

for analog and digital multi-layer, flexible and high-speed boards using current IPC standards. Drafting will be performed on the computer using high-end printed circuit board software.

### DT 211 Advanced Printed Circuit Board Design (3)

1½ hours lecture - 4½ hours laboratory

**Prerequisite:** A minimum grade of 'C' in DT 210

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

Advanced problems and instruction in printed circuit board design generally required for entry-level position in the electronic industry. Special emphasis will be placed on advanced applications including surface mount technology. Includes artwork and complete documentation for analog and digital multi-layer, flexible and high-speed boards using current IPC standards. Drafting will be performed on the computer using AutoCAD and PADS software.

## Earth Sciences (ES)

Contact the Earth, Space, and Aviation Sciences Department for further information.

(760) 744-1150, ext. 2512

Office: NS-110G

### COURSE OFFERINGS

#### ES 100 The Earth as a System: Case Studies of Change in Space and Time (3)

3 hours lecture

**Transfer acceptability:** CSU; UC

An overview of the fields of geology, geography, oceanography, and astronomy that approach Earth as a system. Areas of study include those related to plate tectonics, earthquakes, volcanoes, geologic time, landscape evolution, weather systems, ocean circulation, climate change, and exploration of the solar system.

#### ES 115 Natural Disasters and Environmental Hazards (3)

3 hours lecture

**Note:** Cross listed as GEOG 115

**Transfer acceptability:** CSU; UC

Examination and analysis of natural disasters and environmental hazards including earthquakes, tsunamis, volcanic activity, hurricanes, flooding, air and water pollution, and global climate change.

#### ES 195 Regional Field Studies in Earth Science (1, 2, 3)

2, 4 or 6 hours lecture/laboratory

**Note:** May be taken 4 times

**Transfer acceptability:** CSU

Extended field studies that examine Earth Science-related topics in selected regions. Emphasis is upon field observation, interpretation, and analysis of varying Earth Science phenomena including formation of landforms, natural resources, ecosystems, climate patterns, tectonic processes and human impacts.

## Economics (ECON)

Contact the Economics, History and Political Science Department for further information.

(760) 744-1150, ext. 2412

Office: P-17K

For transfer information, consult a Palomar College Counselor.

### Associate in Arts Degrees -

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

- Economics

### Certificates of Achievement -

Certificate of Achievement requirements are listed in Section 6 (green pages).

- Economics

## PROGRAM OF STUDY

### Economics

Provides lower division preparation for pursuing advanced studies in economics or prepares a complementary base for many professions and areas of interest including business administration, law, engineering, journalism, public administration, and environmental studies. Transfer students should consult the four year college or university catalog for specific requirements or see a Palomar College counselor.

### A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
ECON 101	Principles of Economics (Macro)	3
ECON 102	Principles of Economics (Micro)	3

#### Group I (Select 6 units)

ECON 110	Comparative Economic Systems	3
ECON 115	Economic History of the United States	3
ECON 295	Directed Study in Economics	3
IBUS 100	Intro to Int'l Business Management	3

#### Group II (Select 7-8 units)

MATH 110	College Algebra	4
MATH 120	Elementary Statistics	3
MATH 130	Calculus for the Social Sciences	4

#### Group III (Select 3 units)

CSIT 105	Computer Concepts and Applications	3
PHIL 115	Critical Thinking	3

**TOTAL UNITS** 22 - 23

### COURSE OFFERINGS

#### ECON 100 Basic Economics (3)

3 hours lecture

**Note:** Not intended for programs which require Principles of Economics ECON 101 and/or 102

**Transfer acceptability:** CSU; UC – no credit if taken after ECON 101 or 102

A study of the American economic system as it affects the decision making of the individual as income earner, taxpayer, and voter. Emphasis is on application of the analyses of supply and demand, productivity, wages and the labor force, the money and banking system, the role of government, and domestic and international economic issues.

#### ECON 101 Principles of Economics (Macro) (3)

3 hours lecture

**Prerequisite:** A minimum grade of 'C' in MATH 60

**Transfer acceptability:** CSU; UC

Descriptive analysis of the structure and functioning of the economy of the United States. Emphasizes national income, problems of inflation and unemployment, the role of government, specifically fiscal and monetary policies, money and banking, economic growth, and analysis of global issues.

#### ECON 102 Principles of Economics (Micro) (3)

3 hours lecture

**Prerequisite:** A minimum grade of 'C' in MATH 60

**Transfer acceptability:** CSU; UC

Analyzes decision-making of individuals and groups as it relates to economic behavior. Examines market structures and resource markets under varying degrees of competition. Investigates causes of market failures such as public goods and externalities. Includes international trade and finance.

#### ECON 110 Comparative Economic Systems (3)

3 hours lecture

**Transfer acceptability:** CSU; UC

A study of various types of economic institutions and decision making systems. Emphasis is given to the theories of capitalism, Marxian economics, and the vari-

ous types of social market economies. The theories will be applied to the study of several countries, including the former Soviet Union, Japan, China, Mexico, and a Western European country, as they compare to the United States.

