ENGINEERING FIELDS

Agricultural Engineering. Agricultural engineering utilizes basic fundamentals of engineering and agriculture in economic applications of scientific knowledge to agricultural production and processing; specifically, to the development of machinery, structures, equipment, practices, techniques, methods, and fundamentals. Agricultural engineering prepares for positions in the equipment industry in the areas of design, research, development, testing, sales and management; in the irrigation and drainage field for both public and private organizations, in the areas of design, field investigation, project planning, operation, maintenance, construction supervision and management.

Civil Engineering. Among the many areas included in civil engineering are design and construction of bridges, buildings, dams, waterways, railroads, airport terminals, pipelines, highways, water supply and sanitary systems, foundations, hydroelectric installations, irrigation, and many other systems and structures of modern civilization. Also included are design and structure of airplanes and missiles and the field of surveying and mapping.

Electrical and Electronics Engineering. Electrical engineering's many specialties are grouped under the two main areas of power and electronics. Power engineering involves the generation, distribution, and utilization of electricity to provide power, heat, and light, and makes use of various electronic devices in the process. Electronics engineering involves electrical communications, including electron devices for transmission and reception over wires or through space; devices which control or aid industrial processes, medical science, guidance and detection of air and spacecraft; and exceedingly high-speed electronic computing machines.

Industrial Engineering. Industrial engineering is the field of engineering developed to consider the economic and human, as well as technical, aspects of engineering endeavor, especially in the area of industrial production activities. This field of engineering has application in all types of industry and in areas requiring efficient use of manpower, machines, materials, and money.

Mechanical Engineering. Mechanical engineering is the branch of engineering involving generation, transmission, and utilization of thermal, nuclear, or mechanical energy, including refrigeration and air conditioning. It deals with engineering problems involving machinery and systems, their control and products, and involves research, design, production, operational, organizational, and economic aspects of the field.

CREDENTIAL PROGRAM

For information on current credential programs, consult departmental advisers and see *Public School Credentials* and the *School of Education.*

BACHELOR OF SCIENCE DEGREE IN ENGINEERING

The bachelor of science degree in engineering is granted upon completion of 136 units in all engineering majors except mechanical engineering which requires 128 units. The general degree requirements and general education requirements must be met. See requirements listed below and under *Degrees and Credentials.* General education requirements throughout the program may be taken in any order approved by the adviser. The sequences listed below require 17 units per semester (16 in mechanical engineering). A major in one of the fields of engineering consists of all engineering courses, including approved electives, listed below in the program for the first two years required of all engineering students, and in one of the specific fields of concentration. The major in agricultural engineering includes, also, listed courses in agriculture; and the industrial engineering major includes listed courses in business and economics.