD

TEXTILE INSTITUTE

CATALOGUE
1949-1950

NEW BEDFORD, MASSACHUSETTS

New Bedford Textile Institute

A College of Textiles and Engineering

New Bedford, Massachusetts

Bachelor of Science

Textile Engineering
Textile Chemistry
Machine Design

Catalogue

1949-1950

FOREWORD

The purpose of this issue of the Catalogue is to provide information for prospective students, or anyone else who may be interested, regarding the history, traditions, objectives, resources, programs, equipment and staff of the Institute.

Administration and Staff

Entrance

THE BOARD OF TRUSTEES

OFFICERS OF THE BOARD

JOHN A. SHEA, *President*
FREDERICK ROLLINSON, *Vice-President*
GUSTAVE LaMARCHE, *Clerk*

TRUSTEES

Ex-officio, HIS HONOR ARTHUR N. HARRIMAN, *Mayor*
Ex-officio, JOHN J. DESMOND, JR., *Commissioner of Education*
Ex-officio, W. KENNETH BURKE, *Superintendent of Schools*

Term expires June 30, 1949

LAURENT FAUTEUX, 241 State Street, New Bedford, Massachusetts.
JAMES J. KENNEDY, 15 Branchaud Court, New Bedford, Massachusetts.
RAYMOND R. McEVOY, U. S. Civil Service Commission, Office of Director, Boston, Massachusetts. Res.: 156 Porter Street Stoughton, Massachusetts.
WILLIAM RICHARDS, 519 North Front Street, New Bedford, Massachusetts.
JOHN VERTENTE, JR., 460 County Street, New Bedford, Massachusetts.

Term expires June 30, 1950

WILLIAM B. FERGUSON, West End Gas & Electric Appliance Co., New Bedford, Massachusetts. Res.: 62 Grant Street, New Bedford, Massachusetts.
GUSTAVE LaMARCHE, Wamsutta Mills, New Bedford, Massachusetts. Res.: 175 Phillips Avenue, New Bedford, Massachusetts.
EDWARD L. MURPHY, JR., Brown-Durell Co., Cambridge, Massachusetts. Res.: 209 Hobart Street, Wollaston, Massachusetts.
WALTER H. PAIGE, 12 Lincoln Street, New Bedford, Massachusetts.
FREDERICK ROLLINSON, Soule Mill, New Bedford, Massachusetts. Res.: 68 Florence Street, New Bedford, Massachusetts.

Term expires June 30, 1951

MISS E. FERRIS ALMADA, Gosnold Mills Corporation, New Bedford, Massachusetts. Res.: 6 Ocean Street, New Bedford, Massachusetts.
JOSEPH DAWSON, JR., Knowles Loom Reed Works, New Bedford, Massachusetts. Res.: 190 Sycamore Street, New Bedford, Massachusetts.
PHILIP MANCHESTER, Berkshire Fine Spinning Associates, Inc., Fall River, Massachusetts. Res.: Westport Harbor, Massachusetts.
NILS V. NELSON, N. V. Nelson & Co., 93 Federal Street, Boston, Massachusetts. Res.; 8 Temple Avenue, Winthrop, Massachusetts.
JOHN A. SHEA, Neuss, Hesslein Co., New York. Res.: 384 Washington Street, Taunton, Massachusetts.

ADMINISTRATION

JOHN A. SHEA, *President, Trustee Board*
FREDERICK ROLLINSON, *Vice-President, Trustee Board*
GEORGE WALKER, *President*
MARY F. MAKIN, *Principal Clerk and Treasurer*
CECELIA ZEITLER, *Senior Clerk*
LORETTA B. LAVOIE, *Junior Clerk and Typist*
MILLICENT K. McGRATH, *Junior Clerk and Typist*

INSTRUCTION

Department Heads

Fred Beardsworth, *Department of Weaving*
Edward H. Cloutier, *Department of Knitting*
John E. Foster, B.S., in C.E., *Department of Engineering*
James L. Giblin, *Department of Design*
Thomas H. Gourley, *Department of Testing*
Frank Holden, *Department of Carding and Spinning*
Francis Tripp, B.S. in Ch.E., M.S., Ch.E., *Department of Chemistry*

Instructors

John R. Barylski, *Instructor of Mechanical Drawing and Machine Shop Practice*
Adam Bayreuther, *Instructor of Machine Shop Practice*
John C. Broadmeadow, B.S., in Ch.E., *Instructor of Chemistry*
Edmund J. Dupre, B.S. in T.C., *Instructor of Chemistry*
Louis E. F. Fenaux, B.S. in Ch., M.S. in Ch., *Instructor of Chemistry*
Ferdinand P. Fiocchi, B.S., *Instructor of Chemistry*
William S. Kirk, *Instructor of Carding and Spinning*
Louis Pacheco, *Instructor of Carding and Spinning*
Antone Rodil, *Instructor of Weaving*
David Ward Saltus, B.S., M.A., *Instructor of Mathematics and Physics*
Augustus Silva, B.A., M.A., *Instructor of English*
Leo M. Sullivan, B.S., M.A., *Instructor of History and Sociology*

General Information

History

College Facilities

Student Organizations

Admissions

Graduation Requirements

Attendance Regulations

Expenses

Scholarships

Athletics

NEW BEDFORD TEXTILE INSTITUTE
1898–1948

The New Bedford Textile Institute was established and incorporated by the Board of Trustees of the New Bedford Textile School on August 1, 1895, under Chapter 475 of the Acts of 1895 of the Commonwealth of Massachusetts.

The first meeting of the Board of Trustees was held on January 27, 1896 and committees were appointed to supervise activities with relation to building, finance, machinery, education and other necessary executive functions. During the year 1897 the city of New Bedford appropriated $25,000 for the use of the school and the Commonwealth of Massachusetts appropriated an additional $25,000 the following year. With these funds the first of the present five buildings was constructed.

The first building, consisting of three stories and a basement, comprised about 22,000 square feet of floor space. During the first 25 years of the school's existence, four buildings were added; three in the form of additions and one, the recitation building, a separate structure, was connected to the others by an overpass and tunnel.

The present Institute has approximately 110,000 square feet of floor space. It is one of the most modern and best-equipped textile institutes in the world.

The first course offered by the Institute was entitled, "General Cotton Course." In 1902, two additional courses in Knitting and Chemistry were offered. A mechanical engineering department was added in 1905. This department offered courses in mechanical drawing, machine shop practice, shop mathematics, mechanics, electricity and steam. These courses at first were offered only in conjunction with the general cotton course. Later, a separate course in Junior Mechanical Engineering was offered and it was from this beginning that the present engineering department evolved.

Today the following courses of study are offered:

Degree Courses — 4 years
- Bachelor of Science in Textile Engineering
- Bachelor of Science in Textile Chemistry
- Bachelor of Science in Machine Design

Diploma Courses — 3 years
- General Textile Manufacturing
- Textile Designing
- Chemistry, Dyeing and Finishing
- Knit Goods Manufacturing

Certificate Courses — 2 years
- Textile Technology
- Drafting and Machine Shop Practice

Along with the development and expansion of the Curricula, there has been an almost complete renewal of equipment and a modernization of working facilities, *i.e.*, laboratories, lighting, etc. It is estimated that during the past ten years approximately 450,000 dollars have been spent for new equipment and modernization.

At the present time, extensive additions to the school plant are being planned. The Commonwealth of Massachusetts has recently appropriated funds toward the purchase of considerable property adjoining the institute. Engineers are now working on tentative plans for a large addition which will house more laboratories and a modern library.

The New Bedford Textile Institute is proud of its professional standing and of the recognition it receives throughout the world. This recognition is evidenced by the large number of foreign students who attend each year. The current enrollment consists of students from approximately fifteen states and twelve foreign countries. Among the latter are France, Palestine, Chile, Bolivia, Mexico, Canada, China, Haiti, Egypt, Brazil and Greece.

ENVIRONMENT

The Institute is situated in the city of New Bedford, Massachusetts. It is located along the main bus line; both the bus terminal and railroad station are within walking distance.

New Bedford, being an industrial city is an especially suitable location for a school of this type. For many years it has been recognized as the worlds largest manufacturer of fine cotton yarns and fancy fabrics. In recent years the industry of this city has become more diversified. Many new industries have found New Bedford, with its skilled manpower, particularly suited to their type of work. These industries include the world's largest manufacturers of electronic equipment along with an important manufacturer of condensers. One of the world's most important manufacturers of rubber equipment has long been established here and more recently a leading manufacturer of machine tools has migrated to this industrial city.

Textile, machine tool and rubber manufacturing or processing do not constitute the whole of New Bedford's diversified industry. This historical city has long been recognized as a leading fishing port. Each year, millions of dollars worth of fish are brought into this port, either for direct shipment or for New Bedford's large fish processing houses.

These industries, both old and new, afford the Institute, many opportunities for planned inspection trips. This, we feel, is an invaluable aid in acquainting the student with the practical phases of his academic work.

Students wishing to remain in New Bedford during the summer recess will find many opportunities to work during this period. Because of the nature of the city's industry, the student often finds work which is in his chosen field, thereby gaining practical experience as well as financial aid to meet the expenses incurred during the school year.

The civic center of New Bedford is a few minutes walk from the school grounds. Here the student will find the municipal building, the main library, veterans administration building and many other city and county buildings. Close to the civic center he will find the city's largest shopping and theater district.

COLLEGE FACILITIES

Library

The institute maintains a main library and several small departmental libraries. The present main library contains approximately 4,000 volumes, all of which pertain, for the most part, to textile manufacturing, chemistry and general engineering. Present plans call for a library in the new addition to house a minimum of 15,000 volumes.

Each of the smaller departmental libraries contain volumes pertaining to the work of each particular department. Included among these are bound volumes of some twenty publications which are received monthly. These volumes make a very important reference for those students engaged in research.

The students also have access to the New Bedford Public Library. This library contains a very comprehensive collection of about 250,000 volumes. All courses offered at the institute require the student to make full use of all these facilities.

Bookstore

The institute maintains a bookstore on the second floor of the administration building. This store is operated on a non-profit basis. All supplies, books, etc., are sold at very little above cost — this difference covering the cost of maintaining the store.

The student will find all the supplies he needs in this bookstore. Although the student is not required to purchase these supplies, he is advised not to buy elsewhere until he is certain those things he will buy are approved by the person in charge of the course in which the equipment is to be used. All supplies in the book store are approved.

STUDENT ORGANIZATIONS

Student Council. This is a body consisting of elected representatives from each of the twelve classes, and one faculty representative. Its purpose is to study problems of the student body, class activities and the various matters of student

organizations. This body represents the student body in proposing changes or making recommendations to the college authorities.

Interfraternity Council. An organization consisting of members representing each of the men's and women's fraternities. One member is chosen from the faculty. This body determines the rushing season and the rules which control rushing. It has charge of enforcement of all institute rules regarding membership in fraternities.

Fraternities. There are three national, professional and social men's fraternities and one women's sorority. These are:

Phi Psi Delta Kappa Phi Sigma Tau Phi

The women's sorority is: Phi Zeta Sigma. These fraternities maintain chapter rooms and all play a major part in the social and athletic affairs of the institute.

Athletic Council. This is a body consisting of representatives of the Board of Trustees and representatives of the faculty. The purpose of this group is to determine all athletic policies. The athletic council determines the budgets for each sport and all schedules must meet their approval.

ADMISSIONS

Entrance Requirements for All Degree Courses

The Institute will accept for admission to the freshman class graduates of recognized high schools having 15 high school credits.

Degree Courses

Subjects required for entrance

1. Prescribed 7 units
   - English — 3 units
   - Algebra — 1 unit
   - Geometry — 1 unit
   - U. S. History — 1 unit
   - Lab. Science — 1 unit
2. Optional units
   - Mathematics — unlimited
   - Science — unlimited
   - Social Studies — not more than three
   - Foreign Language — not more than three
   - Other high school credits — varied and subject to evaluation by the faculty committee on admissions

Diploma and Certificate Courses

The number of students admitted to these courses will be limited according to the number of degree students admitted.

Requirements for entrance:

All applicants must have a high school diploma or its equivalent.

Subjects required for entrance will be determined by the courses to be taken.

All applicants must present with their application a certified transcript of their secondary school record.

Advance Standing

Applicants will be admitted to advance standing if the following conditions are fulfilled:

The Faculty Committee on Admission must be satisfied that his secondary school record meets the entrance requirements of the institute.

He must present a certified transcript of the work completed at the previous college.

He must have completed all work required of those classes previous to the class in which he wishes to enter.

He must show that work completed at the previous institution is equivalent to that given at this institution.

A minimum of two years resident study must be completed at this institution in order for the applicant to receive a degree.

GRADUATION REQUIREMENTS

1. Requirements

The requirements for graduation are the satisfactory completion of all courses in one of the prescribed curricula of the Institute, a total of not less than 160 term credits, with not fewer than 160 honor points.

