

**Interactive Media Design**

The Interactive Media Design program is also offered in Drafting Technology and Graphic Communications.

Prepares students with specific skills necessary for employment in the field of multimedia design and production. Students may choose an emphasis in either 3D modeling and animation, which emphasizes production skills and authoring systems, or multimedia design, which emphasizes content development and visual design of multimedia productions. Both areas of emphasis collaborate on an actual multimedia production.

**A.A. Degree Major or Certificate of Achievement*****Emphasis in 3D Modeling and Animation***

<b>Program Requirements</b>	<b>Units</b>
ARTI 100 Introduction to Illustration	3
ARTI 246 Digital 3D Design and Modeling	3
ARTI 247 Digital 3D Design and Animation	3
DT 180 3D Studio Max-Intro to 3D Modeling/Animation	3
GC/RGC 140 Digital Imaging/Photoshop I	3
GC 204 Motion Graphics for Multimedia-A	3
<b>Electives (Select 2 courses)</b>	
ART 241 Computer Graphics	3
ART 248 Character Animation	1.5
ARTD 150 Digital Concepts and Techniques in Art	3
ARTD 220 Motion Design	3
DT/RDT 128 Solid Works Intro 3D Design/Presentation	3
DT 182 3D Studio Max – Advanced 3D Modeling/Animation	3
GC 142 Digital Imaging/Photoshop III	3
GC 201 Intermediate Multimedia	3
ENTT/RTV 120 Basic TV Production	3
RTV 124 Staging and Lighting for TV	3
<b>TOTAL UNITS</b>	<b>22.5 - 24</b>

***Emphasis in Multimedia Design***

<b>Program Requirements</b>	<b>Units</b>
ARTD 100 Graphic Design I	3
ARTD 220 Motion Design	3
ARTI 247 Digital 3D Design and Animation	3
GC 142 Digital Imaging/Photoshop III	3
GC/RGC 200 Introduction to Multimedia	3
GC 201 Intermediate Multimedia	3
GC 204 Motion Graphics/Multimedia-A	3
<b>Electives (Select 2 courses)</b>	
ARTD 150 Digital Concepts/Techniques in Art	3
ARTI 246 Digital 3D Design and Modeling	3
DT 180 3D Studio Max-Intro to Modeling/Animation	3
GC 100 Graphic Communications	3
GC/RGC 140 Digital Imaging/Photoshop I	3
GC/RGC 152 Desktop Publishing with Illustrator	3
GC/ART 197 Multimedia Project	3
GC/RGC 202 Web Page Layout I	3
GC 206 Web Multimedia	3
MUS 180 Computer Music I	3
RTV 170 Introduction to Video Editing	3
<b>TOTAL UNITS</b>	<b>27</b>

The Interactive Media Design program is also offered in Drafting Technology and Graphic Communication.

**Pictorial Arts**

Programs are designed to enable the student to acquire skills in producing marketable fine art for gallery exhibition and commissions, enter into the commercial area, and serve as a preparation for transfer to a four-year college or university. Transfer students should consult the four-year college or university catalog for specific requirements or see a Palomar College counselor.

Pictorial arts majors may select an emphasis in painting or printmaking within the program requirements.

**A.A. Degree Major**

<b>Program Requirements</b>	<b>Units</b>
ART 101 Methods and Materials	3
ART 102 Drawing and Composition I	3
ART 103 Drawing and Composition II	3
ART 104 Design and Composition	3
ART 105 3-Dimensional Form and Design	3
ART 165 History of Art I	3
ART 166 History of Art II	3
ART 200 Color/Light and Theory	3
Emphasis Requirements	15-18
Final Art Portfolio Review	0
<b>TOTAL UNITS</b>	<b>39 - 42</b>