**ECON 115 Economic History of the United States (3)**  
3 hours lecture

**Transfer acceptability:** CSU; UC

Development of the United States economy from the colonial period to the present. Emphasis will be on the evolution of such institutions as labor unions, business, banking, and government. Economic theory will be used to analyze historical problems.

**ECON 197 Economics Topics (.5 - 4)**

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; UC – Credit determined by UC upon review of course syllabus.

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

**ECON 295 Directed Study in Economics (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; UC – Credit determined by UC upon review of course syllabus.

Independent study for students who have demonstrated a proficiency in economics subjects and have the initiative to work independently on projects or research that does not fit into the context of regularly scheduled classes. Students will work under the personal supervision of an instructor.

## Education (ED)

Contact Reading Services for further information.

(760) 744-1150, ext. 2568

Office: RC-1

### COURSE OFFERINGS

**ED 200 Careers in Teaching (3)**

3 hours lecture

**Transfer acceptability:** CSU; UC

An overview of the teaching profession for those students contemplating a career in education. Foundations of education, critical issues in the classroom, and the history and philosophy of education are addressed. Effective and active learning, diversity in the classroom and teaching profession standards are discussed. Guided classroom observations (45 hours) of a K-12 classroom in a variety of subject areas are a requirement for this course.

## Electrician Trainee (ELTR)

Contact Occupational & Noncredit Programs for further information.

(760) 744-1150, ext. 2284

Office: AA-138

### Certificates of Achievement

Certificate of Achievement requirements are listed in Section 6 (green pages).

• Electrician Trainee

### PROGRAM OF STUDY

#### Electrician Trainee

The Electrician Trainee program prepares the student in the elements of electrical inside construction in compliance with the requirements of State of California for non-certificated electricians. Upon completion of the program, the student is eligible to take the California State Electricians Certification exam.

### CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
ELTR 101 Introduction to the Electrical Trade and Industry and Construction Safety	3.5
ELTR 102 Introduction to Electrical Theory, Basic Algebra Concepts, and the National Electric Code	3.5
ELTR 103 Advanced DC Circuit Concepts, Introduction to 3Ø Circuits, and National Electric Code Applications	3.5
ELTR 104 AC Circuit Concepts, Applied Electronics, and National Electric Code Applications	3.5
ELTR 105 Digital Logic Circuits, Conductor Characteristics and Applications, and National Electric Code	3.5
ELTR 106 Overcurrent Protection, Lighting Systems, Basic Blueprints and Specifications, and National Electric Code	3.5
ELTR 107 Grounding Systems, Advanced Blueprints and Specifications, Motor Design and Installation, and National Electric Code	3.5
ELTR 108 Motor Control Principles, Generators and Power Supplies, and National Electric Code	3.5
ELTR 109 Transformer Theory, Leadership and Management, and Test Equipment	3.5
ELTR 110 Specialty Systems	3.5
<b>TOTAL UNITS</b>	<b>35</b>

### COURSE OFFERINGS

**ELTR 101 Introduction to the Electrical Trade and Industry and Construction Safety (3.5)**

3 hours lecture- 1½ hours laboratory

**Note:** May be taken 4 times

Examines safety issues surrounding construction jobsites and installation of electrical systems. Includes OSHA 10 certification, identification of job-site hazards, safe work practices and personal protective equipment for various construction site hazards. Care for breathing and cardiac emergencies along with basic first aid and AED training for both adults and children is covered. Substance abuse will be addressed. Basic math operations will be reviewed and reinforced.

**ELTR 102 Introduction to Electrical Theory, Basic Algebra Concepts, and the National Electric Code (3.5)**

3 hours lecture- 1½ hours laboratory

**Note:** May be taken 4 times

Provides an introduction to algebraic and trigonometric concepts and application of their principles to solve basic electrical equations and layout conduit bends. Teaches the student to apply basic electrical theory to predict circuit behavior. Basic conduit bending techniques will be developed. The National Electric Code will be introduced.

**ELTR 103 Advanced DC Circuit Concepts, Introduction to 3Ø Circuits, and National Electric Code Applications (3.5)**

3 hours lecture- 1½ hours laboratory

**Recommended preparation:** ELTR 102

**Note:** May be taken 4 times

Study of circuit analysis techniques, series, parallel, and combination DC circuits, test instruments, National Electric Code (NEC), and elementary 3Ø circuits.

**ELTR 104 AC Circuit Concepts, Applied Electronics, and National Electric Code Applications (3.5)**

3 hours lecture- 1½ hours laboratory

**Recommended preparation:** ELTR 103

**Note:** May be taken 4 times

Study of AC theory, exploration of inductance and capacitance and the effect of their reactance on AC circuits and the application of electronic concepts and components.

**ELTR 105 Digital Logic Circuits, Conductor Characteristics and Applications, and National Electric Code (3.5)**

3 hours lecture- 1½ hours laboratory

**Recommended preparation:** ELTR 104