2. Grading System

The following grading system shall be used in determining the above:

A. Excellent, 90–95
B. Good, 80–90
C. Passing, 70–79
D. Passing without credit points, 60–69
F. Failure, below 60
Abs. Absent from examination
Inc. Incomplete. Cannot be given unless student has average "C" on the course
Wi. Withdrew officially from course
"Dropped." Dropped without permission or after final date

3. Explanations

a — A student absent from a final examination shall not be allowed to make up the examination until the instructor receives a notice from the Dean indicating that the absence was excused. An unexcused absence from examination becomes "Fa" on the students record.

b — "Incomplete" indicates that the student has had an average of "C" or above, but has not completed the work specified for the course, has been allowed an extension of time by the instructor. The grade of "Incomplete" must be replaced by a regular grade the next time the course is given during the student's residence, or the "Incomplete" will become a "Failure" "Fi."

c — A grade of "Fd" is posted if the instructor reports a student has dropped a course for which he was scheduled. The student may not have dropped the course officially or he may have dropped it after the final date for dropping courses.

d — A "Failure" may be made up only by repeating the subject. Such a repeat course may be regularly scheduled on the students roster.

4. Credits and Averages

The Institute operates on the credit point system. Term credits represent the number of hours of work completed successfully; honor points are determined by the grade earned: (a) 3 honor points for each credit hour; (b) 2 honor points for each credit hour; (c) 1 honor point for each credit hour. In order to be graduated, each student is required to have a minimum number of honor points equal to the number of credit hours required for graduation in his curriculum.

a — The scholastic average of each student is determined by the following formula:

$$\frac{\text{(Net honor points minus the number of hours failed) 10}}{\text{Credit hours earned plus the number of hours failed}} + 65$$

b — Transfer credits and points are not included in scholastic averages.

c — Grades of absent count as failures. Grades of incomplete do not count at all.

d — The roster of the student's courses, duly approved, and copies filed with the Dean of the Institute, must contain every subject for which the student is allowed credit.

e — No student may exceed a load of 24 hours without the approval of the Dean of the Institute, and no student may schedule less than 15 hours without the permission of the faculty committee. In computing student loads, non-credit courses are included.

5. Attendance Regulations

a — *Absence*

(1) Being absent from any ONE class shall constitute ONE absence.
(2) After THREE absences from any one class, the Institute office shall

be notified by the head of the department in which the absence occured.

(3) Any absence shall be considered an unexcused absence unless excused by the Dean.

(4) Each THREE unexcused absences from any one class shall automatically reduce the earned term mark for that subject, ONE grade. Example: An "A" will drop to a "B."

(5) Any recorded unexcused absence shall be corrected to an excused absence on the written order of the Dean.

(6) In case of an absence from any examination and/or quiz period, no student shall be permitted to take a makeup one without written permission of the Dean.

(7) When THREE UNEXCUSED ABSENCES are reported to the office, any student so reported shall be subject to such disciplinary action as is deemed necessary by the Dean.

(8) Only the Dean shall have authority to grant excuses.

b — *Tardiness*

(1) Entering any lecture, laboratory or shop period after the hour that class was scheduled shall constitute a tardiness.

(2) Entering any lecture, laboratory or shop period which is more than ONE THIRD in progress shall constitute an absence.

(3) Three tardy arrivals in any one class shall constitute an absence from that class.

c — *Dismission*

Under certain circumstances, an instructor may dismiss any student or students from any class, if in the instructors opinion, the student or students work is satisfactorily completed and/or his or their presence is not conducive to the best efforts and interests of the other students in the class or group.

EXPENSES, TUITION AND FEES

The tuition for all courses varies according to the residential status of the student. For residents of Massachusetts, the rate is one hundred dollars per year, for residents of other states, the fee is two hundred and fifty dollars. The rate for all foreign students is five hundred dollars.

All students pay a registration fee of two dollars and fifty cents.

Students majoring in chemistry pay a laboratory fee of ten dollars. Those students majoring in Textile Engineering or machine design pay a laboratory fee of five dollars. In addition to these laboratory fees, all non-residents of Massachusetts must pay a ten dollar fee for chemicals.

All students are assessed a $15.00 athletic fee.

The cost of books and supplies varies with the type of course and the year in which it is taken. This cost is more emphasized during the first year and less emphasized during the remainder of the instructional program. This cost varies from approximately fifty dollars to one hundred dollars per year depending, of course, on the aforementioned factors.

Under prevailing conditions it is impossible to estimate the living costs for students. There are many variable factors and much depends on the standard of living of the student.

ENDOWMENTS AND SCHOLARSHIPS

The New Bedford Textile Institute is wholly supported by the Commonwealth of Massachusetts and has no endowments.

There are four scholarships offered and controlled by the school authorities. There are also available about ten other scholarships which are controlled elsewhere. Those which are controlled by the school authorities are as follows:

William Firth Scholarship Fund:

A 3,000 dollar fund deposited in the New Bedford Five Cents Savings Bank. Only the interest of this fund may be used for scholarships.

The Manning Emery, Jr., Scholarship Fund:

A 3,000 dollars fund deposited in the New Bedford Institution for Savings Bank. Only the interest may be used for scholarships.

The Neuss, Hesslein & Co. Scholarship Fund:

A 5,000 dollar fund set up by the Neuss, Hesslein and Co. of New York City. This is a recent contribution and no action has yet been taken in regard to the scholarships to be awarded.

Everett H. Hinckley Scholarship:

This is an annual award of 100 dollars made by the New York Chapter of the New Bedford Textile Institute Alumni Association. It is offered in memory of Everett H. Hinckley, former head of the Institute's Chemistry Department.

The other scholarships which are offered and controlled elsewhere are offered by the New England Textile Foundation and the Berkshire Fine Spinning Company.

AWARDS

The National Assocation of Cotton Manufacturers Medal

The National Association of Cotton Manufacturers offers a medal to be awarded each year to the student in the Textile Engineering graduating class who shows the greatest proficiency in scholarship. This is determined by an examination of all students records and the medal is awarded to that student having the highest average according to the credit point system of determining averages.

The competition for this medal is also open to all evening students who have completed the full course of study required for a degree in Textile Engineering. The association offering the medal has made it a condition of the award that at least four members of the graduating class be eligible to the competition.

The William E. Hatch Key

This award is made to the member of the freshman class of Textile Engineering, who has the highest credit point average for the year. It is awarded by the Alumni Association of the Institute, to commemorate the day of William E. Hatch's retirement from the presidency of the Institute.

The Morris H. Crompton Award

This key is awarded to the student of the graduating class of Machine Design, who has the highest four year average according to the credit point system of determining averages. It is awarded in honor of Morris H. Crompton, former head of the Department of Engineering.

The Fred E. Busby Award

This key is awarded by the Alumni Association to the student of the graduating class of chemistry, who has attained the highest four year average according to the credit point system. It is presented in honor of Fred E. Busby, former head of the Department of Chemistry.

ATHLETICS

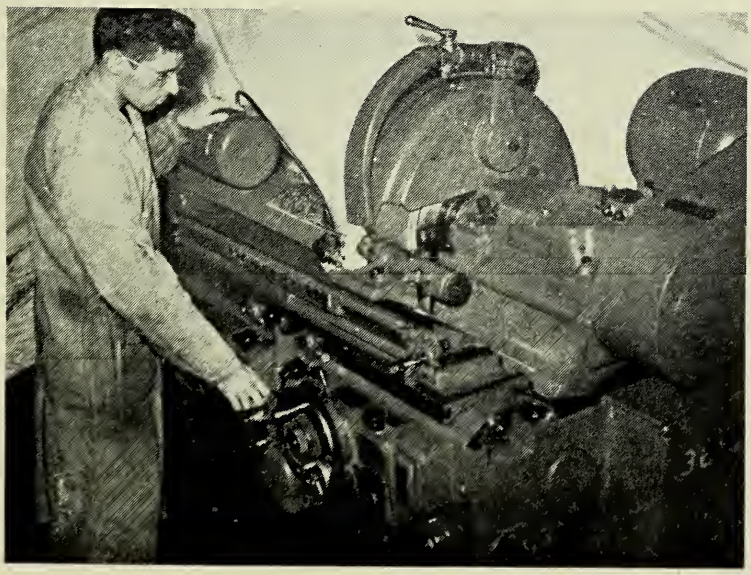
The New Bedford Textile Institute, its administration and faculty, approve and encourage a full program of intercollegiate and intramural athletics. The Athletic Council, in cooperation with the student council plans, and provides for, the fullest possible program of inter-class and inter-fraternity sports.

Varsity teams include football, baseball, basketball and soccer. The Institute schedules for its games, most of the recognized colleges of its athletic class. These schedules include many varied and interesting road trips.

The Faculty Committee on Rules and Regulations strictly enforce the eligibility code for membership on athletic teams. This code is based on the Institute's credit point system of determining averages. Under this system the student must have an average of 65% or better in order to take an active part in athletics.

