

Electronics Assembler

This certificate is intended to prepare students for immediate employment in the electronics assembly industry as an electronics assembler.

CERTIFICATE OF PROFICIENCY

Required Courses		Units
ECHT 100	Electronic Components and Circuits	4.5
ECHT 162	Printed Circuit Board Assembly	3
TOTAL UNITS		7.5

Recommended Electives: ECHT 20; 160; MATH 15; READ 30, 47, 50; ESL 98.1

COURSE OFFERINGS

Courses numbered under 50 are non-degree courses. Courses numbered under 100 are not intended for transfer credit.

ECHT 20 Supplemental Instruction for Electronics and Computer Hardware Technology (1)

2 hours lecture/laboratory

Note: May be taken 4 times

Instructor coordinated informal peer assisted study sessions in which students compare notes, discuss readings, review homework, perform laboratory experiments, and work on projects that are associated with any ECHT course. Instructor will provide mini-lessons in direct response to small group assessed needs.

ECHT 100 Electronic Components and Circuits (4.5)

3 hours lecture-3 hours lecture/laboratory

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.

ECHT 101 Discrete Electronic Circuits (4.5)

3 hours lecture-3 hours lecture/laboratory

Prerequisite: ECHT 100

Transfer acceptability: CSU

Fundamentals of discrete semiconductors, linear and non-linear, analog: diodes, power supplies, transistors, and amplifiers. Laboratory covers application of theory, use of test equipment, circuit design, reconstruction techniques, and troubleshooting carried out through traditional workstation procedures and by computer simulation programs.

ECHT 102 Integrated Electronic Circuits (4.5)

3 hours lecture-3 hours lecture/laboratory

Prerequisite: ECHT 101

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.

ECHT 126 Introduction to Electrical and Computer Engineering (4)

3 hours lecture-3 hours laboratory

Prerequisite: Math 140

Note: Cross listed as ENGR 126

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.

ECHT 160 Electronics for Everyone (3)

3 hours lecture

Transfer acceptability: CSU

Overview course designed and taught so anyone can understand the basic concepts and applications of electronics. Topics covered are direct and alternating current, Ohm's Law, magnetism, transformers, capacitance, inductance, tuned circuits, diodes, transistors, amplifiers, oscillators, power supplies and computers.

ECHT 162 Electronic Printed Circuit Board Assembly and Equipment Troubleshooting (3)

2 hours lecture-2 hours lecture/laboratory

Note: May be taken 4 times

Transfer acceptability: CSU

Fundamentals of printed circuit board assembly: workmanship standards and forms, surface mount and through hole technology, and solder training. Hands-on training on the repair and troubleshooting of electronic equipment.

ECHT 197 Electronics and Computer Hardware Technology Topics (.5-3)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, 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 Electronics and Computer Hardware Technology. See Class Schedule for specific topic offered. Course title will designate subject covered.

ECHT 203 Digital/Computer Electronics (4.5)

3 hours lecture-3 hours lecture/laboratory

Recommended preparation: ECHT 100

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 microprocessor 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.

ECHT 204 Microcomputer Architecture and Interfacing (4.5)

3 hours lecture-3 hours lecture/laboratory

Prerequisite: ECHT 203

Transfer acceptability: CSU

Advanced computer electronic concepts and applications using digital circuits and systems. Interfacing of microprocessors and PC's (personal computers) to peripherals. Upgrading of desktop PC's. Designing, testing, and troubleshooting of computer systems and special projects.

ECHT 205 Telecommunication Systems (4.5)

3 hours lecture-3 hours lecture/laboratory

Recommended preparation: ECHT 102 and 203

Transfer acceptability: CSU

Review of basic electronic analog and digital principles. Communication of information using analog/digital electronic transmission lines, antennas, testing and troubleshooting, as they relate to RADIO, RADAR, TV, Computers, Modems, Networks (Internet, World Wide Web [WWW]), Satellites, Cellular phones, and Fiber optic systems, will be addressed.