***Emphasis in Painting***

<b>Emphasis Requirements</b>	<b>Units</b>
ART 120 Life Drawing and Composition I	3
ART 121 Life Drawing and Composition II	3
<b>Plus 6 units selected from the following:</b>	
ART 220 Oil Painting I	3
ART 221 Oil Painting II	3
ART 225 Acrylic Painting I	3
ART 226 Acrylic Painting II	3
<b>Electives (Select 6 units)</b>	
ART 130 Printmaking I	3
ART 131 Printmaking II	3
ART 197F Topics in Art – Drawing	5-3
ARTI 200 Rendering	3
ARTI 210 Illustration I, Traditional Techniques	3
ARTI 220 Illustration II Digital Techniques	3
ART 220, 221, 225, 226 (if not taken in emphasis area)	3
ART 230 Airbrush Painting I	3
ART 231 Airbrush Painting II	3
ART 235 Watercolor Painting I	3
ART 236 Watercolor Painting II	3
PHOT 110 Basic 35mm Color Photo	3

***Emphasis in Printmaking***

<b>Emphasis Requirements</b>	<b>Units</b>
ART 120 Life Drawing and Composition I	3
ART 130 Printmaking I	3
ART 131 Printmaking II	3
<b>Electives (Select 6 units)</b>	
ART 162 History of the Art of the American West	3
ART 163 History of the Arts of Asia	3
ART 164 History of the Traditional Arts of Africa/ Oceania/ Americas	3
ART 170 Gallery Management/Display I	3
ART 197F Topics in Art – Drawing	5-3
ART 220 Oil Painting I	3
ART 221 Oil Painting II	3
ART 225 Acrylic Painting I	3
ART 226 Acrylic Painting II	3
ART 230 Airbrush Painting I	3
ART 231 Airbrush Painting II	3
ART 235 Watercolor Painting I	3
ART 236 Watercolor Painting II	3
ARTI 210 Illustration I, Traditional Techniques	3
ARTI 220 Illustration II Digital Techniques	3
PHOT 110 Basic 35mm Color Photo	3

**Three-Dimensional Arts**

Programs are designed to enable the student to acquire skills in producing marketable fine art for gallery exhibition and commissions, enter into the commercial area, and serve as a preparation for transfer to a four-year college or university. Transfer students should consult the four-year college or university catalog for specific requirements or see a Palomar College counselor.

Three-dimensional arts majors may select an emphasis in ceramics, crafts, glass, jewelry and metalsmithing, or sculpture, within the program requirements.

**A.A. Degree Major**

**Program Requirements**

	<b>Units</b>
ART 101 Methods and Materials	3
ART 102 Drawing and Composition I	3
ART 104 Design and Composition	3
ART 105 3-Dimensional Form and Design	3
ART 165 History of Art I	3
ART 166 History of Art II	3
Emphasis Requirements	22-24.5
Final Art Portfolio Review	0
<b>TOTAL UNITS</b>	<b>40 – 42.5</b>

***Emphasis in Ceramics***

	<b>Units</b>
<b>Emphasis Requirements</b>	
ART 135 Ceramics I	3
ART 136 Ceramics II	3
ART 250 Ceramics III	3
ART 260 Sculpture I	3
ART 265 Ceramic Sculpture I	3
ART 266 Ceramic Sculpture II	3

**Electives (Select 6 units)**

ART 137 Pottery Production	3
ART 140 Foundry Techniques/Sculpture I	3
ART 147 Design in Enamels	3
ART 160 Glassblowing-Offhand I	3
ART 261 Sculpture II	3
PHOT 100 Elementary Photography	3.5
PHOT 110 Basic 35mm Color Photo	3

***Emphasis in Crafts***

	<b>Units</b>
<b>Emphasis Requirements</b>	
ART 135 Ceramics I	3
ART 145 Design in Mixed Media	3
ART 146 Design in Wood	3
ART 147 Design in Enamels	3
ART 150 Jewelry/Metalsmithing Design I	3
ART 260 Sculpture I	3