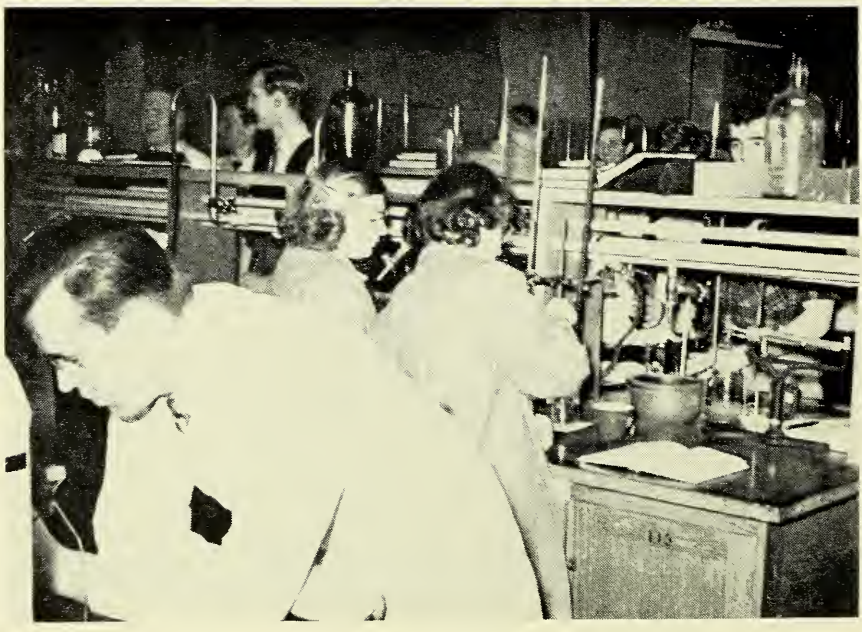
Designing

Microscopy

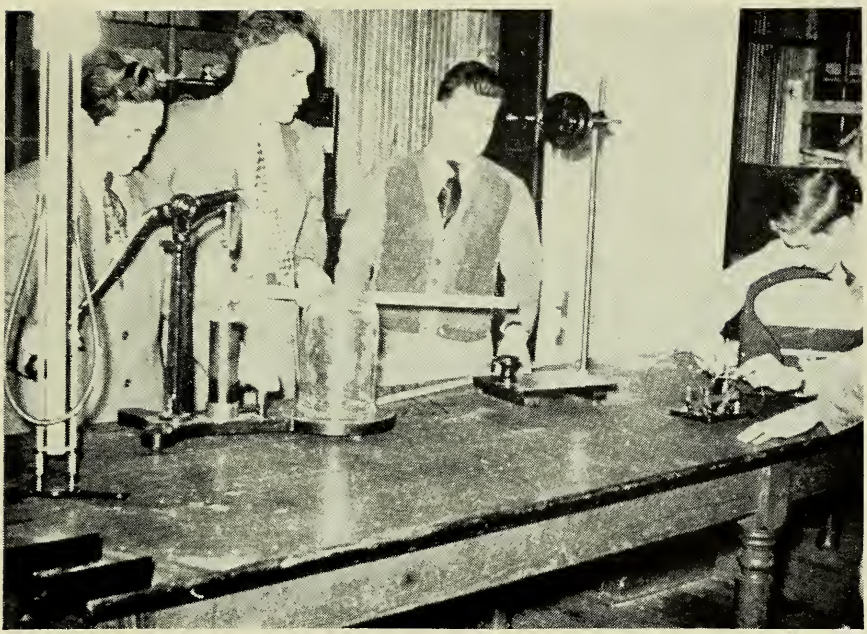


Machine Shop Practice

Weighing

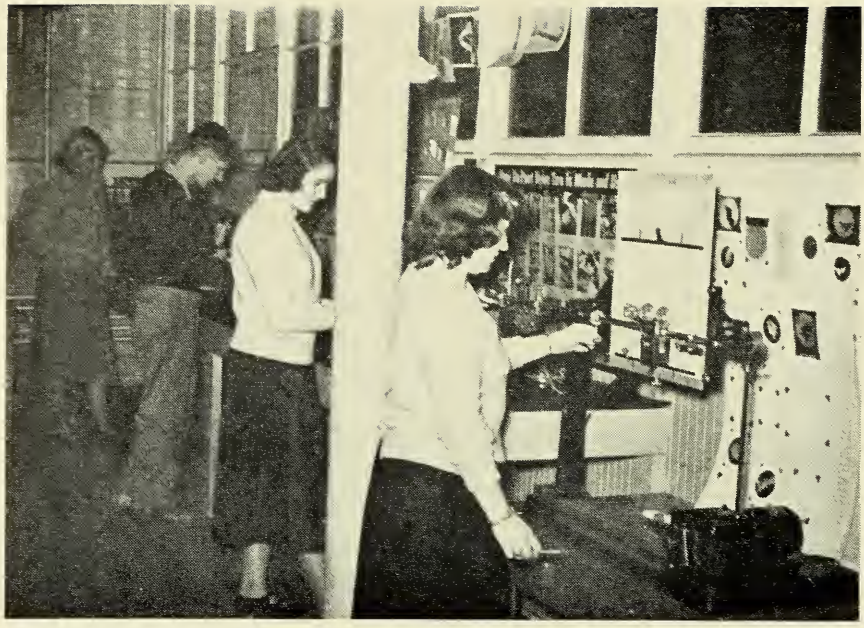


Chemistry Laboratory

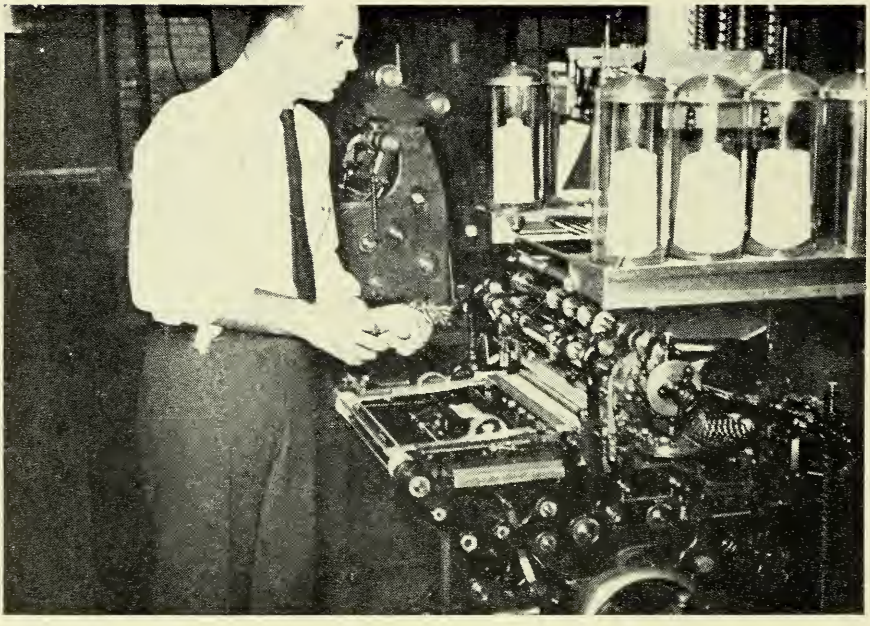


Physics Laboratory

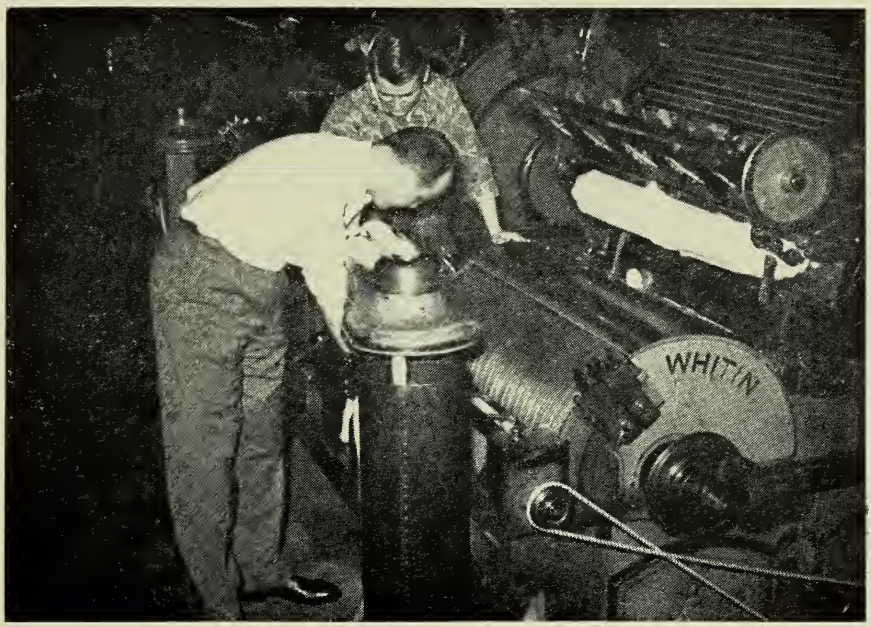
Engineering Drawing



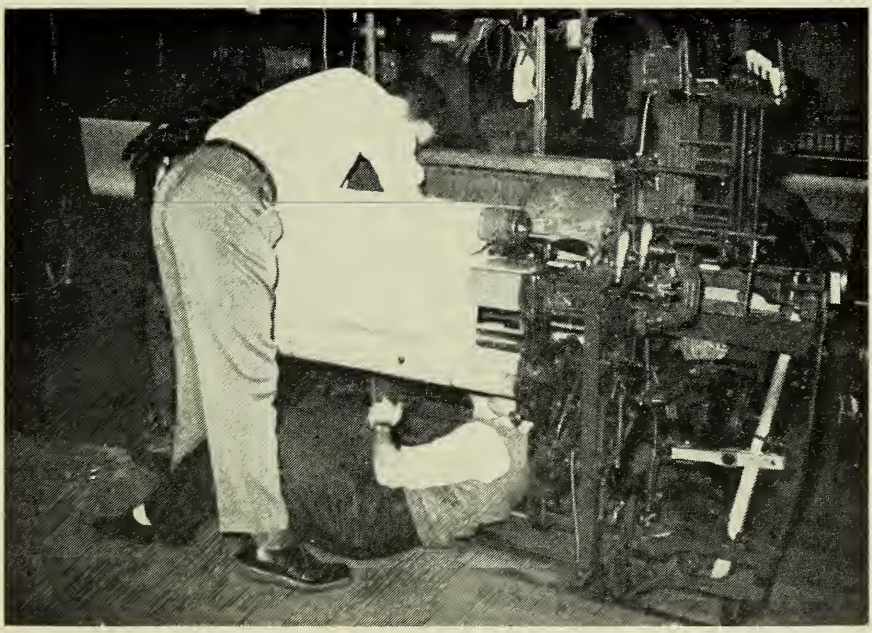
Rayon Testing



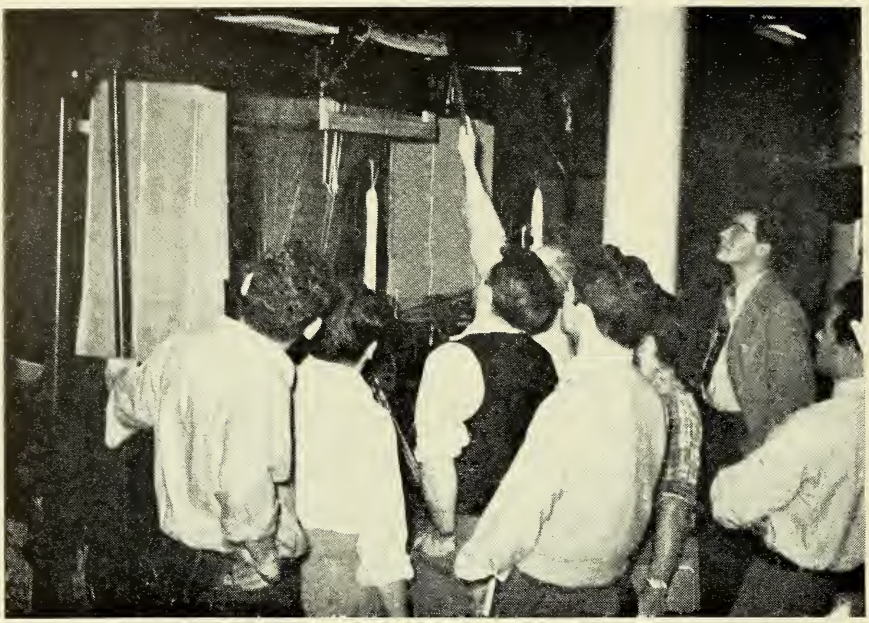
Knitting



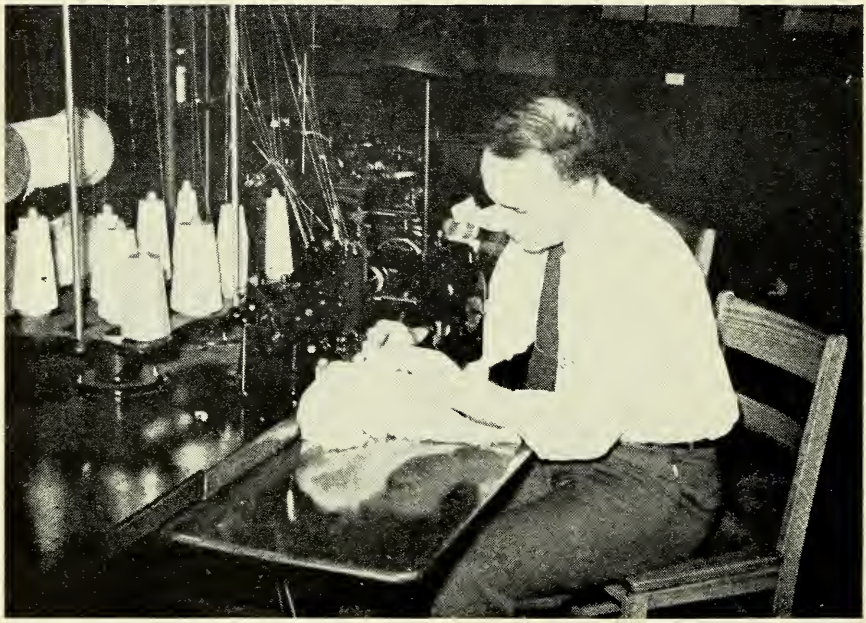
Carding



Weaving

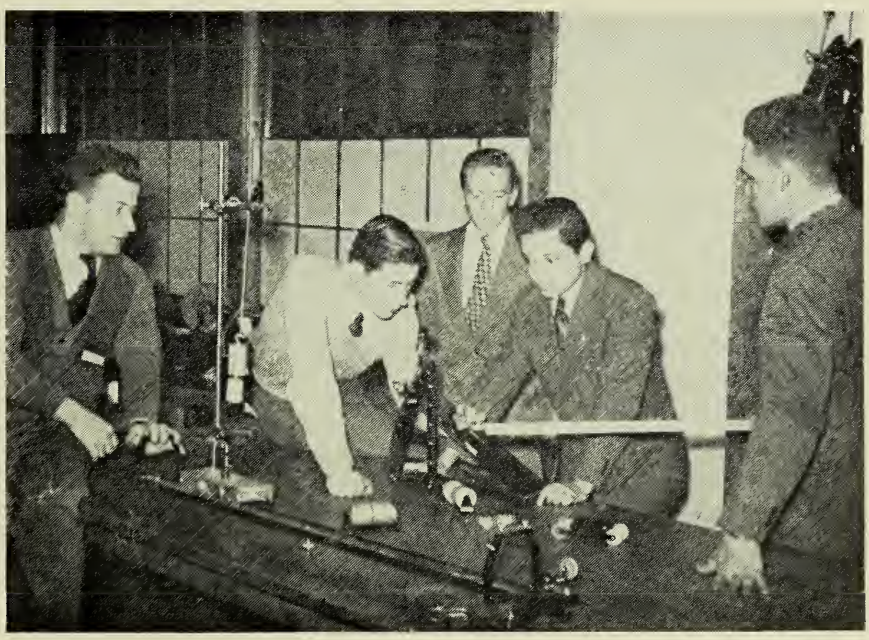


Jacquard



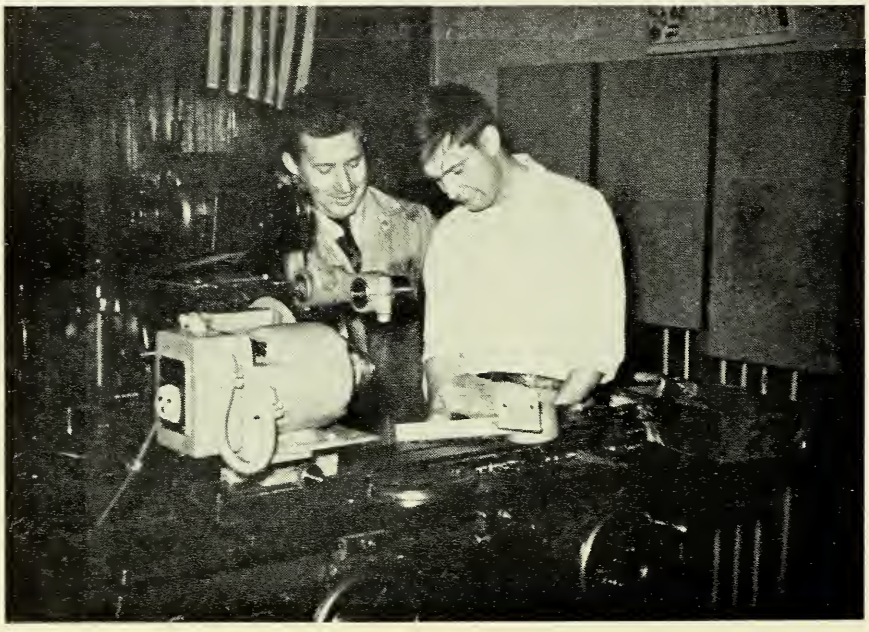
Power Sewing

Physics Lecture



Physics Laboratory

English Class



Machine Shop

COURSES OF STUDY

Degree Courses — 4 Years

1. Textile Engineering
2. Textile Chemistry
3. Machine Design

Diploma Courses — 3 Years

1. General Textile Manufacturing
2. Textile Designing
3. Chemistry, Dyeing and Finishing
4. Knit Goods Manufacturing

Certificate Courses — 2 Years

1. Textile Technology — primarily for girls
2. Drafting and Machine Shop Practice

Evening Courses

1. Carding and Spinning
2. Weaving and Designing
3. Chemistry and Dyeing

Bachelor of Science
Major — Textile Engineering

This course, of four years duration, is especially designed to equip the student with the technical and practical background necessary for one who is to enter one of the various fields of textile manufacturing, *i.e.*, textile engineering, fabric production, converting, selling, testing, factoring, etc.