Emergency Medical Education (EME)

Contact the Emergency Medical Education Department for further information, (760) 744-1150, ext. 8150

Associate in Arts degree requirements, Certificate of Achievement requirements, and Certificate of Proficiency requirements are listed in Section 6 (green pages) of the catalog.

College Credit for Certified Paramedics

This policy is for granting college credit for certified paramedics toward an Associate in Arts degree in Emergency Medical Technician Paramedic. In order for an already certified Paramedic to be granted college units for his/her certification, the following requirements must be met:

1. The EMT P must be currently certified in California as an EMT P.
2. The EMT P must be currently registered at Palomar College.

EMT-P Credit

1. The student may receive a maximum of 31 units for his/her EMT P training, which is equal to the number of units given at Palomar College for the EMT P courses.
2. The student may receive a maximum of 6 units for his/her former EMT I training, which is equal to the number of units given at Palomar College for the EMT I courses.
3. The student may not receive duplicate credit for any other EMT I or EMT P courses.

Degree Requirements

The Associate in Arts degree in Emergency Medical Technician Paramedic requires 60 units. The following criteria must be met:

1. 30 units must be issued by an accredited college on a letter grade basis, of which 12 units must be completed at Palomar College.
2. All other general education and competency requirements for the Associate in Arts degree as provided in the college catalog must be met.
3. When the student has completed the general education and competency requirements for the Associate in Arts degree and the 12 units required to be completed at Palomar College, the student will be awarded unit credit for education/training received in becoming an EMT P.

Paramedics interested in taking advantage of this policy should contact the Emergency Medical Education Department at (760) 744 1150, ext. 8150. Paramedics will be required to provide a copy of his or her paramedic license and course completion certificate for verification of paramedic licensure. Paramedics must also send prior college transcripts to the college and make an appointment with the Counseling Department at (760) 744-1150, ext. 2179 for evaluation of general education requirements.

PROGRAMS OF STUDY**Emergency Medical Technician Basic**

The Emergency Medical Technician Program prepares the student in all elements of pre-hospital Basic Life Support. Upon successful completion of the program, the student is eligible to take the San Diego County EMT-Basic certification exam, which is the National Registry Emergency Medical Technician Basic exam.

Required Courses	Units
EME 100/PE 104 Advanced First Aid	3
EME 106 EMT Basic (Lecture)	6
EME 106L EMT Basic Skills (Laboratory)	1

Paramedic Training

The Paramedic Program prepares the student in all elements of prehospital advanced life support. Upon successful completion of the program, the student is eligible to take the State of California EMT P certification exam, which is the National Registry Emergency Medical Technician-Paramedic Exam.

Admission to the program is by special application.

To be eligible for consideration, the applicant must:

1. Have six months full-time pre-hospital experience as an EMT Basic.
2. Be eligible for admission to Palomar College.
3. Meet academic requirements outlined in the Paramedic Program brochure produced by the EME Program.

AND

4. Have completed ZOO 145 with a grade of 'C' or better and EME 175 and EME 175L with a "B" or better.

Prerequisite Courses

Prerequisite Courses	Units
ZOO 145 Intro to Anatomy/Physiology	3
EME 106 EMT Basic (Lecture)	6
EME 106L EMT Basic Skills (Laboratory)	1
EME 175 Paramedic Preparation (Lecture)	2
EME 175L Paramedic Preparation Skills (Laboratory)	1

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Students must achieve a minimum score of 80% in each of the required courses in order to continue in the program.

