Department of Architecture Circular 1892

MASSACHUSETTS

INSTITUTE OF TECHNOLOGY,

BOSTON, MASS.

DEPARTMENT

OF

ARCHITECTURE.

BOSTON:
PRESS OF H. G. COLLINS, 15 MILTON PLACE.
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The Course in Architecture is designed to secure for its graduates a liberal education, as well as thorough professional training. It prepares them not only for their work as subordinates, when rapidity, skill and taste in drawing and design will be most useful qualifications, but also for their subsequent independent career, when technical knowledge will become most important.

The curriculum has been carefully arranged to attain these ends. The professional work begins with a thorough study of the Orders. A series of plates is drawn to familiarize the students with the proportions and the correct use of Greek and Roman orders, of arcades, balustrades, and other architectural detail. To fix this work thoroughly, regular exercises in memory drawing on the blackboard have been found of the greatest value. This is supplemented by special courses in Shades and Shadows and in Perspective. Architectural History is taught by text-books and lectures, and the students are required to make tracings and drawings from the large collection of books and photographs in the library of the department.

The working catalogue of the library is arranged according to styles, to which notes are added giving some of the best examples for tracing and drawing, the course being so arranged that every book and photograph must be consulted at least once by the pupils, as great stress is laid on the value and proper use of the library.

As skill in design is the natural sequence of good drawing, great importance is attached to the course in Freehand Drawing. Regular exercises are held in the class-rooms

and galleries of the Museum of Fine Arts, the admirable collections of which are always open, by the liberality of the trustees, to students of the department. The Institute also maintains an evening life-class during the school year, while sketching both in and out of doors is encouraged.

The course in Materials deals with the various elements entering into construction, such as cement, limes, mortars, piling, brick, wood, roofing, metals, plumbing, etc., and their uses by the mason, carpenter, roofer, iron, copper, and tin smith, plumber, etc., the instruction being supplemented by visits to buildings in process of construction.

The instruction in Design is arranged as carefully as possible to occupy to best advantage the allotted time. Every month two problems are assigned to each class: one, a sketch problem, which must be worked out, effectively rendered, and finished within one week; the other, a more difficult problem, for the detailed working out of which the entire month is allowed. To accustom the students to concentrate their minds upon the development of a single idea, instead of wasting their energy in the successive adoption and abandonment of different solutions of the given problem, two days are allowed, after the posting of the programme of the month, within which each student must fix upon some general scheme for his design, and show it in plan and elevation on a small scale. These preliminary sketches are attached to the completed designs. Judgment is passed upon the drawings by a jury from the Boston Society of Architects. These designs are afterwards criticised in the presence of the students of the department, and the most deserving are indicated by cards of honorable mention. The others are marked by the instructors according to their merits, and regular reports are made to the parents of the students.

Studies in planning give the student opportunity to enlarge his resources in work of this character; and particular attention is paid to special classes of buildings, such as schools, theatres, churches, and hospitals. The careful study

required for the final thesis serves to fix some good example in the memory.

The long drill in Design would be somewhat barren, if means were not taken to supply ample stores of fresh material and to educate the taste. For this purpose the library of the department is freely used. As soon as a programme for design is posted, the instructors refer the students to books, photographs, and drawings from which examples of the solution of similar problems, or suggestions as to treatment, detail, or decoration, may be obtained; and an effort is made to collate as many examples as possible, in order to increase the student's resources, and to promote originality in adapting historical examples to modern requirements.

The course in the History of Ornament gives not only a conception of the historical development of ornament, but also facility in the general treatment of color in decoration, and acquaintance with the characteristics of different styles. Instruction is given by lectures, and by problems for design in black and white, and in color. Each finished design is carefully criticised before the class. Extended courses in Water Color and Pen and Ink Drawing are given to insure facility in rendering.

In Specifications and Working Drawings, practical instruction is given in making quarter-scale plans and elevations from sketches, in wood, brick, and stone construction, and in making the framing plans and working drawings of various kinds necessary in actual practice. Care is taken not to attempt what will be better learned in office experience, but enough is accomplished to enable the students to take immediate advantage of such opportunities on graduation.

The course in Modelling facilitates the proper understanding of architectural details, and includes both the manipulation of clay and casting in plaster. Thorough preparation in freehand drawing is requisite for admission

to this course. Lectures are given on the history of painting and sculpture, as decorative arts allied to architecture, and on landscape architecture.