Many years of experience in the field of textile education have resulted in a systematically arranged course of study. In order that the student will thoroughly understand and intelligently apply the principles involved in modern manufacture of fabrics from both natural and man made fibres, he will, in his first two years, pursue these courses of study which are basic to all engineering, *i.e.*, mathematics, chemistry, physics, engineering drawing, English composition, etc. In the interim he is gradually introduced to the more elementary phases of fabric construction.

He is thoroughly instructed in both the theoretical and practical phases of picking, carding, drawing and weaving. This work begins with elementary stages in the first year and continues through four years to the most advanced stages. Designing and cloth analysis are introduced during the second year and the scope is gradually broadened through the third and fourth years. The blending of natural and man-made fibres of cotton, wool, worsted, rayons, etc., is considered. During the fourth year the student studies the processing of rayons, nylon, vinyon and other continuous filaments.

The student must complete other courses of study necessary for one who would compete successfully in the textile field. Among these are thorough courses in knitting, textile dyeing, merchandising, economics, applied electricity, machine tool laboratory practice and modern industrial plant construction.

A review of the curriculum will reveal a rigid four year schedule. However, past experience and the results achieved by our graduates have warranted such a schedule and have shown that its successful completion is well within the grasp of those who will succeed.

Bachelor of Science
Major — Textile Engineering

First Year

Course Name	Cl.	Lab.	Cr.
First Term			
Mathematics M-1A & 2 (Alg. & Trig.)	4	0	4
Textile Chemistry TC-101 (Inorg.)	2	4	4
English E-1 (composition)	3	0	3
Engineering Drawing ED-1	0	4	2
United States History H-1	2	0	2
Textile Engineering TE 1, 7 & 9 (Cotton Yarn Preparation, Yarn Calculations & Weaving)	5	4	7
Engineering EG-20 (Mach. tool Lab.)	0	2	1
Cl. hrs. 30; Cr. hrs. 23			

Course Name	Cl.	Lab.	Cr.
Second Term			
Mathematics M-1B & 3 (Algebra & Analytic Geom.)	4	0	4
Textile Chemistry TC-107 (Dyeing)	2	4	4
English E-1	3	0	3
Engineering Drawing ED-1	0	4	2
United States History H-1	2	0	2
Textile Engineering TE-2, 8A & 10A (Cotton yarn prep.; warp prep.; weaving)	5	4	7
Engineering Eg-20 (Mach. tool lab.)	0	2	1
Cl. hrs. 30; Cr. hrs. 23			

Second Year

First Term			
Physics P-1	3	2	4
Mathematics M-4A (Calculus)	2	0	2
English E-2 (Tech. reports)	2	0	2
Textile Chemistry TC-109 (Dyeing)	1	4	3
Textile Engineering TE-3A, 8 & 10 (Cotton Yarn Prep; Warp Prep; and weaving)	4	5	6.5
Textile Designing TD-1, 9 & 17 (Deisgning, Cloth Analysis and Hand Loom)	2	4	4
Cl. hrs. 29; Cr. hrs. 21.5			

Second Term			
Physics P-2	3	2	4
Mathematics M-4B (Calculus)	2	0	2
English E-3 (Business Writing)	2	0	2
Textile Engineering TE-3, 4 11 & 14 (Cotton Yarn prep.; Advanced Calculations; Weaving and Cotton Classing)	4	7	7.5
Textile Chemistry TC-109 (Dyeing)	1	4	3
Textile Designing TD-2, 10 & 17 (Hand loom, designing and cloth analysis)	2	4	4
Cl. hrs. 31; Cr. hrs. 22			

Third Year

First Term			
Economics EC-1	2	0	2
Textile Designing TD 3, 7 & 11 (Cloth analy.; designing & color)	5	3	6.5
Textile Engineering TE5A & 11 (Weaving; Combing & Twisting)	2	7	5.5
Knitting K-1	1	2	2
Engineering Eg-5 (Electricity)	2	0	2
Engineering Drawing ED-3	0	2	1
Textile Technology TT-3 (Microscopy)	1	2	2
Cl. hrs. 29; Cr. hrs. 21			

Second Term			
Engineering Eg-5 (Electricity)	2	0	2
Sociology S-1	2	0	2
Economics Ec-2	2	0	2
Textile Designing TD 4 & 12 (Designing & Cloth analysis)	4	2	5
Textile Engineering TE 5B, 12 & 13 (Weaving; combing and Twisting)	2	4	4
Knitting K-4	1	1	1.5
Textile Technology TT-1, 2 and 3 (Fabric testing and Microscopy)	1	6	4
Cl. hrs. 27; Cr. hrs. 20.5			

FOURTH YEAR

COURSE NAME	Cl.	Lab.	Cr.
FIRST TERM			
Textile Chemistry TC-118 (Finishing)	1	4	3
Knitting K-5	1	1	1.5
Textile Engineering TE-13A & 17A (Weaving and rayon processing)	1	7	4.5
Textile Designing TD-5 & 13 (Cloth Analysis & Designing)	2	3	3.5
Textile Engineering TE-11A (Applied Research)	0	6	3
Textile Engineering TE-15A (Merchandising)	2	0	2
Cl. hrs. 28, Cr. hrs. 17.5			

COURSE NAME	Cl.	Lab.	Cr.
SECOND TERM			
Textile Chemistry TC-118 (Finishing)	1	4	3
Knitting K-8	1	1	1.5
Textile Engineering TE-13B & 17B (Weaving and Rayon Processing)	1	6	4
Textile Designing TD-6 & 14 (Cloth Analysis & Designing)	3	3	4.5
Textile Engineering TE-11B (Applied Research)	0	6	3
Engineering Eg-17 (Mill Eng.)	1	2	2
Cl. hrs. 29; Cr. hrs. 18			

Total Cr. Hrs. 149 hrs.

Bachelor of Science
Major — Textile Chemistry

Through a well balanced program of training in the fundamental sciences and the humanities, together with the practical application of the principles involved, this department trains students for careers in the chemical industries, particularly in the field of textile chemistry, dyeing and finishing.

The curriculum provides a sound fundamental training in the fields of inorganic, organic, analytical and textile chemistry. Courses in mathematics, physics, history, economics, sociology, merchandising and technical writing yield a well-rounded program which prepared the student for industrial professions or for graduate training.

Bachelor of Science
Major — Textile Chemistry

FIRST YEAR

COURSE NAME	Cl.	Lab.	Cr.
FIRST TERM			
Mathematics M-1A & 2 (Alg. & Trig.)	4	0	4
Chemistry Ch-1 (Inorganic Chem.)	3	6	6
English E-1	3	0	3
Engineering Drawing ED-1A	0	4	2
United States History H-1	2	0	2
Introductory Survey of Textiles	1	0	1
Textile Technology TT-3	1	2	2
Cl. hrs. 26; Cr. hrs. 20			

COURSE NAME	Cl.	Lab.	Cr.
Second Term			
Engineering Drawing ED-2	0	4	2
Mathematics M-1B & 3 (Alg. & Anal. Geometry)	4	0	4
Textile Chemistry TC-1 (Inorganic Chem.)	3	0	3
Textile Chemistry TC-2 (Qual. Anal.)	2	4	4
English E-1	3	0	3
Textile Technology TT-3 (Microscopy)	1	2	2
United States History H-1	2	0	2
Cl. hrs. 25; Cr. hrs. 20			

Second Year

Course Name	Cl.	Lab.	Cr.
First Term			
Physics P-1	3	2	4
Mathematics M-4A (Calculus)	2	0	2
English E-2 (Tech. reports)	2	0	2
Textile Chemistry TC-3 (Quan. Anal.)	2	4	4
Textile Chemistry TC-13 (Organic)	1	4	3
Textile Chemistry TC-7 (Elem. Dyeing)	2	4	4
Textile Designing TD-16 (Fabric Classification)	1	1	1.5
Cl. hrs. 28; Cr. hrs. 20.5			
Second Term			
Physics P-2	3	2	4
Mathematics M-4B (Calculus)	2	0	2
English E-3 (Business writing)	2	0	2
Textile Chemistry TC-4 (Quan. Analysis)	2	4	4
Textile Chemistry TC-8 (Elem. Dyeing)	1	4	3
Textile Chemistry TC-14 (Organic)	1	4	3
Textile Designing TD-16 (Fabric Classification)	1	1	1.5
Cl. hrs. 27; Cr. hrs. 19.5			

Third Year

First Term			
Economics Ec-1	2	0	2
Textile Chemistry TC-15 (Organic)	2	6	5
Textile Chemistry TC-9 (Adv. Dyeing)	2	6	5
Textile Chemistry TC-5 (Advanced Quan. Analysis)	1	6	4
Knitting K-1	1	0	1
Textile Engineering TE-14 (Cotton Classing)	1	1	1.5
Textile Technology (Cotton Mfg.)	1	0	1
Cl. hrs. 29; Cr. hrs. 19.5			
Second Term			
Textile Technology TT-1	1	2	2
Textile Designing TD-7 (Color)	1	1	1.5
Sociology S-1	2	0	2
Knitting K-5	1	0	1
Economics Ec-2	2	0	2
Textile Chemistry TC-20 (Printing)	1	6	4
Textile Chemistry TC-10 (Advanced Dyeing II)	2	4	4
Textile Chemistry TC-6 (Advanced Quan. Anal.)	1	6	4
Cl. hrs. 30; Cr. hrs. 20.5			

Fourth Year

First Term			
Textile Chemistry TC-16	1	6	4
Textile Chemistry TC-18 (Finishing)	1	6	4
Textile Chemistry TC-11 (Adv. Dyeing II)	1	6	4
Textile Chemistry TC-21 (Thesis)	0	7	3.5
Textile Chemistry TC-22 (Microbiology)	1	4	3
Textile Engineering TE-15A (Merchandising)	2	0	2
Cl. hrs. 35; Cr. hrs. 20.5			
Second Term			
Textile Chemistry (Colloid)	1	2	2
Textile Chemistry TC-17	1	6	4
Textile Chemistry TC-19 (Finishing)	1	6	4
Textile Chemistry TC-12 (Adv. Dyeing IV)	1	6	4
Textile Chemistry TC-21 (Thesis)	0	7	3.5
Knitting K-10	1	0	1
Textile Technology TT-2 (Rayon Testing)	0	2	1
Cl. hrs. 34; Cr. hrs. 19.5			
Total Cr. Hrs. 160 hrs.			

Bachelor of Science
Major — Machine Design

Due to the increased demand for men skilled in the field of machine design, the original two-year course in Junior Mechanical Engineering has been increased to a four-year course. The course has been greatly broadened in scope and includes many new academic and technical subjects. The addition of these new subjects, we believe, will give the student the necessary background for one who will compete in the field of Machine Design.

The student is trained thoroughly in the field of mathematics, beginning with a review of high school algebra and continuing through a practical course in applied calculus. These courses in mathematics, particularly the course in trigonometry, are designed to meet the problems ordinarily encountered by one engaged in the various fields of engineering.

Full courses in mechanical drawing, geometry of engineering drawing, mechanisms, jig, fixture and tool design are undertaken. As an aid in the better understanding and application of the principles involved in these courses, other subjects such as applied engineering mechanics, strength of materials, metallurgy, etc., are included in the curriculum.

In the past few years we have received several requests for men skilled not only in machine design but who also had a good basic knowledge of textile machinery. With this in mind we have arranged a special course in the textile division of the school, to be pursued by all taking the course in machine design. This, we believe, will train the student in the general field of machine design and also in the particular field of textile machine design.

As in the past, the student will make frequent trips to a wide variety of industrial plants, thereby gaining a first hand knowledge of actual working conditions and methods.

