NEW BEDFORD INSTITUTE of TECHNOLOGY

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institute
of technology

EVENING DIVISION

Academic Counseling

Faculty advisors will be present at registration and must be consulted by the students in making out their programs.

Counseling on academic matters is available during the school year to all evening students. Routine questions can usually be answered in the office of the Director of Evening Division. For more specific counseling the student should arrange for an appointment with the instructor concerned. This appointment must be made in the Evening College Office.

New Bedford Institute of Technology

CALENDAR

ADMINISTRATIVE OFFICERS
AND FACULTY

GENERAL INFORMATION

PROGRAMS OF INSTRUCTION

Louis Pacheco, Jr., *Director*

EVENING DIVISION

EVENING SCHOOL CALENDAR

REGISTRATION, FALL SEMESTER
Sept. 10, 11, 12, 1963   7 P.M. to 9 P.M.

FALL SEMESTER BEGINS
Sept. 30, 1963   7 P.M. or 8:30 P.M.
                    according to class schedule

HOLIDAYS
November 11, Monday   Veterans Day
November 27, Wednesday   Thanksgiving Recess
November 28, Thursday   Thanksgiving Recess
December 20, Friday through
January 1, 1964   Christmas Recess

FALL SEMESTER EXAMINATIONS
January 20, 21, 22, 23, 1964   7 P.M. to 9:45 P.M.

REGISTRATION, SPRING SEMESTER
January 20, 21, 22, 23, 1964   7 P.M. to 9:45 P.M.

SPRING SEMESTER BEGINS
February 3, 1964   7 P.M. or 8:30 P.M.
                    according to class schedule

HOLIDAYS
March 20 through March 29, 1964   Spring Recess
March 30, 1964   Classes Resume
April 20, Monday   Patriots' Day

SPRING SEMESTER EXAMINATIONS
May 18, 19, 20, 21, 1964   7 P.M. to 9:45 P.M.

ALL CLASSES WILL START PROMPTLY AT
7:00 P.M. or 8:30 P.M.,
ACCORDING TO CLASS SCHEDULE

OFFICERS OF THE INSTITUTE

JOHN E. FOSTER, B.S., C.E., Sc.D., *President*
GEORGE WALKER, M.S., *President Emeritus*

EDITH BOOTH
  Director of Bookstore
EDWARD A. CORMIER, B.S. in B.A., ED.M.
  Director of the Summer School
JAMES A. FLANAGAN, B.S. in ED.
  Director of Public Relations
  Director of Placement
JAMES L. GIBLIN, M.S.
  Dean of Faculty
WARREN M. HOLT, B.S., ED.M.
  Director of Admissions
MARY F. MAKIN
  Treasurer
DWIGHT F. MOWERY, JR., A.B., PH.D.
  Director of the Graduate School
LOUIS PACHECO, JR., B.S.T.E., ED.M.
  Director of the Evening School
CLAIRE N. RILEY, A.B.
  Director of the Library
J. LOUIS ROBERTS, B.S.M.E., P.E.
  Superintendent of the Buildings
AUGUSTUS SILVA, A.B., M.A.
  Dean of Students
FRED R. TRIPP, B.S., CH.E.
  Director of the Research Foundation

FACULTY

MILTON S. BRIGGS, B.B.A.
  Professor of Business Administration
  Chairman of the Department
JAMES L. GIBLIN, M.S.
  Commonwealth Professor of Textile Engineering
  Chairman of the Department
LENINE M. GONSALVES, B.S., M.S.E.E., P.E.
  Professor of Electrical Engineering
  Chairman of the Department
ANTHONY J. JOHN, B.S., M.S., M.A.
  Professor of Mathematics
  Chairman of the Department
DWIGHT F. MOWERY, JR., A.B., PH.D.
  Professor of Chemistry
AUGUSTUS SILVA, A.B., M.A.
  Professor of English
  Chairman of the Department
LEO M. SULLIVAN, B.S. in ED., M.A.
  Professor of Social Sciences
  Chairman of the Department
HOWARD C. TINKHAM, B.S.M.E., M.S.M.E.
  Professor of Mechanical Engineering
  Chairman of the Department
FRANCIS TRIPP, B.S.CH.E., B.S.T.C., M.S.CH., CH.E.
  Professor of Chemistry
  Chairman of the Department
JOHN C. BROADMEADOW, B.S.CH.E., B.S.T.C., ED.M.
  Associate Professor of Chemistry
PETER O. CIOFFI, B.S., M.S.
  Associate Professor of Mathematics
EDWARD H. CLOUTIER
  Associate Professor of Textile Engineering
EARL J. DIAS, A.B., M.A.
  Associate Professor of English
EDMUND J. DUPRE, B.S.T.C., ED.M.
  Associate Professor of Chemistry
LOUIS E. F. FENAUX, B.S.CH., M.S.CH.
  Associate Professor of Chemistry