In the strictly professional work, beginning in the second year, great stress is laid upon the student's acquisition and mastery of the principles underlying sound construction, and only those students of the first year who attain high rank in drawing, geometry, and trigometry, as well as satisfactory standing in other studies, are admitted to this work. The studies directed particularly to this end include analytic and descriptive geometry, calculus and physics, and later in the course, strength of materials, including investigations into the stability of structures and the resistance of materials.

Graphical Statics is treated in theory and in practice, and considerable drill is given in designing trusses, in methods of uniting the various members, and in the use of handbooks for deciding the proper sizes of materials in wood and iron.

The construction of domes, arches, buttresses, and modern fireproof constructions is treated in this connection. Actual structures are measured, and criticised by the students. A technical course in Heating and Ventilation is given, illustrated by the study of the principal public buildings in the city.

During the entire course there have been introduced studies in literature, language, politics, and history directed towards the student's mental development. The most important elements in this general training are German and French, General Chemistry, English Literature and Composition, American History, Political Economy and Industrial History, Business Law, History and Literature of the Renaissance and the Reformation.

The proportion in which the time of the student is divided between studies and exercises in one or another of these subjects is a matter to which the attention of the Faculty has been especially directed. In general, it may be said that the proportion of the time allotted to non-professional

studies steadily diminishes during the successive years of the course, allowing an increased number of hours during each year for practice in Original Design and Freehand Drawing. In providing for so large a proportion of strictly artistic training in the course in Architecture, the Faculty has been guided by the consideration that in their future professional career the students are likely to need, in about equal proportions, scientific knowledge in the conduct of construction, and skill in arrangement and design; the scheme of studies is based upon the belief that the attainment in a high degree of both these qualifications is quite within the capacity of intelligent young men, pursuing a four years' course of study with diligence and fidelity.

To be entitled to a degree the student must have completed satisfactorily all the prescribed studies and exercises of the course. Persons applying for admission as special students in Architecture must be college graduates, or twenty-one years of age with not less than two years' office experience. They will be required to pass examinations in plane geometry, in freehand and mechanical drawing (including projections and isometric), and to include in their work at the Institute the full courses in freehand drawing, solid geometry, and descriptive geometry, unless already familiar with these subjects.

The examination in Freehand Drawing required of all such applicants is based upon the subjects given in the first year course of the Institute. Six hours are allowed for the examination, divided into two parts of three hours each. The subjects are as follows: —

(*a*) A perspective drawing in pencil outline, from a group of geometric solids, and from a vase.

(*b*) Outline sketches, in pencil, of projections of a given object; such as a tool, machine, etc.

(*c*) Elementary shading in pencil, from objects.

(*d*) Lettering. A given title is to be arranged in suitable form, and lettered in Roman and Gothic. Work is to be inked.

(*e*) Dimensioning. A mechanical drawing of a construction (detail of a machine or of a building) is furnished, together with a memorandum of measurements. Measurements are to be systematically arranged and executed from the drawing. Work is to be inked.

Points which will be especially considered in (*d*) and (*e*) are accuracy in drawing of letters and numbers; rapidity of execution; arrangement.

NOTE. — The examiner will provide alphabets, exhibiting styles of letters and numbers required, which may be used as copies.

The examination in Mechanical Drawing will cover what is contained in Faunce's Mechanical Drawing or its equivalent.

The tuition fee for regular students is $200. For one half or any less fraction of the school year, the fee is $125. Special students pay, in general, the full fee.

As the exercises of the school begin at nine o'clock in the morning, and end before five o'clock in the afternoon, students may conveniently live in any of the neighboring cities or towns on the lines of the various railroads, if they prefer to do so.

The cost of board and rooms in Boston and the neighboring cities and towns need not exceed from six to eight dollars a week.

The cost of books, drawing instruments, paper, etc. exclusive of chemical breakage, is from twenty-five to forty dollars a year.

The Department of Architeture having entirely outgrown its previous quarters, the Corporation have this year erected a new building to be wholly devoted to it. This building has been carefully planned to meet the needs of instruction, and is fitted with every material appliance required for the fullest and best professional and technical training. It measures 66 feet by 58, and has a basement and five stories.

One half of the basement is a museum for building appliances; the other half is a laboratory for the testing of cements, mortars, etc., and has also a complete plant for experimenting on the siphonage of plumbing traps. This system is arranged to be in exact accordance with the plumbing practice in private houses, in order that the experiments may be thoroughly practical and useful.

The first floor is devoted to lecture rooms.

The second and fourth floors are large drawing rooms, lighted from both sides.

One half of the third floor is a drawing room, and the other half is the library. The library is very fully equipped and catalogued, and has every convenience for ready consultation of its eight hundred volumes and ten thousand photographs.