**Electives (Select 6 units)**

ART 136 Ceramics II	3
ART 140 Foundry Techniques/Sculpture I	3
ART 151 Jewelry/Metalsmithing Design II	3
ART 155 Stained Glass I	3
ART 261 Sculpture II	3
ART 270 Jewelry/Metalsmithing Design III	3
ART 275 Stained Glass II	3
PHOT 100 Elementary Photography	3
PHOT 110 Basic 35mm Color Photo	3

***Emphasis in Glass***

	<b>Units</b>
<b>Emphasis Requirements</b>	
ART 135 Ceramics I	3
ART 145 Design in Mixed Media	3
ART 155 Stained Glass I	3
ART 160 Glassblowing-Offhand I	3
ART 260 Sculpture I	3
ART 280 Glassblowing-Offhand II	3

**Electives (Select 4-6 units)**

ART 140 Foundry Techniques/Sculpture I	3
ART 146 Design in Wood	3
ART 147 Design in Enamels	3
ART 150 Jewelry/Metalsmithing Design I	3
ART 275 Stained Glass II	3
ART 276 Cold Glass Design	1
ART 277 Glass Casting	1
PHOT 110 Basic 35mm Color Photo	3

***Emphasis in Jewelry and Metalsmithing***

	<b>Units</b>
<b>Emphasis Requirements</b>	
ART 145 Design in Mixed Media	3
ART 147 Design in Enamels	3
ART 150 Jewelry/Metalsmithing I	3
ART 151 Jewelry/Metalsmithing II	3
ART 205 Indirect Metal Forming	3
ART 270 Jewelry/Metalsmithing III	3

**Electives (Select 6 units)**

ART 135 Ceramics I	3
ART 140 Foundry Techniques/Sculpture I	3
ART 146 Design in Wood	3
ART 260 Sculpture I	3
ART 265 Ceramic Sculpture I	3
PHOT 110 Basic 35mm Color Photo	3

***Emphasis in Sculpture***

	<b>Units</b>
<b>Emphasis Requirements</b>	
ART 135 Ceramics I	3
ART 140 Foundry Techniques/Sculpture I	3
ART 260 Sculpture I	3
ART 261 Sculpture II	3
ART 265 Ceramic Sculpture I	3
ART 266 Ceramic Sculpture II	3

**Electives (Select 6 units)**

ART 136 Ceramics II	3
ART 145 Design in Mixed Media	3
ART 150 Jewelry and Metalsmithing I	3
ART 160 Glassblowing-Offhand I	3
ART 205 Indirect Metal Forming	3
ART 255 Foundry Techniques/Sculpture II	3
PHOT 110 Basic 35mm Color Photo	3

**COURSE OFFERINGS**

An activity may be taken four times for credit. Activity is defined to include all ability levels. (e.g., A student may take a total of only four Ceramics courses for credit.) Ceramics and Jewelry and Metalsmithing classes are defined as activity courses.

**ART 100 Introduction to Art (3)**

*3 hours lecture*

**Transfer acceptability:** CSU; UC

Promotes an understanding and appreciation of art through slide-lectures, discussion, and museum visits. For non-art majors.

**ART 101 Methods and Materials (3)**

*6 hours lecture/laboratory*

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

Introduction to the aesthetic and technical potential of a variety of materials and methods basic to various art disciplines. Concentration on the skills needed to use these materials in a two- and three-dimensional art.

**ART 102 Drawing and Composition I (3)**

*6 hours lecture/laboratory*

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC; CAN ART 8

A basic studio course in the media and technique of drawing. An introduction to pictorial structure, visual elements, use of perspective, and rendering and sketching techniques. This course is designed to develop skills for both commercial and fine arts.

**ART 103 Drawing and Composition II (3)**

*6 hours lecture/laboratory*

**Prerequisite:** ART 102

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC

The development of subject and theme concepts with varied approaches to composition and the use of media. Introduction to abstract composition and mixed media techniques as a preliminary to painting.

**ART 104 Design and Composition (3)**

*6 hours lecture/laboratory*

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC; CAN ART 14

Basic instruction in flat design. The study of line, color, value, shape, texture, form, and the principles of composition. Experience in a variety of media. Essential to students of fine and commercial art, photography, graphic arts, architectural, and interior design.