Program Requirements

Program Requirements	Units
EME 206 Intro/Paramedic Training (Lecture)	4
EME 206L Intro/Paramedic Training (Laboratory)	1
EME 207 Paramedic Medical Training (Lecture)	10
EME 207L Paramedic Medical Skills (Lab)	1.5
EME 208 Paramedic Trauma Training (Lecture)	4.5
EME 208L Trauma Skills (Laboratory)	.5
EME 209 Paramedic Obstetrical/Pediatric Training (Lecture)	2.5
EME 209L Paramedic Obstetrical/Pediatric Skills (Lab)	.5
EME 210 Hospital Clinical Experience	4
EME 211 Clinical Integration I	1.5
EME 212 Clinical Integration II	1.5
EME 215 Field Internship	9

TOTAL UNITS 40.5

COURSE OFFERINGS

Courses numbered under 100 are not intended for transfer credit.

EME 55 CPR for Health Care Providers (.5)

½ hour lecture

Note: Credit/No Credit grading only; may be taken 4 times

Basic cardio pulmonary resuscitation (CPR) course for one person CPR, two person CPR, child CPR, infant CPR, obstructed airway and mouth-to-mask ventilation based on American Heart Association standards.

EME 100 Advanced First Aid (3)

3 hours lecture

Note: Cross listed as PE 104

Transfer acceptability: CSU; UC

The study and application of emergency medical skills and procedures, including basic anatomy and physiology, terminology, and prevention of disease transmission, for CPR certification from the American Heart Association and/or the American Red Cross.

EME 106 Emergency Medical Technician Basic (Lecture) (6)

6 hours lecture

Prerequisite: Current BLS course CPR card and Emergency Response or equivalent card. Proof of meeting the prerequisite will be required at the first class meeting.

Corequisite: EME 106L

Note: May not be taken for Credit/No Credit grading; may be taken 2 times

The study of EMT theory and knowledge required for identification and treatment of pre-hospital emergencies. The course prepares the student for National Registry, California, and San Diego County EMT-Basic certification.

EME 106L Emergency Medical Technician Basic Skills (Laboratory) (1)

3 hours laboratory

Prerequisite: Current CPR for Health Care Providers CPR and Emergency Response card.

Corequisite: EME 106

Note: Credit/No Credit grading only; may be taken 2 times

Application of skills required for treatment of pre-hospital emergencies. This course prepares the student for National Registry, California, and San Diego County EMT-Basic certification. Student is required to complete 16 hours supervised ambulance and emergency department observation.

EME 116 Emergency Medical Technician Refresher Course (1.5)
1 ½ hour lecture

Prerequisite: Possess a valid current EMT-B, EMT-II or EMT-P certificate, or have possessed one within the last four years.

Note: Credit/No Credit grading only

Review of basic EMT material and update of new material and techniques. Meets State of California requirements for EMT-B recertification continuing education units. An Optional NREMT-B Recertification Exam available the day after the class ends.

EME 175 Paramedic Preparation (2)
2 hours lecture

Prerequisite: Current EMT with a minimum of 3 months full time pre-hospital experience.

Corequisite: EME 175L

An overview of paramedic-level assessment skills combined with appropriate paramedic-level anatomy, physiology, and treatment relevant to the disease processes studied.

EME 175L Paramedic Preparation Skills (Laboratory) (1)
3 hours laboratory

Prerequisite: Current EMT with a minimum of 3 months full time pre-hospital experience

Corequisite: EME 175

Note: Credit/No Credit grading only

Performance of EMT skills combined with appropriate paramedic-level anatomy, physiology and treatment relevant to the disease processes studied.

EME 196 Special Problems in Field Internship (3,3.5,4,4.5,5)
9, 10.5, 12, 13.5, or 15 hours laboratory

Corequisite: EME 210 or EME 215

Application of skills and knowledge necessary for student to successfully complete either the Clinical or Field Internship of Paramedic Training. This is for a student who needs to be extended up to 10 shifts to allow fulfillment of EME 210 or 215 course obligations and requires an individual student specific contract.

**EME 197A Emergency Medical Education Workshop:
Emergency Medical Technician-Paramedic (.5-6)**

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

Note: May be taken 4 times

Workshops to provide upgrading of knowledge and skills relative to paramedics. Will provide paramedic continuing education hours for classroom time. See Class Schedule for specific topic covered. Course title will designate subject covered.

