

MASSACHUSETTS INSTITUTE OF TECHNOLOGY BULLETIN

Volume 89, Number 5



THIS IS M.I.T.

CAMBRIDGE, MASSACHUSETTS, JULY, 1954



A. Westgate and Westgate West
B. Burton House
C. Baker House
D. Playing Fields
E. Graduate House
F. Briggs Field House
G. Rockwell Athletic Cage

J. Walker Memorial
K. John Thompson Dorrance Laboratory
for Biology and Food Technology
L. The East Campus Houses
M. Alumni Swimming Pool
N. Hydrodynamics Laboratory
O. Sloop Building

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INSTITUTE OF
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JULY, 1954

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General Catalogue, and *This Is M.I.T.*

*The Institute reserves the right to make changes in the regu-
lations and courses announced in this Bulletin*

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE, MASSACHUSETTS, U.S.A.

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CALENDAR

FOR ACADEMIC YEAR 1954-1955

	1954	
Fall Term Begins for Freshmen	Sept. 16	
Fall Term Begins for Upperclassmen and Graduate School	Sept. 20	
Columbus Day (<i>Holiday</i>)	Oct. 12	
Field Day (<i>Exercises omitted</i>)	Oct. 30	
Armistice Day (<i>Holiday</i>)	Nov. 11	
Thanksgiving Vacation	Nov. 25 through Nov. 28	
Christmas Vacation	Dec. 18 through Jan. 2	

	1955	
Last Exercises, Fall Term	Jan. 19	
Reading Period	Jan. 20 through Jan. 22	
Examination Period	Jan. 24 through Jan. 28	
Spring Term Begins	Feb. 7	
Washington's Birthday (<i>Holiday</i>)	Feb. 22	
Spring Vacation	March 28 through April 3	
Patriots' Day (<i>Holiday</i>)	April 19	
Last Exercises, Spring Term	May 24	
Reading Period	May 25 through May 27	
Examination Period	May 28 through June 3	
Memorial Day (<i>Holiday</i>)	May 30	
Commencement Day	June 10	
Summer Session 1955 Begins	June 13	
Fall Term 1955 Begins	Sept. 19	

1954

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THIS IS M. I. T.

M.I.T. is an independent, endowed educational institution which has concentrated its resources in certain broad areas: science, engineering, architecture and regional planning, industrial management, and the humanities and social studies.

Through this principle of concentration it brings to bear upon the areas of its major interests the services of a distinguished faculty, together with physical facilities of unparalleled variety and completeness.

The M.I.T. student typically enters his freshman year directly from high or preparatory school; he follows a four-year (or, in architecture, a five-year) program of study in the undergraduate school which constitutes M.I.T.'s major educational activity. Here he finds himself in an environment at once friendly and stimulating, which is calculated to help him develop his interests and powers to the fullest extent.

Going to M.I.T. is a broad-gauged undertaking. An M.I.T. education combines general and professional education; it emphasizes development of intellectual power and breadth, rather than premature or excessive specialization; it encourages mental and physical health through its recognition that campus life, athletic and social—as well as academic life—is an important factor in the education of well-rounded, healthy, effective people.

By a combination of general education and professional education at the undergraduate level, M.I.T. strives to educate the “whole man”: the man who has a thorough basic knowledge of his profession; who is capable of working with and through people in industrial, scientific, engineering, and architectural projects which require administrative talents of a high order; who perceives the effects of his work within its social context; and who is able to meet the non-professional demands of life and to fulfill the requirements of good citizenship *more than adequately*.

The facts that follow will give a partial picture of M.I.T.

THE PEOPLE

STUDENTS

In selecting its students, the Institute seeks quality rather than numbers. Only a limited number of students can receive education of high calibre from a given number of professors, laboratories, libraries, and dormitories. Such a limitation on the number of students, coupled with the large number of applications for admission each year, permits the admission of young men and women who are outstanding not only as students but also as people.

M.I.T. students are young men and women who have demonstrated not only that they possess an intellectual capacity justifying their entrance into M.I.T. but also that they are all-round people whose interests extend beyond the confines of the laboratory into the realms of human relations. The typical M.I.T. student is not a genius. M.I.T. seeks people who enjoy athletics and campus activities, who have shown initiative and leadership in their previous activities, and who have indicated in their school marks a good basic intelligence and a sincere and conscientious interest in their work.

The normal, intelligent, mentally and socially awake students of today will take the leading positions in the business, industry, and research of tomorrow; and M.I.T., as a school that educates men and women for such positions, feels the responsibility of obtaining the most promising students and of giving them the best possible education.

The entering student therefore discovers that his fellow students, who number around 4,500, 3,000 of whom are undergraduates, make up a friendly, varied, and active group of men and women, who come from every state and from virtually every country of the world. The M.I.T. student body is the most cosmopolitan of any university in the United States.

FACULTY

The staff of the Institute totals over 1,400, of whom the 457 Professors, Associate Professors, and Assistant Professors are members of the Faculty. Active teaching is done not only by the Faculty but also by a corps of Instructors, Technical Instructors, Teaching Assistants, Lecturers, and others, so that in general there is one teacher to every five students. This proportion, unusual in university education, assures rich opportunity for individual instruction and for personal discussion of problems which is facilitated also by a carefully administered system of registration officers and advisers to students. Close association of teacher and student is an essential part of M.I.T.'s philosophy of education. Beyond that, it is a source of pleasant friendship and of intellectual stimulation.

The teachers of the Institute are as varied and interesting a group as the students. Some members of the Faculty are scientists and engineers internationally renowned for their achievements in basic research and for their applications of scientific and engineering knowledge in enterprises of great magnitude. Some are theorists who are working daily on the most remote frontiers of new knowledge. Others are young men who are members of research teams pioneering under the direction of senior colleagues. Some bring into the classroom and the lecture hall a wide range of first-hand professional knowledge gained through work in widely scattered parts of the globe. Others render their teaching immediate and compelling through their special understanding of the larger meaning of science and engineering—understanding which they have gained as advisers and leaders in various Federal government



Student and teacher—a team working together.

agencies as well as in the armed services of this country. Most can vitalize their teaching by means of practical illustrations and problems derived from work and consultation with other participants in the major industrial efforts of the United States.

A versatile group as well—with broad interests outside their professional lives—the M.I.T. instructing staff includes orchid growers, painters, writers, sculptors, boat builders, woodsmen, and all sorts of other hobbyists. There is a mathematics professor, for instance, who pitched professional baseball, and a mechanical engineering professor whose paintings have carried off prizes. There are scores of people who are interesting as people and who—more than that—are interested in people, responsive to friendship, and therefore ready to go more than half way in helping their students. The Institute is a friendly place.

THE IDEAS

“What’s the big idea?” This question pops up around every corner of life. It is an important question, for it is in a large degree reflective of the attitude that brings about human progress. It asks for purposes, goals, principles. It asks why. A discussion of five of the big ideas that lie at the base of the Institute program follows.

ADVANCEMENT OF KNOWLEDGE

The Institute by charter and in spirit exists for the purpose of advancing knowledge in the sciences, engineering, architecture, and management. It fulfills this fundamental purpose by means of a two-fold program of education and research. The research activities of the Institute have been embodied in the notable additions to

knowledge made by its staff. Its larger duty is, however, to provide young men and women with a sound and well ordered education, and to train them in orderly and systematic methods of thought, so that they will be useful and productive members of society.

CREATIVE EDUCATION AND RESEARCH

The word *creative* best describes the Institute's activities. Its original research is essentially creative. Its educational program is carried through in the spirit of creativeness. Students learn in an atmosphere where new fields of knowledge are being explored daily by the same men who are teaching them the established knowledge basic to thorough understanding and creative research. The undergraduate program brings the student through the settled area of knowledge, shows him the present-day frontier, and points out to him the vast territories that have yet to be explored.

Not all M.I.T. students are going to be research scientists. The large majority will find creative satisfaction in applying established useful knowledge to the business and industry that form the backbone of present-day society. The difference between the pure scientist, whose chief concern is to evolve and explore new scientific theories, and the applied scientist, whose chief concern is the practical application of those theories to a particular industry, is merely a matter of emphasis. The M.I.T. program strives to make students familiar with the whole scientific picture of which their specialized training is a part, so that they will have both competence in a specialized field and a wide view and understanding of scientific advances—prerequisites to the creative practice of their professions.

Engineers work through people—often very large organizations of people. The arts of management, finance, psychology, and human relations in their every aspect are essential to these activities and play a large part in M.I.T. education. Above all, the scientist and engineer need the broad sense of human values which comes with the study of the humanities and of human society in its larger aspects. An engineer studies history, literature, and philosophy, not as ornaments, but rather because he can scarcely be a first-rate engineer without them.

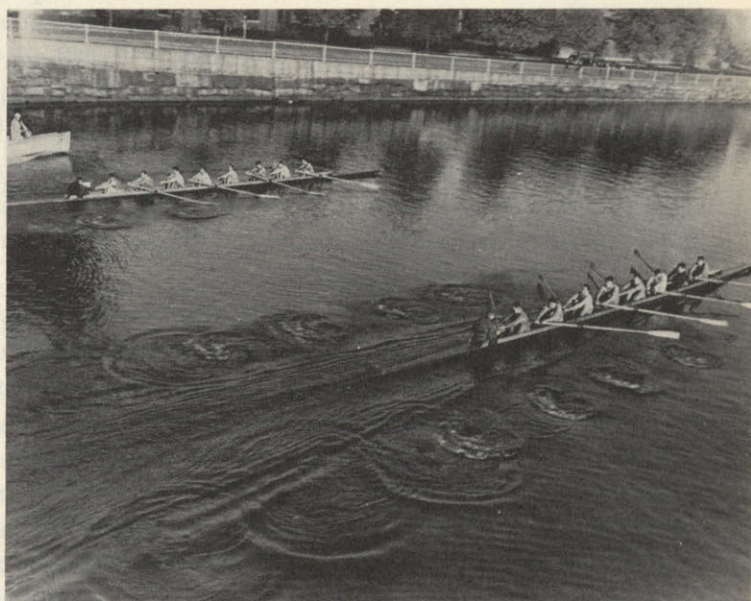
LEARNING BY DOING

"Learning by doing" has become almost a slogan at M.I.T. More accurately, it is learning by *thinking about* what one is doing. It is an expression of the interdependence of the theoretical and the practical, of the lecture room and the laboratory. The questions "Why does it work?" and "Why does it happen?" are discussed in the lecture room; the questions "How does it work?" and "How does it happen?" are answered in the laboratory, where the student himself constructs the practical application of the theory and watches it work. The Geology Camp and Summer Surveying Camp, practice schools, co-operative courses, and many opportunities for students of M.I.T. to visit industrial plants carry further this idea of learning by doing.



Whirlwind Computer at M.I.T.—Institute research thus aids the advancement of knowledge.

Athletics play a large part in the education of the whole man.



IMPORTANCE OF USEFUL KNOWLEDGE

The man doing research in nuclear physics, the engineer in the field, the executive in industry, and the architect of the city are all holding responsible positions in society, and their work is affecting the entire structure of society materially, politically, and culturally. It does not take much imagination to see these effects. The progress of science has brought about visible changes in the appearance of towns and cities and in the pattern of every-day living; the advances in transportation and communication have created, in effect, a smaller world, which in turn has influenced the political happenings and cultural views of the world; the coming of the atomic age has changed our picture of the structure of the universe and has influenced the world of ideas as well as the course of world events.

These constant examples of the effects of scientific progress on society emphasize for those who teach and study at M.I.T. the importance and worth of their work and point up the responsibility of the scientist to know the political, social, and cultural results of his work in the world about him.

EDUCATING THE "WHOLE MAN"

M.I.T. graduates are among the men who will create and administer scientific and technological progress in a world where science and technology have come to the fore as sources of security to free nations and as determinants of world affairs. Society looks to the scientist for a wider form of leadership than he has traditionally supplied, a form of leadership based on a thorough knowledge of the entire cultural environment of which his work is a part.

For this reason, the School of Humanities and Social Studies offers an integrated program to introduce the students of M.I.T. to the wider world of ideas, attitudes, and beliefs, historical and current, that determine the structure of present-day society. This program serves the aim of the Institute to send out graduates who are "whole men," of broad perspective, to take positions of leadership in scientific, industrial, national, and international affairs.

This aim cannot be achieved solely by formal courses. Voluntary student activities have important cultural by-products and contribute to the same end. Student government and activities, athletics, and campus living are educational in themselves. Through them the student learns much that will be of value to him in working with people in his professional life. Through such activities he may enrich his interests and broaden his perspective. Student activities are run entirely by students, with encouragement from the Institute in the form of financial aid and facilities. They offer the student the experience of practice in democracy on a campus-wide scale and provide him with the opportunity of exercising responsibility and leadership.

THE PLACE

CAMPUS

The M.I.T. campus extends for over a mile along the Cambridge bank of the Charles River Basin, facing the skyline of Boston. On this one-hundred acre tract are educational buildings, research laboratories, administrative and faculty offices, student residences, cafeterias, dining halls, libraries, infirmary, gymnasiums, athletic fields and field houses, tennis courts, student union, swimming pool, sailing pavilion, and boathouse—facilities that provide an ample framework for the busy and varied life of the M.I.T. community.

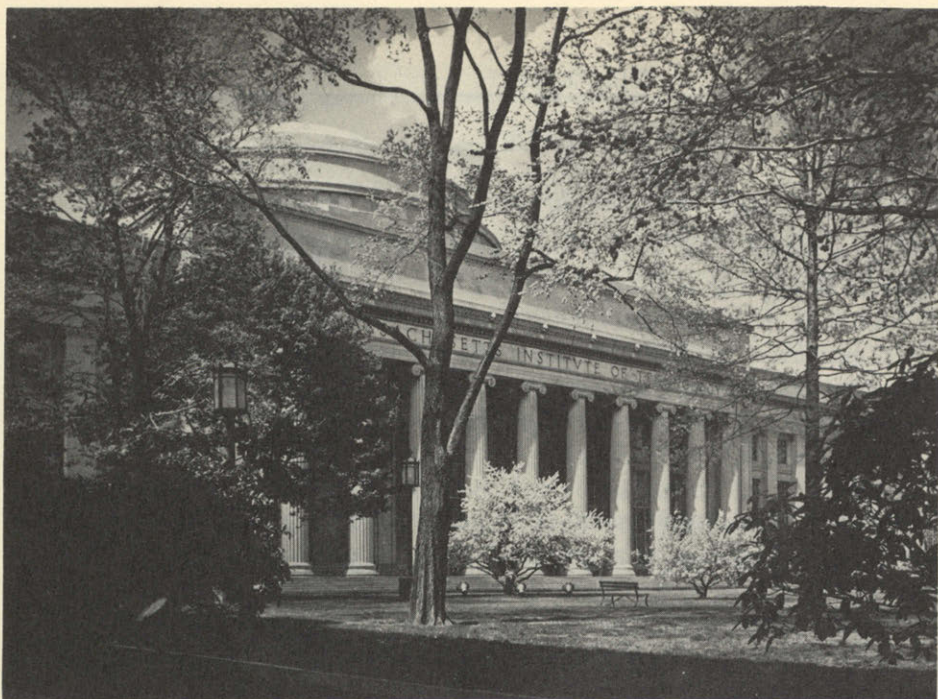
Educational Buildings. The arrangement of these facilities is unique. Nearly all Departments are brought together in a group of joined educational buildings containing over one million square feet of floor space. These buildings are designed to permit flexibility in the allotment of space to projects and Departments that are continually changing and growing with the influx of new ideas. The extensive athletic plant and playing fields are on the campus, where they are fully accessible. Recreational buildings, dormitories, and dining halls are convenient to the educational buildings.

This convenient arrangement of the campus is no accident. It is an expression of the unity that pervades the Institute—unity among the sciences and humanities, among faculty, students, and administration, among the intellectual, social, and recreational aspects of living. M.I.T. was built to contain, in harmonious grouping, a single intellectual family.

Libraries. M.I.T. offers, in its libraries, one of the foremost collections of science and engineering literature in the world. It encourages and aids its students in discovering the advantages that may be gained from fingertip knowledge of where a particular type of literature is located, from a clear realization of how much literature is available, and from the resultant ability to put precious time to good use.

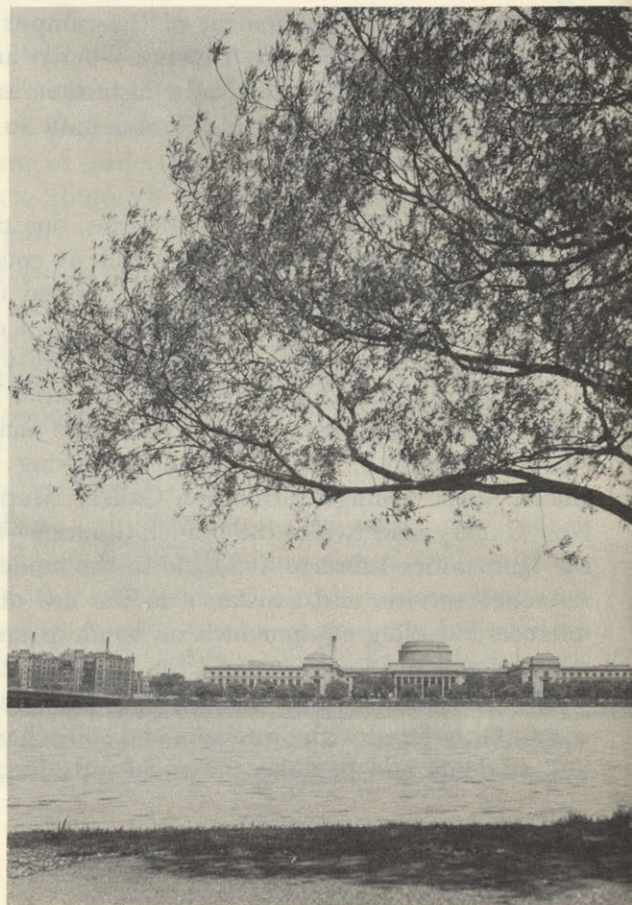
The magnificent Charles Hayden Memorial Library, completed and dedicated in 1950, contains the General Library and the main book collection, as well as the circulation, reference, and technical processing departments, library administration offices, Music Lounge, Exhibition Gallery, Map Room, Dard Hunter Paper Museum, New Gallery, and two of the branch libraries—the consolidated Science Library and the Humanities Library. Available to the student are bibliographical aids, individual reference service, and assistance in the use of the card catalogue. Microfilm and microcard reading equipment is on hand, as are complete photostatic and microfilm services.

The Music Library in this building deserves special mention. Its large lounge, comfortably fitted with armchairs and sofas, has become a gathering place for faculty and students and has also drawn in outsiders to hear fine music reproduced on a



Nearly all Departments are brought together in a group of joined educational buildings containing over one million feet of floor space.

The M.I.T. campus extends for over a mile along the Charles River Basin, facing the Boston skyline.





M.I.T. offers, in its libraries, one of the foremost collections of science and engineering literature in the world. Pictured—the Charles Hayden Memorial Library, completed in 1950.

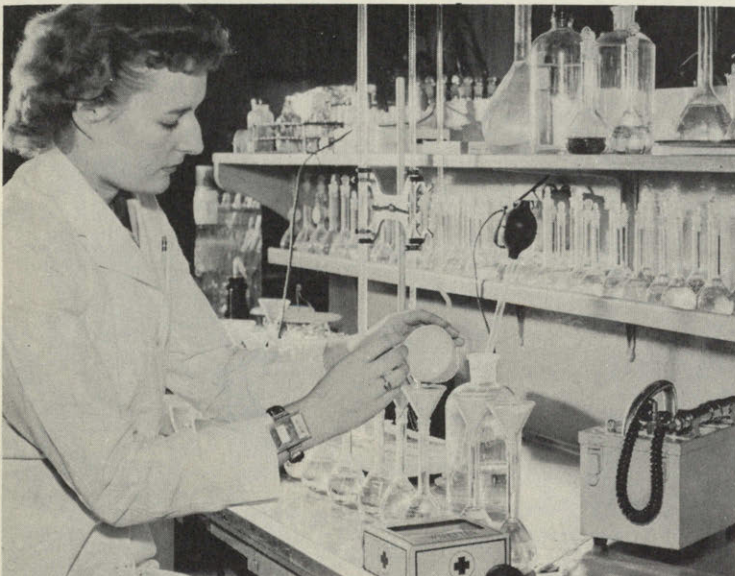


The Music Lounge in the Charles Hayden Memorial Library has become a gathering place where students, faculty, and staff can hear fine music reproduced on a high fidelity player.

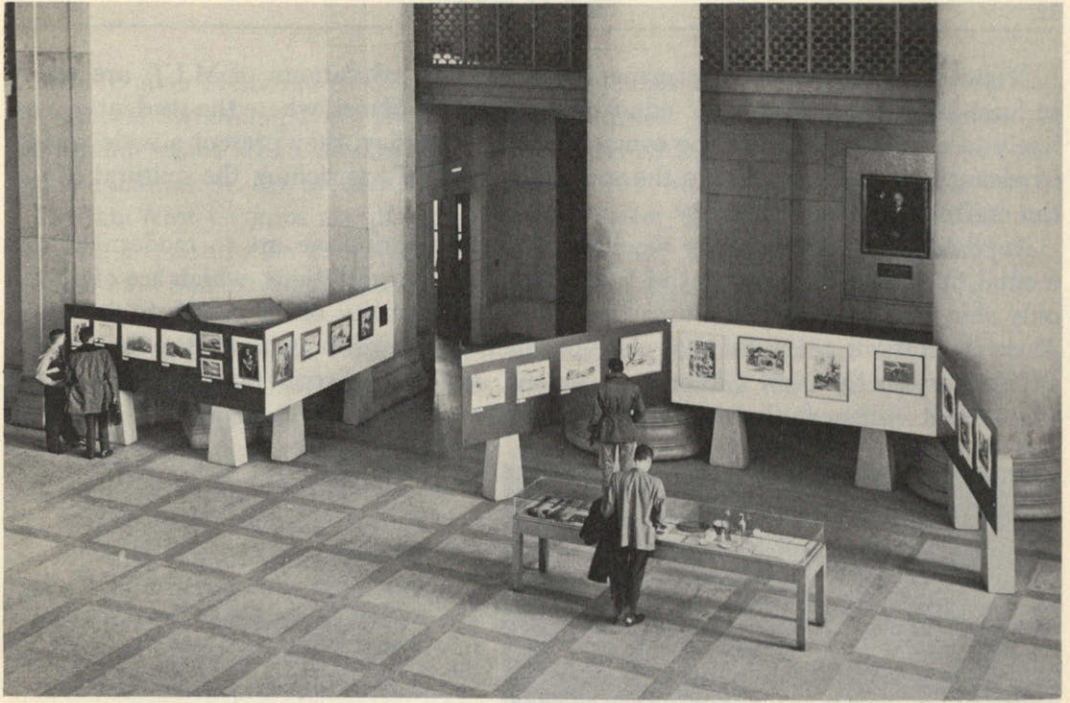
high-fidelity player and amplified throughout the lounge. Seven smaller listening rooms, equipped with record players for standard and LP records, accommodate those who wish to choose their own music. Scores and books of and about music are also available.

The specialized branch libraries are: The Arthur Rotch Library (architecture, housing, city planning); The Engineering Library (electrical engineering, building construction, naval architecture and marine engineering, aeronautics); The Humanities Library (literature, history, social science, music, and recreational); The Dewey Library of Industrial Management (industrial relations, economics, management, accounting, and related fields); The Science Library (mathematics, physics, chemistry, geology, ceramics, metallurgy, biology, and food technology).

Laboratories. M.I.T. students are fortunate in having numerous large and well-equipped laboratories at their disposal. Some of the more notable of the more than 70 special laboratories are the George Eastman Research Laboratories of Physics and Chemistry, the Laboratory for Nuclear Science and Engineering, the Research Laboratory of Electronics, the Gas Turbine Laboratory, the Acoustics Laboratory, the Metals Processing Laboratory, the John Thompson Dorrance Laboratory of Biology and Food Technology, the Spectroscopy Laboratory, the Guggenheim Aeronautical Laboratory, the Wright Brothers Memorial Wind Tunnel, the Supersonic Wind Tunnel, the Pierce Engineering Laboratory, the Sloan Automotive and Aircraft Engine Laboratory, and the Laboratories of Steam and Compressed Air, Refrigeration, Testing Materials, Hydraulics, Metallurgy, Chemical Engineering, Physical Chemistry, Applied Physics, Electrical Engineering, and Geology and Mineralogy.



Large and well equipped laboratories are at the disposal of the students of M.I.T.



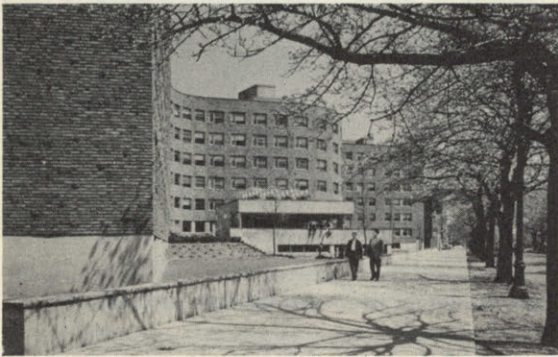
Museums, permanent exhibits, and exhibitions—placed where the student is most likely to encounter them in the course of an average day—enrich the cultural life of the entire Institute community.

The Dard Hunter
Paper Museum.



Museums. The museums, permanent exhibits, and exhibitions of M.I.T. are set up to form an integral part of the educational program. Placed where the student is most likely to encounter them in the course of an average day, they present a wide variety of ideas, both old and new, to the members of M.I.T., enriching the cultural life of the entire Institute community.

Anything from handcraft to machine craft, from primitive art to modern experimental, may be presented at the Institute's monthly exhibitions, which are often the only showings in the Boston area and which draw many of its residents to M.I.T. These exhibitions generally take place on the first floor of the Charles Hayden Memorial Library in the New Gallery, a spacious, well-lighted room designed with a simplicity that enhances the appeal of the numerous and various displays.



The Everett Moore Baker House, facing the Charles River Basin and Boston, is the newest of M.I.T.'s residence houses.

Geology Camp. Field training in geology is offered at the Nova Scotia Centre for Geological Sciences at Crystal Manor on St. George's Bay, near Antigonish, Nova Scotia. The Centre is a joint project of M.I.T. and the Nova Scotian universities, and is sponsored by M.I.T. and the Nova Scotia Department of Mines. In addition to instruction in geological surveying and in the elements of structural geology, an essential part of the joint program is detailed study of promising mineral and fuel deposits.

Recreational Facilities. Walker Memorial is a beehive of student activity. Built in memory of President Francis Amasa Walker, it has become the center of student social life. A large dining hall with cafeteria service, comfortable lounge rooms, and the offices of the Institute Committee (the student governing body) occupy the first floor. The second floor features a recreation center, decorated along colorful, modern lines and provided with a small dance floor, a juke box, and a soda fountain—an excellent place for students to entertain their dates. Also on the second floor are recreation and reading rooms. A gymnasium with a regulation basketball court, lockers, and dressing rooms, a fencing room, and offices for various student activities take up the third floor. In the basement are bowling alleys, student-activity offices, and a lounge for the 5:15 Club, the social organization of M.I.T.'s commuting students.