- ART 105 Three-Dimensional Form and Design (3)**  
*6 hours lecture/laboratory*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC; CAN ART 16*  
 Basic instruction in sculptural forms and structures. A variety of media is explored.
- ART 120 Life Drawing and Composition I (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *A minimum grade of "B" in at least one semester of a college-level drawing course*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC; CAN ART 24*  
 A basic course in the fundamentals of drawing the human figure. The use of the figure as an element of both naturalistic and expressive rendering.
- ART 121 Life Drawing and Composition II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 120*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC—Credit Limitations*  
 An exploration of the human figure as the basic subject of creative and experimental composition.
- ART 123 Arts Across the Curriculum (3)**  
*3 hours lecture*  
**Note:** *Cross listed as: DNCE/MUS/TA 123*  
**Transfer acceptability:** *CSU*  
 This course is an introduction to the artistic creative process through a comparative study of dance, music, theatre, and visual arts, within a social and cultural context. The principles of artistic perception, creative expression, cultural and historical context, and aesthetic valuing will be discussed.
- ART 125 Head Drawing (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 102 or ART 100*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC*  
 Introduction to human head drawing. Special emphasis on techniques designed to illustrate musculoskeletal relationships that distinguish differences in age, sex, and personality.
- ART 130 Printmaking I (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 102*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC; CAN ART 20*  
 Introduction to the techniques of etching, aquatint, drypoint, photo engraving, and wood and linoleum cuts. Problems in multicolor intaglio and multicolor relief printing. Design and composition in relation to the media will be emphasized.
- ART 131 Printmaking II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 130*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC*  
 Continued practice in the creation of fine prints. Mixed media and the photointaglio process are explored.
- ART 132 Lithography and Experimental Printmaking (1)**  
*2 hours lecture/laboratory*  
**Prerequisite:** *ART 102*  
**Note:** *May be taken 2 times*  
 Introduction to the techniques of plate lithography and experimental lithographic processes.
- ART 133 Etching (1)**  
*2 hours lecture/laboratory*  
**Prerequisite:** *ART 102*  
**Note:** *May be taken 2 times*  
 Introduction to the techniques of etching, aquatint and drypoint.
- ART 135 Ceramics I (3)**  
*6 hours lecture/laboratory*  
**Note:** *May be taken 2 times; maximum of 4 completions in any combination of ART 135, ART 136, ART 250*  
**Transfer acceptability:** *CSU; UC; CAN ART 6*  
 An introduction to basic forming techniques in clay and various surface treatments.
- ART 136 Ceramics II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 135*  
**Note:** *May be taken 2 times; maximum of 4 completions in any combination of ART 135, ART 136, ART 250*  
**Transfer acceptability:** *CSU; UC*  
 Advanced studies in handbuilding and wheel throwing techniques. Continuing study of various surface techniques. Techniques of glaze and facility maintenance.
- ART 137 Pottery Production (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 135*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU*  
 Wheel throwing production, kiln use and construction, mixing and maintaining glazes, studio maintenance, decorative techniques, and marketing skills and techniques.
- ART 138 Ceramic Surface Decoration (1)**  
*2 hours lecture/laboratory*  
**Recommended preparation:** *ART 135, 136, and 250*  
 A study of ceramic surface treatments and decorative techniques.
- ART 139 Raku Techniques (1)**  
*2 hours lecture/laboratory*  
**Recommended preparation:** *ART 135, 136, and 250*  
**Note:** *May be taken 2 times*  
 Exploration of the raku ceramic process and related earthenware decorative techniques.
- ART 140 Foundry Techniques in Sculpture I (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 105*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU*  
 Theory and practice in casting skills using foundry techniques.
- ART 145 Design in Mixed Media (3)**  
*6 hours lecture/laboratory*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC*  
 Design and production of useful "one-of-a-kind" or "limited edition" objects of art. Attention to the visual as well as structural character of chosen materials. Media may include wood, metal, fibers, plastics, and bone and leather alone or in combination.
- ART 146 Design in Wood (3)**  
*6 hours lecture/laboratory*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU; UC*  
 Explores in depth the sculptural and functional qualities of wood. Original designs may include useful forms such as furniture, containers, and architectural ornaments as well as fantasy forms. Benefits students of three-dimensional art and wood technology.
- ART 147 Design in Enamels (3)**  
*6 hours lecture/laboratory*  
**Recommended preparation:** *ART 104*  
**Note:** *May be taken 2 times*  
**Transfer acceptability:** *CSU*  
 Exploration of the creative and aesthetic possibilities of enameling. Principles and techniques in two- and three- dimensional designs.
- ART 150 Jewelry and Metalsmithing Design I (3)**  
*6 hours lecture/laboratory*  
**Note:** *Maximum of 4 completions in any combination of ART 150, ART 151, ART 270*  
**Transfer acceptability:** *CSU*  
 Projects in two- and three-dimensional jewelrymaking and metalsmithing. Study of the relationship of design to materials and of contemporary metal working techniques.
- ART 151 Jewelry and Metalsmithing Design II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** *ART 150*