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Warren M. Holt, B.S., Ed.M.
  Associate Professor of Mathematics
Frederic R. Mattfield, B.S. in B.A., M.B.A., Ed.M.
  Associate Professor of Business Administration
Louis Pacheco, Jr., B.S.T.E., Ed.M.
  Associate Professor of Textile Engineering
John R. Barylski, B.S.M.E., Ed.M.
  Assistant Professor of Mechanical Engineering
Clifford N. Beck, B.S.T.E.
  Assistant Professor of Textile Engineering
Alden W. Counsell, B.S.M.E.
  Assistant Professor of Mechanical Engineering
Michael Crowley, B.S., M.A.
  Assistant Professor of Mathematics
Ferdinand P. Fiocchi, B.S.
  Assistant Professor of Chemistry
Frederyk E. Gorczyca, B.S.M.E., M.S.M.E.
  Assistant Professor of Mechanical Engineering
Celestino D. Macedo, A.B., M.A.
  Assistant Professor of English
Walter E. A. Mierzejewski, A.B.
  Assistant Professor of Mathematics
Margot Neugebauer, B.F.A., M.F.A.
  Assistant Professor of Design and Fashion
John T. Regan, A.B.
  Assistant Professor of Textile Engineering
Conrad P. Richard, B.S.M.D., P.E.
  Assistant Professor of Mechanical Engineering
J. Louis Roberts, B.S.M.E., P.E.
  Assistant Professor of Mechanical Engineering
Antone Rodil
  Assistant Professor of Textile Engineering
William A. Silveira, B.S.T.E., M.S.T.T.
  Assistant Professor of Textile Engineering
Arthur V. Swaye, B.S.T.E.
  Assistant Professor of Textile Engineering
George J. Thomas, B.Sc.E., P.E.
  Assistant Professor of Physics
Fred R. Tripp, B.S.Ch.E., B.S.T.C.
  Assistant Professor of Chemistry
Richard Walder, B.S.E.E.
  Assistant Professor of Electrical Engineering
Robert C. Booth
  Instructor in Design and Fashion
Lance C. Buhl, A.B., M.A.
  Instructor in Social Sciences
Edward A. Cormier, B.S. in B.A., Ed.M.
  Instructor in Business Administration
James A. Flanagan, B.S. in Ed.
  Instructor in Chemistry
Frank Golen, Jr., B.S. in B.A., Ed.M., C.A.G.S.
  Insructor in Business Administration
Daniel J. Murphy, B.S.E.E.
  Instructor in Electrical Engineering
Evelyn Ramalhete, B.S.T.D.F.
  Instructor in Design and Fashion
Louis J. Robitaille, B.S. in B.A., Ed.M.
  Instructor in Social Sciences
Priscilla Tabachnik, B.S. in B.A.
  Instructor in Business Administration
Rosemary S. Tierney, A.B., Ed.M.
  Instructor in English
John F. Wareing
  Instructor in Electrical Engineering
Vivian Zerbone, A.B., M.A.
  Instructor in Modern Languages
George Jacobs, A.B., LL.B.
  Visiting Lecturer in Business Law
June F. Devine, B.F.A.
  Visiting Lecturer in Music
Frederic Alpert, A.B., M.B.A.
  Visiting Lecturer in Business Administration

THE EVENING SCHOOL

Organization and Purpose

The Evening School is an integrated administrative unit of the New Bedford Institute of Technology. It is oriented to the need for supplying trained personnel to the professions and industries which the Institute serves. In addition, courses are offered to meet a growing demand for the continuing education for the adult community.

Accreditation

New Bedford Institute of Technology is a member of the New England Association of Colleges and Secondary Schools.

Entrance Requirements

Entrance requirements vary with the program or subject selected. Applicants for college credit are required to present qualifying high school records. For all non-credit programs, the only requirement in general, is the necessary professional or industrial experience. All applications must be reviewed by the department concerned prior to acceptance. Duly enrolled day school students may, with the permission of the Dean of Students, participate in the Evening School program.

Each applicant for the Associate Degree program must have earned a high school diploma, or its equivalency, and must have a minimum of one unit of algebra. It is further recommended that, if at all possible, the applicant show a background in the area of specialization. Each student is to be interviewed by the department chairman for approval into the particular program.

Registration

Registration forms may be procured in advance at the office of the Director. Registration is normally held during the first week of September for the Fall Semester. (See Evening School calendar on page 2.) No new registrations will be accepted after the first two weeks of classes except with the permission of the Director of Evening School and the instructor concerned. Students cannot apply for a transfer to a college credit program after the first two weeks of classes.

Tuition and Fees

Tuition and Fees charged for attendance at the Evening School are as follows:

1. Non-credit courses are available without tuition charge to residents of New Bedford. (This is in lieu of a $10,000 annual grant to the Institute from the City of New Bedford.)

2. Non-credit courses have a tuition charge of $10.00 per course to non-residents of New Bedford.

3. A $9.00 per credit hour fee is charged to all students enrolled in a course for college credit. Out-of-state students will be charged $11.00 per credit hour if college credit is desired.

4. Audited credit courses have a tuition charge of $5.00 per credit hour.

5. The Five Year Associate Degree programs in Business Administration, Electrical Engineering Technology and Mechanical Engineering Technology have a tuition charge of $20.00 per semester.