Near Walker Memorial on the East Campus are four hard-surface tennis courts and the Alumni Swimming Pool. The offices of the Athletic Association and special rooms for visiting teams are in the Barbour Field House, which is outfitted with shower and locker facilities. In the modern building connected with it are eight squash courts.

On the West Campus are playing fields for soccer, lacrosse, baseball, softball and football, a quarter-mile cinder track with a 220-yard straightaway, a standard one-twelfth mile banked-board track with a 60-yard straightaway, and eight hard-surface tennis courts.

Here also are the John Rockwell Athletic Cage, which has a large area for recreational and varsity athletics during the winter months, the State Armory (used by M.I.T. through arrangement with the Commonwealth of Massachusetts), which provides additional facilities for athletics, especially intramural basketball and volleyball, and the Briggs Field House, with lockers and showers to serve the nearby playing fields and the John Rockwell Cage.

The Boathouse, on the Charles River, is supplied with indoor rowing machines, and all undergraduates have the opportunity to learn under competent coaching how to row an eight-oared shell. The Sailing Pavilion, located on the Charles River in front of Walker Memorial, is the headquarters of the Nautical Association.

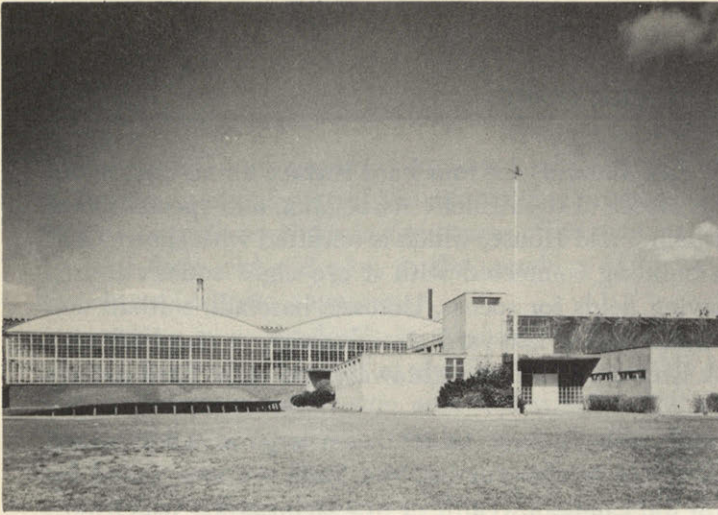
A Hobby Shop provides students with tools for woodworking, metal working, gem cutting, bookbinding, radio, photography, electroplating, and telescope making.

Residential Plan. M.I.T. is essentially a residential college. In order that they may enjoy to the fullest the pleasures and benefits of campus living, freshmen are expected to live in Institute dormitories or fraternities, unless they live at home. Upperclassmen may make whatever living arrangements they choose. On receiving notice of admission, all new students are given opportunity to apply for living accommodations on the Campus, where rooms are normally available to all who wish them.

In reference to living arrangements, the student body divides into four major groups. The first group, consisting of about 2,000 men, is housed on the Campus in the Institute houses. Baker House accommodates 350 students, with dining service; Burton House, equipped with a snack bar, 360, and Conner Hall, 240, with dining service available in the adjacent Baker House and in the nearby Graduate House; the Graduate House, 450 graduate students, with dining service; the East Campus Residence Houses, 609, with dining service adjacent in Walker Memorial. At the Women's Dormitory a house mother is in charge, and meals are served.

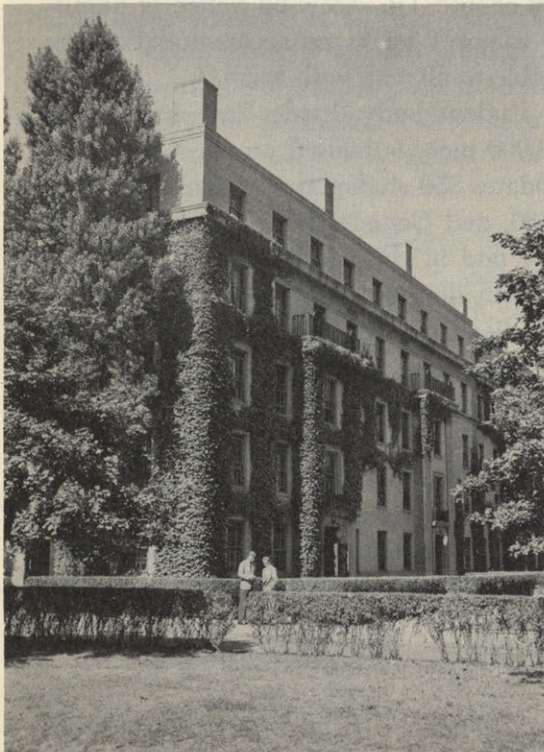
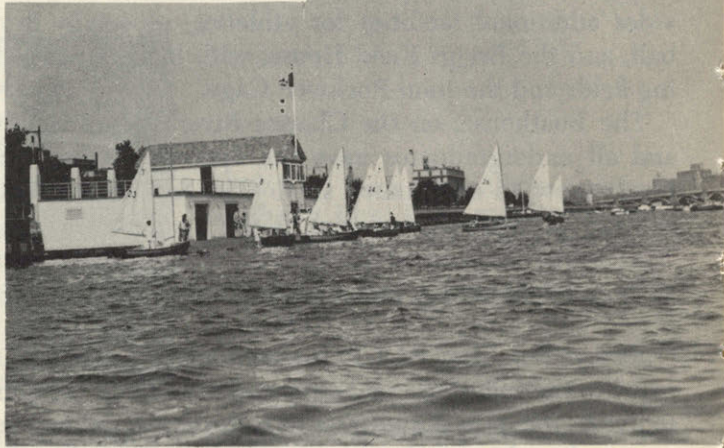
The second group, consisting of about 800 undergraduates, is housed in the 26 fraternities. All of these provide meals for members. Four of the fraternity houses adjoin the campus, while most of the others lie within convenient walking distance. Freshmen who elect, upon invitation, to join fraternities, commonly do so early in their first year, and usually take up immediate residence in the chapter houses.

The third group, consisting of 270 married students with their families, occupies



The Briggs Field House and Rockwell Cage, prominent among the buildings which facilitate the active athletic program at the Institute.

Sailing, carried on under the direction of the Nautical Association, was first introduced as an intercollegiate competitive sport by M.I.T. Pictured—the Sailing Pavilion:



M.I.T. is essentially a residential college. This is Munroe, one of the twelve East Campus Houses in which entering freshmen are given priority.

houses in Westgate or apartments in Westgate West, both of which are on the campus. First preference is given to veterans.

The fourth group consists of those students who live away from the campus, either at home, if that is within commuting distance, or, in a few instances, in lodgings or apartments in the Cambridge and Boston areas.

Medical Facilities. The Medical Department, one of the strongest to be found in any university, makes its headquarters in the Homberg Memorial Infirmary, and its staff of twenty-four doctors, including leading specialists, conducts various clinics daily except Saturday and Sunday. In addition to the clinics, the Infirmary is equipped for 21 bed patients, with three attractive wards and six private rooms. An emergency ward is available for epidemic seasons with a capacity of thirty beds. A well-equipped kitchen provides excellent food and dietary service. The hospital is open twenty-four hours daily throughout the year with a staff of graduate nurses and a visiting physician in attendance. In case of serious illness involving major operations or complicated medical emergency procedures, the student is transferred to one of the Boston or Cambridge Hospitals and then may return to the Infirmary for convalescence.



Boston—a center of culture, business, industry, and education. Pictured, a summer concert in the Hatch Memorial Shell on the Esplanade.

LOCATION

Boston and its environs extend even farther the facilities at the disposal of the M.I.T. student. Boston has been historically and is today a center of culture, business, industry, and education. The first public school in the United States was founded in Boston in 1635, the first college, in 1636. Today there are a great many colleges, universities, and preparatory and specialized schools in the area—to name a few, Harvard, Radcliffe, Northeastern, Boston University, Simmons, Wellesley, Tufts, Boston College, and Brandeis University. The proximity of these schools makes it possible for the M.I.T. student to extend his social horizons greatly beyond the friends he will make on the M.I.T. campus. Nearness to many large industries gives him a chance to supplement his academic work by visits to plants and to make profitable contacts with business and industry. Boston offers an active dramatic season (with frequent premières of Broadway productions) to the theater-goer; the great Museum of Fine Arts to the art-lover; the Boston symphony orchestra, the famous Boston Pops concerts, opera, and other musical events to the music-lover; the Boston Red Sox to the baseball fan; and a variety of lectures, concerts, museums, and fine libraries to the interested and the curious.

THE ORGANIZATION

THE CORPORATION, THE ADMINISTRATION, AND THE FACULTY

In a legal sense, the Institute (which is not a state university) is a body of trustees known as the Corporation, chartered by the Commonwealth of Massachusetts in 1861. The Corporation includes both life members and term members as well as members elected by the Alumni Association, and three ex-officio members from the government of the Commonwealth.

The Chairman of the Corporation, with the President, heads the Administration and the Corporation. The President presides over the Faculty. His principal aids in this task are two Vice-Presidents, one of whom is Treasurer, and the other, Provost. The academic departments are grouped into five Schools, each headed by a Dean as administrator. These schools are: the School of Architecture and Planning, the School of Engineering, the School of Humanities and Social Studies, the School of Industrial Management, and the School of Science. The Dean of the Graduate School supervises the administration of graduate study. The Dean of Students is directly concerned with student life and welfare. Though the Institute's curricula are grouped in five Schools, the Institute has but a single, unified Faculty, which is responsible for educational policy. Thus a common understanding of policy and a broad approach to particular questions are assured; the chemist helps the architect, the historian shares thinking with the mechanical engineer, and the student benefits as a result.

THE SCHOOLS, DEPARTMENTS, COURSES, AND SUBJECTS OF INSTRUCTION

Within the five undergraduate Schools are grouped the Departments appropriate to each School. Each of these (with a few exceptions) offers a Course of Study, which can also be called a "major" or a "field of specialization." Each Course contains broad fundamental scientific subjects, general educational subjects, and professional subjects, and leads to the Bachelor's degree.

THE OUTCOMES

The varied professional careers for which the Institute yearly prepares hundreds of young men offer interesting and useful life work for many temperaments and minds. Few of the activities of mankind are so constantly undergoing vital changes as the fields of the scientist, the engineer, the architect, and the executive. Few are so secure from the monotony of repetitive routine, and few make so many stimulating and invigorating new demands.

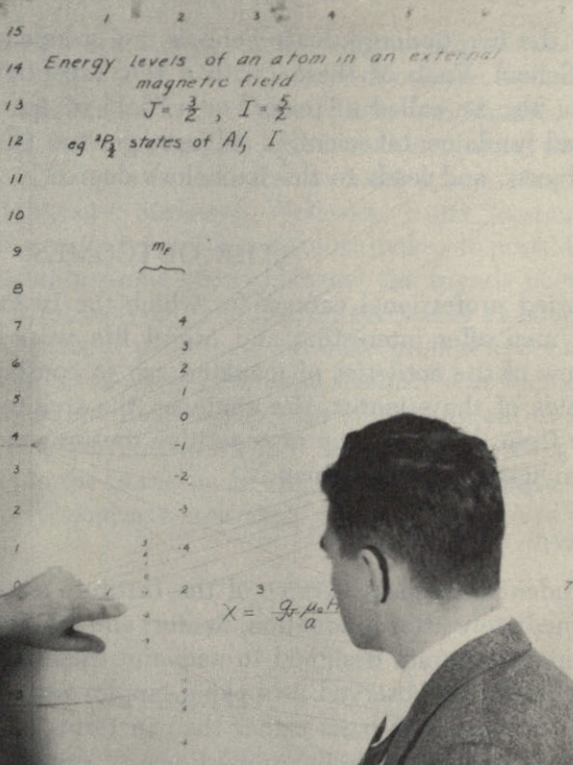
PLACEMENT

The Student Placement Service of the Institute assists students in finding employment immediately after graduation. Seniors and graduate students are offered a placement training program designed to acquaint them with industrial opportunities and the principles to be observed in seeking employment. This training program is conducted on a long-range basis rather than in terms of the first job after graduation, and stress is placed upon the importance of each individual's finding the type of opening for which he is best qualified by his special aptitude and training. Interviews are arranged with representatives of prospective employers.

The M.I.T. graduate is at a distinct advantage in the job market today, for the demands of industry, business, and government for scientists and engineers far exceed the supply of graduates from technological institutions each year. Industry and business come to M.I.T. to look for men with a technical background suited to the executive positions which they must fill. This fact normally permits the M.I.T. graduate to exercise choice among several positions and thus to find the job for which he is best suited.

AN IMPORTANT DECISION

Science and technology are major sources of national security and of the security of the free nations of the world; they are determinants of world affairs; there are not enough men to fill the scientific and technological positions in business, industry, and government. These facts place a personal responsibility on all students qualified to study in a technological institution—students who are at this very moment making decisions about the type of school they will enter, the general type of profession they will take up, and the future course of their lives.



THE M. I. T. EDUCATION

CURRICULA

The great variety of subjects with which M.I.T. education is concerned influences the life of the undergraduate. In fraternity house and dormitory, at noon-time luncheon or evening bull session, it means that the naval architect and the biologist swap ideas, and the thinking of the prospective metallurgist may be stimulated by that of the future city planner. This opportunity for understanding the problems of fields other than one's own and for contributing one's special view to a general discussion with keen minds from other fields is a valuable part of education at the Institute.

SIX GENERAL TYPES OF CURRICULA LEADING TO THE BACHELOR'S DEGREE

The curricula leading to the Bachelor's degree may be divided functionally into six major groups of Courses:

1. Science curricula, in which are grouped all Courses given by Departments in the School of Science, including General Science, which is interdepartmental.
2. Engineering curricula, in which are grouped all Courses given by Departments in the School of Engineering, including General Engineering, which is interdepartmental.
3. Architecture and Planning curricula, in which are grouped all Courses given by Departments in the School of Architecture and Planning.
4. Curricula combining engineering and economics, or science, engineering, and management, in which are grouped: the Course in Economics and Engineering in the School of Humanities and Social Studies; and the Course in Business and Engineering Administration in the School of Industrial Management.
5. The teachers' training curriculum, a joint project of M.I.T. and the Harvard Graduate School of Education.
6. The pre-medical curriculum.

THE PROFESSIONAL COURSES

The Institute's desire to avoid excessive specialization is reflected in these curricula. One does not find, for example, professional Courses in tanning, printing,

paper making, coal mining, and other highly specialized industrial practices, nor does one find emphasis on the mere operation, maintenance, and repair of particular gear, whether it be Diesel engines or radar. Because scientists and engineers, like administrators and managers, work with their brains rather than with their hands, the emphasis in professional Courses is on the larger aspects of subjects in which students concentrate. Among the qualities a student should possess if he is to be successful in these fields, manual skill is near the bottom of the list in importance. Dexterity in assembling a radio transmitter is a good thing, of course, but far more important than handiness with pliers and screw driver is the ability to master the theory of why the set works. More important still, and much rarer, is the quality of mind that can evolve new theories out of which still other useful things can be developed, or that can administer large undertakings which involve scientific processes and control. The large number of M.I.T. graduates holding positions of major responsibility in industry and government reflects this emphasis on breadth, rather than on technical detail.

The similarities of the various Courses are more important than their differences. Much is basic and common to all, or to large groups, of Courses. In the School of Engineering, for example, each Course has four principal parts: (1) general education; (2) a solid foundation in mathematics and science; (3) basic engineering subjects that are common to virtually all branches of engineering (such as statics, dynamics, fluid mechanics, and thermodynamics); and (4) a program of subjects within a single professional field (for example, Civil Engineering).

THE FOUR-YEAR PROGRAM

The four-year program of professional education at M.I.T. is calculated not merely to help the student reach competence in a particular professional field but even more to develop his general adaptability. The curricula of the first two years provide a broad basis of widely applicable knowledge for the professional studies of the later undergraduate years.

Although the entering student is asked to indicate his choice of Course, this choice is not considered definite until the beginning of his sophomore year; and, even after this, a student can generally change his Course with a minimum loss of time. Thus, the entering student who comes to the Institute with a sound preparation and an open mind will find that the curriculum is arranged to permit him to make his choices in accordance with his own increasing knowledge of himself and of the things he is studying.

The First Year. All freshmen (except those enrolled in the Course in Architecture or in City Planning) follow programs of study containing in common: Humanities (Foundations of Western Civilization), Mathematics, Physics, Chemistry, and Military Science. The Course in Architecture and that in City Planning replace Chemistry with Graphics.

An Additional Subject, generally elective, is also a required part of every fresh-

man curriculum. There is opportunity in the freshman year to begin or even to complete the athletic program, described in detail on page 31 of this Catalogue.

Because of its general nature, the first-year curriculum can easily be adapted to the requirements of any Course. But adaptability does not prevent this basic program from being a rigorous means for the freshman to obtain a thorough and indispensable foundation for his later work in a professional Course.

In Foundations of Western Civilization, the freshman studies four periods in history which, in addition to being important in themselves, illustrate certain persistent problems in western civilization. Through historical, literary, and philosophical materials he first examines attitudes and social conditions as they existed at the beginning of each period and then the interaction of forces which, by the end of the period, has created a new equilibrium or sometimes a disequilibrium. This subject meets three hours a week in sections of about 25; there is a good deal of varied reading, and a number of papers are written. Active and stimulating discussion is characteristic of the class sessions.

In Mathematics the freshman builds on his basic knowledge of algebra and trigonometry, to master analytic geometry, which links symbolic logic with geometrical form, and the calculus, which is essentially a method of reasoning about rates of change. In these fields, so basic to all science and engineering, he has the benefit of the give-and-take of discussion in small classes, which meet three times a week.

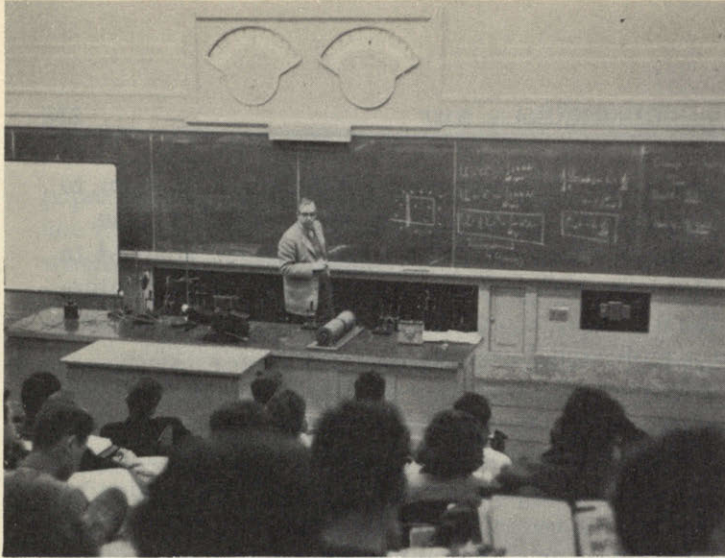
In Physics, he hears two lectures a week, illustrated with experiments and demonstrations and presented by a skillful expositor. To supplement these, he has two meetings with an instructor in a small section where there is ample opportunity for questions and discussion. Once every three weeks, he spends half a day in the physics laboratory, mastering the technique of scientific experiment.

In Chemistry, he follows a similar pattern of two experimental lectures and two section meetings a week, with a weekly laboratory period in which assistance from an instructor is close at hand.

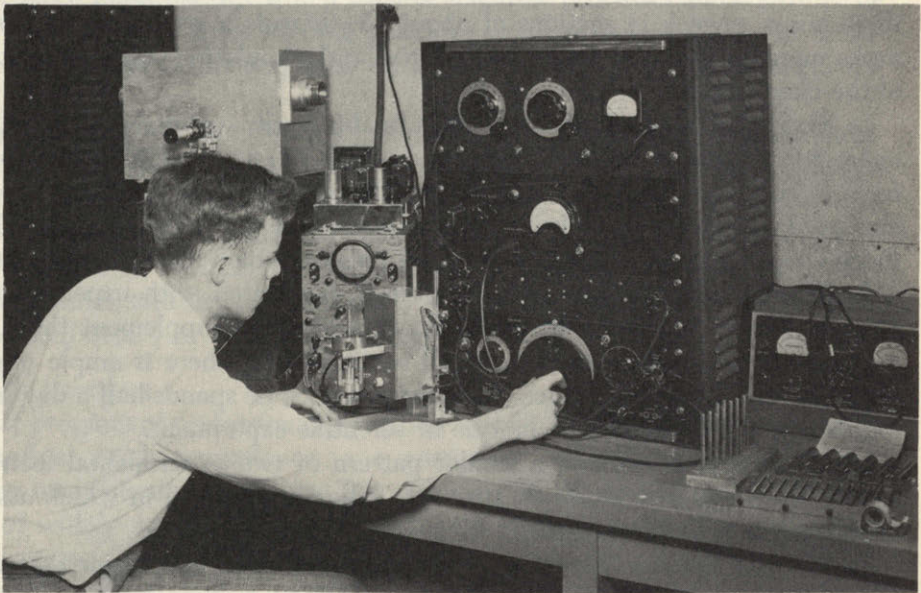
In Military Science, he spends three hours a week, the major part of which are taken up by lectures, the minor part, by drill.

All his study time combined is estimated at 20 hours per week. If he plans his time well, and utilizes free hours during the day, he should not need to study late at night. There is no conventional "cut system" at M.I.T. Occasional absences are assumed to be for valid reasons, and a student who is making satisfactory progress is not held to account for them. Freshmen soon learn that they are out of the school-boy atmosphere of rigid restrictions. They respond quickly to the challenge of a mature university system, where students must take responsibility for planning their own time.

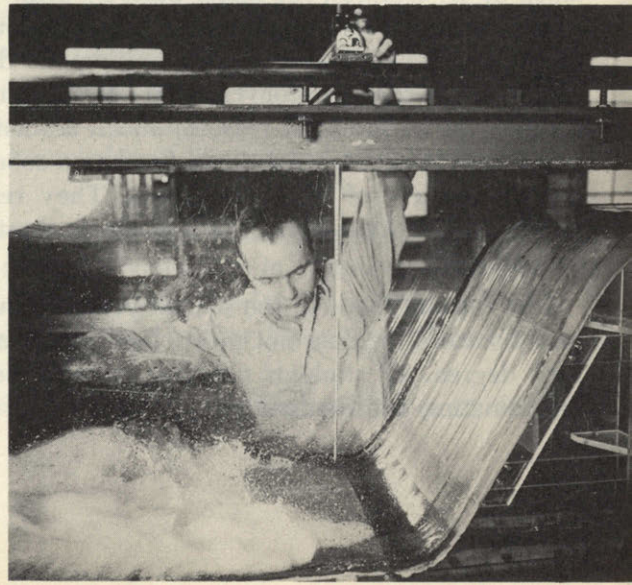
The Second Year. In the second year, all students begin their studies in a particular Course. This does not mean, however, that they have begun to specialize in a high degree. All students continue to take the basic subjects in elementary science, mathematics, and humanities.



Learning by listening.



Learning by doing.



Creative education and research.

The Third Year. During the third year, the basic subjects in engineering, science, and architecture are common to the Courses within these three major groups. Professional subjects within each Course are introduced, and Course specialization begins to a limited extent.

The Fourth Year. In the fourth year, concentration within each Course is upon the professional subjects within that Course, and specialization within a Course is possible.

INTEGRATED PROGRAM IN THE HUMANITIES AND SOCIAL STUDIES

Scientific studies are in themselves cultural and tend to develop powers of critical, independent thought. But they are only part of the social context in which the scientist works. More is required of the scientist today than competence in his special field; he is called upon to be a leader in the society of a technological world. It is therefore an obligation that he be well informed about the things that make up that society—the ideas, the history, the literature, the politics, the art, the economy, the music, and the people. The four-year program of the School of Humanities and Social Studies, integrated into the undergraduate curriculum, introduces the student to a wide variety of facts about and ideas of mankind and reveals to him the nature of the world in which he lives and works.

Basic Program in the First and Second Years. In his first and second years, each student takes a series of four humanities subjects. The objectives of this basic program are:

1. To give the student an introductory knowledge of the most important issues, ideas, periods, and events of the past, selected on the basis of their relevance to the world today.
2. To emphasize the interrelation of the various humanities and social sciences as elements in human experience rather than the distinctive features which characterize them as different areas of academic study.
3. To introduce the student to the process of critical thought as applied in the humanities and social studies.

Practice in writing and speaking is an integral part of the two-year basic program. If a student's written work shows a lack of knowledge of the fundamentals of composition, he is expected to attend a remedial section where he will receive help in overcoming the difficulty. Opportunities for improvement of reading and speaking skills are available in special classes for those who desire them. The basic work in composition, required of all students whose written work needs improvement, is an opportunity, not a penalty. It gives the student a chance to become more literate—literate in the wider sense—by developing his ability to listen, to read, to speak, and to write well. It emphasizes the fact that good writing and clear thinking are difficult,

mature, and connected arts, are capable of being learned, and, most important, are necessary to success in any undertaking. If an idea is to be understood, it must be expressed exactly and expressed well, not only in the English composition and the scientific thesis, but also in the business and industrial world.

Area of Concentration, Third and Fourth Years. In his third year the student elects a combination of three subjects in any one of the following fields: History of Ideas; Political and Social History; Literature; Music; Economics; Political Science and International Relations; Labor Relations; Psychology. A fourth distributional subject is also elected. Two of these humanities subjects are taken in the third year, and two (or even four, if desired) in the fourth year. While most students naturally pursue one of these planned programs in a field of concentration, those who desire to make up different combinations may do so if they present a sensible proposal which is approved by their advisers.

SELECTION OF COURSE OF STUDY

The student has opportunity to gain perspective through exploring his own particular aptitudes as revealed by his progress in the fundamental subjects of the first year. He has time to learn which phases of science and engineering most closely match his own abilities. He has opportunity through discussion with fellow students, through conference with his instructors, which he is urged to seek frequently, and perhaps through direct contacts with industry and business, to find what specific opportunities exist for the combination of ability and application he has discovered in himself. In the last analysis, the initiative is the student's; he should be aggressive in seeking the knowledge on which to base his choice, since the decision must be his own, and no one else can make it for him. He should go to his instructors in their offices; he should visit plants; he should, through summer jobs, accumulate experience; he should talk with engineers and others experienced in the field which interests him. Then, when he enters industry, he will be equipped to find his place in the new environment with the least waste motion.

Student Advisers. In freshman year each student is assigned an adviser from the Freshman Advisory Council, which is composed of professors representing all Departments and is charged by the Faculty with the functions usually performed by a Dean of Freshmen and with the responsibility for policy decisions relative to freshmen. A Freshman Adviser is concerned with the student's good adjustment to M.I.T., his academic program and progress, and his intelligent choice of Course for his upper-class work. After the first year, the advisory function is taken over by Registration Officers who are appointed by each Department to approve academic programs and to advise students.