**Note:** May be taken 2 times; maximum of 4 completions in any combination of ART 150, ART 151, ART 270

**Transfer acceptability:** CSU

Exploration of manipulation of metal and surface decoration including stone setting.

**ART 155 Stained Glass I (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 104

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

Introduction to the materials and processes involved in the creation of flat glass objects. Emphasis on design potential and creative possibilities of the medium.

**ART 160 Glassblowing-Offhand I (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 104 or 105

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

The study of the properties and structure of glass and materials, equipment, and techniques used to work it in offhand method.

**ART 165 History of Art I: Survey of Western Art (3)**

3 hours lecture

**Transfer acceptability:** CSU; UC; CAN ART 2; ART 165+166=CAN ART SEQ A

The art forms and styles of Western man from the Paleolithic period through Medieval Gothic. Emphasis on the contribution of religion, social and political structures, heritage, and inter-cultural contacts as they influence changes in form and style.

**ART 166 History of Art II: Survey of Western Art (3)**

3 hours lecture

**Transfer acceptability:** CSU; UC; CAN ART 4; ART 165+166=CAN ART SEQ A

The art forms and styles of Western man from the Renaissance to the present. Emphasis on the style of individual artists and national styles as well as the contribution of religious, social, and political influences

**ART 167 History of Modern Art I: 19th Century Europe and America (3)**

3 hours lecture

**Transfer acceptability:** CSU; UC

European and American painting, sculpture, and architecture from 1700 to 1900. Emphasis on the styles and contributions of individual artists as well as the influence of social, political, and cultural developments.

**ART 168 History of Modern Art II: 20th Century Europe and America (3)**

3 hours lecture

**Transfer acceptability:** CSU; UC

Twentieth Century European and American painting, sculpture, and architecture. Emphasis on the styles and contributions of individual artists as well as the aesthetic, political, and psycho-sociological motivations behind the art of the 20<sup>th</sup> century.

**ART 182 Introduction to Arts Management (3)**

9 hours laboratory

**Note:** Cross listed as AMS 182, DNCE 182, MUS 182, and TA 182

**Transfer acceptability:** CSU

An introduction to the principles and practices of arts management through an interdisciplinary study of management topics in the visual and performing arts.

**ART 183 Internship in Arts Management (3)**

9 hours laboratory

**Prerequisite:** AMS/DANCE/MUS or TA 182

**Note:** Cross listed as AMS 183, DNCE 183, MUS 183, and TA 183

**Transfer acceptability:** CSU

Practical experience in arts management in the visual and performing arts.

**ART 197A Topics in Art – Printmaking (.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 for a maximum of 9 units

**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.

Short and extended term lecture workshops or laboratory courses in various specialized aspects of printmaking.