**EME 197B Emergency Medical Education Workshop:
Emergency Medical Technician-Basic (.5-6)**

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

Note: May be taken 4 times

Workshops to provide upgrading of knowledge and skills relative to EMT's. Will provide EMT continuing education hours for classroom time as indicated by topic. See Class Schedule for specific topic covered. Course title will designate subject covered.

**EME 197E Emergency Medical Education Workshop:
General (.5-6)**

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

Note: May be taken 4 times

Innovative and creative aspects updating Emergency Medical Education profes-

sions. See Class Schedule for specific topic covered. Course title will designate subject covered.

EME 200 Advanced Cardiac Life Support (1)
1 hour lecture

Prerequisite: Current CPR for Health Care Providers Certificate or "BLS" CPR card and must be an M.D., R.N. or EMT-P

Note: Credit/No Credit grading only; may be taken 4 times

Advanced Cardiac Life Support knowledge and skills necessary to provide the appropriate early treatment for cardiopulmonary arrest. Based on current American Heart Association guidelines.

EME 201 Pediatric Advanced Life Support (1)
1 hour lecture

Prerequisite: Current CPR for Health Care Providers Certificate or "BLS" CPR card and must be an M.D., R.N., or EMT-P

Note: May be taken 3 times

Pediatric Advanced Life Support knowledge and skills necessary to provide the appropriate early treatment for pediatric emergencies. Based on current American Heart Association guidelines.

EME 202 Prehospital Trauma Life Support (1)
1 hour lecture

Prerequisite: Current CPR for Health Care Providers Certificate or "BLS" CPR card and must be an M.D., R.N. or EMT-P

Note: Credit/No Credit grading only; may be taken 3 times

Knowledge and skills taught to provide prehospital trauma life support appropriate for the care of the trauma patient. National Association of Emergency Medical Technicians based course.

EME 203 Paramedic Challenge (Lecture) (2)
2 hours lecture

Prerequisite: RN, MD, PA or former Paramedic who meets State of California challenge requirements

Corequisite: EME 203L

Note: Credit/No Credit grading only; may be taken 2 times

Didactic challenge course for individuals who qualify for Paramedic Challenge per State of California Code of Regulations, Title 22. Allows the individual to attend the didactic portion of Paramedic training as needed to meet paramedic course content per individual student contract.

EME 203L Paramedic Challenge Skills (Laboratory) (.5)
1 ½ hours laboratory

Prerequisite: RN, MD, PA or former Paramedic who meets State of California challenge requirements

Corequisite: EME 203

Note: Credit/No Credit grading only; may be taken 2 times

Application of skills necessary for challenge course for individuals who qualify for Paramedic Challenge per State of California Code of Regulations, Title 22. Allows the individual to attend the skills portion of Paramedic Training as needed to meet paramedic course content per individual student contract.

EME 206 Introduction to Paramedic Training (Lecture) (4)
4 hours lecture

Prerequisite: Admission into Paramedic program

Corequisite: EME 206L

Note: May be taken 2 times

Introduction to Paramedic training which meets the requirements of the National Standard Curriculum for Paramedic Training.

**EME 206L Introduction to Paramedic Training
(Laboratory) (1)**

3 hours laboratory

Prerequisite: Admission into Paramedic program

Corequisite: EME 206

Note: Credit/No Credit grading only; may be taken 2 times

Application of skills used in the Introduction to Paramedic Training which meets the requirements of the National Standard Curriculum for Paramedic Training.

EME 207 Paramedic Medical Training (Lecture) (10)

10 hours lecture

Prerequisite: Admission into Paramedic program**Corequisite:** EME 207L and EME 211**Note:** May be taken 2 times

The study of medical diseases for Paramedic training which meets the requirements of the National Standard Curriculum for Paramedic Training. Includes ACLS training and certification.