Bachelor of Science
Major — Machine Design

First Year

Course Name	Cl.	Lab.	Cr.
First Term			
Mathematics M-1A & 2 (Alg. & Trig.)	5	0	5
Textile Chemistry Ch-101	2	2	3
English E-1	3	0	3
Engineering Drawing ED-1	0	6	3
Engineering Eg-20 (Mach. tool lab.)	0	4	2
Engineering Eg-20A (Shop theory & Calc.)	1	0	1
United States History H-1	2	0	2
Textile Technology TT-5 (Cotton Manufacture)	0	2	1
Cl. hrs. 27; Cr. hrs. 20			

Course Name	Cl.	Lab.	Cr.
Second Term			
Mathematics M-1B & 3 (Alg. & Anal. Geom.)	2	0	2
	3	0	3
Textile Chemistry TC-101	2	2	3
English E-1	3	0	3
Engineering Drawing Ed-2	0	6	3
Engineering Eg-20A (Shop Theory & Calc.)	1	0	1
United States History H-1	2	0	2
Textile Technology TT-5 (Cotton Manufacture)	0	2	1
Engineering Eg-20 (Mach. tool lab.)	0	4	2
Cl. hrs. 27; Cr. hrs. 20			

Second Year

First Term			
Physics P-1	3	2	4
Mathematics M-4A (Calculus)	2	0	2
Engineering Drawing ED-3	0	6	3
English E-2 (Tech. reports)	2	0	2
Engineering Eg-21 (Mach. tool Lab.)	0	6	3
Engineering EG-21A (Shop theory & Calculation)	2	0	2
Engineering Eg-1A (Heat & Power)	2	2	3
Cl. hrs. 27; Cr. hrs. 19			

Second Term			
Physics P-2	3	2	4
Mathematics M-4B (Calculus)	2	0	2
Engineering Drawing Ed-4 (Descriptive Geometry)	2	4	3
English E-3 (Business Writing)	2	0	2
Engineering Eg-21 (Mach. tool lab.)	0	6	3
Engineering Eg-21B (Shop Theory & Calculation)	2	0	2
Engineering Eg-1B (Heat & Power)	2	2	3
Textile Technology TT-3 (Microscopy)	0	2	1
Cl. hrs. 29; Cr. hrs. 20			

Third Year

Course Name	Cl.	Lab.	Cr.
First Term			
Sociology S-1	2	0	2
Economics EC-1	2	0	2
Engineering Eg-2A (Mechanics)	3	0	3
Engineering Eg-4 (Metallurgy)	1	0	1
Engineering Eg-5 (Elec. circuits & machines)	3	2	4
Engineering Eg-7A (Mechanisms)	2	4	4
Engineering Eg-22 (Mach. tool Lab.)	0	4	2
Knitting K-1 (Machinery)	1	1	1.5
Cl. hrs. 25; Cr. hrs. 19.5			

Course Name	Cl.	Lab.	Cr.
Second Term			
Economics Ec-2	2	0	2
Engineering Eg-2B (Mechanics)	3	0	3
Engineering Eg-3 (Strength of Materials)	3	0	3
Engineering Eg-7B (Mechanisms)	2	4	4
Engineering Eg-8 (Tool inspection)	1	3	2.5
Knitting K-1 (Machinery)	1	1	1.5
Engineering Eg-6 (pattern making)	1	3	2.5
Engineering Drawing ED-8 (Electrical Drafting)	1	4	3
Cl. hrs. 29; Cr. hrs. 21.5			

Fourth Year

First Term			
Engineering Eg-9 (Jig, Fixture & Tool Design)	2	12	8
Engineering Eg-11 (contracts)	1	0	1
Engineering Eg-23 (Mach. tool lab.)	0	8	4
Engineering Eg-10A (Machine design)	2	10	7
Cl. hrs. 35; Cr. hrs. 20			

Second Term			
Engineering Eg-10B (Machine Design)	2	12	8
Engineering Eg-23A (Machine tool lab.)	0	8	4
Engineering Eg-12 (Industrial Plants)	1	2	2
Engineering Eg-15 (Thesis)	0	12	6
Cl. hrs. 37; Cr. hrs. 20			

Total Cr. Hrs. 160 hrs.

General Textile Manufacturing
Diploma — 3 years

First Year

First Term	Hrs. per week
Pickers and Cards TE-1	4½
Weaving TE-9	6½
Cloth Analysis TD-9	3
Designing TD-1	1½
Hand Loom TD-17	1½
Mechanics E-1	1
Mechanical Drawing E-3	3½
Slide Rule E-2	1
Chemistry TC-101	6
Yarn Calculations TE-7	1½
Microscopy TT-3	1½
Rayon Testing TT-2	3½
	35

Second Term	Hrs. per week
Cards and Drawing Frames TE-2	4½
Weaving TE-10	6½
Warp Preparation TE-8	3½
Designing TD-2	1½
Cloth Analysis TD-10	3
Hand Loom TD-17	1½
Mechanical Drawing E-3	3½
Elementary Dyeing TC-107	6
Microscopy TT-3	2
Rayon Testing TT-2	3
	35

SECOND YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Roving and Spinning Frames TE-3	6½	Advanced Calculations TE-4	2
Weaving TE-10	4½	Applied Research TE-6	3
Designing TD-3	3	Cotton Classing TE-14	2
Cloth Analysis TD-11	3	Weaving TE-11	4½
Machine Drawing E-4	2½	Designing TD-4	3
Machine-shop Practice E-10	3½	Cloth Analysis TD-12	3
Steam Engineering E-13	1	Machine-shop Practice E-10	3½
Advanced Dyeing TC-109	5	Machine Drawing E-4	2½
Microscopy TT-3	2	Steam Engineering E-13	1
		Physical Testing TT-1	1½
		Advanced Dyeing TC-109	5
	31		31

THIRD YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Combing and Twisting TE-5	8½	Applied Research TE-6	8
Weaving TE-11	6½	Weaving TE-12, 13	6½
Designing TD-5	3½	Designing TD-6	3½
Color TD-7	2	Color TD-8	2
Cloth Analysis TD-13	1½	Cloth Analysis TD-14	3
Electricity E-16	1½	Mill Engineering E-17	3
Knitting K-10	3	Textile Finishing TC-118	2
Rayon Processing TE-17	3	Rayon Processing TE-17	2
Merchandising TE-15	1½	Merchandising TE-15	1½
Economics TE-16	1½	Economics TE-16	1½
	32½		33

Textile Designing Course
Diploma — 3 years

FIRST YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Pickers and Cards TE-1	3	Cards and Drawing Frames TE-2	3½
Weaving TE-9	6½	Weaving TE-10	6½
Cloth Analysis TD-9	3	Warp Preparation TE-8	3½
Designing TD-1	3	Designing TD-2	2½
Hand Loom TD-17	1½	Cloth Analysis TD-10	3
Mechanics E-1	1	Hand Loom TD-17	1½
Slide Rule E-2	1	Mechanical Drawing E-3	3½
Mechanical Drawing E-3	3½	Elementary Dyeing TC-107	6
Yarn Calculations TE-7	1½	Microscopy TT-3	2
General Chemistry TC-101	6	Rayon Testing TT-2	3
Microscopy TT-3	1½		
Rayon Testing TT-2	3½		
	35		35

Second Year

First Term	Hrs. per week	*Second Term*	Hrs. per week
Roving and Spinning Frames TE-3	3½	Advanced Calculations TE-4	2
Weaving TE-10	6½	Cotton Classing TE-14	1½
Designing TD-3	3½	Weaving TE-11	8
Color TD-7	2	Designing TD-4	3
Cloth Analysis TD-11, 12	4½	Color TD-8	2
Rayon Testing TT-2	3	Cloth Analysis TD-13	5
Machine Drawing E-4	2	Machine Shop Practice E-10	3½
Machine-shop Practice E-10	3½	Machine Drawing E-4	2
Steam Engineering E-13	1	Steam Engineering E-13	1
Advanced Dyeing TC-109	5	Physical Testing TT-1	1½
		Advanced Dyeing TC-109	5
	34½		34½

Third Year

First Term	Hrs. per week	*Second Term*	Hrs. per week
Weaving TE-12	6	Weaving TE-12	6½
Jacquard Designing TD-5	6½	Jacquard Designing TD-6	8
Cloth Analysis TD-14	8	Cloth Analysis TD-14	5
Knitting K-10	2	Styling TD-15	3½
Color TD-8	2	Mill Engineering E-17	3
Machine-shop Practice E-10	3½	Merchandising TE-15	1½
Electricity E-16	1½	Economics TE-16	1½
Merchandising TE-15	1½	Physical Testing TT-1	2
Economics TE-16	1½	Textile Finishing TC-118	2
	32½		33

Chemistry, Dyeing and Finishing
Diploma — 3 years

First Year

First Term	Hrs. per week	*Second Term*	Hrs. per week
Mechanics E-1	1	Mechanical Drawing E-3	3½
Mechanical Drawing E-3	4½	Machine-shop Practice E-10	3
Inorganic Chemistry TC-1	9	Qualitative Analysis TC-2	6
Designing and Cloth Analysis TD-1	3½	Microscopy TT-3	3½
Slide Rule	1	Inorganic Chemistry	3
Microscopy TT-3	3½		
	19		19

SECOND YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Color TD-7	2	Color TD-8	2
Machine Drawing E-4	2	Machine-shop Practice E-10	3
Machine-shop Practice E-10	3	Machine Drawing E-4	2
Steam Engineering E-13	1	Steam Engineering E-13	1
Quantitative Analysis TC-3	6	Dyeing TC-8	5
Organic Chemistry TC-13	5	Organic Chemistry TC-14	5
Dyeing TC-7	6	Cotton Classing TE-14	2
		Cotton Manufacturing TT-5	1½
		Quantitative Analysis TC-4	6
	25		27½

THIRD YEAR

First Term		*Second Term*	
Physical Testing TT-1	3	Textile Printing TC-20	7
Electricity E-16	1½	Merchandising TE-15	1½
Dyeing TC-9	8	Economics TE-16	1½
Organic Chemistry TC-15	8	Advanced Dyeing TC-10	6
Merchandising TE-15	1½	Advanced Quantitative TC-6	7
Economics TE-16	1½		
Advanced Quantitative TC-5	7		
	30½		23

Knit Goods Manufacturing
Diploma — 3 years

FIRST YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Pickers and Cards TE-1	4½	Cards and Draw Frames TE-2	4½
Mechanics E-1	1	Mechanical Drawing E-3	3½
Mechanical Drawing E-3	4½	Machine-shop Practice E-10	3
General Chemistry TC-101	6	Elementary Dyeing TC-107	6
Knitting K-1, 5	9½	Knitting K-1, 5	10
Yarn Calculations TE-7	1½	Microscopy TT-3	2
Microscopy TT-3	1½	Rayon Testing TT-2	3
Rayon Testing TT-2	3		
	31½		32

SECOND YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Roving and Spinning Frames TE-3	6½	Advanced Calculations TE-4	2
Machine Drawing E-4	2	Applied Research TE-6	3
Machine-shop Practice E-10	3½	Cotton Classing TE-14	1½
Steam Engineering E-13	1	Machine-shop Practice E-10	3½
Advanced Dyeing TC-109	5	Machine Drawing E-4	2
Knitting K-2, 6	8½	Steam Engineering E-13	1
Microscopy TT-3	2	Knitting K-3, 7	11½
Rayon Testing TT-2	3	Physical Testing TT-1	1½
		Advanced Dyeing TC-109	5
	31½		31

THIRD YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Machine Shop Practice E-10	3½	Mill Engineering E-17	3
Electricity E-16	1½	Dyeing TC-12	7
Dyeing TC-12	7	Knitting K-4, 8, 9	18
Knitting K-4, 8, 9	20	Color TD-8	2
Color TD-8	2	Microscopy TT-3	6
Microscopy TT-3	2		
	36		36

Textile Technology Course for Girls
Certificate — 2 years

FIRST YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Cotton Manufacture TT-5	1½	Weaving TE-9	1½
Yarn Calculations TE-7	1½	Designing TD-2	3
Weaving TE-9	2	Cloth Analysis TD-10	3
Designing TD-1	1½	Color TD-8	2
Cloth Analysis TD-9	3	Textile Fabrics TD-16	2
Color TD-7	2	Elementary Dyeing TC-107	6
Textile Fabrics TD-16	3	Physical Testing TT-1	3
General Chemistry TC-101	6	Rayon Testing TT-2	6½
Physical Testing TT-1	1½	Microscopy TT-3	3
Rayon Testing TT-2	5		
Microscopy TT-3	3		
Hand Loom TD-17	1½		
	31½		30

SECOND YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Designing TD-3	3	Designing TD-4	3
Jacquard Designing TD-5	3½	Jacquard Designing TD-6	2½
Cloth Analysis	3	Cloth Analysis TD-12	3
Styling TD-15	2	Styling TD-15	1½
Retailing TT-4	2	Retailing TT-4	1
Economics TE-16	1½	Economics TE-16	1½
Merchandising TE-15	1½	Merchandising TE-15	1½
Physical Testing TT-1	3	Rayon Testing TT-2	3
Rayon Testing TT-2	3	Microscopy TT-3	3½
Microscopy TT-3	5	Physical Testing TT-1	3
Weaving TE-10	1½	Cotton Classing TE-14	1
Quantitative Analysis TC-103	4	Weaving TE-11	1½
		Textile Printing TC-120	5
	33		31

Drafting and Machine Shop Practice
Certificate — 2 years

FIRST YEAR

First Term	Hrs. per week	*Second Term*	Hrs. per week
Mathematics M-1-S	4	Mathematics M2-S	4
Physics Pl-S	2	Physics P-2S	2
Slide Rule E-2	1	Engineering Drawing ED-3S	12
Engineering ED-1S	12	Machine Shop MS-2	14½
Machine Shop MS-1	13½		
	32½		32½

SECOND YEAR

First Term		*Second Term*	Hrs. per week
Steam Engineering EG-1A	3		
Electricity EG-5	3	Steem Engineering EG-1B	3
Engineering Drawing EG-3	11	Electricity EG-5	3
Machine Shop M-3	12	Engineering Drawing ED-5S	12
Microscopy TT-3	2	Machine Shop MS-4	13
Economics TE-16	1½	Economics TE-16	1½
	32½		32½

EVENING COURSES

A diploma will be awarded to those students of the evening classes who successfully complete the work specified under the following courses:

1 — **Carding and Spinning.** Picking, Carding and Drawing, Roving Frames, Combing, Ring Spinning and Twisting, Physical Testing, Cotton Classing, Advanced Calculations in Carding and Spinning, Mechanical Drawing and Advanced Drawing.