6. A $2.00 laboratory fee is required of students enrolled in Chemistry and Machine Shop courses.

7. All fees are payable on, or prior to, the first week of scheduled classes.

8. No refunds for evening school classes will be made after two weeks from the date of initial class participation. An application for refund must be made by the student concerned; it is not the function of the Institute.

Veterans

Any resident of Massachusetts who has served in any branch of the armed services for at least 90 days, ten of which must have been served either between September 16, 1940, and December 31, 1946, or between June 25, 1950 and January 21, 1955 and who has a discharge other than dishonorable may enroll without charge for instruction in any course here offered within the established limitation of 120 semester hours. To establish his eligibility the veteran must present his discharge (or a photostatic copy) or certificate of satisfactory service in the case of officers, together with proof of residence, in advance of the opening date of class meeting.

Attendance

Students must attend 85% of classes held and complete prescribed assignments in order to receive a certificate for the subject. Students in college credit courses must be present for 90% scheduled classes in addition to completing the necessary assignments.

The sessions per week and the semester(s) required to complete a subject are shown with each course. All lecture sessions will be of seventy-five (75) minutes duration, and will be conducted from 7:00 P.M. to 9:45 P.M. with a class break between 8:15 P.M. and 8:30 P.M.

Withdrawal from Courses

To effect a withdrawal, a student must notify the Director of his intent to withdraw from a course. Until such is done, a student is considered to be a member of the class even though he absents himself therefrom.

A student may withdraw from a course without prejudice provided that this withdrawal takes place with the permission of the Director of Evening School and within

the first three weeks of the semester. A student withdrawing with permission after the first three weeks will receive on his transcript a grade of WP (withdrew passing) or WF (withdrew failing). Any student withdrawing from a course without permission will incur a grade of F (Failing).

Grading System

At the completion of a course the student receives the number of semester hour credits at which the course is rated. The level of performance in a course is indicated by a letter grade: A, superior; B, above average; C, average; D, passing, but not satisfactory; F, failing; Inc., Incomplete; WF, withdrew failing; WP, withdrew passing. The arithmetical equivalents of the letter grades are A, 90-100; B, 80-89; C, 70-79; D, 60-69; F, below 60.

Quality Point Average

The student's semester quality point rating is a weighted value used to denote his relative standing. The point values assigned are A = 4 points, B = 3 points, C = 2 points, D = 1 point and F = 0 points. These point values, when multiplied by the credit hours assigned to the subject and added together, are divided by the sum of the credit hours to give the student's semester rating.

Students who are matriculated in the Associate Degree program must, at the completion of their program, have a cumulative quality point average of 2.0 or higher in order to meet the qualitative requirements for the degree.

All rules and regulations pertaining to the grading system and quality point average not herein mentioned but so recorded in the Institute's day school bulletin shall, in effect, apply to the Evening School Division.

Special Regulations

Students will be held responsible for damage that they may cause to Institute property. The Institute cannot assume the responsibility for losses of personal property upon its premises. The Institute reserves the right to withdraw courses due to insufficient registration.

Bookstore

The Institute-operated bookstore is located on the first floor of the Library & Art building. It is opened for the convenience of the Evening School students during the first three weeks of evening school. The hours are from 6:45 P.M. to 8:30 P.M.

Library

The facilities of the library and audio-visual aid room are made available to all evening school students. The library and reading rooms are open from 7:30 P.M. to 9:30 P.M. on the regularly scheduled nights for evening classes.

PROGRAM OF INSTRUCTION

The Evening Division of the New Bedford Institute of Technology offers three formal programs of study leading to the Associate Degree.

1. Associate in Business Administration.

2. Associate in Engineering, Electrical Engineering Technology.

3. Associate in Engineering, Mechanical Engineering Technology.

These programs cover several of the technological subjects usually included in our day school offerings, but the curricula, in some instances, are less extensive in scope than those required for the Baccalaureate degree. For these reasons, some credits earned in the Associate degree programs cannot be transferred to advanced standing leading to the Bachelor's Degree.

THE ASSOCIATE DEGREE PROGRAM AT THIS INSTITUTE IS A TERMINAL PROGRAM OF INSTRUCTION.

In addition to the Associate Degree program, this Institute will offer some credit and non-credit courses in the following areas:

1. Art and Design
2. Business Administration
3. Chemistry
4. Electrical Engineering
5. English and Modern Languages
6. Mathematics and Physics
7. Mechanical Engineering
8. Social Sciences
9. Textiles

BUSINESS ADMINISTRATION

Leading to the Degree of Associate in Science

FIRST YEAR
1st Semester

		R	L	C
E-101	English I	3	0	3
ABA- 11	Basic Accounting I	3	0	3
				6

2nd Semester

E-102	English II	3	0	3
ABA- 12	Basic Accounting II	3	0	3
				6

SECOND YEAR
1st Semester

AM- 23	Introductory Mathematics	3	0	3
ABA- 21	Intermediate Accounting	3	0	3
				6