The Deans of the five undergraduate Schools and the Heads of the Departments also serve as consultants to students who seek advice relating to their choice of professional Courses.

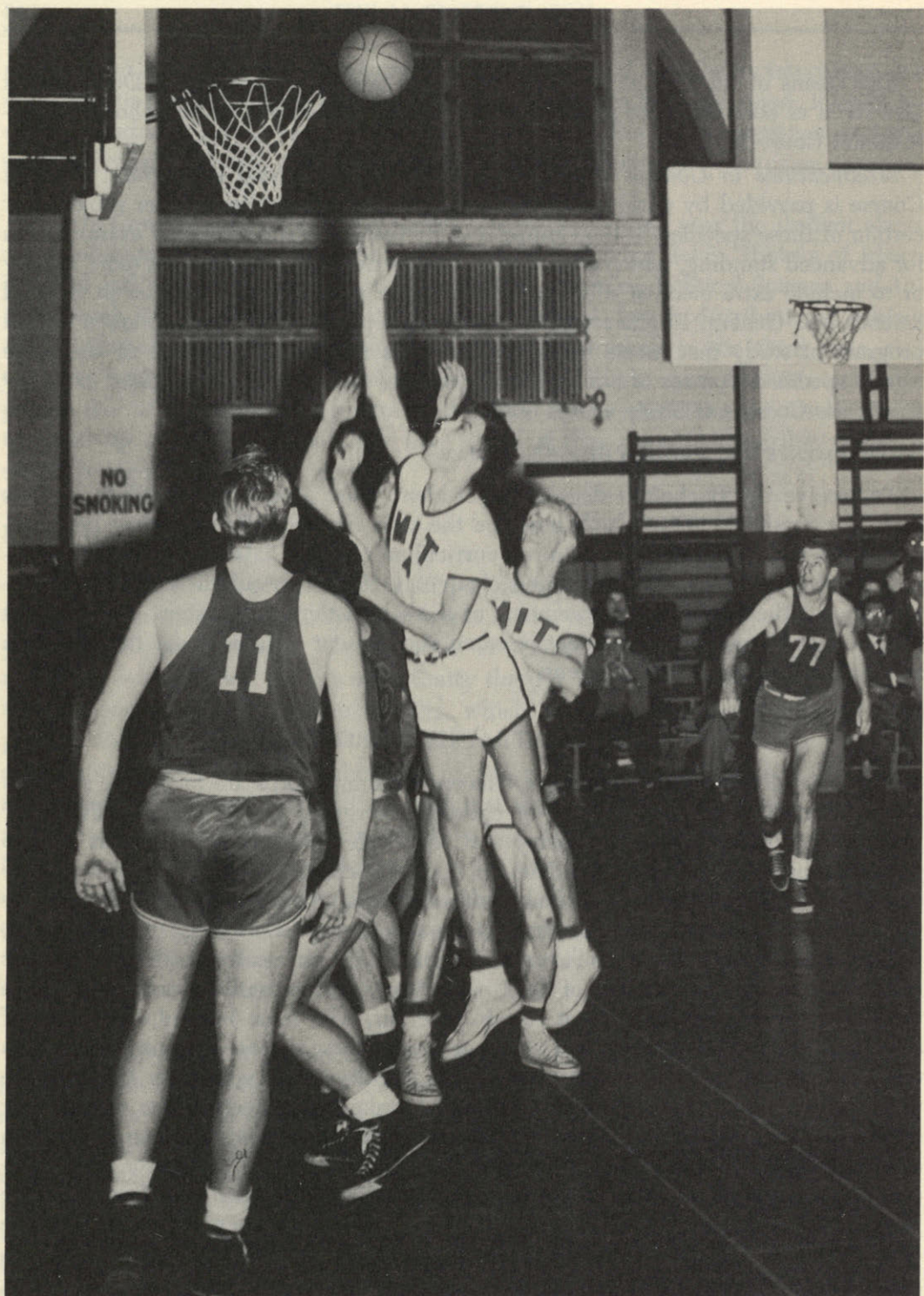
Modifications in Courses of Study. Flexibility in planning a program within a Course is provided by options, by the possibility of substitution of other subjects for certain of those specified in the Course, and by the successful taking of examinations for advanced standing, which enable those of superior ability to progress more rapidly or to include extra elective subjects in a four-year program. The Courses in General Science and General Engineering are designed to permit students to follow a logical program of study that meets needs and interests not satisfied by one of the more rigidly specified Courses of Study. The majority of students, however, elect to follow one of the Courses of Study as it is outlined.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

To receive the Bachelor's degree, the student must attend the Institute no less than one academic year, which must be the year immediately preceding his graduation; he must complete the required curriculum for the Class with which he graduates, unless he has made authorized changes in that curriculum; he must consistently meet the minimum requirements of the scholastic rating system; and he must prove his ability to do independent research and present a thesis about that research as a part of his degree requirements.

MILITARY TRAINING PROGRAM

The general objects of the Reserve Officers' Training Corps are to qualify students for positions of leadership in time of national emergency and to provide officers for the various components of the Army and Air Force. The program consists of two parts, the basic course and the advanced course, each of which takes two academic years, the advanced course including a summer camp. One Air Force and six Army units have been authorized. The Army units are: Army Security Agency, Chemical, Engineers, Ordnance, Quartermaster, and Signal. All physically qualified first-year male students who are citizens of the United States and under 23 years of age at the time of initial enrollment (except certain veterans, who must be under 25 years of age) are required to enroll in the two-year basic course, unless exempted therefrom on conscientious grounds as approved by the Faculty; those who enter the Institute as second-year transfer students are required to take the subjects of the second year of the basic course. Similarly qualified students who have received instruction in an approved R.O.T.C. unit at another institution will receive credit therefor upon presentation of suitable evidence to the Professor of Military Science and Tactics or the Professor of Air Science and Tactics. Those who have been members of any of the armed services will receive credit in accordance with established policies. The advanced R.O.T.C. course is elective.



CAMPUS LIFE

M.I.T. encourages its students to maintain good mental and physical health, first, through its recognition of the importance of athletics and social and recreational activities, and, second, through provision of ample medical facilities and health services. It is not the purpose of the Institute to have students running a continual twenty-four-hour-a-day marathon between the lecture room, the library, the laboratory, and the study desk. The majority of students at M.I.T. are active, well-rounded men who have ample time and energy to devote to studies, clubs, athletics, dances, parties, and plays. That is the way M.I.T. wants them to be.

College life is more than classes, lectures, and studies, even though these must, of necessity, fill much of a student's time. Education extends also to the experience of living with one's fellows in an environment stimulating to intellectual activity, conducive to the development of community responsibility, and beneficial to the growth of the *whole* man. The M.I.T. environment is planned to fulfill, in the broadest sense, this educational function, in the belief that the man who puts the most into and gets the most out of life is the one who has learned how to divide his time profitably between work and recreation.

M.I.T. students participate actively in those important parts of life which are not strictly "academic questions." Tangible evidences of this are the facts that nearly three-fourths of M.I.T. undergraduates participate in athletics and that there are more than a hundred student activities on the M.I.T. campus, reflecting in their variety the diversity of the interests of and the social and mental awakensness of the M.I.T. student body. Almost any student, whatever his tastes, can find an organized group in which he may follow up his social, athletic, cultural, or professional goals and interests.

Perhaps most important of all is the fact that the extra-curricular program at the Institute is run entirely by the students through their democratic campus government. M.I.T. students enjoy an independence that is unusual if not unique among American colleges and with it they learn to accept commensurate responsibility. The Faculty and Staff of the Institute are available for aid and advice, and in certain activities, such as the athletic program, they work in official co-operation with the students for the achievement of the best possible program. But the responsibility of maintaining campus discipline, managing campus activities, and handling the financial aspects of the student activity program is taken by the students. Their success in administering these responsibilities can best be illustrated by the description of the student-activity program in the pages following.

STUDENT GOVERNMENT

M.I.T. Undergraduate Association and Institute Committee. All students belong to the M.I.T. Undergraduate Association, the governing body of which is Institute Committee. The Institute Committee includes representatives from each class, from

the major student activities, and from the living-group governments. It holds regular meetings and every student is welcome to attend and to voice his opinion on the matter in question. Institute Committee approves all activity officers; it has the power of recognizing new activities by approving their constitutions; its Treasurer and Finance Committee control the budgets and expenditures of student organizations and allocate the funds provided by the Institute for student activities, totaling over \$60,000 annually.

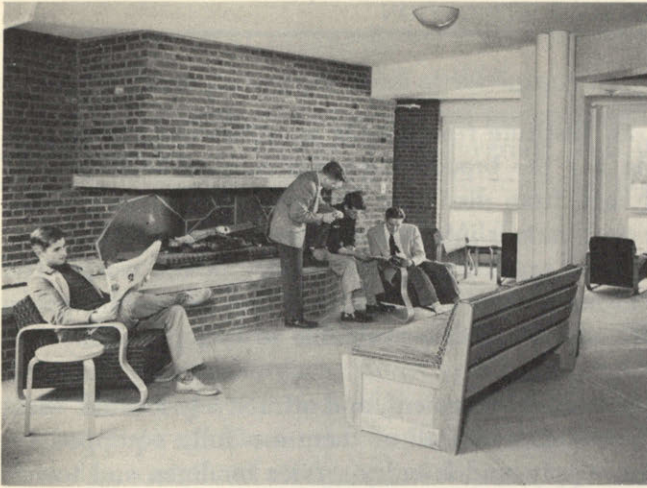
A typical and famous student activity is the Foreign Students Summer Project (sponsored by the National Student Association Committee, a sub-committee of Institute Committee), which makes a unique and valuable contribution to international understanding by bringing some 80 young engineers and scientists from about 30 foreign countries to the Institute each summer to live, to study, and to do research, with all their expenses paid. All arrangements including the raising of a \$80,000 budget for the project are made by Institute students.

Living Group Governments. The government of the dormitories is in the hands of a *Student Dormitory Committee*, made up of the chairmen and representatives of the various House Committees in addition to its officers, which functions mainly to promote social and sports activities within the dormitories and between the dormitories and other living group units and to administer all rules of dormitory life. The elected Chairman of the Dormitory Committee is a member of Institute Committee.

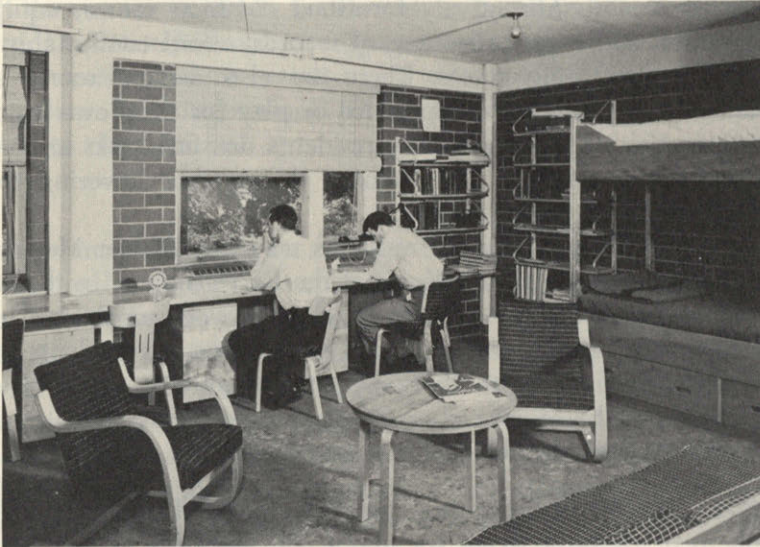
Inter-Fraternity Conference, the central governing body of the fraternities, sets a general policy—social, scholastic, and administrative—which each fraternity can assume as a standard, awards annual trophies to those fraternities having the highest scholastic averages, determines the rules governing the rushing and pledging of freshmen, serves as a clearing house for all problems and concerns of fraternity men, plans inter-fraternity social functions, and promotes plans to keep fraternity members in close touch with students in other living groups at the Institute.

The 5:15 Club has as its members all those students who do not live in dormitories or fraternities. Its purpose is to stimulate the interest of its members in undergraduate activities, to promote social activities for them, and to provide a means for co-operation between commuting students and other living groups. An Executive Committee is elected annually by the members, the President of which represents the Club in Institute Committee.

The Association of Women Students, of which all women students automatically become members when they enter the Institute, serves as their government association and manages their group social life.



Living in one of the Institute Houses offers many opportunities to make close and lasting friendships.



Life in an Institute House is an educational as well as a social experience.

Women students at M.I.T., who participate in every aspect of the academic program and in almost every student activity, play an important part in Institute life.



LIVING

In Student Houses. Living in an Institute residence is an educational as well as a social experience, for there one has the broadening experience of becoming acquainted with a wide variety of men from dissimilar backgrounds and widely differing circumstances, with many and various interests and goals, and representative of every state in the United States and practically every country in the world. The resident has many opportunities to make close friendships in this interesting group and to learn much from these friends that will be valuable to him personally and professionally.

Institute student houses are comfortable, convenient, and attractively located. Most of the rooms are for one or two students, and all of them are fully equipped for occupancy. A porter service, linen supply, and laundry service for linen and towels are included in the rental. Attractively furnished common rooms, equipped with television sets, radios, and large collections of records, afford comfortable places for recreation and for entertaining guests. There are also reading rooms and music rooms with pianos where students can practice or play for their own enjoyment. In the co-operative section of Burton House, residents do such tasks as making their beds, caring for their rooms, and other similar things, thus lowering their rentals through the elimination of porter service.

Of the several places where student residents may eat, Walker Memorial Dining Hall is the most convenient for the residents of the East Campus. In the same building, a soda and sandwich bar serves light lunches between meals and provides an interesting and attractive place, with its small dance floor, for students to entertain their dates. Walker Memorial, with its many student-activity offices, lounges, and recreational facilities, is the social center for campus residents, and its large dining hall also serves for student dances, lectures, and receptions.

In Fraternities. Twenty-six fraternities provide room and board as well as a congenial atmosphere of pleasant living for about 800 members of the student body. Most of these fraternities are located in Boston, right across the river from M.I.T. An average of 35 men live in each house and enjoy together the many satisfactions of close friendships and group responsibilities.

Much of the social life of fraternity members is centered in their fraternities. Almost every week end there are parties in one or more of the houses, and most fraternities follow the custom of inviting some member of the Faculty for dinner once a week. Every fraternity participates in the several intramural leagues, and in these athletic competitions the spirit runs high between fraternity teams as well as between fraternity and dormitory teams.

Off-Campus. Although they do not live together as do the campus residents, commuting students have equal opportunity to share in the social life of the Institute and in all student activities. Through the 5:15 Club's Athletic Committee, the com-

muting students participate in all of the intramural athletic leagues. The Club holds dances for its members and in general promotes social activities for them. This group, like the others, is completely self-governed, and its members are given excellent opportunity to develop initiative and responsibility.

In the Women's Residence. For M.I.T.'s women students there is a house across the river in Boston, where board as well as room is provided for 17 students, and where a house mother is in charge. The women also have a lounge in the main educational buildings, the Margaret Cheney Room, where ample facilities, including a large living room, kitchen, study, rest room, and locker room, provide a pleasant place for business meetings of the Association of Women Students and for teas and dinners. Between classes the women students often stop here for a snack, a few hands of bridge, an hour of study, or just for conversation and relaxation.

Although the women at M.I.T. are far outnumbered by the men, they form an important part of Institute life and participate in every aspect of the academic program and in almost every student activity, and may use the facilities for tennis, swimming, and sailing. Entering women freshmen are assigned to "big sisters" who introduce them to the Institute.

ATHLETICS

M.I.T. places more emphasis on athletics than does the average college, as is illustrated by the number of different sports available (there are 18 varsity teams, representing all intercollegiate sports except football) and by the goal of participation of the greatest possible number of students. Athletics at M.I.T. are not for the physically favored few; there are no athletic scholarships at the Institute. Rather, there is opportunity for every student to engage in one or more competitive sports in which he is interested. If a student has no experience in the sport he chooses, expert coaches are available to teach him the fundamentals. The athletic program is based on the recognition that athletic competition, *competition to win*, benefits the student educationally as well as physically.

The fact that the M.I.T. teams, both varsity and intramural, *compete to win* is well illustrated by the success of the varsity teams in intercollegiate competitions and by the enthusiasm with which students participate in intramural athletics.

Physical Education Program for Freshmen. All male students are required to compile a minimum of six (6) points through participation in athletics and/or physical education activities. A medical examination and swimming, physical fitness, and athletic ability tests are administered for classification purposes. Those not meeting minimum standards are recommended for participation in developmental classes.

Points may be acquired over a period from one to three years by choosing (a) to participate in any one of eighteen varsity and freshman intercollegiate sports, (b) to participate in sports instructional classes or developmental classes according to individual needs and interests, and (c) a combination thereof.

Nautical Association. The Nautical Association is open to every student on his payment of the dues of \$5, and instruction in sailing is available as well as full use of the facilities.

Athletic Association. The M.I.T. Athletic Association is an undergraduate body which promotes and supervises intercollegiate and intramural athletic interests at M.I.T. It is made up of the members of the Executive Committee, the captains and managers of each intercollegiate team, and the managers in charge of intramural sports. The Executive Committee consists of the Director of Athletics, the President of the Athletic Association, a vice-president in charge of Varsity sports, a vice-president in charge of intramural sports, Treasurer, Equipment Manager, and Publicity Manager. The student members of this committee serve for one year. The Athletic Association is responsible for budgeting, scheduling, awarding of letters, and general business administration of athletic activities. Positions in the M.I.T. Athletic Association are open to all undergraduates and offer excellent opportunity for training in leadership and co-operation.

Intercollegiate Athletics. M.I.T. has eighteen varsity and freshman intercollegiate teams: baseball, basketball, crew (rowing), fencing, golf, hockey, lacrosse, rifle and pistol, sailing, skiing, soccer, squash, swimming, tennis, track (including cross-country and indoor and outdoor track), and wrestling. Among the six junior varsity teams are: basketball, crew, lacrosse, and soccer.



On West Campus are the John Rockwell Cage, the State Armory, the Briggs Field House, playing fields for soccer, lacrosse, baseball, softball, and football, a cinder track and a banked-board track, and eight hard-surface tennis courts.

Baseball is one of the leading varsity sports. The John Rockwell Athletic Cage provides indoor space for early practice, and a southern road trip is made during spring vacation. On Briggs Field is the diamond where all home games are played. The majority of varsity games and all freshman games are played with local teams.

Basketball has always enjoyed a place of prominence at M.I.T. The intercollegiate season extends from early December to the end of February. Varsity, junior varsity, and freshman teams participate in a well balanced schedule, with the varsity playing fourteen games, the junior varsity, six, and the freshmen, six to eight. There are two coaches to handle the three intercollegiate squads, which practice and play in Walker Gymnasium.

Crew is one of the most popular and appealing intercollegiate sports at Tech. Approximately 100 men turn out for crew annually to compete with all the major college crews in the country. The Intercollegiate Rowing Association competition is the highlight of the season. The opportunities for making a team in this sport are great, since there are five separate teams competing in meets—"heavy" crews for varsity, junior varsity, and freshman teams, and "light," or 150 pound, crews for both varsity and freshman teams. The M.I.T. Boathouse is located on the Charles River Basin. The practice season extends from early October to the end of the spring term. The regular season begins with the first meet in March and ends with the Lake Onandaga Regatta in mid-June.

Fencing teams at M.I.T. have commanded respect in eastern fencing circles for years. Schedules are maintained for both varsity and freshman teams. Regulation intercollegiate rules in the three standard weapons are followed in all meets. Representatives of the team compete annually in the Eastern and National Intercollegiate meets. This sport offers tremendous possibilities for the development of bodily precision and co-ordination, grace, and poise. Being an individual sport, it attracts men who have limited time to spend in athletic activity.

Golf offers opportunity for intercollegiate competition to ten men on the varsity team, of whom seven compete in each meet, and to freshman golf teams, each of which is made up of four freshmen. Practice sessions and intercollegiate meets are held at convenient clubs nearby.

Hockey is appropriately important at the Institute, since Boston is the outstanding hockey city in the United States. The New England Intercollegiate Hockey League, of which M.I.T. is a participating member, is composed of six local collegiate teams plus teams from the states of Maine, Vermont, and New Hampshire. This insures both the varsity and freshman squads of ample competition each year. Games for the varsity and freshman teams are traditionally scheduled each year with

the local colleges—Boston University, Boston College, Tufts, Harvard, and Northeastern University. Practice sessions are held at the Boston Arena, the Skating Club, and the Lynn Sports Center. Most of the games are played at the Arena.

Lacrosse is a sport that is appealing to members of the hockey teams, even though they have not had experience in the game, because of the basic similarity of lacrosse and hockey. Boston has the distinction of having held the first modern lacrosse game on United States territory. The United States Intercollegiate Lacrosse Association is the outstanding U.S. organization in this sport; and its members, along with M.I.T., include Army, College of the City of New York, Cornell, Dartmouth, Harvard, R.P.I., Navy, Johns Hopkins, Penn, Penn State, Princeton, Yale, and other prominent eastern institutions. A spring schedule for varsity, junior varsity, and freshmen is followed, with New England League and annual competition for the Briggs Cup.

Rifle and Pistol attract large numbers of M.I.T. men to learn the techniques and mechanics of shooting and firearms. Because of the individual nature of the sport, practice sessions can easily be arranged to fit individual class schedules. Coaches are present at all practice sessions. M.I.T. teams traditionally place individuals on the annual All-American Rifle and Pistol teams. A well-balanced schedule of shoulder-to-shoulder and pistol matches starts in December and extends to April. Separate varsity and freshman squads are maintained in each of the two phases of this activity. Annual shoulder-to-shoulder competition is held with the three leading intercollegiate teams in the country—Army, Navy, and U.S. Coast Guard Academy.

Sailing was first introduced as an intercollegiate competitive sport by M.I.T. Today the Sailing Pavilion, located on the Charles River Basin, in front of Walker Memorial, houses a fleet of forty-eight Technology-designed dinghies, four 110-class sloops, a Snipe, and an Olympic Firefly. Sailing is carried on under the direction of the Nautical Association. There are regular courses of instruction for beginners, and some of the most successful skippers the sailing team has had learned everything they knew about sailing after their arrival at M.I.T. Formal races are held regularly every weekend during the season.

Skiing is represented at M.I.T. by an intercollegiate skiing team through the cooperation of the Athletic Association and the Outing Club. Insignia or letter awards are made in this sport as in other intercollegiate sports. Again, because of fortunate geographical location, competition and competitive sites are close at hand. The intercollegiate season extends from the middle of January to the beginning of April. The M.I.T. teams enter the intercollegiate meets at the various Winter Carnivals of New England colleges and also compete in the New England Intercollegiate League. This is one sport that truly affords recreation along with competition.



M.I.T. places more emphasis on athletics than does the average college, having as its goal the participation of the greatest possible number of students.

Expert coaches teach the student the fundamentals of the sport he chooses to learn, and 18 varsity teams, representing all intercollegiate sports except football, give him opportunity to test his skill in competition.



The intramural athletic program furthers the opportunities for the student to take part in athletic competition. About 600 intramural games take place each year, including contests in basketball, volleyball, touch football, and softball.

Soccer has always been one of the favorite athletic activities at M.I.T. and is becoming increasingly popular. Formidable teams are fielded by the Institute each year. The squad is a member of the New England Intercollegiate Soccer League and plays nine varsity games and four freshman and junior varsity games. Brown, Wesleyan, Harvard, Tufts, R.P.I., and the University of Massachusetts are among the colleges which provide annual competition. A well-lighted field makes it possible for the season to extend through the months of October and November.

Squash, a winter sport which requires no previous experience, provides excellent opportunities for both intercollegiate and intramural competition. M.I.T. offers splendid facilities in this sport with eight new courts which rank with the best courts in the area. Both varsity and freshman intercollegiate competition is provided.

Swimming ranks high in the intercollegiate sports program. A normal schedule consists of eight or ten meets for the varsity team and five or six for the freshman team. The season, running from December to March, is climaxed by the New England Intercollegiate Swimming Association Championships. M.I.T. has for years produced well-balanced teams, meeting some of the best competition in the East, including Harvard, Williams, Amherst, Brown, Boston University, R.P.I., Wesleyan, Tufts, and others. The Alumni Swimming Pool, built in 1939, is one of the most modern pools in the country. It is of standard size, is excellently illuminated through complete frontal exposure to daylight, and is provided with a spacious gallery.

Tennis is highly adaptable to the M.I.T. athletic program, both as a competitive and recreational sport. Practice sessions for the intercollegiate varsity and freshman squads may be scheduled at the convenience of individuals. Varsity and freshman intercollegiate schedules include top teams from New England: Yale, Williams, Wesleyan, Harvard, Boston University, and other institutions.

Track at M.I.T. includes cross-country, indoor, and outdoor track. Practice sessions and intra-squad, inter-class, and intramural meets are scheduled throughout the school year, not just during the winter or spring sessions. A member of the track squad practices and competes all year. This sport is especially appealing because an individual can regulate his workouts to his academic schedule. Not much time is required and the best of competition is enjoyed, with the varsity and freshman teams competing both indoors and outdoors in the leading meets of the East. Briggs Field includes an excellent quarter-mile outdoor track. In addition, there is a 1/12 mile board track in the Rockwell Cage. Undoubtedly the success of M.I.T.'s track teams through the years has contributed to the popularity of the sport. More than 125 men are carried on the roster. All receive individual attention and instruction.

Wrestling provides activity for men interested in prime physical conditioning and training. Varsity and freshman teams compete in dual-meet schedules with Brown,

Harvard, U.S. Coast Guard Academy, Williams, Tufts, Springfield, and others. The climax of the season is the New England Intercollegiate Wrestling Tournament.

Intramural Athletics. The competitive sports making up the intramural athletic program are: touch football, basketball, volleyball, and softball. Although intercollegiate athletics are regarded as important at M.I.T. and feeling runs high as M.I.T. teams compete to win, the intramural athletic program is perhaps the most important part of M.I.T. athletics, as it is planned to provide opportunity for participation in competitive sports for those who feel that an intercollegiate sport may be too intensive for their athletic needs. In the organization of the intramural program, the Director of Athletics serves in an advisory and co-ordinative capacity. Students actually administer the program with a vice-president of the Athletic Association in charge. A manager of each different intramural activity is appointed by the Athletic Association, and for his services he receives a letter award the same as a varsity sports manager. This manager, in turn, selects his staff of assistants, who receive numerals for satisfactory service. The manager for the following year is selected from this group of assistants.

