

CURRICULUM

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curves and earthwork and their application in the location and construction of a railroad. The fieldwork of the first term consists of a survey for a railroad some two miles in length. The reconnaissance is followed by the preliminary and later the location survey. Upon the completion of the fieldwork the line is plotted from the notes taken. In the second term the work consists of the laying out of various curves and the staking out of earthwork. Practise is given in the drawing-room in adjusting a line of railroad to a contour map, with computation of the "cut and fill" and "haul." An investigation into the economics of railroad location, including train resistance and the influence of grade, distance, curvature and rise and fall, together with a study of rolling stock, power-brakes and signals, yards, stations and tunnels, comprises the class-work of the fourth year. In the drawing-room practical problems are given in contour location, the proportioning of culverts and waterways, the design of track-work, yards, station-grounds, interlocking signals, etc.

Only a portion of the third-year work, and none of the fourth-year work, is all that is required in Railroads of the students in Sanitary Engineering. There is also a considerable reduction in the work required in Bridges and Bridge Design. The time gained is, as previously stated, devoted to courses in Chemistry and Biology. In these it is designed to give the students such training as shall fit them to interpret properly the results of researches in Sanitary Chemistry and Sanitary Biology, and to co-operate with chemists and biologists in professional work.

Practise is given in the third and fourth years in the Chemical and Biological laboratories. The student is instructed in the methods of Water and Air Analysis, and is taught to observe and identify the various vegetable and animal organisms present in natural water and sewage. The course devotes particular attention to the sanitary side of questions of water supply and drain-

age, and discusses, among other things, the principles of filtration and the methods of purifying water and sewage, the relation between drinking water and disease, methods of disposal of sewage, and other problems relating to the health of communities.

Thus, while the course in Sanitary Engineering is fundamentally a course in Civil Engineering, though a somewhat abbreviated one, sufficient instruction in Chemical and Biological subjects is imparted to the student to enable him to deal successfully with many problems of modern city life in which the student in Civil Engineering has had practically no training.

In addition to the above courses, opportunity is given for a considerable amount of advanced work after graduation, which is described in another column. A comparatively new departure is the institution of a five-year course, which allows the student to complete the work of both the Sanitary and Civil Engineering courses, a separate degree of S. B. being conferred in each department.

Besides the purely engineering subjects thus far mentioned, there are also splendid opportunities for work along more academic lines. Courses in English composition and literature and in English and American history during the first and second years, Political Economy and a choice of several options in Economics, English, Modern languages or History during the third year, together with Business Law in the fourth year, are made a part of the requirements for the students in all departments. Additional electives in all of these subjects are also available.

The Institute Civil Engineering library is one of the best, if not the best, in the country. Complete and up-to-date in every detail, it contains about 1,100 volumes, including German, French, and Spanish texts, that cover the entire engineering field. All periodicals of importance are taken, foreign and domestic, and pamphlets and reports of engineering societies are received.

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