2nd Semester

AM- 24	Mathematics of Finance	3	0	3
ABA- 22	Advanced Accounting	3	0	3
				6

THIRD YEAR
1st Semester

SS-231	Principles of Economics	3	0	3
ABA- 31	Marketing Principles I	3	0	3
				6

2nd Semester

SS-232	Economic Problems and Policies	3	0	3
ABA- 32	Marketing Principles II	3	0	3
				6

FOURTH YEAR
1st Semester

SS-412	Industrial Psychology	3	0	3
ABA- 41	Management Principles I	3	0	3
				6

2nd Semester

ABA- 42	Management Principles II	3	0	3
ABA- 44	Effective Communication	3	0	3
				6

FIFTH YEAR
1st Semester

ABA- 51	Business Law I	3	0	3
	or			
ABA- 53	Labor-Management Relations I	3	0	3
	and			
ABA- 55	Taxation I	3	0	3
	or			
AM- 51	Statistics I	3	0	3
				6

2nd Semester

ABA- 52	Business Law II	3	0	3
	or			
ABA- 54	Labor-Management Relations II	3	0	3
	and			
ABA- 56	Taxation II	3	0	3
	or			
AM- 52	Statistics II	3	0	3
				6

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ELECTRICAL ENGINEERING TECHNOLOGY
Leading to the Degree of Associate in Engineering

FIRST YEAR
1st Semester

		R	L	C
E-101	English I	3	0	3
AM- 11	Technical Mathematics I	3	0	3
AME- 11	Engineering Drawing I	0	3	2
				8

2nd Semester

E-102	English II	3	0	3
AM- 12	Technical Mathematics II	3	0	3
AME- 12	Engineering Drawing II	0	3	2
				8

SECOND YEAR
1st Semester

AM- 21	Calculus I	3	0	3
AP- 12	Physics I	3	0	3
AEE- 32	Electrical Engineering Materials	1½	0	1½
				7½

2nd Semester

AM- 22	Calculus II	3	0	3
AP- 21	Physics II	3	0	3
AEE- 32	Electrical Engineering Materials	1½	0	1½
				7½

THIRD YEAR
1st Semester

AME- 24	Mechanics I	3	0	3
AEE- 21	Electric Circuits I	3	0	3
AEE- 34	Electrical Measurements I	0	1½	1
				7

2nd Semester

AME- 31	Mechanics II	3	0	3
AEE- 22	Electric Circuits II	3	0	3
AEE- 34	Electrical Measurements II	0	1½	1
				7

FOURTH YEAR
1st Semester

AEE- 41	Electronic Fundamentals	3	0	3
AEE- 43	Electric Machinery	3	0	3
AEE- 45	Electrical Engineering Lab. I	0	3	2
				8

2nd Semester

AEE- 42	Electronic Circuits I	3	0	3
SS-412	Industrial Psychology	3	0	3
AEE- 46	Electrical Engineering Lab. II	0	3	2
				8

FIFTH YEAR
1st Semester

AEE- 51	Electronic Circuits II	3	0	3
AEE- 44	Transmission Lines	3	0	3
AEE- 55	Electrical Engineering Lab. III	0	3	2
				8

2nd Semester

AEE- 52	Transistor Circuits	3	0	3
AEE- 53	Control Systems	3	0	3
AEE- 56	Electrical Engineering Lab. IV	0	3	2
				8

MECHANICAL ENGINEERING TECHNOLOGY
Leading to the Degree of Associate in Engineering

FIRST YEAR
1st Semester

		R	L	C
E-101	English I	3	0	3
AM- 11	Technical Mathematics I	3	0	3
AME- 11	Engineering Drawing I	0	3	2
				8

2nd Semester

		R	L	C
E-102	English II	3	0	3
AM- 12	Technical Mathematics II	3	0	3
AME- 12	Engineering Drawing II	0	3	2
				8

SECOND YEAR
1st Semester

		R	L	C
AM- 21	Calculus I	3	0	3
AP- 12	Physics I	3	0	3
AME- 21	Machine Tool Processes I	0	3	2
				8

2nd Semester

		R	L	C
AM- 22	Calculus II	3	0	3
AP- 21	Physics II	3	0	3
AME- 22	Machine Tool Processes II	0	3	2
				8

THIRD YEAR
1st Semester

		R	L	C
AME- 24	Mechanics I	3	0	3
AEE- 21	Electric Circuits I	3	0	3
AME- 33	Machine Drawing I	0	3	2
				8

2nd Semester

		R	L	C
AME- 31	Mechanics II	3	0	3
AEE- 22	Electric Circuits II	3	0	3
AME- 34	Machine Drawing II	0	3	2
				8

FOURTH YEAR
1st Semester

		R	L	C
AME- 41	Thermodynamics I	3	0	3
AME- 43	Metallurgy	3	0	3
AME- 45	Mechanisms	0	3	2
				8

2nd Semester

		R	L	C
AME- 42	Thermodynamics II	3	0	3
AME- 32	Strength of Materials	3	0	3
AME- 46	Mechanical Engineering Lab. I	0	3	2
				8

FIFTH YEAR
1st Semester

		R	L	C
AME- 44	Hydraulics	3	0	3
AME- 51	Machine Design I	3	0	3
AME- 53	Mechanical Engineering Lab. II	0	3	2
				8