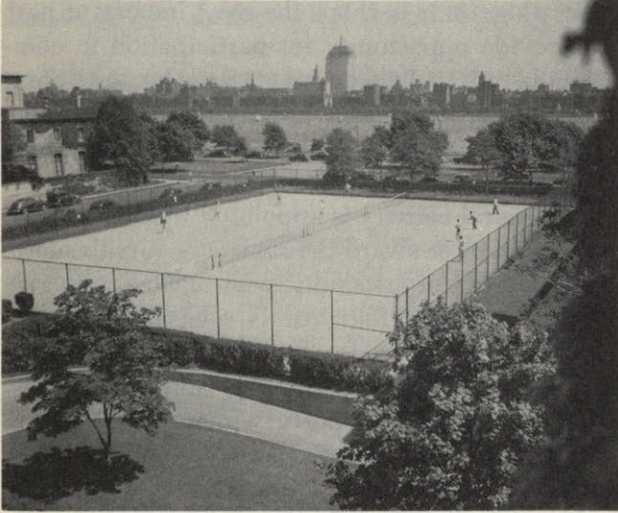
The teams are composed from living groups such as fraternities and dormitories. About 40 teams compete in each of the four intramural sports, with seasonal league playoffs in Round Robin schedules. About 140 to 164 games are played in each sport with individuals actually competing about three times in a two-week period. Some 575 to 600 intramural contests are held during the year. Graduate students compete along with undergraduates.

Other Athletic Activities. Those students who are not members of any competitive teams are not left out of the picture in the M.I.T. athletic program. All the athletic facilities are available to them for their own recreational use, and observation proves that practically every M.I.T. student makes use of these facilities, in competitive or recreational sports, or in both.

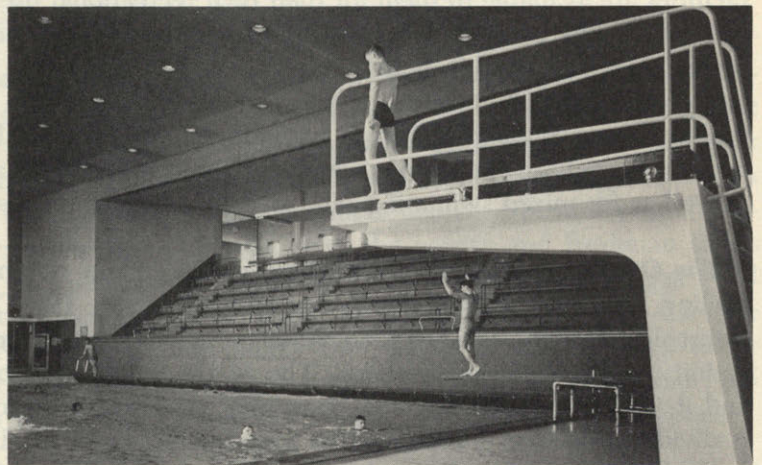
The Alumni Swimming Pool is available for use by all M.I.T. students, and special hours, generally in the evening, are set aside for recreational swimming for women, as well as for mixed swimming. The schedule of hours is posted at the pool.

The Outing Club sponsors all activities of a general outdoor nature such as hiking, cycling, canoeing, riding, skiing, and camping trips. The Club is a member of the Intercollegiate Outing Club Association, which includes many of the colleges in the vicinity, both men's and women's. The M.I.T. Ski Team is backed fully by the Club, and it is through the Club that men may gain positions on the team. Membership is divided into two groups—active membership, open to all undergraduates requiring only the payment of the dues, and honorary membership, to which one must be elected by the Club as a member distinguished in the fields of interest of which the

Club is an exponent. Almost every weekend the Outing Club conducts a rock-climbing or skiing expedition, a cycling trip to Walden in co-operation with Wellesley or Radcliffe, or an overnight camping trip to the White Mountains. Each month an I.O.C.A. square dance is presented by the Club.



Tennis is popular in the M.I.T. athletic program, both as a competitive intercollegiate sport and as a recreational sport.



Swimming ranks high as an intercollegiate as well as a recreational sport at M.I.T. The Alumni Swimming Pool is available for use by all students.

The *Boat Club* is an organization of crew letter-men who promote interest in crew as a sports activity, conduct social affairs for members, and provide new facilities for the Boat House.

The *Swim Club* is composed of letter-men in swimming, provides social activities for its members, and sponsors an annual water ballet in conjunction with Smith College.

The *Track Club* is made up of letter-men in track and cross-country; its purpose is to provide a good social program for its members throughout the year.

STUDENT ACTIVITIES, CLUBS, AND INTEREST GROUPS

Debating. The Debating Society offers students the opportunity to develop skill in public speaking, logical presentation of a case, and self-expression. The Society takes part in many varsity intercollegiate debates, practice debates, special forums, and debating tournaments.

Drama. The *Tech Show* is written, produced, directed, and acted entirely by students. In its present form, it is a musical comedy-variety show offering plenty of opportunity for the exercising of individual talents. The plot is generally flexible enough to be expanded to include any student who is really good at specialty dancing, singing, or almost anything suitable for stage performance. The Tech Show can use anyone who wants to lend a hand in the acting, script writing, music writing, setting design, costume design, properties, make-up, or business and publicity aspects of the production.

Dramashop produces one play each term. Membership is open to all students who display interest and ability in play acting, production, and management. Tryouts are held before each play, and the cast is picked from the students. Those who do not take part in the acting may lend a hand on the management side of the organization, which consists of an executive board, general manager and secretary-treasurer, and the stage, advertising, design, make-up, properties, and lighting crews.

Hobby Clubs. The *Hobby Shop* offers facilities for all types of hobbies: wood and metal lathes, a milling machine, and circular and band saws for all types of metal and wood working; meters and testing equipment for radio work; a ventilated dark-room equipped with enlargers, running water, and safelights for photographic work; a print shop with several faces of type for printing; and equipment for gem grinding, bookbinding, optical work, and so forth.

Model Aircrafters provides students with the opportunity of beginning or continuing the hobby of building and flying model airplanes, sponsors contests for club mem-

bers and local enthusiasts, and engages in scientific study of model aircraft and model aerodynamics.

The *Model Railroad Club*, which has a layout of moderate size including complete yard and terminal facilities and a dial-controlled turntable, provides enjoyment for those interested in the construction and running of model railroads.

The *Electric Railroader's Association* provides a means for interested students to study the construction, facilities, and management of mass transportation facilities, such as subways, through field trips, lectures, and movies.

The *Glider Club*, which has its own glider and tow gear, provides practical training in aerodynamics for students.

The *Flying Club* provides economical flying for its members and assists them in aeronautical education on a co-operative financial basis.

The *Radio Society* is an organization of students and members of the staff interested in amateur radio. The Society maintains an amateur radio station for the use of its licensed members and holds classes in code and theory for those who wish to attain an amateur radio license.

The *Rocket Research Society*, classified as a professional society, has as its purpose the actual testing of motors built by its members and the gaining of knowledge about the field of mechanics from lectures given by Institute faculty members.

Motor Sports Enthusiasts, an organization of students interested in antique and sports cars, has an active program of lectures and exhibits.

The *Chess Club* meets bi-weekly and enters several tournaments with Greater Boston colleges during the course of the year.

The *Bridge Club*, a member of the American Contract Bridge League, holds weekly and monthly tournaments and an annual club championship tournament.

The *Science Fiction Society* furthers interest in science fiction through its program of lectures and discussions.

The *Psychic Research Club* has as its purpose the investigation of psychic phenomena such as extra-sensory perception.

Lectures. The *Lecture Series Committee* presents lectures, forums, and movies of cultural, economic, and social interest as well as programs which are purely entertainment. Any interested student or staff member of the Institute may join the committee and actively engage in corresponding with and interviewing prospective speakers, in publicity work, and in the actual presentation of the programs.

Music. The Institute has an active and full musical program. The *Combined Musical Clubs*, in which many students and Staff members participate enthusiastically, provide entertainment not only for the members of M.I.T. but also for the citizens of Greater Boston. The Men's Glee Club, with about one-hundred members, has a busy season of music-making, combining its talents with those of the glee clubs of many of the women's colleges in the area in frequent performances and joining with the Institute's Choral Society in performance of such works as the Messiah and Elijah, topping off its successful season each year with an appearance in Boston's Symphony Hall called "Tech Night at the Pops." The Concert Band, having about 65 players, is in constant demand both at M.I.T. and other colleges, and performs in the spring at Boston's famous Hatch Shell on the Esplanade. The Symphony Orchestra, consisting of some 80 players, gives frequent excellent concerts throughout the year and combines with the Glee Club and the Choral Society to give performances of major choral works. The Techtonians, a group of 15 instrumentalists, play for parties, dances, and special functions at M.I.T. and around Boston. The Logarithms is an octet that specializes in barbershop harmony, folk tunes, and novelty numbers.

Aside from the Combined Musical Clubs and very worthy of note is the *Choral Society*, a mixed group whose area of musical concentration is madrigals, cantatas, and oratorios and which is noted in the Boston area for its fine presentation of these difficult works.

The *Baton Society* is the Institute's musical honorary society. Its purpose is to promote the welfare of the Combined Musical Clubs and to increase interest in musical activities in general. The Society is composed of students who have shown the most active interest in M.I.T.'s musical organizations. It sponsors an annual dance in cooperation with the Faculty Club, "Tech Night at the Pops," and the All-Tech Sing, a competition among informal singing groups of the various Houses.

Publications. The students have full responsibility for seven publications, four of which are of campus-wide interest, and three of which are of interest to particular Departments or Courses. In these publications, the student may gain experience in whatever aspect of newspaper, magazine, or yearbook publishing he may choose—writing, editing, art, design, photography, layout, production, sales, publicity, or business management. The staffs of these undergraduate publications welcome all students who wish to lend a hand in these publishing procedures.



The Combined Musical Clubs provide entertainment not only for the members of M.I.T. but also for the citizens of Greater Boston. Pictured is the M.I.T. Choral Society in a performance of Brahms' German Requiem with members of the Boston Symphony.

The Tech, the bi-weekly student newspaper, is a business as well as an interesting and worth-while activity and provides valuable business experience, as well as practical experience in journalism, newsgathering, photography, copy-editing, advertising soliciting, advertising writing, and newspaper layout.

Voo Doo is M.I.T.'s humor magazine. It comes out once a month, replete with jokes, stories, cartoons, and all the other things that go with a college humor magazine. Freshmen may become listed members of the various staffs of *Voo Doo* after two terms of active participation on the magazine.

Tech Engineering News is one of the country's leading undergraduate technical magazines. Its circulation extends beyond the Institute into secondary schools and other institutions where its student-written articles on technical and professional matters are of interest. Freshmen are welcome to aid in this publication.

Technique, the annual yearbook, contains a descriptive and pictorial record of the student activities of the year and a section devoted to biographies and pictures of the members of the graduating class, the "Senior Portfolio." Editors, usually juniors and seniors, are chosen as a result of competition among candidates from the lower classes. *Technique* is the one publication that contains a permanent record of all student activities.

Benchmark is the yearbook of the Civil Engineering Summer Camp at East Machias, Maine; *Sparks* is the yearbook of the Co-operative Course in Electrical Engineering; *VI-A News* is the newspaper of the Co-operative Course in Electrical Engineering.

Professional Societies. At present there are a number of active professional societies at M.I.T. Nearly all of these bodies are student chapters of national societies and enjoy the advantages of belonging to such parent organizations. Each group is open to those who are in a Course sponsoring the Society. The purpose of each society is to further interest in a chosen field of study and to provide a common meeting ground for men of mutual interests. They sponsor lectures which are open to all students; some of them arrange plant trips to nearby plants to give their members insight into their chosen profession.

The Professional Societies now active are: Aeronautical Engineering Society; American Chemical Society; American Foundryman's Society; American Institute of Chemical Engineers; American Institute of Electrical Engineers; American Institute of Mining and Metallurgical Engineers; American Management Association; American Meteorological Society; American Society of Civil Engineers; American Society of Mechanical Engineers; Architectural Society; American Ordnance Association; Arnold Air Society; Association of General Contractors of America; Astronomical Society; Society of American Military Engineers; Hexalpha; Institute of Aeronautical Sciences; Institute of Radio Engineers; Marketing Club; Mathematics Society; Naval Architectural Society; Physics Society; Propeller Club; Rocket Research Society; Sedgewick Biological Society; Society of Tech Architects and Planners; Society of Automotive Engineers; Geological Society of M.I.T.; Takli Society.

Radio Station. Radio Station WMIT, or the Technology Broadcasting System, presents programs of interest to students living in dormitories and fraternities of M.I.T.

Religious Groups. There are five groups on the campus established to bring together students of similar beliefs and interests and to participate in local social service activities.

Intersivity Christian Fellowship, a unit of an international organization, encourages its members to study of the Bible and to group worship. In addition to weekly Bible study meetings, and monthly talks by members of the clergy, the I.C.F. also conducts such activities as clothing drives, holds monthly meetings with other college groups, and sends representatives to an annual summer conference.

Hillel Foundation is an organization of Jewish students which offers its members cultural and social contacts through weekly meetings, dances, motion pictures, and joint meetings with similar organizations from the women's colleges. It also offers

an opportunity to maintain traditional holiday observances, and a chance to participate in social service work. A monthly Hillel Bulletin and an annual Hillel magazine offer journalistic opportunities to members.

The *Catholic Club* is an organization of Roman Catholic students to promote their spiritual and social interests. An acquaintance dance is held each fall, and other dances with Catholic organizations in women's colleges are held through the year. There are weekly meetings, usually addressed by members of the clergy.

The *Christian Science Organization*, with its program of weekly meetings of reading and testimonials, gives Christian Scientists a chance to meet their fellows and others an opportunity to learn some of the concepts of Christian Science. An acquaintance get-together is held early in the year.

The *Seabury Society*, founded by Episcopal students, welcomes all M.I.T. students into its membership. Its program includes speakers on and group discussions of topics of religious, cultural, and educational interest, as well as a social calendar of teas, dances, and get-togethers for its members and their friends.

Service Groups. The *Technology Christian Association*, a non-sectarian service organization, has perhaps the most diversified program of service to the Institute community of any organization on campus. In its offices on the second floor of Walker Memorial, a permanent staff of six secretaries conducts a book and instrument exchange, a room registry, a travel and ticket service, and a date bureau, and acts as a co-ordinating center for the activities of student members of T.C.A. Boys' work, the Handbook and Blotter, Tech House for week-end outings, the annual blood donor and clothing drives, are only a few of the activities conducted by the 100 student members. The Technology Christian Association recently established the Baker Memorial Print Library providing a circulatory library of prints to brighten the rooms of M.I.T. men. The Religious Action Department sponsors an active program of discussion groups, lectures, and conferences, and maintains an active affiliation with the Student Christian Movement in New England. T.C.A. is an integral unit of the Y.M.C.A.

Alpha Phi Omega is a national service fraternity for Boy Scouts or former Boy Scouts. With one of the largest memberships of any of the societies, it provides ushers for Tech Show and guides for Open House and performs other functions of a similar nature.

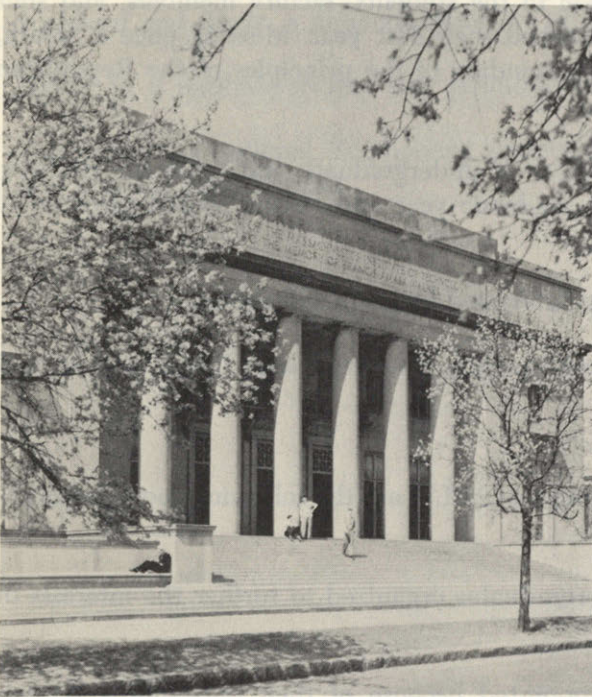
Social Groups. A background of common experience has brought together various organized groups of students, just as similarity of beliefs has been the basis of religious clubs, and similarity of interests, the basis of fraternal organizations.

The *Armenian Club* is one of the newest of the national groups and is already very active, promising to be even more so in the future. Its membership is made up of students of Armenian descent.

The *Chinese Students' Club*, with membership open to all students of Chinese descent, also has a large membership of Institute faculty members. An active group, it holds a dinner-meeting in the fall, social affairs throughout the year, outings, and forums and lectures on Chinese and international affairs.

The *India Association* is generally the leader in promoting joint social activities with the large number of students from India and Pakistan in various schools in the Boston area.

Technicon is an organization for students of Greek descent. Its activities are social, often in collaboration with similar groups from other colleges.



Walker Memorial—the center of student activities—contains a large dining hall, a snack bar, bowling alleys, a gymnasium, recreation rooms, and student-activity offices.

Social Life. The M.I.T. student enjoys a busy social life. He and his fellow students play host each weekend to dates from the women's colleges in the area, entertaining them with a wide variety of interesting activities—formal and informal dances, plays, parties, and sports events. Many opportunities are provided for the student of M.I.T. to meet students from these colleges. At the beginning of each school year

acquaintance dances are sponsored by M.I.T. and such colleges as Wellesley and Radcliffe. To further the opportunities for the Tech student to meet compatible young women, the Technology Christian Association carries on a date bureau which strives to provide him with a date who will be a suitable companion. A number of organizations on the M.I.T. campus make it a point to include similar organizations from the women's colleges in some of their activities. Thus the M.I.T. student meets many new friends who enjoy with him the numerous interesting events on the M.I.T. social agenda.

Other Activities and Groups. There are many other student activities, both organized and unorganized, at M.I.T. A few of these follow:

The *Masonic Lodge*, better known as the "Tech Lodge," meets on the third Wednesday of each month except during June, July, and August.

The *Young Republican Club* is open to the students, faculty members, and staff members of M.I.T. who have not reached their 31st year. Meeting once a month, the Club seeks to bring a greater understanding of the principles of the Republican Party to M.I.T.

The *Technology Dames* are the wives of undergraduate and graduate students. They meet regularly throughout the academic year and have a varied program of social and cultural activities.

The *Student Federalists* is a group interested in world federation.

The *M.I.T. Liberal Union* is an organization concerned with liberal politics and questions of social reform.

Among the numerous honorary groups at M.I.T. are the following social honorary organizations:

Agenda, an elected group of undergraduates organized to further the interests of dormitory residents;

Beaver Key, a group of Juniors appointed because of their outstanding records in athletics and campus activities to act as hosts to visiting teams;

Quadrangle Club, an elected group of Sophomores;

Dorclan, a society of junior and senior dormitory residents who have distinguished themselves in undergraduate activities.

The following professional honorary societies are active at M.I.T.:

Chi Epsilon, a national Civil Engineering society;

Eta Kappa Nu, a national Electrical Engineering society;

Gamma Alpha Rho, a national Aeronautical society;

Kappa Kappa Sigma, a local honorary fraternity in Chemistry and allied fields;

Pershing Rifles, a local chapter of a national military organization;

Pi Tau Sigma, a national Mechanical Engineering fraternity;

Pi Tau Pi Sigma, a local chapter of a national military fraternity;

Scabbard and Blade, a national fraternity of advanced ROTC;

Sigma Xi, a national society that promotes research in science and engineering;

Tau Beta Pi, a national Engineering society (the engineering counterpart of the liberal arts Phi Beta Kappa).

ENTERING M. I. T.

WHO WOULD BE INTERESTED?

M.I.T. needs the full spectrum of human abilities. Its program, both academic and extra-curricular, is a varied one, comprised of all sorts of professional, social, athletic, cultural, and avocational educational activities. Its student body is made up of young men and women from a wide variety of backgrounds with many abilities, ideas, interests, and goals.

It is therefore impossible for us to say: "Here is the typical M.I.T. student; if you are just like him, you would be interested in applying for admission to M.I.T." M.I.T. looks upon its students, not in terms of an average, but rather in terms of a group of widely differing individuals. These include, at one extreme, would-be research scientists, and, at the other, many men who, while having a basic interest in science and its applications, may well become industrial managers or business men.

If, however, you have read the description in this catalogue of the Institute—its ideas and purpose, its Faculty, its students, its Courses, its student activities, its campus—and if during reading this description you have found yourself interested in what we have had to say, then you would be interested in entering M.I.T. If, furthermore, you possess a good basic intelligence, if you have taken subjects in secondary school which demonstrate your interest, not only in science and mathematics, but also in the wide range of humanities, if your marks indicate that you work consistently well and are seriously and conscientiously interested in your studies, if your personal record indicates that you are a well rounded, active person whose interests include many aspects of living beyond the classroom and textbook, then M.I.T. would be interested in having you enter.

In considering its applicants for admission, M.I.T. tries to see them as whole men, as individuals, and to study, insofar as possible, their entire records and personalities. School marks, although important, are only a part of the things M.I.T. considers, and a straight A average is *not* prerequisite to entry.

HOW MUCH DOES IT COST TO GO TO M.I.T.?

ESTIMATED COST OF A COLLEGE YEAR

The cost of attending M.I.T. is necessarily high, but there is extensive financial aid available for promising students, and many part-time jobs on the campus sup-

plement summer earnings. The following is an *average* estimate of costs for an academic year of two terms; this, with recesses and holidays within the year, totals 37 weeks.

Tuition	\$900.00
Board	525.00
Room	330.00
Books and Materials	95.00
Total	\$1,850.00

During the freshman year there are certain non-recurring expenses such as drawing equipment and slide rules, for which \$40 should be allowed. Freshmen, as well as others using chemical laboratories, make a deposit of \$25 to cover supplies and breakage in the laboratory as well as damage to military uniforms. Students wishing Institute health insurance pay \$11 per term, \$22 per academic year. (See page 50.)

ANALYSIS OF EXPENSES

Academic Expenses. The regular tuition fee is \$450 per term. Payment of tuition, due on the date specified in the Registration Instructions issued before the beginning of each term, should be made in advance to D. L. Rhind, Bursar, Massachusetts Institute of Technology, Cambridge 39, Massachusetts. Students desiring periodic payments within each term should consult with the Bursar at least ten days before the beginning of each term. Students are advised to make their payments by mail, in the form of a check or money-order.

Living Costs. The rental fees for living accommodations in the dormitories vary from \$120 to \$190 per academic term (from \$240 to \$380 per academic year). In the co-operative section of Burton House, rentals are less because the students themselves co-operate in the upkeep. The fraternity rentals vary. All students, upon acceptance for admission, may apply for a room reservation in the undergraduate dormitories, including the co-operative section of Burton House (and the M.I.T. Student House, also co-operative). Membership in fraternities is by invitation only. In order to reserve a room in one of the campus dormitories, an entering student should send his application (separate from application to M.I.T.) to the Associate Dean of Students.

Payment of rental for each term is due on the date specified in the Registration Instructions issued before the beginning of each term. Payment should be made to D. L. Rhind, Bursar. Students desiring special arrangements for payment of rental should consult with the Bursar at least ten days before the beginning of each term.

Meal costs vary with individuals. It has been estimated, on the basis of average costs of meals in the Institute's cafeteria dining halls, that each student spends around

\$500-\$600 per academic year on meals. This figure applies to students who live on the campus, taking their meals in the various cafeterias of the Institute. All freshmen living in the residence houses and all residents of Baker House take commons meals; the fee is paid in advance, with the term rental, for three meals a day Monday through Friday throughout the term. Other students may also elect to take the commons plan, if they prefer it to payment by the meal. Those who choose the regular cafeteria plan, paying by the meal, have more choice as to meals but generally pay more, in the long run. Freshmen, residents of Baker House, and those others who choose the commons plan may supplement it on week ends by use of the regular cafeteria facilities. Residents of fraternities spend various amounts on their meals, depending on the amount each fraternity spends on food; costs in fraternities differ little from those in the Institute cafeteria dining halls.

Payment for commons meals should be made to D. L. Rhind, Bursar, by the date specified in the Registration Instructions issued before the beginning of each term. Students desiring special arrangements for payment for commons meals should consult with the Bursar at least ten days before the beginning of each term.

Personal expenses such as transportation, clothing, laundry, and recreation vary according to individuals and do not admit of an average figure; the student himself must determine how much these variable expenses will be.

Further information pertaining to student housing may be found in Appendix B of this Catalogue.

Health Insurance and Medical Expenses. A health insurance plan is available to all students of the Institute for a premium of \$11 per term. In return for this sum the insurance agency agrees with certain limitations to pay up to \$1,000 toward meeting the cost of each injury or illness during the term. If any student does not wish to be enrolled in this plan, he must sign a waiver by September 13, which is a part of the Bursar's Registration Card. Insurance is not necessary for Army, Navy, or Air Force students or for those veterans enrolled under Public Law No. 16. Any student registering after September 13, 1954, will be insured only from the date of filing registration material.

Any student may receive routine medical care in the clinic without charge. If he is referred to one of the special clinics, a moderate fee is charged. Psychiatric service will be charged for after the fifth interview in any one academic year. Insured students are seen in the various special clinics, including psychiatry, without charge other than the insurance premium. The charges for students in the hospital are low. Food, nursing, and medical care in the wards cost \$6 a day. For insured students the cost of these services is borne by the insuring agency.

In cases of serious illness, or contagious disease, when students are sent for treatment and care to hospitals outside the Institute in the Boston area, fees at these hospitals are paid by the student or his family, or, if he is insured, by the insuring agency.

WHAT FINANCIAL AID IS AVAILABLE FOR STUDENTS?

To help meet the costs of living and studying at M.I.T., there are four types of financial aids: scholarships; loans; part-time jobs; and the economies of co-operative living. Nearly one-third of the entering class are awarded freshman scholarship grants, which range from \$200 to \$2,000 for the academic year, and which are further augmented, in some cases, by grants to cover room rentals. Application for such scholarships should be made before February 7 preceding the fall term. Further grants are available in succeeding years to those with high academic records. After the first year, students with satisfactory records may borrow up to \$900 per academic year from the Technology Loan Fund, which is of ample size; this is in addition to any scholarship held; repayment of such loans is at the rate of \$50 every six months after graduation, at 1 per cent interest. Many jobs are available in the cafeterias, libraries, dormitories, and elsewhere, both on and off campus, for which application may be made to the Director of Student Aid. It is reasonable for a student who plans his time well to expect to earn from \$200 to \$300 per academic year; he should not, however, count on "working his way" completely. In addition substantial economies are effected by students who live in the co-operative section of Burton House, where the residents share the work.

It is highly important that each student make an accurate estimate of his expenses, including not only the basic expenses outlined in the "Estimated Cost of a College Year," but also the expenses that vary according to the individual student's tastes and personal needs. And beyond the making of such an estimate, in order to assure its accuracy, the wise student will make a careful record of what he actually spends over a period of time, preferably before entry into M.I.T., so that he will have a realistic picture of what he will spend in the future, and can thus determine whether or not to apply for scholarship aid or for a part-time job.

WHAT HIGH SCHOOL BACKGROUND IS NEEDED?

Any good high school or preparatory school in the United States, and equivalent schools in other countries, will provide adequate preparation to students who take full advantage of the opportunities before them. A broad secondary education—that kind of education that gives high school graduates the ability to think, to learn, and to express themselves clearly—is most desirable. Specialized technical preparation is not recommended.

