

ENGINEERING DEPARTMENT

E7-111

(323) 265-8858

Engineers and technologists have shaped civilization and will continue to do so. They are trained to be problem solvers, with subjective and critical minds that work on solutions to make our world a better place. The products they create, design, and implement enhance and improve our quality of life. Almost every product invented and built has been touched by the minds and hands of engineers and technologists. Engineering requires an inquisitive mind, a love of details, and the ability to conceive a product before it is built. To become an engineer, one must master the sciences and mathematics which are the foundations of engineering. They must be trained in communication skills, the art of teamwork, and consensus building. Engineers mainly work together to meet the challenges of the design process and the rewards of accomplishment as a group.

It is exciting to realize that due to the work of engineers, computer technology has advanced so rapidly that the technical world landscape has been changed forever. We have become a people that cannot exist without our computers. Fifty years ago, engineers used their slide rules to perform their necessary computations. Then came the mainframe computers and handheld calculators - advancing to our present state of personal computers. What does the future hold for us? Engineers are working on that question. The field of engineering is becoming broader than ever with new fields in bio-medical, computer science, communication, and other areas developing each year. This brings tremendous opportunity to the engineering student and opens many new and exciting doors. The demand for engineering will always be high and historically students receive very generous entry salaries upon graduation. However, one should not seek financial rewards above the love of the work.

One area of growth in engineering is the number of women engineering students. The Society of Women Engineers is an active group which female engineering students are encouraged to join. The Society of Hispanic Professional Engineers has a student chapter at ELAC and is active with many functions, teamwork, and friendships being developed on an ongoing basis. The Department is aligned with the MESA (Mathematics, Engineering, and Science Achievement) Center which offers tutoring services and houses an engineering library. While attending ELAC, the engineering student has the opportunity to earn a certificate and/or an Associate in Science degree. It is a great place to start your engineering and technology career.

SUBJECTS

- **Civil Engineering**
- **Electrical Engineering**
- **Electrical Engineering Technology**
- **Engineering Support**
- **General Engineering**
- **Manufacturing and Industrial Technology**

FACULTY

- Ramirez, Jose C. - Chair
Assistant Professor
 Khashayar, Kamyar
Assistant Professor

ADJUNCT FACULTY

- Athans, Dean P.
 Jolly, John
 Lindell, David
 Moretti, Vincent C.
 Shekerjian, Hrair P.
 Smith, Michelle
 Su, William
 Wu, Chivey

EDUCATIONAL PROGRAMS

CERTIFICATES OF ACHIEVEMENT:

- **Computer-Aided Drafting (CAD)**
- **Computer-Aided Drafting/Design (CADD)**

ASSOCIATE DEGREE PROGRAMS:

- **Computer-Aided Drafting (CAD)**
- **Computer-Aided Drafting/Design(CADD)**

TRANSFER CURRICULUM:

- **Engineering**

CERTIFICATES OF ACHIEVEMENT

COMPUTER-AIDED DRAFTING (CAD)

The Engineering and Technology Department offers a Computer-Aided Drafting program leading to a Certificate of Achievement that may enhance employment or promotion within industry. Many students take advantage of the value of this certificate by working part-time, providing funding for their education. Successful completion of the required program with a grade-point average of 2.5 or better entitles the student to apply for, and upon approval of the department, be awarded a certificate in Computer-Aided Drafting (CAD). The program may also lead to an Associate in Science degree upon completion of additional courses in general education graduation requirements to total 60 units. The CAD certificate prepares the student for an entry-level drafting position in industry. Specialization during the coursework is possible in such fields as civil, electrical, mechanical, and structural drafting.

| SUBJECT & NO. | COURSE | UNITS |
|---------------------------|---|-----------|
| ENG GEN 101 | Introduction to Science, Engineering and Technology | .2 |
| ENG GEN 102 | Engineering Problem Solving. | .2 |
| ENG GEN 110 | Engineering Graphics | .3 |
| ENG GEN 111 | Introduction to Engineering Drafting | .3 |
| ENG GEN 211 | CADD for Engineers I | .3 |
| ENG GEN 212 | CADD for Engineers II. | .3 |
| MATH 115 | Elementary Algebra | .3 |
| OR | | |
| MATH | <i>Any higher-level course</i> | |
| ENGLISH | <i>Any one of English 61, 62, 63, 65, 101</i> | .3 |
| <i>Subtotal</i> | | 22 |

ENGINEERING

Restricted Elective Courses:

| | |
|-----------------------------|---|
| ENG CIV | 121 & 122, 221 & 222 |
| ENG ELC | 220 |
| EET | 120 |
| ENG GEN | 112, 121, 131, 151, 231, 241 and 242, 272 |
| <i>Subtotal</i> 9 | |
| <i>Total</i> 31 | |

COMPUTER-AIDED DRAFTING/DESIGN (CADD)