2nd Semester

		R	L	C
SS-412	Industrial Psychology	3	0	3
AME- 52	Machine Design II	3	0	3
AME- 54	Tool and Die Design	0	3	2
				8

CREDIT AND NON-CREDIT COURSES

Art and Design

	R	L	C
Basic Photography	0	3	0
Drawing and Painting (2 sem.)	0	3	0
Screen Painting (2 sem.)	0	3	0

Business Administration

		R	L	C
BA-101	Basic Accounting I	3	0	3
BA-102	Basic Accounting II	3	0	3
BA-201	Intermediate Accounting	3	0	3
BA-202	Advanced Accounting	3	0	3
BA-301	Cost Accounting I	3	0	3
BA-302	Cost Accounting II	3	0	3
BA-303	Business Law I	3	0	3
BA-304	Business Law II	3	0	3
*BA-501	Curriculum Dev. in Bus. Ed.	3	0	3
	Federal Income Taxes	2	0	0

Chemistry

		R	L	C
	General Inorganic Chemistry	1	2	0
Ch-111	General Chemistry I	3	2	4
Ch-112	General Chemistry II	3	2	4
Ch-351	Bacteriology	2	2	3

Electrical Engineering

		R	L	C
EE-412	Feedback Control Systems I	3	0	3
EE-413	Feedback Control Systems II	3	0	3
EE-416	Transistor Circuits	3	0	3
EE-417	Transient Analysis	3	0	3
EE-424	Logic Circuit Design	3	0	3

English and Modern Languages

		R	L	C
E-101	English Composition	3	0	3
E-102	English Comp. & Intro. to Lit.	3	0	3
E-301	Masterpieces of World Lit.	3	0	3
E-322	Chaucer's Canterbury Tales	3	0	3
L-201	French I	3	0	3
L-202	French II	3	0	3
L-211	German I	3	0	3
L-212	German II	3	0	3
	Spanish	3	0	0

Mathematics and Physics

		R	L	C
	Pre-College Mathematics	3	0	0
M-101	Algebra and Analytic Geometry	4	0	4
*M-102	Calculus I	4	0	4
*M-201/2	Calculus II & III	3	0	3
*M-223	Linear Algebra	3	0	3
*M-250	Descriptive Astronomy	3	0	3
*M-311/12	Statistics I & II	2	2	3
*M-340	Linear Programming	3	0	3
*M-401	Philosophy of Science	3	0	3
*P-102	Physics I	3	2	4
*P-201/2	Physics II & III	3	2	4
P-211/12	College Physics I & II	3	2	4
*P-301	Modern Physics	3	0	3

Mechanical Engineering

		R	L	C
ME-131/32	Engineering Drawing I & II	0	3	1
ME-214	Mechanics (Statics)	3	0	3
ME-310	Mechanics (Dynamics)	3	0	3
*ME-410	Engr. Draw. for H.S. Teachers	1	2	2
*ME-417	Advanced Kinematics	3	0	3
*ME-424	Vibrations	3	0	3

Social Sciences

		R	L	C
SS-110	General Psychology	3	0	3
SS-221	Hist. of Western Civilization II	3	0	3
*SS-231/32	Economic Analysis Problems and Policies I & II	3	0	3
*SS-240	Government	3	0	3
*SS-311	Psychology of Adjustment	3	0	3
*SS-333	Economic Geography	3	0	3
*SS-334	Contemporary Economic Issues	3	0	3
*SS-341	Formation of Am. Foreign Pol.	3	0	3
*SS-412	Industrial Psychology	3	0	3
*SS-423	Hist. of American Civilization	3	0	3

Textiles

	R	L	C
Power Sewing	0	1½	0
Sewing Machine Maintenance	0	1½	0

* *Graduate Credit upon acceptance by participating college*

DEPARTMENT OF BUSINESS ADMINISTRATION

ABA-11—Basic Accounting I (3-0-3). This course covers the basic principles and procedures in the development of the accounting cycle with emphasis on use of accounting knowledge as a fundamental aid to management and marketing.

ABA-12—Basic Accounting II (3-0-3). Introduction to partnership and corporation accounting. Consideration is given to the effects of automation in accounting procedures.

Pre-requisite ABA-11.

ABA-21—Intermediate Accounting (3-0-3). Review of the nature and presentation of basic financial reports and records. A detailed analysis of profit and loss accounts and the effect on the balance sheet equation. Consideration of errors and corrections required by the most reputable standards in current professional practices.

Pre-requisite ABA-12.

ABA-22—Advanced Accounting (3-0-3). A detailed study of procedures in partnership and corporation accounting. Installment and consignment sales, consolidations and fiduciary and budgetary accounting.

Pre-requisite ABA-21.

ABA-31, 32—Marketing Principles I & II (3-0-3) (3-0-3). The study of the role of distribution in a dynamic economy. Social and economic value of marketing activities. Analysis of the processes and institutions involved in the distribution of commodities: product line selection, choice of wholesale and retail channels, advertising and determination of pricing strategy. Analysis of consumer demand through sampling techniques.