An interest in and an aptitude for mathematics and a general motivation to go further than a superficial introduction to the sciences are of primary importance; a familiarity with history and literature help achieve the understanding necessary for meeting the professional as well as the broader demands of life. As science and engineering become increasingly public concerns, this breadth of outlook becomes more valuable for the scientist and the engineer.

Some suggestions to entering students are formalized in specific requirements that have been established for all entering freshmen. These "entrance requirements" are:

English	(three units)
Algebra	(two units)
Plane Geometry	(one unit)
Physics	(one unit)
Trigonometry	(one-half unit)

A "unit" represents one full year's study—four or five times a week—in a high school subject, except for English, where four years of study are counted as only three units. In some states algebra is completed in one and one half years, and this program satisfies the algebra requirement. Solid geometry, though recommended, is not required.

In addition to these subjects, M.I.T. recommends that among high school "electives" should be one year of chemistry and one or more years' study of history. Although there is no requirement of language for admission, the study of modern foreign languages in secondary school is desirable and is strongly recommended. No limitations are imposed with regard to languages, except that if a language is offered at all, it should total at least two units. The choice of languages should be guided by the student's own interest, by the educational opportunities open to him, and by the nature of his probable future work. For example, those who expect to have contacts with Latin America may need Spanish or Portuguese. Those who look forward to advanced work in research or design in a scientific or engineering field are likely to need a knowledge of German, Russian, or French, since there is an extensive and important technical literature in each of these languages. Since, however, relatively few public high schools in the United States offer German, and very few offer Russian, the student may find it expedient to take French, and to postpone until a later stage the study of German, Russian, or other languages appropriate to his professional specialty.

If the applicant to M.I.T. has not fulfilled the subject and unit requirements for entrance to M.I.T. at the time of his graduation from high school, he may, if he wishes, utilize summer study to make up subjects missing from his high school program. (Such summer study is not now possible at M.I.T.)

ARE THERE ENTRANCE EXAMINATIONS?

All applicants are expected to take the one-day test program of the College Entrance Examination Board, which is given five times each year, in many centers in the United States and abroad. The Board will accept late applications for its tests with a penalty fee of \$3, in addition to the regular fee of \$12, but in any event will not accept applications within less than a week of the test date. The test dates for the current year are given in the leaflet which is sent to all candidates.

The applicant to M.I.T. should take the following Board tests: in the morning, the Scholastic Aptitude Test; in the afternoon, three one-hour achievement tests: (1) Advanced Mathematics; (2) English Composition; (3) either Physics or Chemistry. He may take the tests on any date he wishes or divide them among different dates as he prefers. Application should be made to the College Entrance Examination Board, Box 592, Princeton, New Jersey. (Residents of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming, Alaska, Hawaii, Alberta, British Columbia, Mexico, Australia, Pacific Islands, Japan, and Formosa should apply to the College Entrance Examination Board, P.O. Box 9896, Los Feliz Station, Los Angeles 27, California.) The applicant should request the College Entrance Examination Board to send his test scores to M.I.T.

HOW SHALL I APPLY TO M.I.T.?

IF YOU ARE A HIGH SCHOOL OR PREPARATORY SCHOOL STUDENT SEEKING ADMISSION:

Application. You should send to the Institute for a Preliminary Application Form well in advance of the January before the fall term in which you desire to begin your studies at the Institute and should fill out and return this form immediately. The earlier this is done, the better, because it will assure that announcements and final admission forms will be sent automatically at the proper time.

A Final Application Form and two personal endorsement forms will then be sent to you in January preceding the date of entrance. At the same time, a School Report form will be sent directly to the principal or headmaster of each secondary school which you have attended, and will be returned by the school directly to the Institute.

Interviews. Applicants for admission to the first-year class at the Institute who live within one hundred miles of Cambridge are expected to have a conference with the Director of Admissions. It is recommended that this be done as early as possible in the applicant's final year of secondary school. Office hours are from nine to five, Monday through Friday; the office is closed on Saturday. It is not necessary to make an appointment in advance.

All other applicants are expected to arrange a conference with the nearest Honorary Secretary, an alumnus designated by the Director of Admissions, or with a member of the M.I.T. Educational Council. It is recommended that this be done early in the applicant's final year of secondary school.

Admission. In April of each year the Admissions Office reports on the status of most applicants for the class entering the following fall. Dormitory reservations are completed after admission has been secured, and separate application must be made for them.

IF YOU ARE PLANNING TO ENTER THROUGH THE COMBINED PLAN OF STUDY WITH LIBERAL ARTS COLLEGES:

Most prospective students of engineering, science, architecture, city planning, or industrial management enter the Institute directly after graduation from high school or preparatory school. A few, however, follow the plan of attending a liberal arts college before beginning their professional training. These include students who are undecided about their professional aims and prefer to enter a liberal arts college in preparation for M.I.T., in order to delay making their decision between a major in a technical field and one in a liberal arts field.

Ordinarily such students would spend four years at their liberal arts college, followed by two more years to attain a Bachelor's degree from the Institute. M.I.T. has therefore entered into a Combined Plan of Study with certain liberal arts colleges—selected on the basis of their excellent work in the prerequisite fields of science and mathematics. A student may enter one of the sixteen liberal arts colleges in the M.I.T. combined plan and may, by properly planning his studies, achieve a Bachelor's degree from both institutions at the end of the five-year combined program (six years in the case of architecture). The first three years of this plan are spent at the liberal arts college, and the last two (or three, in the case of architecture) are spent at the Institute. The student's entry to the Institute at the end of his three-year period of study at the liberal arts college depends upon the recommendation of that college that the student is qualified for entry to M.I.T. A chief advantage of this plan for students who wish to attend both a liberal arts college and M.I.T. is that they may thereby follow a well-organized schedule that will fully qualify them for entry into M.I.T. without need of making up subjects that should have been taken before their entry into M.I.T.

The colleges that participate in this unified program with M.I.T. are:

- Amherst College, Amherst, Massachusetts
- Bowdoin College, Brunswick, Maine
- Carleton College, Northfield, Minnesota
- Hamilton College, Clinton, New York
- Miami University, Oxford, Ohio
- Middlebury College, Middlebury, Vermont
- Oberlin College, Oberlin, Ohio
- Ohio Wesleyan University, Delaware, Ohio
- Pomona College, Claremont, California
- Reed College, Portland, Oregon
- Ripon College, Ripon, Wisconsin
- St. Lawrence University, Canton, New York
- Washington and Jefferson College, Washington, Pennsylvania
- Wesleyan University, Middletown, Connecticut
- College of William and Mary, Williamsburg, Virginia
- Williams College, Williamstown, Massachusetts
- College of Wooster, Wooster, Ohio

If you are interested in M.I.T.'s combined plan with liberal arts colleges, you should make application directly to one of the above-named colleges.

IF ADMITTED TO M.I.T., WHAT SHOULD I BRING WITH ME?

You know what clothing to bring to M.I.T., what decorations you will want for your room, whether to bring your skis or ice skates. Other things that may not at once occur to you are even more important. Here are a few suggestions:

Bring an open mind. Curricular and extra-curricular opportunities for activity and study at the Institute are many. Arriving with an active curiosity and a determination to discover for yourself, you will have many chances to investigate all these things, and if you are a beginner in most of them, as you probably are, you will have plenty of time to look around a bit and to receive basic instruction in any new field of activity you may decide to take part in.

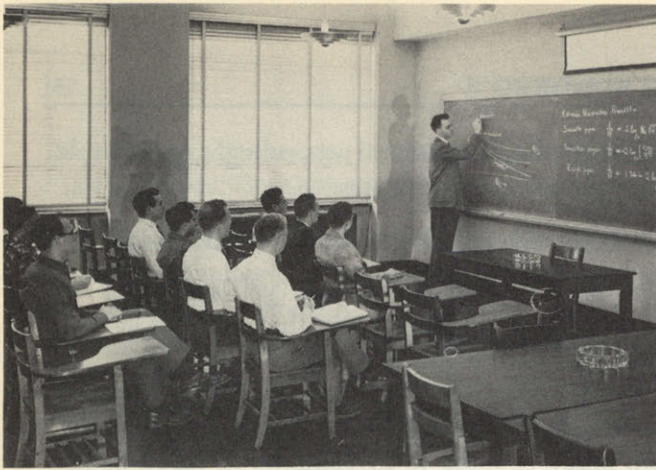
On the academic side of the picture, you may gain perspective by exploring your own particular aptitudes as revealed by your progress in the fundamental subjects of the first year. You will have time to learn which phases of science and engineering most closely match your own abilities, thus gaining judgment based on knowledge. You will have a chance to discuss these matters with your fellow students, with your instructors, and often with men in industry, and may find out what specific opportunities exist for the combination of ability and application you have discovered in yourself. The initiative is your own.

Correspondingly, the student organizations on campus and the social clubs make freshmen welcome at the start of the year and throughout the years of their residence at the Institute. The officers and members of all activities make new students more than welcome in their offices.

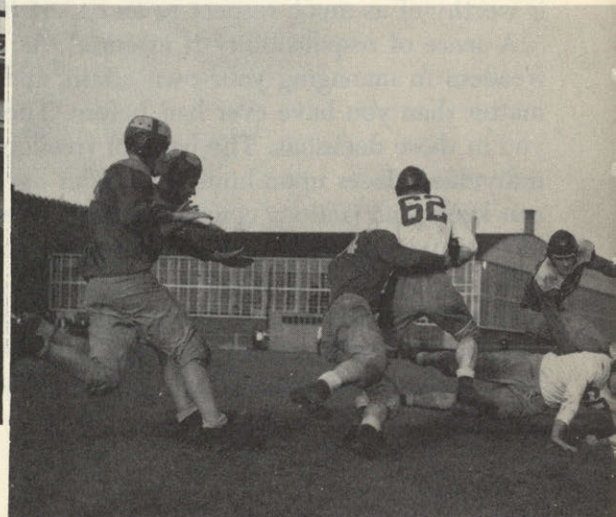
Self-confidence is important. You will find yourself a beginner in the midst of a wide variety of people at various stages in the pattern of learning and research at the Institute. There is nothing wrong with being a beginner, and a beginner who shows the proper enthusiasm and eagerness to learn and who demonstrates his good attitudes by hard and careful work and by an interested and interesting personality is worthy of as much respect as an expert in research or a leader in campus activities.

A sense of responsibility is essential. As a freshman you will probably have more freedom in managing your own affairs and in making your own decisions in every matter than you have ever had before. There are few rules at the Institute to compel you in these decisions. The basis of freedom for everyone lies in the limitations each individual places upon himself in order not to infringe on the freedom of others. You can keep your actions compatible with the interests of your fellow students as well as your own; doing so, you will be laying the foundation for good citizenship throughout your life.

Remember at all times that people at the Institute are looking forward to meeting you and to hearing what you have to say. Friendship is one of the cornerstones of the Institute and, even before you arrive, you will have friends here waiting for you.



Four aspects of the varied life of M.I.T. students.



APPENDICES

APPENDIX A REGULATIONS

GENERAL REGULATIONS

The Institute regards its student-citizens as adults and assumes that they are capable of managing their own affairs and of seeking advice on their own volition. It is therefore an Institute policy to have as few rules and regulations as are consistent with efficient administration and the general welfare. The regulations that do exist pertain to the academic, financial, and medical sides of campus life. Certain general regulatory measures are obvious and to be expected. If any student does injury to Institute property, for example, he is held financially responsible for repair of the damage; if the person or persons who cause the damage are unknown, the cost of repair is assessed equally upon all the students of the school. Conduct inconsistent with general good order, persistent neglect of work, or failure to respond to official notices or to meet class or examination schedules may lead to probation or dismissal. Insofar as possible, however, the regulation of the day-to-day affairs of students, including disciplinary measures, of residence in the Institute dormitories and fraternities, of extra-curricular activities, including athletics—in fact, of every phase of life at the Institute except the specified academic, financial, and medical—is the responsibility of the students themselves and their elected student government.

ACADEMIC REGULATIONS

Academic Year. The academic year of the Institute begins on Registration Day, which is the Monday before the last Monday in September, and continues through until the early part of June. In order that freshmen be properly

oriented to the Institute and take various tests administered to all freshmen, the Fall Term for freshmen begins on the Thursday preceding Registration Day. The following legal holidays of the Commonwealth of Massachusetts are observed: Labor Day, October 12, November 11, Thanksgiving Day, December 25, January 1, February 22, April 19, May 30, and July 4. Vacation dates are announced each year.

Registration Day. The student is required to fill in and present registration forms to the Registrar at a date specified in the registration instructions sent to each student before the opening of each term.

Official Notices. It is the student's responsibility to keep informed of all official notices on the Official Bulletin Board.

Attendance. After approval of his registration, the student is expected to attend all classes, laboratories, quizzes, tests, and final examinations in the subjects in which he is registered. Irregular attendance or habitual tardiness may lead to probation or suspension. The student is expected to follow the program assignments as published in the official Class Schedules between the hours of 9 A.M. and 5 P.M. There are no classroom exercises after 1 P.M. on Saturdays.

Withdrawal During Term. Students who withdraw from a subject during the term should obtain the approval of the Office of the Dean of Students and give notice to the Registrar.

Academic Standards. It is the aim of the Faculty to maintain the highest standards of integrity. The attempt of any student to present as his own the work of another, or any work which he has not honestly performed, or to pass any examination by improper means, is regarded

by the Faculty as a most serious offense, and renders the offender liable to immediate expulsion. The aiding or abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Faculty-Student Committee. A Faculty-Student Committee, made up of an equal number of students and of Faculty, meets regularly to discuss matters pertaining to the curriculum, teaching methods, schedules, and, in fact, all relations of students and Faculty.

Final Examinations. Final examinations are held at the end of each term, the schedule being issued about a month before the examination period. Each student is responsible himself for obtaining a copy of the examination schedule at the Information Office. Each student is also responsible for attending the final examinations required in the subjects for which he is registered, and for reporting any conflicting examinations on his schedule before the time limit given on the examination schedule.

No member of the instructing staff can excuse a student from a final examination. Absence from any final examination is equivalent to complete failure in the subject, unless a valid reason for absence from the examination (such as illness) is presented in writing to the Dean of Students, who may permit a student whose term work has been satisfactory to take an ensuing examination in the subject.

The ability of a student to continue his subjects is determined partially by examinations, but regularity of attendance and faithfulness to daily duties are equally essential.

Condition Examinations. A conditional grade received by a student as a term record can only be removed by examination or by repetition of the subject. Condition examinations will be given in March for conditional grades of the first term, in September, before the opening of the fall term, for conditional grades of the second term. Each student is responsible for obtaining a schedule of condition examinations and filing an application card for the condition examination *before* the time limit given on the schedule.

A student not taking an examination at the scheduled time forfeits the right to the examination. A student who takes a condition or advanced standing examination in a given term, and fails to pass it, is not allowed to register for that subject in the same term.

Examinations for Advanced Standing. Registered undergraduate students of all classes, with a cumulative rating of 3.50 and above, may take examinations for advanced standing during the condition examination periods in each term, provided that they have never been registered for the subjects, or have never attended classes in them. Notice of intention must be filed with the Registrar on the usual petition forms, and must be submitted at least two weeks before the day of the first scheduled examination of the condition and advanced standing examination period. Endorsement by members of the Faculty is not necessary except that examination in a subject which involves laboratory instruction or drawing must be approved by the Faculty member in charge.

Petitions. The Committee on Academic Regulations is the Faculty body through which the student may appeal for special consideration of his individual case. All requests must be submitted in writing on petition blanks, which may be obtained at the Information Office.

Theses. All theses and records of work done in preparation of theses are the permanent property of the Institute, and must not be published, either wholly or in part, except by authorization of the heads of the respective Departments.

FINANCIAL REGULATIONS

Payment. No bills are sent. It is the responsibility of each student to see that he has paid his tuition, board, room, and other fees at the time specified in the registration instructions before the beginning of each term. Registration is not complete until all payments of tuition, board, room, and deposits have been made.

A charge of \$5 is incurred by students for late registration at the Institute or late payment of tuition, room, and board (in cases where students take part in the commons meals plan).

Payment of tuition, rent, and for commons meals should be made to D. L. Rhind, Bursar, Massachusetts Institute of Technology, Cambridge 39, Massachusetts, by the time specified in the registration instructions issued before the opening of each term. Students are advised to make their payments by check or money-order through the mail.

Students desiring periodic payments within each term should consult with the Bursar or Assistant Bursar at least ten days before the beginning of each term.

Refunds. Full-time students withdrawing before the end of the term are charged \$35 per week for tuition up to the last day of attendance. For others the charge is proportionately adjusted.

No refund of deposits for military and laboratory supplies is made during the academic year except to students leaving the Institute.

Students who leave the Institute before the end of a term receive a proportionate refund of their room rental.

Residents of the undergraduate dormitories who desire to move to recognized fraternities after Registration Day and before the fourth Monday following it and whose transfer is requested by authorized members of the fraterni-

ties will be refunded the rental fee less a charge for occupancy at the weekly rate.

MEDICAL REGULATIONS

Every entering student, undergraduate or graduate, is required to be immunized against tetanus and smallpox prior to matriculation. After registering he is given a complete physical and dental examination within six weeks after matriculation, followed up by an X-ray of the chest in succeeding years. No student is permitted to engage in intercollegiate or intramural athletics without having had a physical examination in the same academic year.

APPENDIX B STUDENT HOUSING

(All rentals and information apply to the school year 1954-55 and are subject to change.)

THE UNDERGRADUATE HOUSES

The student housing facilities provided at the Massachusetts Institute of Technology have been carefully planned and organized to afford an economical, comfortable place in which to live, an environment conducive to study, and an opportunity to participate in those social and extracurricular activities which properly supplement scholastic work. A Faculty Resident occupies quarters in each of the three residential centers. Chosen for their understanding of students and student questions, these men welcome informal friendly discussions with their fellow residents.

The Institute believes that it is to the great advantage of all freshmen who do not live at home to live in Institute Houses or in fraternities; such residence is required for all freshmen unless other special arrangements are approved by the Associate Dean of Students. The Institute has no specific regulations, however, as to the place where upperclassmen must live, and they are free to make whatever living arrangements they choose.

GOVERNMENT

The undergraduate houses are administered as a part of the general plan of student self-government at the Massachusetts Institute of

Technology, with the co-operation of an Advisory Committee, appointed by the President. The Student Dormitory Committee organizes and supervises all student activities, athletic and social, and cooperates with recognized undergraduate activities at the Institute.

The success of student self-government depends upon the willingness of every resident to cooperate and contribute, and therefore upon the responsibility which the group as a whole is willing to assume. Those who are unable or unwilling to live under student government and support its principles in the strictest sense, whether on or off the Institute grounds, are undesirable tenants, and are so recognized by the Student Dormitory Committee and the Institute's Faculty and Administration. The privilege of residence in the undergraduate houses will therefore be denied to those who do not accept this responsibility.

A House Tax included in rental is turned over to the Student Dormitory Committee for social and athletic activities.

THE EVERETT MOORE BAKER HOUSE

(West Campus)

Located on the river front at 362 Memorial Drive, Cambridge, west of Massachusetts Ave-

nue, Baker House was completed and occupied during the academic year 1949-50. The House, which accommodates some 350 students in single, double, or triple rooms, offers many distinctive features. All private rooms in it receive direct sunlight during most of the day, and nearly all have spectacular views across the Charles River Basin. On the north are living rooms with large window areas looking out on the Institute's playing fields. Generous lounge space is provided on each of the floors, with a main lounge adjoining the entrance. On the ground floor is a community area including music, recreation, and social rooms. The Baker House has its own dining facilities, where residents are expected to take commons meals. (See Page 61.)

THE ALFRED EDGAR BURTON HOUSE
(West Campus)

This House is also on the river front at 410-420 Memorial Drive, Cambridge, west of the Baker House. Formerly an apartment hotel, it has been converted into a residence house and completely refurnished and redecorated. It consists of five units accommodating 600 students. There are some single and double rooms but most of the accommodations are suites of rooms designed for congenial groups. Conner Hall, the name of the section of this House comprising units 1 and 2, is operated on the cooperative plan and residents accept responsibility for the care of their own rooms. Units 3, 4, and 5 of the 420 section are not on a cooperative basis and the rooms are cared for by Institute personnel.

Residents of the House who choose to do so may include commons meals with the rental and will be served in one of the campus dining rooms, where à la carte service is also available. The building has a number of lounge and game rooms, and a bicycle room. A completely modern snack bar on the ground floor has just been opened to accommodate those students who live on West Campus. Open from 7:30 in the morning to 12:00 midnight, seven days a week, this provides a very pleasant place to meet friends and relax.

THE FACULTY HOUSES

WARE, ATKINSON, RUNKLE, HOLMAN,
NICHOLS, AND CRAFTS
(East Campus)

These six houses, located on Memorial Drive, east of Walker Memorial and adjacent to the President's House, accommodate about 225 students.

Most of the first floor rooms in all the houses except Crafts and Ware are designed for single occupancy. On the upper floors most of the quarters are suites, composed of a living room, a dressing room, with lavatory, and a sleeping room arranged for two students.

THE ALUMNI HOUSES

MUNROE, HAYDEN, WOOD, GOODALE,
BEMIS, WALCOTT
(East Campus)

Situated on the main campus near Walker Memorial, these six houses have accommodations for 430 men. Most of the rooms are designed for single occupancy—with a limited number of double and triple suites. There are lavatory installations in all these rooms, supplemented by adequate toilets and showers on each floor of every house.

Dining facilities for residents of the East Campus Houses are in the Walker Memorial Building. This includes a large cafeteria where both commons meals and à la carte service are provided. A modern social room and soda bar, where light refreshments are served, is located in Pritchett Lounge on the second floor. This room is open to residents of the house and their guests during the evening hours, and is equipped with a dance floor and other facilities for entertainment.

APPLICATION—ASSIGNMENT OF ROOMS

Applications for rooms should be sent to the Associate Dean of Students, Massachusetts Institute of Technology, Cambridge 39, Massachusetts. Each Freshman and college transfer student will receive with his notice of admission a form for use in requesting up-to-date information about dormitory accommodations, including an application. Application forms for the next regular year will be distributed to present residents prior to the end of a term. The right is reserved to reject any application for sufficient reason.

Priority in the assignment of rooms for the year 1954-55, except those especially reserved for entering first-year students, is granted to students in residence.

The number of rooms reserved for Freshmen in the undergraduate houses varies from year to year but is arranged to accommodate all first year students who do not live at home or who are not affiliated with a recognized fraternity and live in the fraternity house. All applications received on or before August 15 will be subject to a draw-

ing and applicants will be notified of an assignment in the undergraduate houses.

Students transferring from other colleges with upper class status are urged to file application promptly after admission for assignment to rooms not reserved for freshmen.

OCCUPANCY

The period of occupancy for an academic year extends from the Wednesday preceding Registration Day (see Calendar in Catalogue) through the Tuesday following the last day of the scheduled final examination period.

On arrival in Cambridge, a student should report to the desk in the lobby of the house to which he has been assigned. At this time he will complete his dormitory registration and obtain a key. Every effort will be made to accommodate students who find it impossible to arrive during the normal business hours; in the event of difficulty in locating the proper dormitory unit, inquire at the Institute's Information Desk in the Rogers Lobby at 77 Massachusetts Avenue, which is attended at all times.

A student is not allowed to sublet or transfer his room or his share in a room to any person.

FRATERNITY AFFILIATION

The "recognized list" of fraternities at the Massachusetts Institute of Technology includes twenty-six chapters situated on private property in Cambridge, Boston, and Brookline. Residence in the undergraduate houses or fraternities provides a more intimate contact with Technology life and activities. Approximately 90 per cent of the fraternity Freshmen are pledged early in the Fall term, and in order that they may assume residence at the fraternity houses of their choice immediately and thereby release accommodations to those who prefer residence in the undergraduate houses, the privilege of cancellation of reservations is extended to those who make a decision on or before Registration Day. Parents who anticipate fraternity affiliation for their sons should, if possible, encourage them to participate in Rush Week and grant them permission to act on their own initiative. The satisfactory and permanent housing of a large group of entering students can be accomplished best through the cooperation of parents, students, fraternities and Institute housing representatives in making early and prompt decisions so that temporary housing is reduced to a minimum. Freshmen and other new students are therefore requested to withdraw applications for residence promptly if they

are certain that such accommodations will not be required.

FEES—REFUNDS

Commons Meals. Commons meals are required of all students living in Baker House and all freshmen living anywhere in the undergraduate houses. Three meals are served each day Monday through Friday, except during stated vacation periods. On Saturdays and Sundays, and during vacations, the dining facilities of the Institute are available on a cash basis.

Upperclassmen not resident in Baker House are invited to take commons meals on the same basis by making arrangements with the Dining Service.

The fee for commons meals, at the rate of \$10.75 per week, is payable for the full term in advance with the tuition. The current commons meal fee for the fall term is \$182.75. Arrangements for deferred payment may be made through the Bursar before payment is due.

Room Rentals. Rental rates for accommodations in the dormitories vary from \$120 to \$190 each person each term. The following are the current rental rates:

East Campus: \$165 each student each term, except for: Bemis double rooms 112, 212, 312, 412, and 512; Atkinson single rooms 204A, 304A, 404A, and 204B, 304B, and 404B; and Runkle single rooms 206A, 306A, 406A, 501, 502, 505, 601, 602, 603, 604, 604A, 605, and 605A—all of which are \$130 each term each man.

Baker House: \$190 each student each term.

Burton House: \$120 each student each term in the Cooperative Section; rates in the 420 section range from \$150 to \$175 each man each term, depending on size and location of the room. Floor plans and details may be secured from the Associate Dean of Students.

Rent for the full term is payable with tuition to D. L. Rhind, Bursar, except when prior arrangements are made with the Bursar for deferred payments.

Rooms are engaged for the full academic year. Reservations are automatically cancelled and a proportionate refund is allowed upon withdrawal of a student from the Institute or transfer to a cooperative course, or in the event of a leave of absence for military service, or under circumstances approved by the Office of the Dean of Students. Students resident in the undergraduate houses who desire to move to recognized fraternities after Registration Day and prior to the end of the second week of the Fall term or during the

first two weeks of the Spring term and whose transfer is requested by authorized representatives of the fraternity will be refunded the rental fee less a charge for occupancy at the weekly rate.

EQUIPMENT AND SERVICE

All rooms in the undergraduate houses are fully equipped for occupancy, all single rooms having a special bed or couch, all-hair inner-spring mattress, pillow, blankets, mirror, chiffonier or wardrobe, desk and chair, study chair, bookcase, wastebasket, light bulbs, and extra electrical outlets. Inter-dormitory telephone service is provided. Double and triple suites are furnished in a manner similar to the single rooms. Each occupant is expected to complete an equipment inventory acknowledgment at the opening of the fall term, indicating the condition of the room and the furnishings. A student will be held responsible for losses or for unusual damage occurring during his occupancy.

Bed linen is furnished in all houses. Except for the Co-operative Section of Burton House, the beds are made up with clean linen once a week by Institute personnel and the rooms are cleaned daily, but not on week ends and holidays. In the Cooperative section of Burton House, each occupant is responsible for the cleaning and care of his own room, drawing fresh bed linen once a week from the supply room. Students in all houses provide their own towels and soap.