2 — **Weaving and Designing.** Spooling, Warping and Slashing, Plain Loom Fixing, Fancy Loom Fixing, Elementary Designing and Cloth Analysis, Advanced Designing and Cloth Analysis, Jacquard Designing, Mechanical Drawing, Advanced Drawing and Cost Finding.

3 — **Chemistry and Dyeing.** General Chemistry, Qualitative Analysis, Quantitative Analysis, Organic Chemistry, Textile Chemistry 1, Textile Chemistry 11, Dyeing 1, Dyeing 11, Dyeing 111, Mechanical Drawing and Advanced Drawing.

DEPARTMENT OF TEXTILE ENGINEERING

TE-1 Pickers and Cards

Cotton yarn mill machinery. Lists of processes in cotton mills for different numbers of yarn. Proper sequence of processes.

Objects of blending cotton. Methods of mixing same.

Methods of blending and mixing the different types of synthetic fibers.

Bale breakers and opening and cleaning machinery. Picker rooms. Automatic feeders, construction, capacity and suitability for the purpose intended. Various styles of openers, their use and object. Connection of feeders to openers. The various types of cleaning trunks.

Calculations in connection with openers, breaker pickers, intermediate and finisher pickers, and single process pickers with blending reserve.

Construction of aprons, beaters, bars, screens, fans, lap heads, evener motions, measuring motions, etc. The setting and adjusting of the different parts of these machines.

The revolving top flat card. Its principal parts described, including feed, licker-in, cylinder, doffer, coiler, screens and flats. Different setting arrangements. Calculations in connection with all types of cotton cards.

Clothing, grinding, setting and stripping cards.

TE-2 Cards and Drawing Frames

Study of Cards continued.

Drawing frame roller drafting, setting and calculations. Method of arranging and constructing drawing frames, its use and objects. Gearing, types of weighing and stop motions. Varieties of rolls.

TE-3 Roving and Spinning Frames

Slubbers, first and second intermediates, inter-draft, super-draft, long draft, roving frames and jack frames. The construction and use of these machines. Calculations in connection therewith. Changing, fixing and re-setting frames, etc.

The ring spinning frame, its construction and use. Its principal parts, as creels, rolls, rings, travelers, speeds, builder motions, calculations, etc.

TE-4 Advanced Calculations and Costs

Figuring the number of doublings and amount of draft required from picker to spinning frames.

Calculations for organization of machinery required for different counts of yarn. Amount of production and cost of production of yarn.

Practice work consists of running work from picker to spinning frames.

TE-5A Combers and Twisters

The object of twisting. Wet and Dry Twisting. The different methods of preparing yarns for twisting. The direction and amount of twist in different ply and cord threads. Size of rings and travelers for the different counts of yarn. Calculations for twist and production.

TE-5B

Sliver and Ribbon Lap machines. Construction of the different types of Combers. Methods of setting, adjusting and operation of these machines, and calculations in connection therewith.

TE-6 Applied Research

Research as applied to one or more machines consists of running original work, in laying out the machines to be used for the different types of yarns, as regards speeds, weights, etc., from the raw stock to the finished yarn. Tests at the different processes. Methods of testing. Blending and running all kinds of natural and synthetic fibers.

TE-7 Yarn Calculations

Methods to establish the Count, Weight, or Length in all the different types of fibers are given with examples. Equivalent yarn numbering systems. New Fiber systems. Suggested system for universal numbering of all yarns.

TE-8 Warp Preparation

Spooling or winding — The various types of packaging explained on the machine with respect to cost and manner of usage in the next preparatory manufacturing step.

Warping — High speed warping from cones, and slow speed from spools is taught, with the necessary instructions for production and cost figuring. Warping with the Silk system.

Slashing—The need for sizing. Methods of sizing. Difference in requirements as to heat, kind of size, and methods of operation with the various kinds of fibers. Cotton methods. Rayon methods. Silk methods.

TE-9. Plain Looms

The primary movements required in weaving. Elementary power loom construction. Shedding by Cams. Plain Cams. Twill and Satin Cams. Side cams. Split time cams. Double set cams. Construction of cams for special conditions. Timing of cams and its effect on the cloth. Methods of calculations for gearing of different cam drives. Picking motions.

Bat-wing and cone motions in detail from a practical weaving basis.

Shuttles—Different kinds of shuttles. Woods and other materials used in their manufacture. Care and treatment of shuttles.

Protector motions.

Reeds—Calculations for reeds. Care of reeds.

Take-up motions—Various kinds, with the necessary calculations to insure the greatest range of use.

Filling stop motions of all types.

Temples—The various types and makes and their distinctive features. The operation and maintenance of plain cam looms. Starting of warps. Faults and remedies in weaving and loom fixing.

Discussions on general loom accessories.

TE-10. Dobby and Box Looms

Looms with a much greater range of pattern than the cam loom. The dobby shedding machine. Dobby construction, with the timings and settings necessary for correct operation. Single and Double Index. Chain pegging and reading. Box looms. Different kinds of drop box mechanisms. Practical settings, with the best operational methods for the different types. Multiplier motions as applied to box looms. Dobby box looms with special weave mechanisms for such weaves as handkerchiefs, terry and other toweling, curtains, etc.

TE-11. Automatic Filling Change Looms

Draper looms of numerous models. Maintenance, operation, and possibilities of the different models of Draper looms. Practical settings for the feeler and transfer mechanisms. Warp stop motions. Various types of mechanical beam tension control.

Crompton and Knowles multiple box looms, with automatic selective filling transfer. All of the required settings for complete loom operation. Chain building and co-ordination for varied patterns. Stafford shuttle changing looms. All settings for the shuttle changing mechanisms explained in detail.

Student assembly and operation of all the above looms.

TE-12. Jacquards

The principle of construction of Jacquard machines. Single and double lift machines. Jacquard machines for special purposes. Principles of harness tying. Lay-

over, Center tie, etc. Care and treatment of harness lines. Practical work in cutting cards and weaving the students' own designs. Double cylinder Jacquard construction and operation with a 4 x 1 automatic box loom and center filling motion.

TE-13. Special Mechanisms and Costing

Dobby looms with leno mechanisms for the weaving of all pattern lenos. Requirements and methods for the weaving of lenos on Jacquard looms.

Analysis and application of direct and indirect weave room costs.

Weaving yarn requirements and the preparatory machinery necessary to produce it.

Weave room operation and management under different product, labor, and power conditions.

Room lay-outs best suited to different kinds of product.

TE-14. Cotton Classing

Different species of cotton plants. Cultivation of cotton. The different varieties of cotton and the classes of goods for which they are best adapted. Cotton picking, ginning and marketing. The selection of cotton for different classes of goods. Cotton grading and stapling.

TE-15. Merchandising

Products, trade marks, markets, distribution, broker, commission house, advertising, seasons, pricing, market analysis, business policies, price charts.

TE-16. Economics

Problems in textile management, production, labor relations, social, accident and fire insurance, stabilization, business policies, depreciation and obsolescence, financial setup, taxes, tax returns.

TE-17. Rayon Processing

Raw materials, from which the various rayons are produced, and the steps in the manufacture of rayon yarn from the raw material to the filament and yarn form comprise the first part of this subject. Included in this part is the study of the chemical treatments and reactions which occur during the evolution from solid raw material through the rayon solution and finally into the regenerated solid form of rayon yarn. The second part of this subject covers the various conditioning and preparatory processes applied to the rayon yarns which are necessary in the production of rayon fabrics. These processes include soaking, spooling, throwing, winding, warping and slashing of rayon yarns.

TD-1. Designing

Definitions of the words and terms used in designing and analysis. Characteristics of the various classes of fabrics. Design paper and its application to designing and analysis. Cloth structure, with a study of the various sources from which the patterns of fabrics are obtained. Twills. Wave effects. Diamonds. Sateens. Granites. Checkerboards. Rearranged twills. Figured twills.

TD-2. Designing

Designing for single fabrics continued, such as honeycombs. Mock and imitation lenos. Entwining twills. Spots weaves arranged in various orders. Cord weaves. Imitation welts. Elongated twills. Check effects. Corkscrew weaves. Four change system of designing. Damask weaves.

TD-3. Designing

Designing for more complicated fabrics, such as figure fabrics, using extra materials. Fabrics backed with extra material. Fabrics having the face and back of different material or pattern. Double plain fabrics. Reversible fabrics. Embossed effects, such as Bedford cords, piqués, Marseilles weaves.

TD-4. Designing

Designing for leno, pile and lappet fabrics, such as methods of obtaining leno patterns. Mechanical appliances for the production of lenos, yoke and jumper motions. Bottom doups. Top doups. Check lenos. Jacquard leno-effects. Weaving with wire doups. Weaving with the bead motion. Russian cords. Marquisettes. Full turn lenos.

Pile fabrics, such as velveteens, corduroys, velvets, plushes, carpets, terry toweling.

TD-5. Jacquard Designing

Design paper. How to figure the design paper necessary to reproduce any Jacquard pattern. Defects of Jacquard patterns and how to avoid them. Transferring designs to plain paper. Transferring sketches to design paper. Changing the sley of Jacquard fabrics. Method of casting out. Ground weaves. Rules for finding sley, pick, warp and filling. Foundations upon which Jacquard patterns are based.

TD-6. Jacquard Designing.

Different methods of making designs. Sketching original designs by the different methods commonly used. Working out the sketches upon design paper. Cutting cards on the piano card-cutting machine. Card lacing. Weaving of at least one original design. Method of weaving Jacquard leno designs. Mechanisms required in weaving Jacquard lenos. Making Jacquard leno designs.

Harness tying. Various systems of tying Jacquard harnesses. Lay-over ties. Center ties. Compound ties.

TD-7. Color

Theory of colors. Complementary colors. Hue, value and chroma scales. Practical work in color scales.

TD-8. Color

Nunsell system of coloring. Color harmony, color effects. Analyzing color effects. Practical work in making sequences and in producing colored designs.

TD-9. Analysis

Standard methods of representing harness and reed drafts. Harness drafts on design paper. Written harness drafts. Chain drafts. Layout plans. Finding weight of warp yarns, weight of filling yarns. Yards per pound of cloth.

TD-10. Analysis

Finding counts of warp and filling by various methods. Finding yards per pound of cloth from a small sample by weighing. Making original designs and weaving them on the power loom. Reproduction of woven samples.

TD-11. Analysis

Analyzing more difficult samples. Methods of analysis on various rayon fabrics. Finding average counts. Percentage of each material. Production of loom. Price per yard for weaving. Weaving of more difficult original designs.

TD-12. Analysis

Analysis of leno fabrics, making both written drafts and harness drafts on design paper. Chain drafts. Weaving of original leno designs. Changing the construction of fabrics and preserving balance of structure.

TD-13. Analysis

Analysis of more difficult samples continued. Weaving of original samples. Work on changing over samples to different constructions.

TD-14. Analysis

Continuation of the work outlined in TD-13. Weaving of students' original Jacquard designs. Work on cost of manufacturing fabrics.

TD-15. Styling

Study of common fabrics. Application of cloth analysis to the requirements of a converter or of a commission house.

Methods of ascertaining counts of warp and filling; also sley and pick for new fabrics.

Determining use of colored yarns in striped and figured fabrics with relation to cost of dyed yarns and woven colored patterns.

This is a continuation of analysis. Changing the construction of fabrics. Making sketches for alteration of fabrics. Finding cost of fabrics.