**ART 197B Topics in Art – Painting (.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 for a maximum of 9 units

**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.

Short and extended term lecture-workshops or laboratory courses in various specialized aspects of painting.

**ART 197C Topics in Art – Glass (.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 for a maximum of 9 units

**Transfer acceptability:** CSU

Short and extended term lecture workshops or laboratory courses in various specialized aspects of glass.

**ART 197D Topics in Art – Ceramics (.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 for a maximum of 9 units

**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.

Short and extended term lecture workshops or laboratory courses in various specialized aspects of ceramics.

**ART 197E Topics in Art – Sculpture (.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 for a maximum of 9 units

**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.

Short and extended term lecture workshops or laboratory courses in various specialized aspects of sculpture.

**ART 197F Topics in Art – Drawing (.5-3)**

1 to 6 hours lecture/laboratory

**Note:** May be taken 4 times for a maximum of 9 units

**Transfer acceptability:** CSU

Short and extended term lecture-workshops or laboratory courses in various aspects of drawing techniques.

**ART 197G Topics in Art – Computer Art (.5-3)**

1 to 6 hours lecture/laboratory

**Note:** May be taken 4 times for a maximum of 9 units

**Transfer acceptability:** CSU

Short and extended term lecture-workshops or laboratory courses in which a teacher utilizes and teaches special computer hardware/software relationships and processes to produce art.

**ART 197H Topics in Art – General (.5-3)**

1 to 6 hours lecture/laboratory

**Note:** May be taken 4 times for a maximum of 9 units

**Transfer acceptability:** CSU

Short and extended term lecture-workshops or laboratory courses in various aspects of art. Course title will designate subject covered.

**ART 200 Color/Light and Theory (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 102 and 104

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC

Investigations into the phenomenon of color and its use in art. Problems involving color and design in various media, including

acrylics and collage. Exploration of the role of color in Western art from late 19th Century to the present.

