

Engineering (ENGR)

Contact the Physics and Engineering Department for further information.
(760) 744-1150, ext. 2505
Office: NS-355B

Associate in Arts Degrees -

AA Degree requirements are listed in Section 6 (green pages).

- Engineering

PROGRAMS OF STUDY

Engineering

Provides the background to begin upper division coursework and will prepare the student for entry level jobs that require a knowledge of engineering and engineering related topics. The highly sequential nature of the engineering curriculum necessitates completion of lower division requirements before being admitted into upper division courses.

Engineering students are urged to give priority to the completion of major field requirements over the completion of general education requirements. Engineering lower division requirements are not the same for different universities. These institutions recommend that their particular lower division requirements be completed before transfer. Students should seek early assistance in planning their specific program from the Counseling Department, the Transfer Center, or the Physics/Engineering Department.

A.A. DEGREE MAJOR

Program Requirements (Select a minimum of 11 units)	Units
ARCH/DT 125 or AutoCAD Introduction to Computer Aided Drafting	
DT 128 SolidWorks Introduction to 3D Design and Presentation	3
ENGR 126 Intro Electric/Computer Engineering	4
ENGR 210 Electrical Network Analysis	3
ENGR 210L Electrical Network Analysis Laboratory	1
ENGR 231 Engineering Measurement Analysis	3
ENGR 235 Engineering Mechanics Statics	3
ENGR 236 Engineering Mechanics Dynamics	3
ENGR 245 Properties of Materials	4

Electives (Select a minimum of 30 units)

Note that mathematics courses are often prerequisite to engineering and physics courses.

MATH 140*	Calculus/Analytic Geometry, First Course	5
MATH 141	Calculus/Analytic Geometry, Second Course	4
MATH 205	Calculus/Analytic Geometry, Third Course	4
MATH 206	Calculus with Differential Equations	4
PHYS 230*	Principles of Physics	5
PHYS 231	Principles of Physics	5
PHYS 232	Principles of Physics	4
CHEM 110*	General Chemistry	3
CHEM 115*	General Chemistry	3
CHEM 110L*	General Chemistry Laboratory	2
CHEM 115L*	General Chemistry Laboratory	2

MINIMUM TOTAL UNITS 41

Recommended Elective: ENGR 100

* Courses marked with an asterisk may be used to fulfill General Education requirements.

ENG 100, ENG 202, and BIOL 100 are highly recommended as electives to fulfill General Education requirements.

COURSE OFFERINGS

ENGR 100 Introduction to Engineering (1)
1 hour lecture
Transfer acceptability: CSU; UC

An overview of the engineering profession including not only the different engineering fields but also the specialized demands and rewards of each. It will afford the opportunity for community building among the students, who usually are otherwise isolated in the community college milieu. Group projects in the course will encourage socialization and human relations training in what is often perceived as a dry and dull profession. Academic success strategies will be explained and practiced; ethical concepts will be examined through case histories and practical applications.

ENGR 126 Introduction to Electrical and Computer Engineering (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in MATH 140

Transfer acceptability: CSU

Introductory concepts covering a broad range of topics in Electrical and Computer Engineering presented in an integrated approach at a hands-on level. Students work in small teams to analyze, build, and test a small programmable robot for competition at the end of the semester. Provides basic understanding and skills for students to later build their theoretical understanding in more advanced physics and engineering courses.

ENGR 130 Fundamentals of Electric Circuits (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in MATH 140

Transfer acceptability: CSU

Fundamentals of DC and AC: Ohm's Law, Kirchoff's Laws, Thevenin's Theorem, magnetism, transformers, capacitance, inductance, and tuned circuits. Laboratory covers application of theory, use of test equipment, circuit design, construction techniques, and troubleshooting carried out through traditional workstation procedures and by computer simulation programs.

ENGR 131 Introduction to Electronics (4)

3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in ENGR 126 and/or ENGR 130

Transfer acceptability: CSU

Fundamentals of discrete semiconductors, linear and non-linear, analog: diodes, power supplies, transistors, and amplifiers. Fundamentals of linear and non-linear, analog, integrated circuits: thyristors, frequency effects, operational amplifiers, feedback, non-linear OPAMPS, oscillators, power supplies, and communication circuits. Laboratory covers application of theory, use of test equipment, circuit design, construction techniques, and troubleshooting.

ENGR 135 Integrated Electronic Circuits (4.5)

3 hours lecture - 3 hours lecture/laboratory

Prerequisite: A minimum grade of 'C' in ENGR 130

Transfer acceptability: CSU

Fundamentals of linear and non linear, analog, integrated circuits: thyristors, frequency effects, operational amplifiers, feedback, non-linear OPAMPS, oscillators, power supplies, and communication circuits. Laboratory covers application of theory, use of test equipment, circuit design, construction techniques, and troubleshooting.

ENGR 197 Engineering Topics (.5-5)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

Note: May be taken 4 times

Transfer acceptability: CSU

Topics in Engineering. See Class Schedule for specific topic offered. Course title will designate subject covered.

ENGR 203 Digital/Computer Electronics (4.5)

3 hours lecture - 3 hours lecture/laboratory

Recommended preparation: ENGR 130

Transfer acceptability: CSU

Fundamental logic functions of AND'ing, OR'ing, and inverting will be studied in various combinational and sequential logic circuits such as: encoders, decoders, multiplexers, demultiplexers, flip-flops, registers, counters, clocks, memories, and microprocessors. The architecture and programming of the digital microproces-

sor will be emphasized. The primary components required for proper operation of a PC (personal computer) will be addressed. Designing, testing, and troubleshooting of computers and special projects.