For maintenance and safety, rooms are inspected regularly during the normal working hours by responsible Institute personnel.

GENERAL INFORMATION

Basic Regulations. In applying for a room in the houses, each student must sign his name on a sheet listing the following basic regulations, thus indicating his understanding and acceptance of them:

1. Only one room application form per student may be filed. Duplicate applications will not be considered.

2. Upperclassmen who are assigned rooms in the houses this spring will receive, in their registration material, a card which must be signed and returned by the deadline established for registration material in order to confirm acceptance of a room assignment. Students from whom no card is received will lose their assignment and be transferred to the bottom of the waiting list. Under special circumstances explained to the Associate Dean of Students, students may be re-

lieved of the responsibility for confirmed assignments up to, but not including, September 20, 1954.

3. Room changes within the dormitories will be made, on application, with the approval of the Associate Dean of Students. Changes requested during the first three weeks of any term will not be effected until the end of the three-week period. Vacancies occurring during the first three weeks of any term will be filled directly from the waiting list, if any. At the end of the three-week period, priority in moves will be given residents as of Registration Day over men assigned rooms after Registration Day.

4. Students engaging a dormitory room will be expected to live in the dormitories throughout the academic year except if they (a) leave the Institute, (b) move to a fraternity as indicated below, (c) present special circumstances to the satisfaction of the Associate Dean of Students. Students who so leave the dormitories will be charged the weekly rate for the period of occupancy.

5. Students may only move from the dormitories to a fraternity during the first two weeks of the Fall Term and during the first two weeks of the Spring Term.

6. The Institute reserves the right to move students within the dormitories at its discretion for purposes of consolidation in case of vacancies, other demands upon dormitory facilities, etc. Under these circumstances, students will be allowed to leave the dormitories, instead of moving, with the approval of the Associate Dean of Students.

7. Students who do move from the dormitories for any reason will be responsible for room rent until they have signed out at the *Dean's Office*. This is essential to guarantee accurate refunds.

8. As a general rule, students may not occupy doubles as singles, triples as doubles, etc. If extra rooms are available, students may so occupy rooms at the Institute's convenience or protect the privilege in any given term by payment of \$50.00 each.

9. No cooking equipment may be used in the undergraduate houses for reasons of safety and sanitation.

10. Refrigerators are allowed in students' rooms but must be licensed at a fee of \$2.50 per term to cover costs. Refrigerators are subject to inspection for reasons of safety.

11. Damage of Institute property in the dormitories shall be the responsibility of the residents. Each student shall be held accountable

for any damages in his own room, the entire dormitory, or any part thereof as may be determined by the student government, and for damage outside individual rooms.

12. All upperclassmen electing to live in Baker House, all freshmen living in Burton House, Baker House, or East Campus are required to register for Commons Meals.

13. Open House Regulations and regulations for extra-curricular activities in the dormitories are among the responsibilities of student government in the houses. The Faculty and Administration expect all students to abide willingly by the regulations of student government.

Key Deposits. A deposit of \$1 is required for a room key, subject to refund in full upon return of the key.

Parking and Automobile Regulations. Because of the acute shortage of on-campus parking space the Institute cannot provide parking facilities for use of resident students. A limited number of spaces are provided, with the approval of the Office of the Dean of Students, for residents with physical handicaps demanding use of an automobile.

Operators of motor vehicles should consult the Office of the Dean of Students or the Massachusetts Registry of Motor Vehicles, regarding regulations and insurance of out-of-state motor vehicles. The registration and operating licenses of certain states are not honored in Massachusetts after thirty days.

Storage. Space is available in the basement for trunks and baggage during the academic year only and at the owner's risk. The Institute assumes no liability, and articles must be removed when occupancy is terminated. No packing cases or trunks are permitted in the rooms.

Mail, Parcel Post, and Express Service. Each room or suite has a separate combination lock mail box, located in the house office. In addressing mail or packages to a student in the Houses, please specify the house (e.g. East Campus, 3 Ames Street, or Burton House, 420 Memorial Drive, or Baker House, 362 Memorial Drive, or the Graduate House), Massachusetts

Institute of Technology, Cambridge 39, Massachusetts.

Telephone Service. Local and long distance calls for resident men students should be made by calling University 4-6900. An inter-dormitory telephone system provides internal service between rooms (corridors in the case of Burton House) of the various men's residence houses. Telephone pay stations for outgoing telephone calls and telegrams are conveniently located about the Houses.

Laundry and Valet Service. Laundry and valet service by the Institute's authorized suppliers is available at reasonable prices to residents of the Houses for their personal laundry and cleansing on a cash basis. Laundry bags, slips, and tags are available at the office desk.

OPPORTUNITIES FOR STUDENT EMPLOYMENT

As stated under Financial Aid on page 51 of the Catalogue, the Institute provides many opportunities for students to earn a part of their expenses. The operations of the Dormitories and the Dining Service lend themselves especially to part-time work; Burton House, for example, is staffed entirely by student personnel. For information, write to Dean T. P. Pitré, Director of Student Aid, at the Institute.

WOMEN'S RESIDENCE

The Women's Dormitory, located at 120 Bay State Road, Boston (telephone CIRCLE 7-8646), accommodates 17 students. It is an attractively furnished house where girls may enjoy a home-like atmosphere. A House Mother is in residence. The Dormitory is a fifteen to twenty minute walk to M.I.T. Breakfast and dinner are served to all residents during the academic year in accordance with the schedule planned in advance by the residents of the house. The girls also have the privilege of preparing their lunches with food provided by the house. During the Summer Session residents are allowed kitchen privileges. Application forms as well as further information may be obtained from the Assistant to the Dean of Students.

APPENDIX C TUITION

The regular tuition fee is \$450 per term.

The tuition fee for students taking Course VI-A (Co-operative Course in Electrical Engi-

neering) after the second year is \$300 for each term including the summer term, provided that the student attends three consecutive terms in

a twelve-month period, one of which must be at the plant; otherwise, the regular term tuition of \$450 is applicable.

Students in Course II-B or XVI-B (Co-operative Course in Mechanical Engineering and Co-operative Course in Aeronautical Engineering respectively) will pay the tuition fees as listed in the Summer Session Catalogue for the subjects they register for during the Summer Session they attend. They will also register and pay a \$50 tuition fee for the six-month period they are at the plant.

A charge of \$5 is made for each condition or

advanced standing examination taken, and \$5 for the removal of each deficiency.

Payment of tuition should be made to D. L. Rhind, Bursar, Massachusetts Institute of Technology, Cambridge 39, Massachusetts, by the time specified in the registration instructions issued before the beginning of each term. Students desiring periodic payments within each term should consult with the Bursar or Assistant Bursar at least ten days before the beginning of each term. Students are advised to make their payments by check or money-order through the mail.

APPENDIX D CURRICULA

ORGANIZATION OF CURRICULA

The curricula are grouped into Schools, Departments, and Courses as follows:

SCHOOL OF ARCHITECTURE AND PLANNING

Courses leading to the degrees of Bachelor in Architecture (B.Arch.) or Bachelor in City Planning (B.C.P.)

DEPARTMENT OF ARCHITECTURE

Course IV-A, Architecture. (Five years.)

DEPARTMENT OF CITY AND REGIONAL PLANNING

Course IV-B, City Planning.

SCHOOL OF ENGINEERING

Courses leading to the degree of Bachelor of Science (S.B.) in the respective branches of engineering

DEPARTMENT OF AERONAUTICAL ENGINEERING

Course XVI, Aeronautical Engineering.

Course XVI-B, Aeronautical Engineering, Co-operative Course.

DEPARTMENT OF BUILDING ENGINEERING AND CONSTRUCTION

Course XVII, Building Engineering and Construction.

DEPARTMENT OF CHEMICAL ENGINEERING

Course X, Chemical Engineering.

Course X-B, Chemical Engineering Practice.

DEPARTMENT OF CIVIL AND SANITARY ENGINEERING

Course I, Civil Engineering, with options:

(1) Theory and Design, (2) Planning and Administration, (3) Construction and Management.

DEPARTMENT OF ELECTRICAL ENGINEERING

Course VI, Electrical Engineering, with options:

(1) Electric Power, (3) Electrical Communications, (4) Electronic Applications.

Course VI-A, Electrical Engineering, Co-operative Course.

(Leads to S.B. and S.M.; requires five years.)

DEPARTMENT OF MECHANICAL ENGINEERING

Course II, Mechanical Engineering.

Course II-B, Mechanical Engineering, Co-operative Course.

DEPARTMENT OF METALLURGY

Course III, Metallurgy, with options:

(1) Metallurgy, (2) Mineral Engineering.

DEPARTMENT OF METEOROLOGY

Course XIX, Meteorology.

DEPARTMENT OF NAVAL ARCHITECTURE AND MARINE ENGINEERING

Course XIII, Naval Architecture and Marine Engineering.

Course XIII-C, Marine Transportation (suspended 1952).

INTERDEPARTMENTAL

Course IX-B, General Engineering.

SCHOOL OF HUMANITIES AND SOCIAL STUDIES

Courses leading to the degree of Bachelor of Science (S.B.)

- DEPARTMENT OF ECONOMICS AND SOCIAL SCIENCE
 Course XIV-A, Economics and Engineering,
 based on Mechanical Engineering.
 Course XIV-B, Economics and Engineering,
 based on Electrical Engineering.
 Course XIV-C, Economics and Engineering,
 based on Chemical Engineering.

SCHOOL OF INDUSTRIAL MANAGEMENT

Courses leading to the degree of Bachelor of Science (S.B.)

- SCHOOL OF INDUSTRIAL MANAGEMENT
 Course XV-A, Business and Engineering Administration, based on the Physical Sciences.
 Course XV-B, Business and Engineering Administration, based on the Chemical Sciences.

SCHOOL OF SCIENCE

Courses leading to the degree of Bachelor of Science (S.B.) in the respective fields of science

- DEPARTMENT OF BIOLOGY
 Course VII, Quantitative Biology.
 Course VII-A, Physical Biology. (Leads to S.B. and S.M.; requires five years.)
 Course VII-B, Chemical Biology. (Leads to S.B. and S.M.; requires five years.)

- DEPARTMENT OF CHEMISTRY
 Course V, Chemistry.

- DEPARTMENT OF FOOD TECHNOLOGY
 Course XX, Food Technology.
 Course XX-A, Food Technology. (Leads to S.B. and S.M.; requires five years.)
 Course XX-B, Biochemical Engineering.

- DEPARTMENT OF GEOLOGY AND GEOPHYSICS
 Course XII-A, Geology.
 Course XII-B, Geophysics.

- DEPARTMENT OF MATHEMATICS
 Course XVIII, Mathematics.

- DEPARTMENT OF PHYSICS
 Course VIII, Physics.

INTERDEPARTMENTAL

- Course IX-A, General Science.
 Course IX-C, Science Teaching. (Leads to S.B. and Master of Arts (A.M.) in Teaching; requires five years; a joint program with the Harvard Graduate School of Education.)

In addition to the Departments listed above, the following departments offer subjects of instruction included in the various programs: the Department of English and History, the Department of Modern Languages, the Department of Military Science and Tactics, the Department of Air Science and Tactics, and the Section of Graphics.

COURSE SCHEDULES

In the Course Schedules that follow, the credit hours associated with a subject indicate the total hours per week required in class and laboratory and the estimated total hours the student will spend in outside preparation. The total credits for a subject are listed by two numbers: the first represents hours in a class or laboratory, the second, estimated preparation time for an average student. Thus the numbers 3-6 after a subject indicate that it involves three hours per week in class and laboratory and an average of six hours per week of outside preparation. On this basis the normal student schedule is approximately 50 hours a week total time in class, laboratory, and outside preparation. This means that a student taking a 50-hour schedule for a term of approximately 15 weeks is registered for 50 units of credit, a unit being equivalent to 15 hours of work.

Humanities subjects are not listed by title in the schedules. A description of the integrated four-year program in the Humanities and Social Studies may be found on page 92 following this section on Course Schedules.

No substitutions are permitted for subjects in the schedules of the first or second year, except for professional subjects. Substitutions for the professional subjects of the second year and for certain subjects in the third and fourth years cannot be made in any case without the approval of the Head of the Course and the Committee on Academic Regulations, and such substitutions are only approved where the desired subject has practically the same subject content,

objectives, and at least the same number of credit units as the subject for which it is being substituted. Subjects in the humanities program are required, and the rules governing choices between them may be found in the section following, which deals with the integrated program in the Humanities and Social Studies.

A thesis based on independent research must be presented in every Course as a part of the requirements for the Bachelor's degree.

(For rules governing modifications in Course Schedules and for the requirements for the Bachelor's degree, see page 25 of this Catalogue.)

Following are the schedules of undergraduate Courses, in summary form:

I. CIVIL ENGINEERING

FIRST YEAR
First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

REQUIRED DURING SUMMER
AT CAMP TECHNOLOGY

Surveying	13-0
Surveying Fieldwork, Adv.	6-0
Route Surveying Fieldwork	5-0

SECOND YEAR
First Term

Surveying, Adv.	6-4
Statics	3-5
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	23-25

Second Term

Route and Constr. Surveys	2-4
Dynamics	3-5
Physics	5-5
Engineering Geology	4-4
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	23-29

THIRD YEAR
First Term

Fluid Mechanics	3-6
Engineering Construction	3-3
Strength of Materials	3-6
Testing Materials Lab.	2-2
Materials	6-6
Humanities	3-5
	<hr/>
	20-28

Second Term

Structural Analysis	3-6
Structural Design, Elem.	9-0
(1) Fluid Mechanics	2-4
(2) Conservation, Prin.	3-6
(3) Constr. Equip. & Methods	2-4
(1) Heat Engineering	4-5
Electrical Eng., Fund.	4-6
(2) Elementary Statistics	2-4
(3) Accounting	5-4
Humanities	3-5
	<hr/>
(1) 25-26 (2) 24-27 (3) 26-25	

FOURTH YEAR

Option 1. Theory and Design

First Term

Soil Mech. & Found. Eng.	6-6
Structural Analysis	3-6
Structural Design	6-0
Fluid Mechanics Lab.	6-0
Humanities	3-5
Elective Subject	12
	<hr/>
	53

First Term Elective Subjects

Transportation Engineering	6-6
Hydrology	6-6
Water Supply & Purification	6-6

Second Term

Structural Analysis	3-6
Reinforced Concrete Des.	6-0
Professional Problems	2-4
Thesis	9
Humanities	3-5
Elective Subject	9
	<hr/>
	47

Second Term Elective Subjects

Transportation Engineering	6-3
Hydraulic Engineering	6-3
Sewerage & Sewage Treatment	6-3

Option 2. Planning and Administration

<i>First Term</i>	
Soil Mech. & Found. Eng.	4-4
Structural Analysis	3-6
Hydrology & Water Power Eng.	3-3
Regional Plan., Prin.	2-4
Humanities	3-5
Elective Subjects	14
	51

First Term Elective Subjects

Structural Design	6-0
Heat Engineering	4-5
Govt. & Public Admin.	3-6
Public Finance	3-5
Union-Manage. Rel.	3-6

Second Term

Transportation Planning	3-3
Water Supply & Sewerage	3-3
Professional Problems	2-4
Urban Sociology	2-4
Thesis	9
Humanities	3-5
Elective Subjects	8
	49

Second Term Elective Subjects

Structural Analysis	3-6
Reinforced Concrete Des.	6-0
Fluid Mechanics	2-4
Plan. Legis. & Admin.	2-4
Seminar in Technical Writing	2-4

Option 3. Construction and Management

First Term

Soil Mech. & Found. Eng.	6-6
Structural Analysis	3-6
Humanities	3-5
Elective Subjects	21
	50

First Term Elective Subjects

Highways & Airports	3-3
Structural Design	6-0
Hydrology & Water Power Eng.	3-3
Heat Engineering	4-5
Finance	3-6
Building Construction	5-4

Second Term

Structural Analysis	3-6
Reinforced Concrete Design	6-0
Professional Problems	2-4
Thesis	9
Humanities	3-5
Elective Subjects	12
	50

Second Term Elective Subjects

Fluid Mechanics	2-4
Water Supply & Sewerage	3-3
Industrial Manage., Int.	3-6
Business Law	3-6

II. MECHANICAL ENGINEERING

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Machine Drawing	6-0
Machine Tools, Int.	4-1
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	27-22

Second Term

Applied Mechanics II	3-5
Engineering Metals	6-4
Physics	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	23-25

THIRD YEAR

First Term

Applied Mechanics III	4-8
Heat Engineering	4-8
Machine Design	4-2
Electrical Eng., Fund	4-6
Humanities	3-5
	19-29

Second Term

Fluid Mechanics	4-8
Mech. Behavior of Materials	4-4
Heat Engineering	3-6
Machine Design	5-4
Machine Tool Fund	3-2
Humanities	3-5
	22-29

FOURTH YEAR		<i>Second Term</i>	
Group 1. Power		<i>Second Term</i>	
<i>First Term</i>		Mech. Eng. Problems	3-6
Fluid Mechanics	3-6	Internal Combustion Eng.	3-6
Heat Engineering	3-6	Internal Combustion Eng. Lab.	2-2
Engineering Laboratory	4-4	Thesis	9
Humanities	3-5	Humanities	3-5
Additional Subjects	17	Additional Subject	8
	46		47
	51	Group 5. Materials and Materials Processing	
<i>Second Term</i>		<i>First Term</i>	
Mech. Eng. Problems	3-6	Strength of Materials	3-6
Power Plant Eng.	6-6	Mech. Prop. of Materials	4-6
Thesis	9	Engineering Laboratory	4-4
Humanities	3-5	Humanities	3-5
Additional Subject	8	Additional Subjects	14
	46		49
	51	<i>Second Term</i>	
Group 2. Jet Propulsion		Mech. Eng. Problems	3-6
<i>First Term</i>		Mech. Prop. of Materials	4-6
Fluid Mechanics	3-6	Thesis	9
Jet Propulsion	3-6	Humanities	3-5
Engineering Laboratory	4-4	Additional Subjects	15
Humanities	3-5		51
Additional Subjects	17	Group 6. Design	
	46	<i>First Term</i>	
<i>Second Term</i>		Strength of Materials	3-6
Mech. Eng. Problems	3-6	Machine Design	3-6
Thesis	9	Humanities	3-5
Humanities	3-5	Additional Subjects	23
Additional Subjects	20		49
	46	<i>Second Term</i>	
Group 3. Air Conditioning and Refrigeration		Mech. Eng. Problems	3-6
<i>First Term</i>		Engineering Laboratory	4-4
Fluid Mechanics	3-6	Indust. Hydraulic Machinery, Des.	5-4
Heat Engineering	3-6	Thesis	9
Air Conditioning	3-6	Humanities	3-5
Engineering Laboratory	4-4	Additional Subject	8
Humanities	3-5		51
Additional Subject	8	Group 7. Production	
	51	<i>First Term</i>	
<i>Second Term</i>		Machine Design	3-6
Mech. Eng. Problems	3-6	Production	3-6
Refrigeration	3-6	Humanities	3-5
Thesis	9	Additional Subjects	23
Humanities	3-5		49
Additional Subjects	12	<i>Second Term</i>	
	47	Mech. Eng. Problems	3-6
Group 4. Internal Combustion Engines		Engineering Laboratory	4-4
<i>First Term</i>		Production Management	3-6
Strength of Materials	3-6	Thesis	9
Internal Combustion Eng.	3-6	Humanities	3-5
Internal Combustion Eng. Lab.	2-2	Additional Subject	8
Humanities	3-5		51
Additional Subjects	21		
	51		

Group 8. Textiles

First Term

Strength of Materials	3-6
Fabric Structure, Prin.	3-6
Textile Manufacturing, Elem.	3-6
Humanities	3-5
Additional Subjects	14
<hr/>	
	49

Second Term

Mech. Eng. Problems	3-6
Engineering Laboratory	4-4
Textile Manufacturing, Prin.	3-6
Thesis	9
Humanities	3-5
Additional Subject	8
<hr/>	
	51

Group 9. Nuclear Engineering

First Term

Heat Engineering	3-6
Engineering Laboratory	4-4
Atomic Physics	4-6
Humanities	3-5
Additional Subjects	14
<hr/>	
	49

Second Term

Mech Eng. Problems	3-6
Nuclear Physics	4-6
Thesis	9
Humanities	3-5
Additional Subjects	15
<hr/>	
	51

II-B. MECHANICAL ENGINEERING

COOPERATIVE COURSE

(Four Years)

Same as Course II through Second Year

THIRD YEAR

SUMMER

<i>At M. I. T.</i> (First 6 weeks)	
Heat Engineering	4-8
Machine Design	4-4
<hr/>	
	8-12

<i>Vacation</i> (Approximately 2 weeks)	
<i>At Plants</i> (Remainder of Summer)	
Industrial Practice	40 h.p.w.

REGULAR ACADEMIC YEAR

First Term

At Plants

Industrial Practice	40 h.p.w.
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Second Term

At M. I. T.

Fluid Mechanics	4-8
Heat Engineering	3-6
Machine Design	5-4
Electrical Eng., Fund.	4-6
Humanities	3-5
<hr/>	
	19-29

FOURTH YEAR

SUMMER

Vacation (First 6 weeks)

At M. I. T. (Second 6 weeks)

Applied Mechanics III	4-8
Humanities	3-5
<hr/>	
	7-13

REGULAR ACADEMIC YEAR

Same as Fourth Year in Course II.

III. METALLURGY

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
<hr/>	
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
<hr/>	
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Heat Measurements	3-1
Machine Tool Lab.	4-0
Physics	5-5
Mineralogy I	3-1
Humanities	3-5
Calculus	3-6
Military Science	3-0
<hr/>	
	27-23

<i>Second Term</i>	
Applied Mechanics II	3-6
Quantitative Analysis	7-3
Physics	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0

24-25

THIRD YEAR

First Term

Testing Materials Lab.	2-2
Physical Metallurgy I	7-4
Mineral Engineering I	5-4
Physical Chemistry I	4-4
Humanities	3-5
Science Elective Subject	6 to 9

46 to 49

First Term Science Elective Subjects

Inorganic Chem., Adv.	2-4
Organic Chemistry I	4-4
Physical Chem. Lab. I	4-2
Atomic Physics	4-6
Statistics, Elem.	3-6
Adv. Calculus for Eng.	3-6

Second Term

Metallurgical Engineering I	4-4
(1) Metal Processing	5-4
(1) Physical Metallurgy II	6-6
(2) Mineral Engineering II	6-4
Physical Chemistry II	4-4
Physical Chem. Lab. II	4-2
(2) General Geology	5-5
Humanities	3-5

(1) 26-25
(2) 26-24

REQUIRED DURING SUMMER

Metallurgical Plant Visits	3-1
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FOURTH YEAR

Option 1. Metallurgy

First Term

Metallurgical Engineering II	4-4
Metallurgical Eng. Lab.	4-0
Metal. Thermodynamics	4-4
X-ray Metallurgy	4-4
Humanities	3-5
Elective Subjects	12

48

First Term Elective Subjects

Powder Metallurgy	2-4
Plastic Working of Metals	2-4
Light Alloys	2-4
Advanced Calculus for Engineers	3-6

Second Term

Physical Metallurgy III	6-4
Electrical Eng., Fund.	4-6
Thesis	12
Humanities	3-5
Elective Subject	8

48

Second Term Elective Subjects

Metallurgical Eng. III	2-4
Foundry Eng. I	2-4
Welding Eng.	2-4
Physics of Metals	2-4
Ceramics	5-4
Mineral Eng. II	6-4
Mineragraphy	4-2
Adv. Calculus for Engineers	3-6

Option 2. Mineral Engineering

First Term

Metallurgical Engineering II	4-4
Metallurgical Eng. Lab.	4-0
Metal. Thermodynamics	4-4
Mineral Engineering III	4-4
Humanities	3-5
Elective Subjects	12

48

First Term Elective Subjects

Fluid Mechanics	3-6
Engineering Lab.	3-3
X-ray Metallurgy	4-4
Mineragraphy	4-2
Ore Testing	10-0
Organic Chemistry I	4-4
Mining, Elements	3-6
Mineral Economics	3-6
Accounting	5-4

Second Term

Metallurgical Engineering III	2-4
Electrical Eng., Fund.	4-6
Thesis	10
Humanities	3-5
Elective Subjects	16

49

Second Term Elective Subjects

Physical Metallurgy II	6-6
Ceramics	5-4
Mineragraphy	4-2
Surface & Colloid Chem.	2-4
Theoretical Crystallography	2-4
Industrial Management, Int.	3-6
Accounting	5-4
Business Law	3-6
Patent Law	3-6

IV-A. ARCHITECTURE

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Graphics	4-2
Humanities	3-5
Military Science	3-0
Additional Subject*	5 to 11
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Graphics	4-2
Humanities	3-5
Military Science	3-0
Additional Subject*	5 to 11
	42 to 48

* Additional subjects totaling at least 16 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Architectural Design	9-3
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	26-24

Second Term

Applied Mechanics II	3-5
Shop	4-0
Urban Sociology	2-4
Architectural Design	9-3
Materials—Wood	3-3
Humanities	3-5
Military Science	3-0
	27-20

THIRD YEAR

First Term

Sanitation	2-4
Heating & Ventilation	2-4
Visual Fundamentals	4-0
Architectural Design	12-6
Structural Analysis	8-0
Humanities	3-5
	31-19

Second Term

Heating & Ventilation	2-4
Visual Fundamentals	4-0
City Planning, Prin.	2-4
Architectural Design	12-6
Structural Analysis	8-0
Humanities	3-5
	31-19

FOURTH YEAR

First Term

Architectural Design	12-6
Electricity	3-6
Architectural Acoustics	5-3
Humanities	3-5
Elective Subject	6
	49

Second Term

Light and Color	6-0
Architectural Design	12-6
Illumination	2-4
Materials—Masonry & Metals	5-4
Humanities	3-5
	28-19

FIFTH YEAR

First Term

Graphic Presentation	6-0
Land Economics	2-4
History of Architecture	3-6
Architectural Design	12-9
Elective Subject	8
	50

Second Term

Graphic Presentation	6-0
History of Architecture	3-6
Building Economics	2-4
Thesis	21
Elective Subject	8
	50

IV-B. CITY PLANNING

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Graphics	4-2
Humanities	3-5
Military Science	3-0
Additional Subject*	5 to 11
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Graphics	4-2
Humanities	3-5
Military Science	3-0
Additional Subject*	5 to 11
	42 to 48

* Additional subjects totaling at least 16 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

REQUIRED DURING SUMMER

AT CAMP TECHNOLOGY

Surveying	13-0
Surveying Fieldwork, Adv.	6-0
Route Surveying Fieldwork	5-0

SECOND YEAR

First Term

Architectural Design	9-3
Physics	5-5
Quant. Method, Int.	3-5
Public Speaking	3-3
Humanities	3-5
Military Science	3-0
	<hr/>
	26-21

Second Term

City Planning, Prin.	2-4
Architectural Design	9-3
Physics	5-5
Engineering Geology	4-4
Humanities	3-5
Military Science	3-0
	<hr/>
	26-21