EME 207L Paramedic Medical Skills (Laboratory) (1.5)

4½ hours laboratory

Prerequisite: Admission into Paramedic program**Corequisite:** EME 207**Note:** Credit/No Credit grading only; may be taken 2 times

Application of skills necessary for the medical portion of Paramedic Training which meets the requirements of the National Standard Curriculum for Paramedic Training.

EME 208 Paramedic Trauma Training (Lecture) (4.5)

4½ hours lecture

Prerequisite: Admission into Paramedic program**Corequisite:** EME 208L and EME 212**Note:** May be taken 2 times

The study of traumatic emergencies for Paramedic training which meets the requirements of the National Standard Curriculum for Paramedic Training. Includes Pre-hospital Trauma Life Support training and certification.

EME 208L Trauma Skills (Laboratory) (.5)

1½ hours laboratory

Prerequisite: Admission into Paramedic program**Corequisite:** EME 208**Note:** Credit/No Credit grading only; may be taken 2 times

Application of skills necessary for trauma class of Paramedic training which meets the requirements of the National Standard Curriculum for Paramedic Training. Includes Pre-hospital Trauma Life Support training and certification.

EME 209 Paramedic Obstetrical and Pediatric Training (Lecture) (2.5)

2½ hours lecture

Prerequisite: Admission into Paramedic program**Corequisite:** EME 209L and EME 212**Note:** May be taken 2 times

The study of Obstetrical and Pediatric emergencies for Paramedic training which meets the requirements of the National Standard Curriculum for Paramedic Training. Includes Pediatric Education for Pre-hospital Professionals.

EME 209L Paramedic Obstetrical and Pediatric Skills (Laboratory) (.5)

1½ hours laboratory

Prerequisite: Admission into Paramedic program**Corequisite:** EME 209**Note:** Credit/No Credit grading only; may be taken 2 times

Application of skills necessary for the Obstetrical and Pediatric class for Paramedic Training which meets the requirements of the National Standard Curriculum for Paramedic Training. Includes Pediatric Education for Pre-hospital Professionals.

EME 210 Hospital Clinical Experience (4)

12 hours laboratory

Prerequisite: EME 209 and EME 209L**Note:** May be taken 2 times

Supervised clinical experience in acute care areas of hospitals where knowledge of advanced life support techniques is necessary.

EME 211 Clinical Integration I (1.5)

4½ hours laboratory

Corequisite: EME 207**Note:** May be taken 2 times; Credit/No Credit grading only

Application of assessment and BLS skills necessary to be successful in Paramedic Training.

EME 212 Clinical Integration II (1.5)

4½ hours laboratory

Corequisite: EME 208 and EME 209**Note:** Credit/No Credit grading only; may be taken 2 times

Application of assessment and BLS skills necessary to be successful in Paramedic Training.

EME 215 Field Internship (9)

28 hours laboratory

Prerequisite: EME 210**Note:** May be taken 2 times

Assignment to a response vehicle with a field preceptor. Includes direct patient care responsibilities in providing advanced life support.

EME 295 Directed Study in Emergency Medical Education (1,2,3)

3, 6, or 9 hours laboratory

Prerequisite: Approval of project or research by department chairperson/director**Note:** May be taken 4 times

Independent study for students who have demonstrated skills and/or proficiencies in Emergency Medical Education subjects and have the initiative to work independently on projects or research outside the context of regularly scheduled classes. Students will work under the personal supervision of an instructor.

Engineering (ENGR)

Contact the Physics and Engineering Department for further information, (760) 744-1150, ext. 2505

Associate in Arts degree requirements, Certificate of Achievement requirements, and Certificate of Proficiency requirements are listed in Section 6 (green pages) of the catalog.

PROGRAM 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
ENGR 125	Engineering Graphics	3
ENGR/		
ECHT 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	3
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