

## V.—COURSE IN BUILDING AND ARCHITECTURE.

*Architectural Design.*—The Elements of Design. The Principles of Composition. Exercises. The Study of Executed Works.

*Construction.*—Building Materials and Processes. The Study of Works in Progress.

*Drawing.*—Plans, Elevations, Sections, and Details. Ornament. Sketching from Buildings.

*Mathematics.*—Differential and Integral Calculus. Analytic Mechanics.

*Applied Mechanics.*—Stress. Stability, Strength, and Stiffness.

*Descriptive Geometry.*—Applications to Masonry and Carpentry.

*Geology.*—Physiographic Geology. Lithology. Outline of Geological History.

*English.*—Logic. Rhetoric. History of English Literature.

*Constitutional History.*—England and the United States.

*French.*—(Spanish may be substituted.)

*German.*

## VI.—COURSE IN SCIENCE AND LITERATURE.

*Mathematics.*—Differential and Integral Calculus. Analytic Mechanics.

*Chemistry.*—Quantitative Analysis. Pure and Applied Chemistry.

*Physics.*—Physical Research.

*Architectural Design.*—The Elements of Design. The Principles of Composition. Exercises. The Study of Executed Works.

The foregoing studies are elective. Each student must select one or more of them. He may in addition choose any of the special subjects of the other Professional Courses, such as Descriptive Geometry, Engineering, Spherical Astronomy, Metallurgy, or Mineralogy. The following studies are required:—

*History.*—Guizot—Histoire Generale de la Civilisation en Europe.

*Drawing.*—Subjects determined by each student's choice of studies.

*Physics.*—Laboratory Practice.

*Geology.*—Physiographic Geology. Lithology. Outline of Geological History. Dynamical Geology.

*English.*—Logic. Rhetoric. History of English Literature.

*Constitutional History.*—England and the United States.

*French.*—(Spanish may be substituted.)

*German.*

## FOURTH YEAR.

### I.—COURSE IN MECHANICAL ENGINEERING.

*Machines.*—Strength and Proportions of the Parts of a Machine. Hand Machinery, —Cranes, Derricks, Pumps, Turn-tables, etc.

*Motors.*—Hydraulic Motors. Water-wheels. Water-Pressure Engines. Power and Strength of Boilers. Steam Engines,—Stationary, Locomotive, Marine. Air and Gas Engines.

*Building Materials.*—Stones, Bricks, Mortars and Cements.

*Descriptive Geometry.*—Applications to Masonry, Carpentry, and Machinery. Modeling.

*Drawing.*—Machines. Working Plans and Projects of Machinery, Mills, etc.

*Political Economy.*

*Natural History.*—Zoology, Physiology.

*French.*—(Italian may be substituted.)

*German.*

### II.—COURSE IN CIVIL AND TOPOGRAPHICAL ENGINEERING.

*Engineering.*—Structures of Wood,—Framing, Trusses, Girders, Arches, Roofs, Bridges. Structures of Stone,—Foundations, Retaining Walls, Arches, Bridges. Structures of Iron,—Foundations, Beams, Girders, Columns, Roofs, Bridges. Field Practice.

*Physical Hydrography.*—As practised by the U. S. Coast Survey.