THIRD YEAR

First Term

Sanitation	2-4
Govt. & Public Admin.	3-6
City Planning, Th. & Prac.	3-6
City & Regional Plan.	12-6
Economic Prin. I—Humanities	3-5
	<hr/>
	23-27

Second Term

Transportation Planning	3-3
Urban Sociology	2-4
City Planning, Th. & Prac.	3-6
City & Regional Planning	12-9
Humanities	3-5
	<hr/>
	23-27

REQUIRED DURING SUMMER

Office Practice	35 h.p.w.
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FOURTH YEAR

First Term

Land Economics	2-4
Site Plan. & Constr.	9-3
City & Regional Plan.	9-6
Humanities	3-5
Elective Subject	8
	<hr/>
	49

Second Term

Land Economics	3-6
Plan. Legis. & Admin.	2-4
Thesis	20
Humanities	3-5
Elective Subject	8
	<hr/>
	51

V. CHEMISTRY

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Qualitative Analysis	11-3
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
Language	3-5
	<hr/>
	28-24

Second Term

Quantitative Analysis	12-4
Physics	5-5
Hum. & Soc. Sciences, Int.	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	26-20

THIRD YEAR

First Term

Organic Chemistry I	4-4
Organic Preparations I	9-0
Physical Chemistry I	4-4
Physical Chem. Lab. I	6-2
Humanities	3-5
Elective Subject	6
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	49

Second Term

Organic Chemistry II	4-4
Organic Prep. II & Anal.	9-0
Physical Chemistry II	4-4
Physical Chem. Lab. II	6-2
Humanities	3-5
Elective Subject	8
	<hr/>
	49

FOURTH YEAR

First Term

Inorganic Chemistry, Adv.	2-4
Organic Chemistry III	2-4
Thesis	15
Humanities	3-5
Elective Subjects	15
	50

Second Term

Inorganic Chemistry, Adv.	2-4
Organic Chemistry IV	2-4
Thesis	15
Humanities	3-5
Elective Subjects	15
	50

THIRD YEAR

First Term

Electronic Circuits	7-5
Control & Conv. of Energy	7-5
Adv. Calculus for Eng.	3-6
Humanities	3-5
Elective Subject	9
	50

Elective Subject must be selected from the following:

Heat Engineering	4-5
Thermodyn. & Statis. Mech.	4-5
Chemical Engineering	4-6

VI. ELECTRICAL ENGINEERING

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Circuit Theory, Elem.	7-5
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	24-26

Second Term

Applied Mechanics II	3-5
Circuit Theory, Elem.	7-5
Physics	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	24-26

Second Term

Control & Conv. of Energy	7-5
Electronic Syst. Comp.	7-5
or	
Com. Network Theory	7-5
Humanities	3-5
Elective Subjects	18
	50

Elective Subjects should be selected from the following:

Dynamics	3-6
Heat Engineering	3-6
Electronics	4-5
Chemical Engineering	4-6
Adv. Calculus for Eng.	3-6

FOURTH YEAR

Option 1. Electric Power

First Term

Fluid Mechanics	3-6
Engineering Lab.	3-3
Electrical Eng., Prin.	3-6
Electrical Mach. Lab.	4-4
Humanities	3-5
Hum. or Prof. Elec. Subj.	8
	48

Second Term

Power, Trans., & Dist.	3-6
Electrical Eng., Prin.	3-6
Electrical Mach. Lab.	3-3
Thesis	9
Humanities	3-5
Prof. Elective Subject	9
Hum. or Prof. Elec. Subj.	8
	49

Option 3. Electrical Communications

First Term

Electrical Eng., Prin.	3-6
Electrical Com., Prin.	3-6
Electrical Com., Prin.	3-6
Electrical Com. Lab.	3-3
Humanities	3-5
Hum. or Prof. Elec. Subj.	8
	<hr/>
	49

Second Term

Electrical Com., Prin.	3-6
Electrical Com. Lab.	4-5
Electrical Mach. Lab.	3-3
Thesis	9
Humanities	3-5
Hum. or Prof. Elec. Subj.	8
	<hr/>
	49

Option 4. Electronic Applications

First Term

Fluid Mechanics	3-6
Electrical Eng., Prin.	3-6
Electronic Control & Meas.	3-6
Electronic Eng. Lab.	3-3
Humanities	3-5
Hum. or Prof. Elec. Subj.	8
	<hr/>
	49

Second Term

Elec. Implementation	3-6
Electrical Mach. Lab.	3-3
Elec. Implement. Lab.	4-5
Thesis	9
Humanities	3-5
Hum. or Prof. Elec. Subj.	8
	<hr/>
	49

*Professional Elective Subjects**First Term*

(1, 3) Electronic Control & Meas.	3-6
Feedback Control Syst.	5-5
Elec. Power Syst.	3-6
Elec. Equip. App. Eng.	3-6
(1, 3) Elec. Implementation	3-6
Case Studies in Elec. Eng. Prac.	3-6
Illuminating Eng., Prin.	3-6
Wire Communications, Prin.	3-6
Radar, Prin.	3-6
(1, 4) Electrical Com., Prin.	3-6
(1, 4) Electrical Com., Prin.	3-6
Acoustics, Fund.	4-5
Electrical Meas. Lab.	Time arr.
Electrical Machinery Lab.	Time arr.

Second Term

Electronic Control & Meas.	3-6
Elec. Power Syst.	3-6
Elec. Equip. App. Eng.	3-6
(1, 3) Electrical Implementation	3-6
Case Studies in Elec. Eng. Prac.	3-6
Molecular Elec. Eng.	3-6
Illuminating Eng., Prin.	3-6
Radar, Prin.	3-6
Electrical Communications, Prin.	3-6
(1, 4) Electrical Communications, Prin.	3-6
Television, Prin.	3-6
Electrical Meas. Lab.	Time arr.
Electrical Machinery Lab.	Time arr.
Vibration and Sound	3-6
Int. to Theoret. Physics II	4-8

VI-A. ELECTRICAL ENGINEERING

COOPERATIVE COURSE

Same as Course VI through Second Year.

THIRD YEAR

*Summer**At M. I. T.*

Electronic Circuits	7-5
Control & Conv. of Energy	7-5
Economic Prin. I—Humanities	3-5
Elective Subject	9
	<hr/>
	41

Elective Subject must be selected from the following:

Heat Engineering	4-5
Thermo. & Statist. Mech.	4-5
Chemical Engineering	4-6

*First Term**At Plants*

Advanced Calculus for Engineers	3-6
Industrial Practice	40 h.p.w.

*Second Term**At M. I. T.*

Control & Conv. of Energy	7-5
Electronic Syst. Comp.	7-5
or	
Com. Network Theory	7-5
Humanities	3-5
Elective Subjects	18
	<hr/>
	50

Elective Subjects should be selected from the following:

Dynamics	3-6
Heat Engineering	3-6
Electronics	4-5
Chemical Engineering	4-6
Adv. Calculus for Eng.	3-6

FOURTH YEAR

Option 1. Electric Power; Option 3. Electrical Communications; Option 4. Electronic Applications

Summer

At Plants

Electrical Eng., Prin. 3-6
Industrial Practice 40 h.p.w.

First Term

At M. I. T.

(4) Fluid Mechanics 3-6
(1) Engineering Lab. 3-3
(1) Power Trans. and Dist. 3-6
(4) Elec. Implementation 3-6
(3) Elec. Com., Prin. 3-6
(3) Elec. Com., Prin. 3-6
(3) Elec. Com. Lab. 4-5
(1) Elec. Mach. Lab. 4-4
(3, 4) Elec. Mach. Lab. 3-3
(1) Elec. Mach. Lab. 3-3
(4) Electronic Eng. Lab. 3-3
(4) Elec. Implement. Lab. 4-5
Humanities 3-5
(1, 3) Prof. Elective Subject 9

(1) 46
(3) 50
(4) 47

Second Term

At Plants

Advanced Calculus for Engineers 3-6
Industrial Practice 40 h.p.w.

GRADUATE YEAR

Summer

At M. I. T.

Humanities 3-5
Graduate Study and Thesis 36
44

First Term

At Plants

Thesis 10
Industrial Practice 40 h.p.w.

Second Term

At M. I. T.

Graduate Study and Thesis 50
50

VII. QUANTITATIVE BIOLOGY

FIRST YEAR

First Term

Mathematics 3-6
Physics 5-6
Chemistry 7-4
Humanities 3-5
Military Science 3-0
Additional Subject* 0 to 6

42 to 48

Second Term

Mathematics 3-6
Physics 5-6
Chemistry 7-4
Humanities 3-5
Military Science 3-0
Additional Subject* 0 to 6

42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Organic Chemistry I 4-4
General Biology I 6-4
Physics 5-5
Humanities 3-5
Calculus 3-6
Military Science 3-0

24-24

Second Term

Quantitative Analysis 7-3
General Biology II 6-4
Physics 5-5
Humanities 3-5
Differential Equations 3-6
Military Science 3-0

27-23

THIRD YEAR

First Term

Organic Preparations I 6-0
Physical Chemistry I 4-4
Physical Chem. Lab. I 4-2
Genetic Cytology 6-4
Biochemistry 8-4
Humanities 3-5

31-19

Second Term

Physical Chemistry II 4-4
Physical Chem. Lab. II 4-2
Embryology 8-4
Humanities 3-5
Elective Subjects 12

46

FOURTH YEAR

First Term

General Physiology I 2-4
Gen. Physiol. Lab. I 4-0
Thesis 10
Humanities 3-5
Elective Subjects 18

46

Second Term

General Physiology II	2-4
Gen. Physiol. Lab. II	4-0
Thesis	10
Humanities	3-5
Elective Subjects	18
	<hr/>
	46

VII-A. PHYSICAL BIOLOGY

Same as Course VII through Third Year.

FOURTH YEAR

First Term

General Physiology I	2-4
Gen. Physiol. Lab. I	4-0
Biophysics I	4-4
Atomic Physics	4-6
Humanities	3-5
Elective Subjects	12
	<hr/>
	48

Second Term

General Physiology II	2-4
Gen. Physiol. Lab. II	4-0
Nuclear Physics	4-6
Experimental Physics, Tech.	3-3
Humanities	3-5
Elective Subjects	14
	<hr/>
	48

GRADUATE YEAR

First Term

Biology Seminar	1-2
Instrument. in Biol. I	7-6
Thesis	16
Elective Subjects	16
	<hr/>
	48

Second Term

Biology Seminar	1-2
Biophysics II	2-4
Biophysics Lab.	4-0
Thesis	24
Elective Subjects	12
	<hr/>
	49

A total of at least 18 units of Electives in the fourth and Graduate years must be selected from the following subjects:

First Term Electives

Enzymology	2-4
Enzymology Lab.	4-2
Biochem. of Microorganisms	7-4
Tissue Ultrastructure	2-4

Second Term Electives

Phys. Chem. of Proteins	2-4
Phys. Chem. of Proteins Lab.	4-0
Biochemistry, Adv.	6-4
Tissue Ultrastructure	2-4

VII-B. CHEMICAL BIOLOGY

Same as Course VII through Third Year.

FOURTH YEAR

First Term

Atomic & Molecular Struct., Int.	2-4
General Physiology I	2-4
General Physiology Lab. I	4-0
Biochem. of Microorganisms	7-4
Humanities	3-5
Elective Subjects	12
	<hr/>
	47

Second Term

Organic Chemistry II	4-4
Org. Prep. II and Anal.	9-0
General Physiology II	2-4
General Physiology Lab. II	4-0
Humanities	3-5
Elective Subjects	14
	<hr/>
	49

GRADUATE YEAR

First Term

Biology Seminar	1-2
Enzymology	2-4
Enzymology Lab.	4-2
Thesis	14
Elective Subjects	20
	<hr/>
	49

Second Term

Biology Seminar	1-2
Phys. Chem. of Proteins	2-4
Phys. Chem. of Proteins Lab.	4-0
Biochemistry, Adv.	6-4
Thesis	26
	<hr/>
	49

VIII. PHYSICS

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Physical Chemistry	3-6
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
Language	3-5
	<hr/>
	20-27

Second Term

Elec. Circuit Theory, Elem.	4-8
Physics	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
Language	3-5
	<hr/>
	21-29

THIRD YEAR

First Term

Electronic Circuits	3-5
Elec. Measurements Lab.	3-3
Atomic Physics	4-6
Experimental Physics, Tech.	3-3
Adv. Calculus for Eng.	3-6
Humanities	3-5
	<hr/>
	19-28

Second Term

Electronics	4-5
Atomic Structure Lab.	3-3
Electronic Devices Lab.	3-3
Adv. Calculus for Eng.	3-6
Humanities	3-5
Prof. Elective Subject	9
	<hr/>
	47

Professional Elective Subjects

Nuclear Physics	4-6
Optics	3-6

FOURTH YEAR

First Term

Thermodyn. & Statist. Mech.	4-5
Experimental Physics	8-4
Int. Theoretical Physics I	4-8
Humanities	3-5
Elective Subject	8
	<hr/>
	49

Second Term

Int. Theoretical Physics II	4-8
Thesis	18
Humanities	3-5
Elective Subject	8
	<hr/>
	46

IX-A. GENERAL SCIENCE

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Qualitative Analysis	7-3
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
Elective Subject	8
	<hr/>
	48

Second Term

Quantitative Analysis	7-3
Physics	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
Elective Subject	8
	<hr/>
	48

THIRD YEAR

First Term

Physical Chemistry I	4-4
Thermodyn. & Statist. Mech.	4-5
Advanced Calculus for Eng.	3-6
Humanities	3-5
Elective Subjects	16
	<hr/>
	50

Second Term

Physical Chemistry II	4-4
Electronics	4-5
Advanced Calculus	3-6
Humanities	3-5
Elective Subjects	16
	<hr/>
	50

FOURTH YEAR		SECOND YEAR	
<i>First Term</i>		<i>First Term</i>	
Thesis	4	Applied Mechanics I	3-5
Humanities	3-5	Physics	5-5
Elective Subjects	36	Humanities	3-5
	48	Calculus	3-6
		Military Science	3-0
<i>Second Term</i>		Elective Subject	9
Thesis	5		47
Humanities	3-5	<i>Second Term</i>	
Elective Subjects	35	Applied Mechanics II	3-5
	48	Physics	5-5
<i>Suggested Elective Subjects</i>		Humanities	3-5
<i>First Term</i>		Differential Equations	3-6
Organic Chemistry I	4-4	Military Science	3-0
Organic Preparations I	9-0	Elective Subject	9
Physical Chem. Lab. I	4-2		47
General Biology I	6-4	THIRD YEAR	
General Physiology Lab. I	4-0	<i>First Term</i>	
Biochemistry of Microorganisms	7-4	Engineering Metals	6-4
Atomic Physics	4-6	Heat Engineering	4-5
Experimental Physics, Tech.	3-3	Electrical Eng., Elem.	4-6
Architectural Acoustics	5-3	Humanities	3-5
Int. Theoretical Physics I	4-8	Elective Subjects	13
Engineering Geology	2-4		50
Bacteriology	6-2	<i>Second Term</i>	
Differential Equations	2-4	Heat Engineering	3-6
		Humanities	3-5
<i>Second Term</i>		Elective Subjects	33
Organic Chemistry II	4-4		50
Org. Prep. II & Anal.	9-0	FOURTH YEAR	
Physical Chem. Lab. II	4-2	<i>First Term</i>	
General Biology II	6-4	Thesis	4
Embryology	8-4	Humanities	3-5
Photography	2-1	Elective Subjects	36
Optics	3-6		48
Color Measurements	3-2	<i>Second Term</i>	
Int. Theoretical Physics II	4-8	Thesis	5
Engineering Geology	4-4	Humanities	3-5
		Elective Subjects	35
IX-B. GENERAL ENGINEERING			48
FIRST YEAR		<i>Suggested Elective Subjects</i>	
<i>First Term</i>		<i>First Term</i>	
Mathematics	3-6	Surveying	3-1
Physics	5-6	Fluid Mechanics	3-6
Chemistry	7-4	Strength of Materials	3-6
Humanities	3-5	Air Conditioning	3-6
Military Science	3-0	Engineering Laboratory	3-3
Additional Subject*	0 to 6	Machine Drawing	6-0
	42 to 48	Machine Design	4-2
		Internal Combustion Eng.	3-6
<i>Second Term</i>		Qualitative Analysis	7-3
Mathematics	3-6	Electric Power Systems	3-6
Physics	5-6	Advanced Calculus for Engineers	3-6
Chemistry	7-4		
Humanities	3-5		
Military Science	3-0		
Additional Subject*	0 to 6		
	42 to 48		

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

Second Term

Structural Analysis	3-6
Dynamics	3-6
Heat Measurements	3-1
Refrigeration	3-6
Internal Combustion Eng.	3-6
Engineering Metals	6-4
Illumination	2-4
Industrial Electronics	4-6
Electrical Eng. Lab.	2-3
Accounting	5-4
Business Law	3-6
Reports	1-4
Advanced Calculus for Engineers	3-6

CONSERVATION ENGINEERING — A SAMPLE CURRICULUM FOR COURSE IX-B

Same as First Year for Course IX-B.

SECOND YEAR

In addition to the required subjects, take as electives:

First Term

General Biology I	6-4
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Second Term

General Biology II	6-4
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THIRD YEAR

In addition to the required subjects, other than Engineering Metals, take as electives:

First Term

Surveying	3-1
Fluid Mechanics	3-6
Govt. and Public Admin.	3-6

Second Term

Fluid Mechanics	2-4
Conservation, Prin.	3-6
Engineering Geology	4-4
Statistics, Elem.	3-6

FOURTH YEAR

In addition to the required subjects, take as electives:

First Term

Hydrology & Water Power Eng.	3-3
Land Economics	2-4
Mineral Economics	3-6
Cargoes in World Trade	3-6
Additional Humanities	3-5

Second Term

Photogrammetry	4-4
Water Supply & Sewerage	3-3
Land Economics Seminar	3-6
Plan. Legis. & Admin.	2-4
or	
Additional Humanities	3-5
Thesis (additional time)	6

IX-C. SCIENCE TEACHING

(In co-operation with the Harvard Graduate School of Education)

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
<hr/>	
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
<hr/>	
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Qualitative Analysis	7-3
General Biology I	6-4
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
<hr/>	
	27-23

Second Term

General Biology II	6-4
Physics	5-5
Introductory Psychology	3-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
<hr/>	
	23-25

THIRD YEAR

First Term

Electrical Eng., Fund	4-6
Genetic Cytology	6-4
or	
Elective Subject	12
Thermodyn. & Statist. Mech.	4-5
Humanities	3-5
†Educational Psych. & Meas. 1	4-6
<hr/>	
	47 or 49

<i>Second Term</i>	
Quantitative Analysis	7-3
or	
Embryology	8-4
Statistics, Elementary	3-6
Humanities	3-5
Elective Subject	8
†Teaching Math. 2	4-8
	<hr/>
	47 or 49

FOURTH YEAR

First Term

Thesis	4
Humanities	3-5
Elective Subjects	18
History of Science 102	2-4
†Teaching Mathematics 1	4-8
	<hr/>
	48

Second Term

Thesis	5
Humanities	3-5
Elective Subjects	24
†History of Education 1	4-8
	<hr/>
	49

GRADUATE YEAR

First Term

Elective Subjects	18
†Phil. of Education 1	4-8
†Prin. of Teaching 3	2-4
†Science of Education 1	4-8
	<hr/>
	48

Second Term

Elective Subjects	18
†Prin. of Teaching 3	2-4
†Prin. of Teaching 4	25
	<hr/>
	49

† Subjects marked with a dagger (†) are taken at the Harvard Graduate School of Education.

X. CHEMICAL ENGINEERING

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Quantitative Analysis	7-3
Physics	5-5
Chemical Engineering	1-1
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	25-25

Second Term

Applied Mechanics II	3-5
Quantitative Analysis	7-3
Physics	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	24-24

THIRD YEAR

First Term

Organic Chemistry I	4-4
Organic Preparations I	6-0
Physical Chemistry I	4-4
Physical Chem. Lab. I	2-0
Industrial Chemistry	3-4
Chemical Engineering	4-6
Humanities	3-5
	<hr/>
	26-23

Second Term

Organic Chemistry II	4-4
Qual. Organic Analysis	6-0
Physical Chemistry II	4-4
Physical Chem. Lab. II	2-0
Industrial Chemistry	3-6
Chemical Engineering	4-6
Humanities	3-5
	<hr/>
	26-25

FOURTH YEAR

First Term

Electrical Eng., Fund.	4-6
Thesis Reports	3-0
Industrial Chem. Lab.	10-0
or	
Chemical Eng. Lab.	10-0
Chemical Engineering	4-6
Humanities	3-5
Elective Subject	8
	<hr/>
	49

Second Term

Industrial Chemistry	3-6
Chemical Engineering	4-6
Thesis	12
Humanities	3-5
Elective Subject	8
	<hr/>
	47

X-B. CHEMICAL ENGINEERING PRACTICE

Same as Course X through Third Year.

FOURTH YEAR

First Term

Electrical Eng., Fund.	4-6
Chemical Engineering	4-6
Chemical Engineering	4-6
Humanities	3-5
Humanities	3-5
	<hr/>
	18-28

Second Term

Engineering Equipment	9-0
School Chem. Eng. Practice	
Bangor Station	12-0
Parlin Station	12-0
Buffalo Station	12-0
Thesis	15
	<hr/>
	48

XII-A. GEOLOGY

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Qualitative Analysis	7-3
Physics	5-5
Mineralogy I	3-1
Elem. Crystallography	2-2
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	26-22

Second Term

Physics	5-5
Mineralogy II	4-1
General Geology	9-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	27-22

REQUIRED DURING SUMMER AT NOVA SCOTIA
CENTRE FOR GEOLOGICAL SCIENCES

Geological Surveying	5-0
Field Investigations & Reports	15-0
Structural Elements	4-0
	<hr/>
	24-0

THIRD YEAR

First Term

Physical Chemistry I	4-4
Optical Crystallography	6-2
Paleontology	6-2
Structural Geology	3-4
Humanities	3-5
Math. or Lang. or Hum. Elec. Subj.	13-5
	<hr/>
	47

Second Term

Physical Chemistry II	4-4
Petrology	2-4
Geology of Oilfields	2-4
Geophysics, Int.	2-4
Statistics, Elementary	3-6
Humanities	3-5
Language or Humanities	3-5
	<hr/>
	21-28

FOURTH YEAR

First Term

Mineral Deposits	2-4
Petroleum Geology	2-4
Mineral Economics	3-6
Statistics, Elementary	3-6
Humanities	3-5
Elective Subjects	12
	<hr/>
	50

Suggested Elective Subjects

X-ray Crystallography	2-4
Mineral Deposits Lab.	4-0
Petroleum Geology Lab.	4-0
Special Problems	Time arr
Spectrochemical Analysis	3-3
Mining, Elements	3-6

Second Term

Theoretical Crystallography	2-4
Sedimentology	2-4
Geochemistry	2-4
Thesis	15
Humanities	3-5
Elective Subject	8
	<hr/>
	49

Suggested Elective Subjects

X-ray Crystallography	2-4
Special Problems	Time arr
Tectonic Elements	2-4
Photogeology	4-4
Seismology, Elements	2-4
Isotope Geology	2-4
Mining Methods & Prac.	3-6

XII-B. GEOPHYSICS

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Circuit Theory, Elem.	7-5
Physics	5-5
Mineralogy I	3-1
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	24-22

Second Term

Circuit Theory Elem.	7-5
Physics	5-5
General Geology	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	26-26

REQUIRED DURING SUMMER AT NOVA SCOTIA
CENTRE FOR GEOLOGICAL SCIENCES

Geological Surveying	5-0
Field Investigations & Reports	15-0
Structural Elements	4-0
	<hr/>
	24-0

THIRD YEAR

First Term

Electronic Circuits	7-5
Structural Geology	3-4
Reports	1-4
Statistics, Elementary	3-6
Adv. Calculus for Eng.	3-6
Humanities	3-5
	<hr/>
	20-30

Second Term

Electronic Syst. Comp.	7-5
or	
Com. Network Theory	7-5
Stratigraphy	5-3
Seismology, Elem.	2-4
Geophysics, Int.	2-4
Adv. Calculus for Eng.	3-6
Humanities	3-5
	<hr/>
	22-27

FOURTH YEAR

First Term

Control & Conv. of Energy	7-5
or	
Int. Theoretical Physics I	4-8
Thermo. & Statist. Mech.	4-5
Mineral Deposits	2-4
Petroleum Geology	2-4
Humanities	3-5
Elective Subject	8
	<hr/>
	49

Second Term

Control & Conv. of Energy	7-5
or	
Int. Theoretical Physics II	4-8
Theoretical Crystallography	2-4
Thesis	15
Humanities	3-5
Elective Subject	8
	<hr/>
	49

XIII. NAVAL ARCHITECTURE AND MARINE ENGINEERING

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are required. In this Course, the Additional Subject must be Descriptive Geometry, which fulfills in one term the unit requirement for additional subjects for the entire year.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Machine Tool Lab.	4-0
Physics	5-5
Naval Arch. & Marine Eng. I	3-3
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	24-24

Second Term

Applied Mechanics II	3-5
Engineering Metals	6-4
Physics	5-5
Ship & Eng. Drawing	3-1
Humanities	2-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	26-26

THIRD YEAR

First Term

Strength of Materials	3-6
Fluid Mechanics	3-6
Heat Engineering	4-5
Naval Architecture I	4-5
Hull Form Design	5-0
Humanities	3-5
	<hr/>
	22-27

Second Term

Heat Engineering	3-6
Electrical Eng. Fund	4-6
Naval Architecture II	4-5
Ship Structures	3-6
Marine Engineering I	3-3
Humanities	3-5
	<hr/>
	20-31

FOURTH YEAR

First Term

Testing Materials Lab.	2-2
Engineering Lab.	3-3
Ship Structural Drawing	3-0
Marine Engineering II	3-6
Marine Eng. Des. III	4-0
Humanities	3-5
Prof. Elective Subject	6
Elective Subject	8
	<hr/>
	48

Second Term

Ship Design	9-2
Marine Eng. Dynamics	2-4
Marine Eng. Des. IV	5-0
Thesis	10
Humanities	3-5
Elective Subject	8
	<hr/>
	48

XIV-A, XIV-B, and XIV-C. ECONOMICS AND ENGINEERING

XIV-A. ECONOMICS AND ENGINEERING
(BASED ON MECHANICAL ENGINEERING)

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

<i>Second Term</i>	
Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6

42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Machine Tool Lab.	4-0
Physics	5-5
Economic Principles I	3-5
Humanities	3-5
Calculus	3-6
Military Science	3-0

24-26

Second Term

Applied Mechanics II	3-5
Physics	5-5
Economic Principles II	3-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0

20-26

THIRD YEAR

First Term

Fluid Mechanics	4-8
Heat Engineering	4-8
Quant. Method, Int.	3-5
Personality & Soc. Struct.	3-5
Humanities	3-5

17-31

Second Term

Fluid Mechanics	3-6
or	
Heat Engineering	3-6
Engineering Metals	6-4
Humanities	3-5
Engineering Elective Subject	9
Professional Subjects	16

52

FOURTH YEAR

First Term

Applied Mechanics III	4-8
Elec. Eng., Fund	4-6
Thesis	3
Humanities	3-5
Prof. & Hum. Elective Subjects	16

49

<i>Second Term</i>	
Thesis	7
Humanities	3-5
Engineering Elective Subject	9
Prof. & Hum. Elective Subjects	24

48

XIV-B. ECONOMICS AND ENGINEERING
(BASED ON ELECTRICAL ENGINEERING)

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6

42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6

42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Circuit Theory, Elem.	7-5
Physics	5-5
Economic Principles I	3-5
Humanities	3-5
Calculus	3-6
Military Science	3-0

24-26

Second Term

Circuit Theory, Elem.	7-5
Physics	5-5
Economic Principles II	3-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0

24-26

THIRD YEAR

First Term

Electronic Circuits	7-5
Cont. & Conv. of Energy	7-5
Quant. Method, Int.	3-5
Personality & Soc. Struct.	3-5
Humanities	3-5

23-25

Second Term

Applied Mechanics I	3-5
Cont. & Conv. of Energy	7-5
Humanities	3-5
Engineering Elective Subject	8
Professional Subjects	16

52

FOURTH YEAR

First Term

Thesis	3
Humanities	3-5
Engineering Elective Subjects	18
Prof. & Hum. Elective Subjects	16
	<hr/>
	45

Second Term

Thesis	7
Humanities	3-5
Prof. & Hum. Elective Subjects	24
	<hr/>
	47

**XIV-C. ECONOMICS AND ENGINEERING
(BASED ON CHEMICAL ENGINEERING)**

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Qualitative Analysis	7-3
Physics	5-5
Chemical Engineering	1-1
Economic Principles I	3-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	25-25

Second Term

Quantitative Analysis	7-3
Physics	5-5
Economic Principles II	3-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	24-24

THIRD YEAR

First Term

Physical Chemistry I	4-4
Industrial Chemistry	3-4
Chemical Engineering	4-6
Quant. Method, Int.	3-5
Personality & Soc. Struct.	3-5
Humanities	3-5
	<hr/>
	20-29

Second Term

Physical Chemistry II	4-4
Electrical Eng., Fund.	4-6
Industrial Chemistry	3-6
Humanities	3-5
Professional Subjects	16
	<hr/>
	51

FOURTH YEAR

First Term

Organic Chemistry I	4-4
Chemical Engineering	4-6
Thesis	3
Humanities	3-5
Prof. & Hum. Elective Subjects	16
	<hr/>
	45

Second Term

Industrial Chemistry	3-6
Chemical Engineering	4-6
Thesis	7
Humanities	3-5
Prof. & Hum. Elective Subjects	24
	<hr/>
	48 or 49

Professional Elective Subjects

Each student must plan with his registration officer an integrated program based primarily on subjects selected from the list below. Certain graduate subjects in Economics and Social Science may also be taken as electives by properly qualified students.