- ART 205 Indirect Metal Forming (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ART 150 or 260  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU  
 Exploration of indirect metal forming in jewelry and small sculpture. Projects in lost wax centrifugal and gravity casting, electroforming, and metal spraying.
- ART 213 Illustration/Life Drawing (1)**  
*2 hours lecture/laboratory*  
**Note:** May be taken 3 times  
**Transfer acceptability:** CSU  
 The study of techniques used in drawing and painting from both nude and costumed models.
- ART 214 Head Painting (1)**  
*2 hours lecture/laboratory*  
**Note:** May be taken 3 times  
**Transfer acceptability:** CSU  
 Introduction to painting techniques as they apply to the human head. Critical analysis and application of color theory and mixing principles. Analysis of human facial planes, proportion and bone structure in the application of either oil or acrylic paint.
- ART 220 Oil Painting I (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** Completion of, or concurrent enrollment in, ART 103 and 200  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU; UC; CAN ART 10  
 Fundamental methods and concepts of studio painting using oil color as the primary medium. Concentration on gaining technical skills in pictorial composition, subject interpretation, brush handling, and the use of color. Exploration of historical and contemporary styles, attitudes, and techniques.
- ART 221 Oil Painting II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ART 220  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU; UC  
 Advanced projects in the concepts and techniques of oil painting with concentration on individual creative progress and development.
- ART 225 Acrylic Painting I (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** Completion of, or concurrent enrollment in, ART 103 and 200  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU; UC  
 Concepts of studio painting utilizing acrylic based colors as the primary medium. Exploration of different styles and techniques with emphasis on contemporary modes of expression. Concentration on gaining skills in composition, brush handling, and the use of color.
- ART 226 Acrylic Painting II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ART 225  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU; UC  
 Advanced projects in the concepts and techniques of acrylic painting with emphasis on individual creative progress and development.
- ART 230 Airbrush Painting I (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** Completion of, or concurrent enrollment in, ART 103 and 200  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU  
 Emphasis on developing skills in airbrush painting and masking techniques for use in fine arts, commercial art, and photo retouching. The theory, use, and maintenance of airbrushes and associated equipment.
- ART 231 Airbrush Painting II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ART 230  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU  
 Creative approaches to airbrush painting. A continued study of airbrush techniques used in fine arts, commercial art, and photo retouching.
- ART 235 Watercolor Painting I (3)**  
*6 hours lecture/laboratory*  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU; UC  
 Fundamental approaches to the use of watercolors and other waterbase paints in creative painting. Concentration on both literal and expressive modes utilizing a variety of subjects.
- ART 236 Watercolor Painting II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ART 235  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU; UC  
 Advanced work in watercolor media.
- ART 241 Computer Graphics (3)**  
*6 hours lecture/laboratory*  
**Recommended Preparation:** ARTD 150  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU  
 Two dimensional graphics applications of the computer using Adobe Photoshop software. Explore relationship between computer media and traditional art media. Digital image processing and storage, digital painting methods and layout generation. Technical issues pertaining to generation of digital art.
- ART 244 Illustration II Digital Techniques (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ARTD 150  
**Recommended preparation:** ART 241  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU  
 An introduction to concepts and techniques used in the field of digital illustration. Critical thinking and visual problem solving using digital tools as well as the translation of traditional theory and principles will be stressed. Emphasis will be placed on the integration of several computer software programs and traditional media as a means of communicating and applying ideas into the various commercial art marketplaces.
- ART 248 Character Animation (1.5)**  
*3 hours lecture/laboratory*  
**Note:** May be taken 3 times  
**Transfer acceptability:** CSU  
 Fundamentals of character animation and design. Hands on experience creating hand drawn animations. Drawings are scanned and assembled on the computer. Final output is transferred onto videotape.
- ART 250 Ceramics III (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ART 136  
**Note:** May be taken 2 times; maximum of 4 completions in any combination of ART 135, ART 136, ART 250  
**Transfer acceptability:** CSU; UC  
 Creative and experimental handbuilding, advanced throwing, firing techniques, glaze evaluation, and special research.
- ART 255 Foundry Techniques in Sculpture II (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** ART 140  
**Note:** May be taken 2 times  
**Transfer acceptability:** CSU  
 Advanced theory and practices in casting skills using foundry techniques.
- ART 260 Sculpture I (3)**  
*6 hours lecture/laboratory*  
**Prerequisite:** Completion of, or concurrent enrollment in, ART 102 and 105

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC; CAN ART 12

Design and fabrication of expressive three-dimensional forms. Exploration of both historical and contemporary sculptural materials with emphasis on 20th Century models of expression.

**ART 261 Sculpture II (3)**

6 hours lecture/laboratory 3

**Prerequisite:** ART 260

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC

Advanced projects in the concept and creation of original sculpture.

**ART 265 Ceramic Sculpture I (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 102 or 104 or 105, and ART 135

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC

Creative projects and experimentation using clay as the primary material for non-utilitarian expressive forms.

**ART 266 Ceramic Sculpture II (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 265

**Note:** May be taken 2 times

**Transfer acceptability:** CSU; UC

Advanced problems in creative and experimental uses of clay for non-utilitarian expressive forms.

**ART 270 Jewelry and Metalsmithing Design III (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 151

**Note:** May be taken 2 times; maximum of 4 completions in any combination of ART 150, ART 151, ART 270

**Transfer acceptability:** CSU

Continued exploration of the manipulation of metal. Advanced projects in jewelry and metalsmithing.

**ART 275 Stained Glass II (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 155

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

Creative expression in flat glass. Emphasis on architectural and fine arts application of the medium. Painting, enameling, and etching techniques will be explored in depth.

**ART 276 Cold Glass Design (1)**

2 hours lecture/laboratory

**Note:** May be taken 3 times

**Transfer acceptability:** CSU

Applications of the materials and processes involved in the production of flat glass materials. Emphasis is on the design of stained glass and problem solving during fabrication of designs.