The Engineering and Technology Department offers a Computer-Aided Drafting and Design program leading to a Certificate of Achievement that may enhance employment or promotion within industry. Many students take advantage of the value of this certificate by working part-time providing funding for their education. Successful completion of the required program with a grade-point average of 2.5 or better entitles the student to apply for, and upon approval of the department, be awarded a certificate in Computer-Aided Drafting/Design (CADD). The program may also lead to an Associate in Science degree upon completion of additional courses in general education graduation requirements to total 60 units. The CADD certificate prepares the student for advanced employment in the field of design drafting in industry. Specialization during the coursework is possible in such fields as civil, electrical, mechanical, and structural drafting.

| SUBJECT & NO. COURSE | UNITS |
|----------------------|---|
| ENG GEN 101 | Introduction to Science, Engineering and Technology 2 |
| ENG GEN 102 | Engineering Problem Solving. 2 |
| ENG GEN 110 | Engineering Graphics 3 |
| ENG GEN 111 | Introduction to Engineering Drafting . 3 |
| ENG GEN 121 | Programming for Engineers 3 |
| ENG GEN 131 | Statics 3 |
| ENG GEN 151 | Materials of Engineering |

OR

| | |
|-------------|---|
| ENG GEN 161 | Processing of Engineering Materials . . 3 |
| ENG GEN 211 | CADD for Engineers I 3 |
| ENG GEN 212 | CADD for Engineers II. 3 |
| MATH 115 | Elementary Algebra 3 |

OR

| | |
|-----------|---|
| MATH | <i>Any higher-level course</i> |
| ENGLISH | Any one of English 61, 62, 63, 65, 101 .3 |
| PHYSICS 1 | Mechanics of Solids |

OR

| | |
|-----------|-------------------|
| PHYSICS 6 | General Physics I |
|-----------|-------------------|

OR

| | |
|------------------------------|----------------------------------|
| PHYSICS 11 | Introductory Physics 4 |
| <i>Subtotal</i> 35 | |

Restricted Elective Courses:

| | |
|-----------------------------|------------------------------------|
| ENG CIV | 121 & 122, 221 & 222 |
| ENG ELC | 220 |
| EET | 120 |
| ENG GEN | 121, 131, 151, 231, 241 & 242, 272 |
| <i>Subtotal</i> 8 | |
| <i>Total</i> 43 | |

ASSOCIATE DEGREE PROGRAMS

COMPUTER-AIDED DRAFTING (CAD)**Associate in Science Degree**

The Engineering and Technology Department offers an Associate in Science Degree in Computer-Aided Drafting. This degree may enhance employment or promotion within industry. Many students take advantage of the value of this degree by working part-time providing funding for their education at the university. In addition to the degree, the student may apply for, and be awarded, a certificate in Computer-Aided Drafting (CAD) upon successful completion of the program (with at least a 2.5 grade-point average) and approval of the department. The program requires that students complete general education requirements in five broad areas, as well as courses for the Computer-Aided Drafting major. This A.S. degree prepares the student for an entry-level drafting position in industry, as well as providing a basis for lifelong learning. Specialization during the coursework is possible in such fields as civil, electrical, mechanical, and structural drafting.

| SUBJECT & NO. COURSE | UNITS |
|------------------------------|---|
| ENG GEN 101 | Introduction to Science, Engineering and Technology 2 |
| ENG GEN 102 | Engineering Problem Solving 2 |
| ENG GEN 110 | Engineering Graphics 3 |
| ENG GEN 111 | Introduction to Engineering Drafting . 3 |
| ENG GEN 211 | CADD for Engineers I 3 |
| ENG GEN 212 | CADD for Engineers II. 3 |
| <i>Subtotal</i> 16 | |

Restricted Elective Courses:

| | |
|-----------------------------|--------------------------------------|
| ENG CIV | 121 & 122, 221 & 222 |
| ENG ELC | 220 |
| EET | 120 |
| ENG GEN | 121, 131, 151, 231, 241 and 242, 272 |
| <i>Subtotal</i> 8 | |

General Education Courses Plan B

| | |
|------------------------------|--|
| Area A | Natural Sciences 3 |
| Area B | Social and Behavioral Sciences 3 |
| Area C | Humanities 3 |
| Area D | Language and Rationality 6 |
| Area E | Health and Physical Education. 3 |
| <i>Subtotal</i> 18 | |

FREE ELECTIVES: **18**

Total 60

COMPUTER-AIDED DRAFTING/DESIGN (CADD)**Associate in Science Degree**

The Engineering and Technology Department offers an Associate in Science Degree in Computer-Aided Drafting and Design. This degree may enhance employment or promotion within industry. Many students take advantage of the value of this degree by working part-time providing funding for their education at the university. In addition to the degree, the student may apply for, and be awarded, a certificate in Computer-Aided Drafting/Design (CADD) upon successful completion of the program (with at least a 2.5 grade-point average) and approval of the department.