Government & Public Admin.	3-6
Prices and Production	3-5
Econ. Prob. Sem.	3-5
Building Economics	2-4
Econ. of Invention	3-5
Statistical Quality Control	3-6
Elem. Statistics	3-6
Money and Income	3-5
Public Finance	3-5
International Trade	3-5
Labor Relations	3-5
Labor Econ. & Pub. Policy	3-5
Union-Manage. Relations	3-6
Org. & Commun. in Groups	3-5
Finance	3-6
Accounting	5-4
Indust. Accounting	5-4
Management Lab.	6-3
Marketing	3-6

XV-A and XV-B. BUSINESS AND ENGINEERING ADMINISTRATION

(Undergraduate Courses in the School of Industrial Management)

XV-A. BUSINESS AND ENGINEERING ADMINISTRATION (BASED ON PHYSICAL SCIENCES)

FIRST YEAR
First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR
First Term

Applied Mechanics I	3-5
Machine Tools Int.	4-1
Physics	5-5
Indust. Manage. I, Fund.	4-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	25-27

Second Term

Applied Mechanics II	3-5
Physics	5-5
Indust. Manage. II, Fund.	4-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	21-26

THIRD YEAR
First Term

Heat Engineering	4-8
Engineering Metals	6-4
Economic Prin. I—Humanities	3-5
Accounting	5-4
Marketing	3-6
	21-27

Second Term

Fluid Mechanics	3-6
Heat Engineering	3-6
Personnel Administration	3-6
Production Management	3-6
Humanities	3-5
Hum. or Prof. or Eng. Elec. Subj.	8
	52

FOURTH YEAR
First Term

Electrical Eng., Fund.	4-6
Finance	3-6
Thesis	2
Humanities	3-5
Eng. Elec. Subj.	9
Prof. Elective Subjects	9
	47

Second Term

Industrial Electronics	4-6
Thesis	10
Humanities	3-5
Hum. or Prof. Elective Subj.	8
Prof. Elective Subject	9
	45

Suggested Engineering Elective Subjects

Applied Mechanics III	4-8
Fluid Mechanics	3-6

XV-B. BUSINESS AND ENGINEERING ADMINISTRATION (BASED ON CHEMICAL SCIENCES)

FIRST YEAR
First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Qualitative Analysis	7-3
Physics	5-5
Indust. Manage. I, Fund.	4-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	25-24

Second Term

Quantitative Analysis	7-3
Physics	5-5
Indust. Manage. II, Fund.	4-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	25-24

THIRD YEAR

First Term

Organic Chemistry I	4-4
Organic Preparations I	6-0
Physical Chemistry I	4-4
Economic Prin. I—Humanities	3-5
Accounting	5-4
Marketing	3-6
	<hr/>
	25-23

Second Term

Organic Chemistry II	4-4
Physical Chemistry II	4-4
Personnel Administration	3-6
Finance	3-6
Production Management	3-6
Humanities	3-5
	<hr/>
	20-31

FOURTH YEAR

First Term

Electrical Eng., Elem.	4-6
Chemical Engineering	4-6
Thesis	2
Humanities	3-5
Hum. or Prof. or Eng. Elec. Subj.	8
Prof. Elective Subjects	9
	<hr/>
	47

Second Term

Chemical Engineering	4-6
Thesis	10
Humanities	3-5
Hum. or Prof. Elective Subj.	8
Prof. Elective Subject	9
	<hr/>
	45

XVI. AERONAUTICAL ENGINEERING

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are required. In this Course, the Additional Subject must be Descriptive Geometry, which fulfills in one term the unit requirement for additional subjects for the entire year.

SECOND YEAR

First Term

Statics	3-5
Physics	5-5
Aircraft Detail Design	9-0
Aeronautical Eng., Int.	3-1
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	29-22

Second Term

Strength of Materials	3-6
Physics	5-5
Aeromechanics	4-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	<hr/>
	21-27

THIRD YEAR

First Term

Heat Engineering	4-5
(b) Electrical Eng., Fund.	4-6
Aeromechanics	5-5
Aerodynamics, App.	4-8
(a) Structures	3-6
Humanities	3-5
	<hr/>
	(a) 19-29
	(b) 20-29

Second Term

(a) Electrical Eng., Fund.	4-6
(b) Indust. Electronics	4-6
Aerodynamics	6-6
Airplane Stability & Cont.	3-6
(b) Structures	3-6
(a) Structures	4-6
Humanities	3-5
	<hr/>
(a)	20-29
(b)	19-29

FOURTH YEAR

First Term

Automatic Control, Prin.	3-9
Aeronautical Eng. Lab.	6-6
Aeronautical Eng.	10-0
Humanities	3-5
Prof. Elec. Subj. or Hum.	8
	<hr/>
	50

Second Term

Aircraft Power Plants, Prin.	3-6
Aeronautical Eng.	12-0
Thesis or Project	9
Humanities	3-5
Prof. Elec. Subj. or Hum.	8
	<hr/>
	46

Suggested Professional Elective Subjects for 1953-54

Airport Design	6-0
Gas Turbines	3-6
Int. Comb. Eng. Elem.	3-6
Industrial Electronics	4-6
Applied Aerodyn.	3-6
Aircraft Structures	6-6
Rotat. Wing Aircraft	3-6
Aeroelasticity	3-6
Adv. Calculus for Eng.	3-6

XVI-B. AERONAUTICAL ENGINEERING

COOPERATIVE COURSE

(Four Years)

Same as Course XVI through Second Year.

THIRD YEAR

SUMMER

At M. I. T. (First 6 weeks)

Heat Engineering	4-5
Aeromechanics	5-5
	<hr/>
	9-10

Vacation (Approximately 2 weeks)

At Plants (Remainder of Summer)

Industrial Practice 40 h.p.w.

REGULAR ACADEMIC YEAR

At Plants

First Term

Industrial Practice 40 h.p.w.

Second Term

At M. I. T.

Aerodynamics	6-6
Aerodynamics, App.	4-8
Structures	3-6
Humanities	3-5
Humanities	3-5
	<hr/>
	19-30

FOURTH YEAR

SUMMER

Vacation (First 6 weeks)

At M. I. T. (Second 6 weeks)

Electrical Eng., Fund.	4-6
Airplane Stability & Cont.	3-6
	<hr/>
	7-12

REGULAR ACADEMIC YEAR

Same as Fourth Year in Course XVI.

XVII. BUILDING ENGINEERING AND CONSTRUCTION

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	<hr/>
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Applied Mechanics I	3-5
Physics	5-5
Building Construction	6-6
Humanities	3-5
Calculus	3-6
Military Science	3-0
	<hr/>
	23-27

<i>Second Term</i>	
Applied Mechanics II	3-5
Physics	5-5
Building Construction	4-6
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	21-27

REQUIRED DURING SUMMER AT
CAMP TECHNOLOGY

Surveying	13-0
Construction Survey. Fieldwork	11-0

THIRD YEAR
First Term

Soil Mech. & Found. Eng.	4-4
Fluid Mechanics	2-4
Testing Materials Lab.	2-2
Heat Engineering	4-5
Building Construction	4-4
Materials—Metals	2-4
Humanities	3-5
	21-28

Second Term

Structural Analysis	3-6
Job Management	2-4
Steel Design	5-7
Materials—Masonry	6-4
Materials—Wood	3-3
Humanities	3-5
	22-29

FOURTH YEAR
First Term

Structural Analysis	3-6
Electrical Eng., Fund.	4-6
Wood Design	3-4
Thesis	2
Humanities	3-5
Elective Subjects	13
	49

Second Term

Structural Analysis	3-6
Concrete Design	4-6
Thesis	7
Humanities	3-5
Elective Subjects	13
	47

XVIII. MATHEMATICS

FIRST YEAR
First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR
First Term

Applied Mechanics I	3-5
Physics	5-5
Hum. & Soc. Sciences, Int.	3-5
Calculus	3-6
Military Science	3-0
Language	3-5
	20-26

Second Term

Physics	5-5
Humanities	3-5
Differential Equations	3-6
Statistics, Elementary	3-6
Military Science	3-0
Language	3-5
	20-27

THIRD YEAR
First Term

Adv. Calculus for Engineers	3-6
Modern Algebra	3-6
Humanities	3-5
Elective Subject	21
	47

Second Term

Adv. Calculus for Engineers	3-6
Humanities	3-5
Elective Subjects	30
	47

FOURTH YEAR
First Term

Analysis	3-9
Thesis	4
Humanities	3-5
Elective Subjects	21
	45

Second Term

Analysis	3-9
Thesis	7
Humanities	3-5
Elective Subjects	21
	48

Professional Elective Subjects

Int. Theoretical Physics I	4-8
Int. Theoretical Physics II	4-8
Statistical Methods, App.	3-6
Modern Statistical Th.	3-6
Modern Statistical Th.	3-6
Numerical Analysis	5-6
Diff. Geometry, Elem.	3-6
Fund. of Mech. of Continua.	3-6
Any 12-unit Math. Subject	

XIX. METEOROLOGY

FIRST YEAR
First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR
First Term

Applied Mechanics I	3-5
Physics	5-5
General Meteorology	6-3
Humanities	3-5
Calculus	3-6
Military Science	3-0
	23-24

Second Term

Applied Mechanics II	3-5
Physics	5-5
Meteorological Lab., Int.	3-0
Humanities	3-5
Differential Equations	3-6
Statistics, Elementary	3-6
Military Science	3-0
	23-27

THIRD YEAR
First Term

Heat Engineering	4-5
or	
Thermodyn. & Statist. Mech.	4-5
Descriptive Meteorol. I	3-6
Meteorol. Observations	4-2
Physics of Atmos., Elem.	2-4
Humanities	3-5
Elective Subject	8
	46

Second Term

Descriptive Meteorol. II	3-6
General Climatology	2-4
Thermodyn. of Atmos.	3-6
Humanities	3-5
Elective Subjects	15
	47

FOURTH YEAR
First Term

Synoptic Lab. I	15-0
Dynamic Meteorol. I	3-6
Oceanography	2-4
Thesis	3
Humanities	3-5
Elective Subject	8
	49

Second Term

Synoptic Meteorol. I.	3-6
Thesis	9
Humanities	3-5
Elective Subjects	22
	48

Elective subjects must include one of the following:

Synoptic Lab. II	15-0
Dynamic Meteorol. II	3-6

XX. FOOD TECHNOLOGY

FIRST YEAR

First Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

Second Term

Mathematics	3-6
Physics	5-6
Chemistry	7-4
Humanities	3-5
Military Science	3-0
Additional Subject*	0 to 6
	42 to 48

* Additional subjects totaling at least 6 units for the academic year are to be selected from the list of Additional First-Year Subjects on page 92.

SECOND YEAR

First Term

Qualitative Analysis	7-3
General Biology I	6-4
Physics	5-5
Humanities	3-5
Calculus	3-6
Military Science	3-0
	27-23

Second Term

Quantitative Analysis	7-3
General Biology II	6-4
Physics	5-5
Humanities	3-5
Differential Equations	3-6
Military Science	3-0
	27-23

THIRD YEAR

First Term

Chem. & Tech. Food Sup. I	7-3
Bacteriology	6-2
Humanities	3-5
Elective Subjects	24
	50

First Term Electives

Organic Chemistry I	4-4
Organic Preparations I	6-0
Physical Chemistry I	4-4

Second Term

Chem. & Tech. Food Sup. II	7-3
Industrial Microbiology	6-4
Humanities	3-5
Elective Subjects	18
	46

FOURTH YEAR

First Term

Food Engineering	4-2
Biochemistry	8-4
Tech. of Food Products	6-4
Chem. Eng. Food App.	4-6
Thesis	4
Humanities	3-5
	50

Second Term

Food Engineering	4-2
Tech. of Food Products	6-4
Chem. Eng. Food App.	4-6
Chemistry of Nutrition	2-2
Thesis	10
Humanities	3-5
	48

XX-A. FOOD TECHNOLOGY

Same as Course XX through Third Year.

FOURTH YEAR

First Term

Food Engineering	4-2
Biochemistry	8-4
Tech. of Food Products	6-4
Chem. Eng. Food App.	4-6
Humanities	3-5
	25-21

Second Term

Food Engineering	4-2
Tech. of Food Products	6-4
Chem. Eng. Food App.	4-6
Chemistry of Nutrition	2-2
Chem. of Nutrition Lab.	5-0
Humanities	3-5
Elective Subject	8
	51

GRADUATE YEAR

First Term

Enzymology	2-4
Food Technology, Adv.	8-4
Food Technology Seminar	2-2
Thesis	16
Elective Subject	10
	48

Second Term

Food Technology, Adv.	6-4
Food Technology Seminar	2-2
Thesis	20
Elective Subjects	14
	48

XX-B. BIOCHEMICAL ENGINEERING

Same as Course XX through Second Year.

THIRD YEAR*First Term*

Organic Chemistry I	4-4
Organic Preparations I	6-0
Physical Chemistry I	4-4
Physical Chem. Lab. I	2-0
Industrial Chemistry	3-4
Bacteriology	6-2
Humanities	3-5

28-19

Second Term

Organic Chemistry II	4-4
Qual. Organic Analysis	6-0
Physical Chemistry II	4-4
Physical Chem. Lab. II	2-0
Industrial Microbiology	6-4
Humanities	3-5
Elective Subject	8

50

FOURTH YEAR*First Term*

Biochemistry	8-4
Chem. Eng. Food App.	4-6
Biochemical Engineering	8-2
Thesis	7
Humanities	3-5

47

Second Term

Chem. Eng. Food App.	4-6
Biochemical Eng.	8-2
Thesis	8
Humanities	3-5
Elective Subject	12

48

ADDITIONAL FIRST-YEAR SUBJECTS*First Term Elective Subjects*

Chemistry, General	7-4
Earth Science, Geology, Geophysics, Geochemistry	2-4
Elem. Meteorology I	3-3
Graphics	4-2
Graphics Laboratory	3-2
English Composition	2-4
Public Speaking	3-3
Spoken French	4-2
Spoken German	4-2
Theory of Numbers	2-4

Second Term Elective Subjects

Conservation of Natural Resources	2-4
Chemistry, General	7-4
Perspectives in Life Science	3-3
Elem. Meteorology I	3-3
Elem. Meteorology II	4-2
Graphics	4-2
Graphics Laboratory	3-2
English Composition	2-4
Public Speaking	3-3
Spoken French	4-2
Spoken German	4-2

**INTEGRATED FOUR-YEAR PROGRAM IN THE
HUMANITIES AND SOCIAL STUDIES**

The humanities and social sciences are an integral part of education at M.I.T. Their purpose in the curriculum is to impress upon the student how important human relationships are in any society and to develop in him the first-rate human and social values which must accompany technical competence if an individual is to make his maximum contribution as a citizen.

The four-year program is based upon the theory that to achieve a well-balanced professional education a student should pursue these studies simultaneously with his studies in science and engineering. The program is constructed in a manner that will insure the student some breadth in the humanities during this first two years and some depth in a more limited area of either the humanities or social sciences in his third and fourth years.

In the first and second years each student will take a series of four subjects designed as an introduction to several areas in the humanities and social sciences and as a foundation for more advanced study in those areas during the third and fourth years.

The objectives of this basic program are:

1. To give the student an introductory knowledge of the most important issues, ideas, periods, and events of the past, selected on the basis of their relevance to the world today.
2. To emphasize the interrelation of the various humanities and social sciences as elements in human experience rather than the distinctive features which characterize them as different areas of academic study.
3. To introduce the student to the process of critical thought as applied in the humanities and social sciences.

Practice in written and oral expression is an integral part of the two-year basic program. Students whose written papers show a lack of

knowledge of the fundamentals of composition will be expected to attend remedial sections until the deficiency is remedied. If, at the end of the first year, a student's written work is unsatisfactory, he may receive a deficiency in composition which can be removed by passing English Composition.

Each student in his third year will elect one of the eight fields listed below as an area for further study. Three subjects taken in the third and fourth years must normally fall within this area while the fourth will usually be a distributional subject in a different area. A student may, if he wishes, elect two additional term subjects in the humanities and social sciences in lieu of two professional electives.

Students enrolled in Courses I, II, II-B, III, IV-A, VI, VI-A, IX-A, IX-B, IX-C, XIII, XIII-C, XVI, XVI-B, XVII, XX, XX-A, XX-B are re-

quired to elect Economic Principles sometime during their junior or senior years. Successful work in this subject will be credited either as the distributional requirement in humanities or as a part of an appropriate three-term combination.

Students enrolled in Courses IV-B, XV-A, or XV-B are required to elect Economic Principles, in the first term of their junior year under the same conditions as above. Students enrolled in Courses XV-A or XV-B will not receive credit toward their humanities requirements for any work in Field Seven, Labor Relations.

Students enrolled in Courses XIV-A, XIV-B, or XIV-C will not receive credit toward their humanities requirements for any work in Field Five, Economics, or Field Seven, Labor Relations, or for the subject Organization and Communication in Groups.

SUBJECTS FOR THE FIRST AND SECOND YEARS

FIRST YEAR

<i>First Term</i>	Foundations of Western Civilization	3-5
<i>Second Term</i>	Foundations of Western Civilization	3-5

SECOND YEAR

<i>First Term</i>	Humanities	
	Option A. The United States: Ideas and Men	3-5
	Option B. Modern Western Ideas and Values	3-5
<i>Second Term</i>	Humanities	
	Option A. The United States: Ideas and Men	3-5
	Option B. Modern Western Ideas and Values	3-5

SUBJECTS FOR THE THIRD AND FOURTH YEARS

Any one of the following combinations of three subjects may be taken without the approval of a Humanities Adviser. Other combinations are not prohibited but must be specifically approved by a Humanities Adviser.

Subjects indicated by a dagger (†) may be taken as the single subject in a different field to satisfy the distributional requirement.

FIELD ONE: HISTORY OF IDEAS

† Nationalism and Growth of Nations in the West 3-5	or	† Basic Ideas of West Politics & Ethics, 500 B.C. -1500 A.D. 3-5	and	† Modern Europe 3-5	or	Rise of Mod. Pol. & Soc. Science, 1500-1914 3-5	or	† Comp. Polit. Ec. Systems 3-5	and	Contemp. Ideas on Pol. Econ. Dev. 3-5
† Science & Phil. from Greeks to Copernicus 3-5	and	Science & Phil. from Galileo to Present 3-5	and	† Amer. Govt. & Society since 1860 3-5	or	† Amer. Intellectual Hist. from 1865 to the Present 3-5	or	† Amer. Pol. System 3-5	and	Contemp. Nat'lism & Nat'l Dev. 3-5
† Topics in Amer. Civ. before 1860	or	† Amer. Intellectual Hist. to 1865 3-5	and						and	Phil. of Science 3-5
										or
										Topics in Hist. of Science 3-5

FIELD TWO: POLITICAL, SOCIAL, AND ECONOMIC HISTORY

<i>American History</i>		and {	† Topics in Amer. Civ. before 18603-5	and {	American Values3-5
† Topics in Amer. Civ. before 18603-5	or		† Amer. Govt. & Society since 18603-5		Topics in Amer. Foreign Policy3-5
† Amer. Govt. & Society since 18603-5	or		† Industrial Growth3-5		Technology & Soc. in U.S. 3-5
† Amer. Econ. Development3-5	or		† Amer. Pol. System3-5		
<i>History of Foreign Relations</i>		and {	† Hist. of Amer. For. Policy 3-5	and {	Topics in Amer. For. Policy3-5
† Hist. of Amer. For. Policy 3-5	or		† Rise of China and Japan 3-5		
† Rise of China and Japan 3-5	or		† Modern Europe3-5		
	or		† Internat'l Relations3-5		
<i>European History</i>		and {	† Hist. of Amer. For. Policy 3-5	and {	The Russian Rev. and the Sov. Union3-5
† Nationalism and Growth of Nations in the West 3-5	or		† Modern Europe3-5		Contemp. Ideas on Pol. & Econ. Dev.3-5
† Modern Europe3-5	or		† Comp. Polit. & Ec. Systems3-5		Nat'lism & Nat'l Dev.3-5
<i>Economic History</i>		and	Industrial Growth3-5	and	Problems in Econ. Development3-5
† Amer. Econ. Development3-5					
† Econ. Principles I3-5					
<i>History of Technology</i>		and	Technology and Society 3-5	and {	Technology & Soc. in U.S. 3-5
† History of Engineering 3-5					

FIELD THREE: LITERATURE

† Books and Men3-5 or † Books and Men3-5	and {	† Books and Men3-5	and {	Literature of Greece3-5	
		† Books and Men3-5		or	Non-Western Literature 3-5
		Literature of Greece3-5		or	Techniques of Drama3-5
		Non-Western Literature3-5		or	Nature of Poetry3-5
		Techniques of Drama3-5		or	Shakespeare3-5
		Nature of Poetry3-5		or	Imaginative Mind since 18803-5
		Shakespeare3-5		or	Nineteenth Century Amer. Lit.3-5
		Imaginative Mind since 18803-5		or	Twentieth Cen. Amer. Lit. 3-5
		Nineteenth Century Amer. Lit.3-5		or	Russia and the West in Modern Russian Literature3-5
		Twentieth Century Amer. Lit.3-5		or	The Bible3-5
		† Russia and the West in Modern Russian Literature3-5			
		† The Bible3-5			
Any three of these subjects in German		and {	Intermed. German3-5	and {	
	† Germ. Lit. 1919-19333-5				
	† Literature of Post-War Germany3-5				
Any three of these subjects in French		and {	† Great Books & Authors in Germ. Literature3-5	and {	
	Intermed. French3-5				
	† Contemp. Fr. Lit.3-5				
	† Fr. Lit. of 3rd Republic3-5				
	† Great Books & Authors in French Literature3-5				

† Books and Men3-5 or † Books and Men3-5 or † Ger. Lit. 1919-19333-5 or † Literature of Post-War Germany3-5 or † Great Books & Authors in German Literature3-5 † Contemp. Fr. Lit.3-5 or † Fr. Lit. of 3rd Republic ...3-5 or † Great Books & Authors in French Literature3-5	and	† Language and Society3-5	and	† Applied Semantics3-5
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FIELD FOUR: MUSIC

† Introduction to Music3-5	and	Western Music from Middle Ages to Present3-5	and	Classic String Quartet3-5 or Twentieth Century Music 3-5
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FIELD FIVE: ECONOMICS

† Econ. Principles I3-5	and	Econ. Principles II3-5	and	Prices & Production3-5 or Econ. Probs. Sem.3-5 or Econ. of Invention3-5 or Money and Income3-5 or Public Finance3-5 or International Trade3-5 or Govt. & Econ. Pol.3-5
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† Econ. Principles I3-5	and	Internatl. Relations3-5	and	Internatl. Trade3-5
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FIELD SIX: POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

† Amer. Pol. System3-5 or † Comp. Polit. & Ec. Systems3-5	and	Internatl. Relations3-5 or † Amer. Pol. System3-5 or † Comp. Polit. & Ec. Sys- tems3-5	and	Issues in Contemp. Amer. Politics3-5
† Econ. Principles I3-5 or † Topics in Amer. Civ. to 18603-5 † Amer. Govt. & Society since 18603-5	and	† Amer. Pol. System3-5 or † Comp. Polit. & Ec. Systems3-5	and	Issues in Contemp. Amer. Politics3-5
† Econ. Principles I3-5 or † Amer. Pol. System3-5 or † Comp. Polit. & Ec. Systems3-5 or † Amer. Govt. & Society since 18603-5 or † Hist. of Amer. For. Policy 3-5	and	Internatl. Relations3-5	and	Maj. Probs. in Contemp. World Politics3-5

FIELD SEVEN: LABOR RELATIONS

† Econ. Principles or † Organization & Communication in Groups or † Personality and Social Struc- ture	and	† Labor Relations3-5	and	Labor Economics & Public Policy3-5
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FIELD EIGHT: PSYCHOLOGY

† Int. Psychology3-5 or † Organization & Communica- tion in Groups3-5	and	† Int. Psychology3-5 or † Organization & Communica- tion in Groups3-5	and	Experimental Psychology 3-5 or Psychology of Com- munication3-5
† Int. Psychology3-5	and	Experimental Psychology 3-5 or Psychology of Communica- tion3-5	and	Experimental Psychology 3-5 or Psychology of Com- munication3-5

COURSE SCHEDULES - QUANTITIES PROGRAM

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