ABA-41, 42—Management Principles I & II (3-0-3) (3-0-3.) The study of the applications of basic economic principles to managerial decisions. A survey of the various techniques for planning, organizing and controlling production. Case studies are used to provide familiarity with actual problems of production control, purchasing, location, physical facilities and personnel.

ABA-44—Effective Communication (3-0-3.) The fundamental principles of effective writing with emphasis on clearness, conciseness, concreteness, character and courtesy. Practical problems and practice in the preparation of inquiries and replies, notices, announcements, invitations, orders, acknowledgments, human-interest messages, the letter of application, effective sales letters and sales talks, adjustments, credit and collection letters.

Pre-requisite E-102.

ABA-51—Business Law I (3-0-3). Study of legal principles and laws applicable to business. Courts and court procedure. Sales, insurance, contracts, agency, common carriers, partnerships. Text and case methods are used.

ABA-52—Business Law II (3-0-3). Laws pertaining to corporations, property sales, negotiable instruments and bankruptcy.

Pre-requisite ABA-51.

ABA-53, 54—Labor-Management Relations I & II (3-0-3) (3-0-3.) This course is designed to familiarize the student with problems in the field of labor-management relations, the approach of labor and management to these problems, the historic and economic background from which these problems have arisen, and government regulations in this field. Emphasis will be placed upon the following topics: The history of unionism in the United States, labor law and its enforcement, the structure and function of unions, collective bargaining, strikes, boycotts, lock-outs and labor economics.

ABA-55—Taxation I (3-0-3). A course designed to acquaint the student with basic tax problems affecting the individual and the business organizations with which he may become associated. In addition to individual income taxes, sales and excise taxes as well as real and personal property taxation are treated.

ABA-56—Taxation II (3-0-3). A study of the Internal Revenue Code as it affects individuals, partnerships, and corporations. Practical application through the preparation of tax returns for all types of taxpayers.

Pre-requisite ABA-55.

DEPARTMENT OF ELECTRICAL ENGINEERING

AEE-21—Electric Circuits I (3-0-3). Introduction to electric circuit theory including a study of passive and active circuit parameters. Kirchhoff's Laws, loop-current and node-voltage equations, principle of superposition, power relationships and graphical analysis techniques.

AEE-22—Electric Circuits II (3-0-3.) Continuation of AEE-21. Network topology, duality, other network theorems, maximum power transfer, and simple transient response of RL-, RC-, RLC-circuits.

AEE-31—Electric Circuits III (3-0-3). Continuation of AEE-22. Alternating-current theory. Immittances, steadt-state performance, three-phase circuits, frequency response, and resonant circuits.

AEE-32—Electrical Engineering Materials (3-0-3). Elementary study of dielectric, magnetic, and conductive properties of materials, including semi-conductors, and their application in electrical engineering.

AEE-34—Electrical Measurements (1-2-2). Lecture-laboratory course including a study of types of electrical instruments, theory of operation, and methods of measurement.

AEE-41—Electronic Fundamentals (3-0-3). Introduction to electronic ballistics and semi-conductor theory. Vacuum diode and semi-conductor diode operation, triode and multi-element tubes, and transistor operation.

AEE-42—Electronic Circuits I (3-0-3). Study includes rectifier circuits, feedback circuitry, cascaded circuits, oscillators.

AEE-43—Electric Machinery (3-0-3). Study of DC and AC rotating energy conversion machinery and their control. Transformers and transformer theory.

AEE-44—Transmission Lines (3-0-3). Introductory field theory and traveling-wave phenomena. Topics included: transient waves, sinusoidal waves, transmission efficiency, impedance matching, equivalent lumped-parameter circuits, Smith Chart.

AEE-45—Electrical Engineering Laboratory I (0-3-2).

AEE-46—Electrical Engineering Laboratory II (0-3-2).

AEE-51—Electronic Circuits II (3-0-3). Continuation of AEE-42 including the study of filter circuits, regulators, communication systems, pulse circuits, and other wave-shaping circuits.

AEE-52—Transistor Circuits (3-0-3). Review of semi-conductor properties. Study of basic transistor circuits, including limitations; input, output, and transfer parameters; amplifiers; oscillators; and biasing techniques.

AEE-53—Control Systems I (3-0-3). Study of various transducers, electrical measurement of physical characteristics, indicators and recorders, controllers, and actuators. Discussion of control applications.

AEE-54—Control Systems II (3-0-3). Introduction to feedback control theory including system stability, block diagrams, network reduction, transfer functions obtained by experimental methods, classical and graphical methods of determining system response.

AEE-55—Electrical Engineering Laboratory III (0-3-2).

AEE-56—Electrical Engineering Laboratory IV (0-3-2).

DEPARTMENT OF MATHEMATICS AND PHYSICS

AM-11—Technical Mathematics I (3-0-3.) This is an introductory mathematics course for post-secondary students who intend to enter some field of technology. A thorough review of basic algebra is followed by a substantial treatment of analytic geometry.

AM-12—Technical Mathematics II (3-0-3). A continuation of Technical Mathematics I with a study of advanced algebra and logarithms. Numerical trigonometry is included with emphasis on the oblique triangle and trigonometric applications.

