

engineering approaches the

Core of the Problem

THE times and the techniques are changing more rapidly in engineering and its many related fields than in almost any other area. And as the work of the engineer becomes more and more complex, so must his training be adjusted to prepare him to meet these new demands.

To keep pace with this changing scene, the University of Oklahoma College of Engineering has launched its new "core" curriculum, designed to produce the graduate with a firmer grounding in the basic engineering sciences — an engineer better equipped to quickly and surely master the techniques of his specialized field.

The University's council on instruction, which supervises changes in the teaching curriculum, has adopted the program on an interim basis for the 1960-61 school year. The final core curriculum will be considered at the end of this period.

The "core" refers to the block of fundamental courses which will be required of all engineering students, regardless of specialization. By use of this standardized across-the-board approach, the college hopes to achieve more efficient use of faculty and facilities, upgrading of the specialized courses, an increase in the amount of graduate study being done in engineering and more effective faculty recruiting.

In the past each of the schools within the College of Engineering—aeronautical and space, chemical, civil, electrical, engineering physics, geological, industrial management, mechanical, metallurgical, petroleum and general engineering—has taught its own version of the basic engineering sciences.

The core will eliminate this wasteful overlapping of near-identical courses. Consolidation of the elementary courses will make additional classroom and laboratory space available for more advanced classes, as well as the faculty to staff them.

The fundamental courses in past years have shown a tendency to degenerate into somewhat of a disagreeable task for both students and instructors—a requirement to be gotten out of the way before going on to more interesting work. This situation is also due for a change. Most textbooks, even

for the basic subjects, are slanted toward a particular engineering field. Instructors for O.U.'s new core classes will have to prepare their own written material and will be freer to adopt new approaches to the old, standard subject matter.

About 75 per cent of the total 127 to 155 credit hours required for a degree will be made up of these basic courses with the remaining 25 per cent within the various engineering schools. The specialized 25 per cent is in one case a reduction of 50 per cent.

From 76 to 90 credit hours of the new core will be a block of subjects in mathematics, chemistry, physics, English, engineering, engineering drawing and speech. Also within the core will be 25 hours of electives including 6 hours of history or government, 10 of social studies, 3 of advanced chemistry or physics and 6 of engineering analysis or mathematics beyond calculus.

The new curriculum will not add to the total hours for graduation, nor will it necessarily increase the time required to complete class work. However, under the new system, student engineers may be able to change schools within the college as late as the end of the third year without serious loss of credit hours. Freshman and sophomore years will be devoted entirely to the core classes with the first taste of specialized training delayed until the junior year.

THE reduction in hours spent within the schools is expected to strengthen rather than weaken the individual school. The committee, which spent two years preparing the new program, expects a definite upgrading of the advanced courses, since the students in those courses will have a much better background in engineering than those of previous years.

Careful attention was given to maintaining accreditation in each of the schools while arranging the curriculum change. Even with the shift in course hours, each school remains fully accredited by the Council for Professional Development, the accrediting agency of the American Society for Engineering Education.

The emphasis on basic engineering on the undergraduate level is also expected to stimulate the continued growth of the graduate engineering program. By September about 200 engineers will be studying for the master's degree, which is offered in each of the engineering schools. Originally the only doctorate offered by the college was in chemical engineering, which in the last four years has grown from 0 to 22 candidates. Two years ago a doctoral degree in the engineering sciences, with no departmental affiliation and encompassing all the other engineering areas, was established. Seventy-five candidates are anticipated for that program next semester.

THE faculty question will be further simplified in the area of recruiting. New teachers will be sought on the basis of their teaching strength in a particular engineering science fundamental to all schools rather than on capabilities in a single specialized school, making the number of potential applicants significantly larger. In addition, the brighter young instructors are more likely to be attracted to a college that has evidenced a forward-looking academic program.

O.U. engineering is already beginning to receive recognition as such a college from other colleges and from industry—and only a few months after announcement of the core curriculum which goes into effect in the fall semester. The new instructional program is believed to be the first such sweeping revision in the nation, but one which is expected to be followed.

Industrial leaders, who must be impressed enough with O.U.'s engineering education to hire its graduates, have responded enthusiastically to the change in emphasis. The general trend in industry has been toward on-the-job training programs for the engineering graduate with a stronger background in basic principles and fewer of the techniques. Industry has found that this sort of engineer—the type O.U. intends to continue providing—is a better pupil for the special skills accompanying each job than one whose education is too thinly spread over a more diversified area.