The fifth and upper story constitutes one large drawing room, arranged for the classes in freehand drawing from the cast and from life, and for the classes in water color and modelling. The lighting of this room has had the most careful study, and its arrangement of skylights and sidelights is unsurpassed. The heating and ventilating apparatus of the building is so planned that the rooms are kept at a constant regular temperature by means of electrical appliances, and the air is constantly changed without the necessity of an open window.

The new building is opposite the Boston Museum of Fine Arts, in which the advanced courses of freehand drawing are held, and is also near the new Public Library. Both of these institutions offer the free use of their collections to the students of the Institute.

COURSE IN ARCHITECTURE.

FIRST YEAR.

FIRST TERM.	SECOND TERM.
Solid Geometry.	Plane and Spherical Trigonometry.
Algebra.	Political History since 1815.
General Chemistry.	French (or German).
Chemical Laboratory.	Mechanical Drawing and Descriptive Geometry.
Rhetoric and English Composition.	Freehand Drawing.
French (or German).	Military Drill.
Mechanical Drawing.	
Freehand Drawing.	
Military Drill.	

SECOND YEAR.

FIRST TERM.	SECOND TERM.
Shades and Shadows.	Design.
Freehand Drawing.	Materials.
The Orders.	Freehand Drawing.
Analytic Geometry.	Pen and Ink.
Physics.	Architectural History.
German.	Perspective.
English Literature.	Differential Calculus.
American History.	Physics.
	English Literature and Composition.
	German.

THIRD YEAR.

FIRST TERM.	SECOND TERM.
Architectural History.	Freehand Drawing.
Freehand Drawing.	Pen and Ink.
Pen and Ink.	Specifications and Working Drawings.
Design.	Design.
Specifications and Working Drawings.	Water Color.
Integral Calculus.	Kinematics and Dynamics.
General Statics.	Strength of Materials.
Structural Geology.	Stereotomy.
Physics: Heat.	German.
German.	Business Law.
Business Law.	Political Economy and Industrial History.

FOURTH YEAR.

FIRST TERM.	SECOND TERM.
Design.	Design.
History of Ornament.	History of Ornament.
Water Color.	Water Color.
History of Construction.	Advanced French.
Strength of Materials.	Sanitary Science and the Public Health.
Ventilation and Heating.	Modelling.
Advanced French.	Iron Construction and Graphical Statics.
History of the Renaissance.	History of the Renaissance.
Acoustics.	Business Relations, Contracts, etc.
Graphical Statics.	History of Painting and Sculpture.
	Thesis Work.

OFFICERS OF INSTRUCTION IN ARCHITECTURE.

FRANCIS W. CHANDLER, Professor of Architecture. In charge of the Department.
EUGÈNE LÉTANG, Professor of Architectural Design.
ELEAZER B. HOMER, S. B., Assistant Professor of Architecture.
WILLIAM H. LAWRENCE, S. B., Instructor in Architecture.
ROBERT S. SHEDD, Assistant in Architecture.
ROSS TURNER, Instructor in Sketching and Water Color.
C. HOWARD WALKER, Instructor in the History of Ornament.
CHARLES L. ADAMS, Instructor in Freehand Drawing.
FRED LAW OLMSTED, Lecturer on Landscape Architecture.
TRUMAN H. BARTLETT, Lecturer on Modelling.
D. A. GREGG, Instructor in Pen and Ink Sketching.
ERNEST MAJOR, In charge of the Life Class.

OFFICERS OF INSTRUCTION IN OTHER RELATED DEPARTMENTS.

JOHN D. RUNKLE, Ph. D., LL. D., Walker Professor of Mathematics.
GEORGE A. OSBORNE, S. B., Professor of Mathematics.
CHARLES R. CROSS, S. B., Thayer Professor of Physics, and Director of the Rogers Laboratory.
GAETANO LANZA, C. E., Professor of Theoretical and Applied Mechanics.
WILLIAM T. SEDGWICK, Ph. D., Professor of Biology.
SILAS W. HOLMAN, S. B., Associate Professor of Physics.
WEBSTER WELLS, S. B., Associate Professor of Mathematics.
LINUS FAUNCE, S. B., Assistant Professor of Drawing.
DANA P. BARTLETT, S. B., Assistant Professor of Mathematics.
S. HOMER WOODBRIDGE, A. M., Instructor in Heating and Ventilation.

ADMINISTRATIVE OFFICERS OF THE INSTITUTE.

President . . .	FRANCIS A. WALKER.
Secretary . . .	HARRY W. TYLER.
Bursar . . .	ALBERT M. KNIGHT.