TD-16. Fabric Classification

A study of the characteristics of a wide range of staple fabrics made of cotton, wool, rayon, silk, nylon, aralac, glass and other fibers. In this subject, the student is supplied with samples of the various materials together with the information pertaining to their characteristics such as construction, composition, weave, performance and uses. At the conclusion of the subject, the student has a notebook containing about 300 samples of staple cloths and the data applying to each sample.

TD-17. Hand Loom

The hand loom, its construction and use. Harness drafts as affecting the weave. Building harness chains. Practice on the hand loom in weaving fabrics from original and other designs, and putting into practice the designing lessons.

TT-1. Physical Testing

This course is a study of the best methods recognized in the textile industry for testing cottons, sliver, roving, yarns and fabrics. It includes atmospheric conditions and their effect on carding, spinning, weaving and testing; determining moisture content and regain. Tensile strength in single, ply and cord yarns. Breaking load of fabrics by the grab, strip and cut strip methods. Serigraphing of yarns. Analysis of twists. Fiber sorting of raw material and of yarns to analyze whether carded or combed. Identification of fibers. Weight of fabric in square yards and linear yards. Yarn counts in fabrics and skeins. Expansion, contraction and elasticity.

TT-2. Rayon Testing

This includes testing of other synthetic fibers such as nylon, vinyon, aralac, etc. This subject covers methods of tests for construction, weight, fiber identification and content, yarn sizes, filament count, yarn twist, fabric strength, yarn slippage, color fastness, shrinkage and all other tests conducted for determining quality and performance of fabrics. Wherever available, test methods taught are the accepted standard procedures. Analysis of knit fabrics and hosiery included.

TT-3. Microscopy

The object of this course is to instruct the student in the use and manipulation of the microscope. Methods of mounting, cross sectioning, micrometry, camera lucida drawings, calibration, measuring and counting are taken up.

Instruction is also given in photomicrography; that is, the taking of photographs through the microscope, in developing and printing, obtaining the magnifications and enlarging.

On completion of the above the student is given yarns and fabrics, which are unfamiliar to him or which have defects, to analyze.

TT-4. Retailing

This subject is included in the girls' course to give the student, who desires to make use of her textile training in a career within the field of retailing, a knowledge

of the principles of retailing. Buying and merchandising are stressed. A study of the data to use in composing labels for merchandise to conform with an informative selling program is made.

TT-5. Cotton Manufacture

Cotton Manufacture is the name assigned to a course of lectures given to the first year students in Textile Technology and the second year students in Chemistry, so that they may become acquainted with the methods employed in the manufacture of cotton yarn and cloth. The various machines are thoroughly described and the methods of using them discussed in the lecture room. Because of the limited amount of time allowed for this subject, the students are not taught to operate the machines, but are given an opportunity to examine them at rest and later to observe them in operation.

TT-6. Freehand Drawing

This consists of a study of procedures used in the creation of original patterns in sketch form. Several types of exercises are carried out to make the student familiar with the use of the pencil in decorative designing for textiles. The principles of design and the forms of application are studied. The students produce several original sketches of print patterns, shirtings, dress patterns and others, both with and without the use of color.

K-1. Elementary Knitting

A study of the various types of winding machines used for cotton, wool and synthetic yarns preparatory to running on hosiery knitting machines.

K-2 Needle Study

A complete study of the latch and spring board needles, and full knowledge of insides on all types of knitting machines.

K-3 Hosiery Finishing

Fundamental principles and a study of various types of loopers, fine and coarse gauge, for circular and full fashioned hose, and back seaming for full fashioned hose.

K-4 Hosiery Manufacture

Winding, inspection, pairing, stamping, folding, boarding and boxing, management and the handling of knitted goods throughout the mill.

K-5 Underwear Finishing

A study of the various finishes used on underwear, setting-up, adjusting and study of the various types and makes of sewing machines used in the manufacture of underwear.

K-6 Warp Knitting

A study of the construction of a warp knitting machine, timing and warp making, designing of the warp and of the pattern wheel.

K-7 Circular Knit Underwear

A study of a plain Jersey stitch and rib stitch machine, sweater machines and Jacquard sweater machines.

K-8 Circular Knit Hose

A study of circular hose and half hose to the point of study of rib top and applying top to machine and completing the hose to the looping operation.

K-9 Full Fashioned Hose

A study of ladies' full fashioned hose to the point of size, style and operation of machines and their upkeep and learning to loop and backseam.

K-10A K-10B Dyeing and Finishing

The final study of the dyeing of nylon and synthetic, washing and boarding of hose and knitted goods.

TC-1 TC-1L Inorganic Chemistry

This course is required of those students enrolled for the Bachelor of Science in Chemistry Degree. The course is divided into two sections. Section I is taken during the first three months of the 1st semester and comprises a thorough study of basic chemical facts (study of matter, atomic structure and its applications to chemical reactions, the states of matter, solutions and equilibrium; certain elements and their compounds are studied in order to show more clearly the relation between theory and practice). Section II is taken during the last month of the 1st semester and comprises a study of the manufacture of chemical materials of importance to Textile Chemists (acetic acid, sulfuric acid, soda ash, caustic soda, the artificial fibers, etc.). The laboratory work associated with TC-1 is designed to accompany the lectures very closely and thus enable the student to better learn the facts and theories they are studying.

TC-2 TC-2L Qualitative Analysis

This course enables the student to tell what inorganic, and a few organic, substances are present in a compound. The latest semi-micro technique of analysis is used. In the laboratory the student applies what he has studied in the analysis of both "known" and "unknown" materials. Problem work dealing with equilibrium and the other important phases of qualitative analysis is stressed and the student is taught how to think for himself.

TC-3 TC-3L Quantitative Analysis

The lectures in this course comprise a thorough and complete discussion of the theories of solutions, a quantitative approach to oxidation reduction reactions (redox reactions) and a study of some precipitation methods. The laboratory work is an application of the lectures. It consists of the calibration of the columetric ware used and the analysis of materials by neutralization, oxidation-reduction and precipitation methods. Quality rather than quantity is stressed.

TC-4 TC-4L Quantitative Analysis II

This course is a continuation of TC-3 and consists of a study of the gravimetric methods of analysis.

TC-5 TC-5L Advanced Quantitative Analysis
TC-6 TC-6L Advanced Quantitative Analysis II

These are primarily laboratory courses in which the student analyzes many materials of a more advanced nature than encountered in TC-3 and 4. He employs many methods used in commercial practice and analyzes ores, silicate rocks, minerals, etc. The student uses electroanalysis, photometry, colorimetry and gas analysis. He also studies more at length and more deeply certain special topics of Quantitative Analysis (indicators, redox equilibrium, etc.). Frequent reference is made to recent advances and discoveries in current chemical literature.

TC-7 TC-7L Elementary Dyeing

This course consists of (1) a study of the physical and chemical constitution of the textile fibers, both natural and artificial; (2) a study of the action of physical and chemical agents upon the fibers; and (3) a study of the methods of application and the effect of the various classes of dyes upon fibers.

TC-8 TC-8L Elementary Dyeing II

This course, which is a continuation of TC-5, teaches the student how to process the various fibers; how to test the dyed fibers for the various characteristics and how

to enhance certain of these characteristics by special treatment of the fibers, before and or after dyeing.

TC-9 TC-9L TC-10 TC-10L Advanced Dyeing I & II

In this course the student learns how to dye various textile fiber combinations (cotton and wool, cotton and rayon, acetate and rayon, etc.). Various types of dyes are used, natural, mineral, coal tar, singly or in combination. The student also learns how to obtain maximum benefits from the various classes of dyes as applied to the various fibers in combination.

TC-11 TC-11L Advanced Dyeing III

The theory and practice of color matching are principally emphasized in this course. The student is taught proper method of obtaining a given shade by using a combination of several dyes. The testing of various classes of dyestuffs for their coloring powers and money value is included. The characteristics of the various dyestuff combinations is considered.

TC-12 TC-12L Advanced Dyeing IV Dyeing of Knit Goods

This course primarily teaches the student how to dye all types of knit goods (hosiery, sweaters, sleeving, etc.). Lectures describing the various processes are given, and the necessary claculations are taught in connection with this course. Scouring and bleaching are also taught. The student is required to make use of the knowledge acquired in the previous courses in dyeing.

TC-13 TC-13L Organic Chemistry

This course consists of a study of those compounds of carbon comprising what is known as the "aliphatic" family. Particular stress is placed upon structural formulas the while a classification of properties and group reactions is made. The laboratory course comprises a study of the more common methods of synthesis, the preparations exemplifying the principles studied in the lectures.

TC-14 TC-14L Organic Chemistry II

This course is a continuation of TC-13 in which compounds of carbon constituting the "aromatic" family and also certain heterocyclic compounds are studied.

TC-15 TC-15L Organic Chemistry III Manufacturing of Dyes and Intermediates

This course is a specialized continuation of TC-13 and TC-14. It deals with the chemical nature of dyes, their preparation as well as of their intermediates. In the laboratory, the student prepares certain intermediates and dyes. He then tests them by comparing material dyed with his dyes, to fibers dyed with commercially prepared dyes of the same class.

TC-16 TC-16L Textile Chemistry

The student learns, during this course, how to determine the properties, and analyze, many of the chemical materials used in the textile industry. He will analyze soap, bleaching agents, caustic soda, soda ash, etc. He is expected to apply the knowledge and experience acquired during the previous courses in Chemistry.

TC-17 TC-17L Textile Chemistry II

This course, a continuation of TC-16, teaches the student how to analyze coal, oil, water, certain types of organic materials (using the Kjeldahl Method) and finishing compounds.

TC-18 TC-18L Textile Finishing

This course deals with the study of the finishing of textile fabrics. Lectures explain the theory and functions of the machinery involved in the finishing of the com-

mon textile fabrics. Practice in the singeing, scouring, bleaching, drying, calendering and mercerization of cotton cloth is provided in the finishing laboratory. The finishing of rayon, nylon and mixed fabrics is also studied.

TC-19 TC-19L Textile Finishing II

This course is a continuation of TC-18. The processing of wool aralac and mixed fabrics is studied. The latest methods and machinery used in the industry are discussed and constant consultation of the literature on the subject is required. The student is given practice in the application of dyestuffs by the padder and jigger. The methods of yarn dyeing and the machinery involved, the organization and management of finishing plants are studied. The course is supplemented, and its value enhanced, by field trips to bleacheries, dyehouses and printing plants.

TC-20 TC-20L Textile Printing

This is primarily a laboratory course in which the student becomes familiar with the theory and practice of the various styles of printing of the fabrics. Both roller and screen printing are used to enable the student to apply what he has studied.

TC-21 TC-21L Thesis

Every student, in his senior year, is obliged to undertake, and report on, some original research problem. The choice is left to the student under the supervision of the members of the Department of Chemistry. The student is left on his own in order to help him develop originality in thought and action. However, frequent consultation with his thesis supervisor, at least once a week, enables the student to make certain that he is not going astray nor that he is wasting his time and effort.

TC-22 TC-22L Microbiology

This course includes the study of various micro-organisms and their importance to man and his textile world. Sterilization, disinfection, fumigation and staining, and methods of studying the action of molds and bacteria on textile fabrics are considered. Laboratory work includes preparation and sterilization of culture media, staining and microscopic observation of bacteria, mildewproofing tests on textile fabrics, and the bacteriological examination of water, milk and other products.

TC-23 TC-23L Colloid Chemistry

An introduction to the colloidal state of matter, covering a consideration of the characteristics and behavior of colloidal substance; methods of preparing colloidal substances; a study of natural colloidal substances and a special study of the application of colloidal behavior to the chemistry of textiles, dyeing and finishing.

In the laboratory the student observes the fundamental characteristics and behavior of materials in the colloidal state; learns how to prepare colloidal substances and applies this knowledge to selected problems dealing with textile chemistry, dyeing and finishing.

TC-101 TC-101L General Chemistry

This is an introductory course in Chemistry required of all students attending the Institute, with the exception of those enrolled for the degree in chemistry, during their freshman year. It comprises a general survey of chemistry, its basic laws and theories, a general study of the commoner elements both metallic and non-metalic and a study of the use and application of chemistry to daily life. In the laboratory work which accompanies this course, the student performs experiments selected with a view to enabling him to learn to draw correct conclusions from definitive happenings. It also enables him to acquire a certain manipulative technique in using the basic chemical tools.

TC-107 TC-107L Elementary Dyeing

This course is adapted to the needs of the student taking the Textile Engineering Course. The content of this course is essentially that of TC-7 only in a much short-

ened form. Much of the elaborate knowledge and laboratory work is omitted. The student obtains sufficient knowledge to enable him to become familiar with the terms and practices of the Dyeing Industry.

TC-109 TC-109L Advanced Dyeing

This course is adapted to the needs of the students taking the Textile Engineering Course. The contents of this course are essentially that of TC-9 only in a much shortened form.

TC-113 Quantitative Analysis

This is a semester course designed primarily for students in the Textile Technology Course. It is so designed that the student aquires a working knowledge of the fundamentals of volumetric and gravimetric analysis: concentration of solutions, normality and how determined, use of the burette and other volumetric apparatus, simple neutralization titrations, pH — its meaning and properties; the use of the analytical balance, the make-up and use of the Gooch filter, chemical factors and their applications, simple gravimetric processes.