ENGR 210 Electrical Network Analysis (3) 3 hours lecture

Prerequisite: A minimum grade of 'C' in ENGR 210L and PHYS 231, or concurrent enrollment in ENGR 210L and PHYS 231

Transfer acceptability: CSU; UC

Circuit analysis by reduction methods, source transformations, loop and nodal analysis, OPAMP model for networks, transient analysis, alternating current circuits, impedance, power and phasor diagrams.

ENGR 210L Electrical Network Analysis Laboratory (1) 3 hours laboratory

Prerequisite: A minimum grade of 'C' in ENGR 210, or concurrent enrollment in ENGR 210

Transfer acceptability: CSU; UC

Laboratory exercises of circuit analysis by reduction methods, source transformations, loop and nodal analysis, OPAMP model for networks, transient analysis, alternating current circuits, impedance, power and phasor diagrams.

ENGR 231 Engineering Measurement Analysis (3) 2 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in MATH 140

Transfer acceptability: CSU; UC

Analysis and treatment of engineering data. Probability, statistics, error theory, correlation and regression analysis, dimensional analysis, data processing, and preparation of technical reports. Laboratory experiments in hydraulic flow, surveying, heat transfer, and static and dynamic test systems.

ENGR 235 Engineering Mechanics – Statics (3) 3 hours lecture

Prerequisite: A minimum grade of 'C' in PHYS 230 and MATH 140

Transfer acceptability: CSU; UC

Force systems and equilibrium conditions. Engineering problems covering structures, machines, distributed forces, and friction. Graphical and algebraic solutions, and vectorial analysis.

ENGR 236 Engineering Mechanics – Dynamics (3) 3 hours lecture

Prerequisite: A minimum grade of 'C' in ENGR 235

Transfer acceptability: CSU; UC

Fundamental principles of bodies in motion; kinetics and kinematics of particles; system of particles; central force; work and energy; linear and angular momentum; moments and products of inertia; vibrations and time response; engineering applications.

ENGR 245 Properties of Materials (4) 3 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in CHEM 110 and 110L

Transfer acceptability: CSU; UC

Physical properties of engineering materials. Atomic, molecular, and crystal lattice characteristics. Relations between these and mechanical, thermal, electrical, corrosion, and radiation properties. Metallic, ceramic, polymer, and agglomerate materials. Selection, treatment, and use of materials.

ENGR 295 Directed Study in Engineering (1, 2, 3) 3, 6, or 9 hours laboratory

Prerequisite: Approval of project or research by department chairperson

Note: May be taken 4 times

Transfer acceptability: CSU

Designed for the student who has demonstrated a proficiency in engineering subjects and the initiative to work independently on a particular sustained project which does not fit into the context of regularly scheduled classes.

English (ENG)

Contact the English Department for further information.

(760) 744-1150, ext. 2392

Office: P-2

Associate in Arts Degrees -

AA Degree requirements are listed in Section 6 (green pages).

• English

PROGRAM OF STUDY

English

Focuses on the English language and literatures in English. Provides the background for students to succeed in diverse fields, such as advertising and marketing, teaching, journalism and telecommunications, law, technical writing, and business administration. Prepares students for upper division course work in English. For specific transfer requirements, the student should consult an academic counselor or the catalog for the school to which he or she wishes to transfer.

AA DEGREE MAJOR

Program Requirements		Units
ENG 205 and	Introduction to Literature	3
ENG 202 or	Critical Thinking /Composition	
ENG 203	Critical Thinking/Composition Through Literature	4

Literature Surveys (Select 9 Units) Of these nine units, students must take either a two-semester survey of British literature or a semester each of British and United States literature.

ENG 210	Survey of British Literature I	3
ENG 211	Survey of British Literature II	3
ENG 220	Survey of World Literature I	3
ENG 221	Survey of World Literature II	3
ENG 225	Literature of the United States I	3
ENG 226	Literature of the United States II	3

Elective Courses (Select 2 courses) Any of the above courses not previously taken or pick from the following:

ENG 135	Introduction to Creative Writing	4
ENG 136	Intermediate Creative Writing	4
ENG 137	The Literary Magazine: History/Production	4
ENG 215	Introduction to the British Novel	3
ENG 230	Introduction to the American Novel	3
ENG 240	Introduction to Classical Mythology	3
ENG 245	Survey of Biblical Literature	3
ENG 250	Introduction to Shakespeare	3
ENG 260	Literature Through Film	3
ENG 265	Science Fiction	3
ENG 270	Popular Literature	3
ENG 280	Women and Literature	3

TOTAL UNITS

22 - 24

COURSE OFFERINGS

Any student wishing to earn an A.A. degree must complete ENG 100 with a grade of 'C' or better. The student must participate in the English placement process before enrolling in any English or English as a Second Language composition class except ENG 10 and 150. The eligibility will indicate whether the student may enroll in ENG 50 or ENG 100. Students whose first language is not English may find, however, that ESL instruction meets their needs better than immediate enrollment in ENG 10 or 50. Such students may take one or more ESL classes (ESL 101, 102, 103) instead; then by again participating in the English placement process, they may qualify for ENG 50 or ENG 100. Non resident international students may be required to take one or more classes of English as a Second Language. Students should sign up for English assessment as soon as possible because some students may take three or more semesters to finish the competence in English. Please contact the Counseling Department for the English assessment schedule.