Pre-requisite AM-11.

AM-21—Calculus I (Differential) (3-0-3). This course begins with a study of the pertinent concepts of analytic geometry which lead to the notion of the derivative. Then the derivatives of elementary functions are developed and applied. The concepts of limit and continuity are introduced and discussed at appropriate stages in the course. The course concludes with the integral concept and an introduction to the process of integration.

Pre-requisite AM-12.

AM-22—Calculus II (Integral) (3-0-3). After a brief review of the basic notion of integration and a discussion of the Fundamental Theorem of Integral Calculus, the various techniques of integration of elementary functions are discussed and applied. The study of limits and sequences serves as an introduction to infinite series. Multiple integration and applications conclude the course.

Pre-requisite AM-21.

AM-23—Introductory Mathematics (3-0-3). An introductory course in algebra. The following topics are studied in detail: factoring, fractions, functions and graphs, systems of linear equations, exponents and radicals.

AM-24—Mathematics of Finance (3-0-3). This course covers the basic mathematics essential to an understanding of financial computations. The following mathematical principles and applications are studied: simple and compound interest, partial payments, bank discount, annuities, depreciation, valuation of bonds and insurance.

AM-51—Statistics I (3-0-3). A course to acquaint the student with the basic concepts in statistics. A study is made of the meaning of statistics, the collection of statistical data, tabular presentation, ratios, percentages, bar charts, line charts, statistical maps, pi-charts, basic concept of

frequency distribution, histograms, frequency polygons and Lorenz curve.

Pre-requisite AM-12.

AM-52—Statistics II (3-0-3). A continuation of AM-51 including the arithmetic mean, median, mode, dispersion, skewness, quartile, deviation, standard deviation, kurtosis, moments of frequency distribution, random samples, statistical inference, index numbers, correlation, time series analysis including the secular trend, the seasonal fluctuation, cycles and forecasting.

Pre-requisite AM-51.

AP-12—Physics I (3-0-3). This course is designed to meet the needs of a student in the Associate Degree program. Mechanics and heat are covered in the first semester. Demonstrations of physical principles are incorporated into the lecture periods with an occasional laboratory period to further amplify the development of this course.

AP-21—Physics II (3-0-3.) This course follows the same development as Physics I in both classroom and laboratory assignments. The areas of study in this semester are: electricity and magnetism, sound and light.

Pre-requisite AP-12.

DEPARTMENT OF MECHANICAL ENGINEERING

AME-11—Engineering Drawing I (0-3-2). A course which provides the student with a background in free-hand lettering and sketching, multiview projection, isometric and oblique drawing, sectional views and blue-print reading.

AME-12—Engineering Drawing II (0-3-2). A continuation of the first semester. Auxiliary views, intersections and developments, dimensioning, tolerancing, threads and fasteners, and descriptive geometry are some of the areas which are stressed in this phase of study.

AME-21, 22—Machine Tool Processes I & II (0-3-2) (0-3-2). A course consisting of laboratory and a series of lectures designed to familiarize the student with the basic machine tools of industry. The laboratory consists of operating the lathes, shapers, milling machines and grinders while the lectures point out the theory of operation and the capacities and economics of the various devices.

AME-24—Mechanics I (Statics) (3-0-3). An introductory course in mechanics beginning with a study of the statics of particles—concentric, coplanar force systems through non-coplanar, nonconcentric forces in space; statics of rigid bodies in two and three dimensions; equivalent

systems of forces and equilibrium of rigid bodies; location of centroids and centers of gravity; analysis of structures, strusses, frames and machines; friction; distributed forces; and moments of inertia.

AME-31—Mechanics II (Dynamics) (3-0-3). An introduction to the kinematics and kinetics of particles, force, mass and acceleration, work and energy, and impulse and momentum. Considers the kinematics and kinetics of rigid bodies, dynamic equilibrium, work and energy, impulse and momentum, and impact. It further includes a study of rectilinear and curvilinear motion, rotation and plane motion of bodies.

AME-32—Strength of Materials (3-0-3). A course emphasizing the fundamental principles used in design and selection of materials. Considers concentric loading; a study of thin-walled cylinders; emphasizes stress and introduces Mohr's circle; torsional loading of circular cross sections; flexural loading, statically indeterminate beams, combined loading; columns; repeated loading and dynamic loading; welded and riveted connectors. There is further included a study of energy-strain and mechanical and physical properties of materials. Approximately seven laboratory experiments are conducted and written reports submitted.

AME-33—Machine Drawing I (0-3-2). An application of the principles learned in Engineering Drawing I & II by preparing detail working and assembly drawings of machine parts. Introductory welding and piping drafting.

AME-34—Machine Drawing II (0-3-2). Topics covered are spur, bevel, rack and worm gearing. A study is also made of cam motions and design in addition to elementary jig and fixture design.

AME-41, 42—Thermodynamics I & II (3-0-3) (3-0-3). A series of lectures discussing that branch of physics dealing with the laws of transformation of heat into other forms of energy and vice versa. Topics for discussion include thermodynamic properties, conservation of energy, energy relation, the ideal gas, first and second laws of thermodynamics.