Upon the successful completion of this course, the student is well equipped to perform simple, routine analytical work and understand what she is doing.

TC-118 TC-118L Textile Finishing

This course is simply a lecture course of the material contained in TC-18 and TC-19. The students enrolled in the Textile Engineering Course take this course in their Senior year. They also are offered the opportunities presented by the field trips.

TC-120 Textile Printing (Screen Printing)

This is a semester course given in collaboration with the Designing Department to the students in the Textile Technology Course. The students learn how to make their own designs, their own screens, how to print their designs and finish the prints. They are given some training in the making of the pastes and dyes and the simplified reactions involved in the printing.

DEPARTMENT OF ENGINEERING

M-1A Algebra

Review of high school algebra through quadratic equations. Includes a further study of simultaneous quadratic equations.

M-1B Algebra

Prerequisites M-1A. Continuation of M-1A to include a study of complex numbers, higher degree equations, inequalities, logarithms, exponential functions, progressions, mathematical induction, binomial theorem and determinants.

M-2 Trigonometry

Prerequisites M-1A. A study of the functions of the acute angle and the relations among the trigonometric functions. A thorough consideration of the right triangle and the oblique triangle and the important formulas relating to all triangles. Approximately ten hours is spent in studying the use and application of the slide rule.

M-3 Analytical Geometry

Prerequisites M-1A, 1B, 2A. A study of plane and solid analytical geometry. Functions and graphs, linear functions, polynomial curves, transformation of coordinates, the circle, algebraic and trigonometric curves, parametric equations, polar equations, planes and lines, surfaces and curves.

M-4A Differential Calculus

A study of the various formulas, variables, functions and limits. Differentiation and the rules for differentiating ordinary algebraic terms. Applications of the derivative and successive differentiation. A study of curvatures, radius and circle of curvature.

M-4B Integral Calculus

A study of integration and the integrating of standard elementary forms. Considers the constant of integration, the definite integral, process of summation, reduction formulas and their practical applications.

P-1 Physics

A study of heat, heat quantities, heat transfer, expansion, temperature measurement, etc. A thorough study is made of the properties of solids, the gas laws, motion, forces, vector quantities and simple machines.

P-2 Physics

Continuation of P-1 to include a study of electricity including sources and effects of electric currents, the simple series and parallel circuits, measuring instruments, etc. A further study is made of the various phases of sound and light.

MS-1 through MS-4B Machine Tool Laboratory

A continuous course systematically arranged according to the tool course involved. Consists of a thorough study of the most modern machinery used in the present day machine shop practice. The student is trained in the use of measuring instruments, turning, facing, boring, etc. Continued instruction is given on all machinery, including the miller, shaper, a planer and grinders. This course is supplemented by lectures in shop theory and classes in shop calculations.

ED-1 Engineering Drawing

The use and care of the drawing instruments, lettering, theory of shape description, orthographic projection, sketching, sectional views, auxiliary views, methods of dimensioning, screw fasteners, isometric, detail and assembly of machine parts.

ED-2 Engineering Drawing

Continuation of ED-1.

ED-3 Engineering Drawing

Complete detail and assembly drawings of small machines, with complete practical limit dimensions and tolerances, notes and all information necessary for a working drawing.

ED-4 Descriptive Geometry

A more direct method of the applications of the principles of descriptive geometry from the point of view of the engineer. A wide variety of topics such as straight lines, curves and curved lines, planes, intersections and development of surfaces, single and warped curved surfaces, double curved surfaces.

ED-8 Electrical Drafting

Prerequisite EG-5. Consists of both lecture and drafting room practice. Considers the proper methods of laying out wiring for both light and power. All proper sizes for wire, protective devices, etc., are determined by actual calculation according to the loads involved. Constant reference is made to the recommendations of the National Board of Fire Underwriters.

ED-28 Engineering Drawing

A course especially arranged for the students of textile engineering. Consists of detail and assembly drawing with the proper application of dimensions, tolerances, etc. A study of gears and cams as applied to textile machinery is also taken.

ED-38 Engineering Drawing

A continuation of ED-28.

Eg-1A Eg-1B Heat and Power

A typical power plant, including the various types of boilers, heaters, pumps, steam engines, turbines and all the necessary auxiliaries and accessories as found in a modern power plant is studied in detail. Calculations for evaporation, efficiency, horsepower, boiler rating, heat, fuel consumption, heating surface, boiler losses, etc., are determined in lecture periods. Practice is given in handling steam engines, apparatus and equipment, and exercises also consist of setting valves on the engine and taking and determining indicator diagrams.

Eg-2A Applied Engineering Mechanics

A study of those topics ordinarily considered under the subject of statics. The various force systems, friction, centroids and center of gravity, moments of inertia of areas, etc.

Eg-2B Applied Engineering Mechanics

A study of those topics ordinarily considered under the subject of dynamics, kinematics of rectilinear motion, kinetics of rectilinear motion, curvilinear motion, kinematics and kinetics of rotation, plane motion, work, power and energy, impulse and momentum.

Eg-3 Strength of Materials

Simple stresses, shear, riveted joints, stresses in thin walled cylinders, torsion, beams, deflections, combined axial and bending stresses.

Eg-4 Metallurgy

A lecture course on the various processes of working metals and separating them from their ores.

Eg-5 Electric Circuits and Machines

A thorough study of direct and alternating circuits, their characteristics and laws. Detailed consideration is given the characteristics and operation of both direct and alternating current motors and generators of various types.

Eg-6 Pattern Making

A study of pattern making as associated with foundry and metal trades. In order that the student will design more intelligently he is instructed in the various phases of this trade, *i.e.*, the use of the shrinkage rule, allowing for draft, etc.

Eg-7A Mechanisms

A study of mechanisms and machines, transmission of motion by the various means, friction wheels, flexible connectors, cams, centres, gears, etc. A study is also made of velocity diagrams and accelerations in mechanisms.

Eg-7B Mechanisms

A continuation of Eg-7A.

Eg-8 Tool Inspection

A careful study of the use and application of precision instruments as applied to tool inspection. This course includes both lectures on the proper use of these instruments and actual laboratory practice in tool inspection. Laboratory practice includes the use of the various precision gages, size block, shadow graphs, hardness testers, sine bars, etc.

Eg-9 Jig, Fixture and Tool Design

This course consists of both lectures on the various types of jigs, fixtures and tools, and actual practice in the drafting room. The student is instructed in the generally accepted methods of construction, the proper allowances, fits, clearances, etc. Particular attention is paid to the simplicity of construction, always keeping in mind the use to which tool is to be put.

Eg-10A Machine Design

Consists of both lectures and actual drafting room practice. For the most part the design is empirical but the student is encouraged to use, whenever possible, a combination of empirical and scientific design. In this manner he will draw into use a good many of the principles he has become familiar with in his study of mathematics, physics, chemistry, mechanics, etc. He is also encouraged in the frequent use of the many reference books and hand goods that are available.

Eg-10B Machine Design

A continuation of Eg-10A.

Eg-11 Engineering Contracts

An elementary study of the interpretation and writing of engineering-commercial agreements. The aim of this course is to enable the man in the field of engineering to co-operate more fully with lawyers if the necessity should arise.

Eg-12 Industrial Plants

This course, consisting of both lectures and drafting room practice, is designed to familiarize the student with modern plant layout. Particular attention is paid to the proper layout of machinery, modern lighting methods and in general those things which contribute to better working conditions. He will be assigned a project to carry out in the drafting room and will be guided and advised by his instructor.

Eg-17 Mill Engineering

Proficiency in this course depends on the thoroughness with which the work of the previous courses was carried on. It consists of lectures supplemented by work in the drafting room. Problems in design, construction and equipment of textile mills are taken up by the student. Each student must determine the machines and equipment required for manufacturing a certain type of goods assigned to him, and floor plans are made with the machines in their proper positions. The method of generating and transmitting the power, with the type of drive to be used and the necessary horsepower of the motors needed must be determined. Methods of lighting, heating and ventilation, as well as protection from fire are also taken into consideration.

E-1 English Composition and Literature

A basic course in rhetoric and composition. Consists of a thorough drill in the fundamentals of writing. Particular attention is paid to the four forms of discourse, *viz.*, description, narration, exposition and agumentation. The course is supplemented by a study and discussion of a group of selected essays.

H-1 United States History

The aim of this course is to provide the student with a clear over-all picture of the history of the United States to the present time. Emphasis will be placed on such topics as the colonial background, the American Revolution, the founding of the National Government, Manifest Destiny, the Civil War, industrialism, expansion, World War I, world depression, the New Deal and World War II.

The first half of the course will cover the period from colonization to the Civil War. The second half will be the continuation of the first, covering the period from the Civil War through World War II. Special attention will be given to the period from World War I to the present.

S-1 Sociology

The aim of this course is to aid the student in developing an understanding of the principles of sociology in order that he may live more intelligently and deal more effectively with the social problems of the world about him.

Topics to be covered in the course include, factors in the social life of man, the role of culture, heredity and personality, group and personality, personality disorganization, group life, suggestibility, status, cooperation, competition, conflict, population distribution and growth, communities, social institutions and social change.

Special attention will be given to some of the current social problems.

NEW BEDFORD TEXTILE INSTITUTE

CALENDAR

Day Classes

1949

September 12, Monday, 8:30 A.M.	First semester begins
September 26–30, Monday-Friday	Class elections
October 12, Wednesday	Columbus Day — Holiday
November 11, Friday	Armistice Day — Holiday
November 23, Wednesday, 12 M.	Thanksgiving recess begins
November 28, Monday, 8:30 A.M.	Thanksgiving recess ends
December 16, Friday, 3:40 P.M.	Christmas recess begins

1950

January 2, Monday	New Year's Day — Holiday
January 3, Tuesday, 8:30 A.M.	Christmas recess ends.
January 16, Monday	Mid-year examinations begin
January 27, Friday	Mid-year examinations end
January 30, Monday, 8:30 A.M.	Second semester begins
February 22, Wednesday	Washington's Birthday—Holiday
March 17, Friday, 3:40 P.M.	Spring recess begins
March 27, Monday, 8:30 A.M.	Spring recess ends
April 7, Friday	Good Friday — Holiday
April 19, Wednesday	Patriots' Day — Holiday
May 22–31, Monday-Wednesday	Final examinations
May 30, Tuesday	Memorial Day — Holiday
June 2, Friday, 8 P.M.	Commencement exercises — Assembly Hall

Evening Classes

1949

September 26, Monday, 7:30–9 P.M.	Enrollment
September 26, Monday, 7:30 P.M.	First term begins
October 12, Wednesday	Columbus Day — Holiday
November 11, Friday	Armistice Day — Holiday
November 24, 25, Thursday, Friday	Thanksgiving Recess
December 12–16, Monday-Friday	Examinations
December 16, Friday	First term ends

1950

January 2, Monday	New Year's Day — Holiday
January 3, Tuesday, 7:30-9 P.M.	Enrollment, second term
January 3, Tuesday, 7:30 P.M.	Second term begins
February 22, Wednesday	Washington's Birthday—Holiday
March 13–17, Monday-Friday	Examinations
March 17, Friday	Second term ends

Day Classes

1950

September 11, Monday, 8:30 A.M.	First semester begins
September 25–29, Monday-Friday	Class elections
October 12, Thursday	Columbus Day — Holiday
November 22, Wednesday, 12 M.	Thanksgiving recess begins
November 27, Monday 8:30 A.M.	Thanksgiving recess ends
December 15, Friday, 3:40 P.M.	Christmas recess begins

1951

January 1, Monday	New Year's Day — Holiday
January 2, Tuesday, 8:30 A.M.	Christmas recess ends
January 15, Monday	Mid-year examinations begin
January 26, Friday	Mid-year examinations end
January 29, Monday, 8:30 A.M.	Second semester begins
February 22, Thursday	Washington's Birthday—Holiday
March 16, Friday, 3:40 P.M.	Spring recess begins
March 23, Friday	Good Friday — Holiday
March 26, Monday, 8:30 A.M.	Spring recess ends
April 19, Thursday	Patriots' Day — Holiday
May 21–29, Monday-Tuesday	Final examinations
May 30, Wednesday	Memorial Day — Holiday
June 1, Friday, 8 P.M.	Commencement exercises — Assembly Hall

Evening Classes

1950

September 25, Monday, 7:30–9 P.M.	Enrollment
September 25, Monday, 7:30 P.M.	First term begins
October 12, Thursday	Columbus Day — Holiday
November 23, 24, Thursday, Friday	Thanksgiving Recess
December 11–15, Monday-Friday	Examinations
December 15, Friday	First term ends

1951

January 2, Tuesday, 7:30–9 P.M.	Enrollment, second term
January 2, Tuesday, 7:30 P.M.	Second term begins
February 22, Thursday	Washington's Birthday—Holiday
March 13–16, Monday-Friday	Examinations
March 16, Friday	Second term ends

INDEX

Publication of this Document Approved by the State Purchasing Agent

2500-3-49-25825.


ENSE PETIT PLACIDAM SUB LIBERTATE QUIETEM