The second semester is a continuation of the first with emphasis being placed on liquids and vapors rather than the ideal gas.

AME-43—Metallurgy (3-0-3). A course consisting of lectures supplemented by a series of laboratory assignments. The course presents the fundamentals of metal structure, factors affecting engineering properties, static and dynamic properties of metallic materials, corrosion and extraction of metals from their ores. Also included is a study of phase diagrams and simple alloy systems, heat treatment and the iron-iron carbide diagram.

AME-44—Hydraulics (3-0-3). A course devoted to the study of incompressible fluids covering static fluids, flow measurement and instrumentation, dynamic fluid, losses in systems and a brief coverage of pumps and fluid machines.
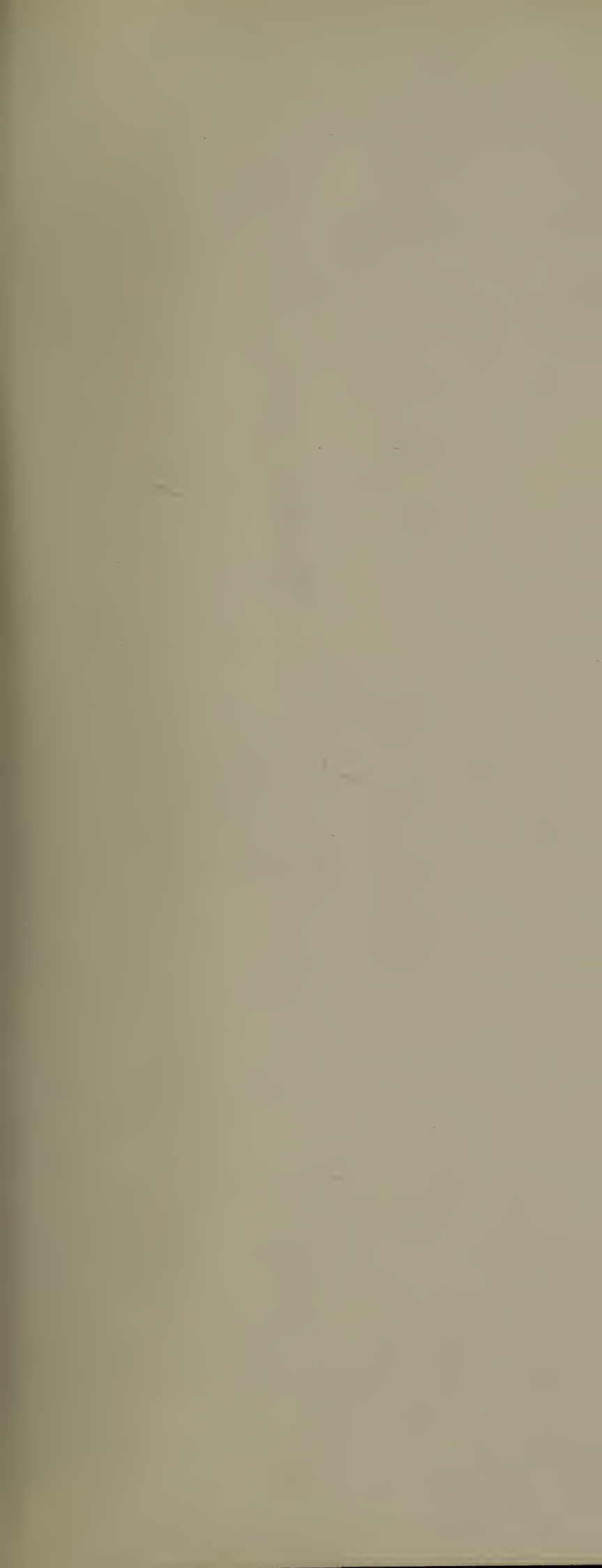
AME-45—Mechanisms (0-3-2). A study of the relative motions of machine parts. Operating principles are analyzed to determine displacement, velocity and acceleration by analytical and graphical methods. Emphasis is placed upon linkages, cams, rolling contact, gearing, flexible connectors, gear trains, translation screws and dimensional synthesis.

AME-46, 53—Mechanical Engineering Laboratory I & II (0-3-2) (0-3-2). A series of experiments designed to illustrate physical properties of materials and to integrate the various subjects covered showing methods of testing and methods of measurement.

AME-51—Machine Design I (3-0-3). An introduction to design and selection of components used in the design of machines. Simple stress analysis, use of physical properties of materials in design, design factors, power and power transmission, design and selection of key pulleys and belts are some of the topics covered.

AME-52—Machine Design II (3-0-3). A continuation of Machine Design I providing instruction in the design and selection of the following elements: gears, couplings, bearings, clutches, fastenings and springs. Supplementary work with fits and tolerances with combined stresses are also included.

AME-54—Tool and Die Design (0-3-2). A laboratory course providing an opportunity to discuss the basic principles involved in the design of jig fixtures and simple dies. Problems involving the selection of standard parts from manufacturers catalogues are assigned which provide an experience similar to that of industry.