**ART 277 Glass Casting (1)**

2 hours lecture/laboratory

**Note:** May be taken 3 times

**Transfer acceptability:** CSU

The study of the properties of molten glass as applied to glass casting. The acquisition of knowledge through problem solving using open face glass casting techniques.

**ART 280 Glassblowing-Offhand II (3)**

6 hours lecture/laboratory

**Prerequisite:** ART 160

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

Advanced problems in the creation of fine blown glass.

**ART 295 Directed Study in Art (1,2,3)**

3, 6, or 9 hours laboratory

**Prerequisite:** 18 units of college-level art including ART 102, 104 or 105, 165, and 166, and instructor's approval of proposed project or research

**Note:** May be taken 4 times for a maximum of 9 units

**Transfer acceptability:** CSU; UC - Credit determined by UC upon review of course syllabus.

Independent study for advanced students dealing with projects or research in areas not covered by regular classes. Students will work

under the guidance of an instructor.

**ART 296 Special Projects (1,2,3)**

2, 4, or 6 hours lecture/laboratory

**Prerequisite:** A minimum grade of "B" in 6 units of college-level course work in a specialized area of art, and instructor's approval of the proposed project

**Note:** May be taken 4 times for a maximum of 9 units

**Transfer acceptability:** CSU; UC- Credit determined by UC upon review of course syllabus.

A course for the student who has demonstrated a proficiency in art and wishes to work beyond existing classes or desires to pursue a project which does not fit into the context of existing classes. Students will work directly with an instructor.

## Art - Design (ARTD)

Contact the Art Department for further information, (760) 744-1150, ext. 2302

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

#### Graphic Design

Prepares students in basic skills necessary to prepare a portfolio for application to graphic Design, environmental Design, and packaging Design programs at 4 year schools. In addition, develops creative Design ability and conceptual skills in the printed media, motion graphics, and web Design.

#### A.A. Degree Major

Program Requirements		Units
ART 104	Design and Composition	3
ART 166	History of Art II	3
ART 200	Color/Light and Theory	3
ARTD 100	Graphic Design I	3
ARTD 150	Digital Concepts and Techniques in Art	3
ARTD 200	Graphic Design II- Lettering and Layout	3
ARTD 210	Typography Design	3
ARTD 220	Motion Design	3
ARTD 250	New Media Studio	3
ARTI 100	Introduction to Illustration	3
ARTI 246	Digital 3D Design and Modeling	3
ARTI 247	Digital 3D Design and Animation	3
BUS 150	Advertising	3
PHOT 100	Elementary Photography	3.5
	Final Art Portfolio Review	0

#### Electives (Select 6-7 units)

ART 120	Life Drawing and Composition I	3
ART 296	Special Projects	1,2,3
ARTI 220	Illustration II Digital Techniques	3
R GC/		
GC 140	Digital Imaging/Photoshop I	3
R GC/		
GC 152	Desktop Publishing/Illustrator	3
GC 160	DTP/Adobe In Design	3
RTV 275	Avid Editing for Television and Film	3
BMGT 105	Small Business Management	3
MUS 180	Digital Music	3
MUS 181 or	Digital Music II	
MUS 184	Electronic Ensemble	3
CE 100	Cooperative Education	1,2,3,4
<b>TOTAL UNITS</b>		<b>48.5-49.5</b>

### COURSE OFFERINGS

**ARTD 100 Graphic Design I (3)**

6 hours lecture/laboratory

**Transfer acceptability:** CSU

Design principles as they apply to graphic communication. Abstract and pictorial Design for the printed media. Film and architectural signage. Lettering is applied as an abstract Design element.

**ARTD 150 Digital Concepts and Techniques in Art (3)**

6 hours lecture/laboratory

**Prerequisite:** ARTD 100

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

An overview of vector based and pixel based computer applications, and how they are used in a creative environment. Understanding of the underlying logic of computer software will be taught with an emphasis on the role of the computer in all forms of modern art-making. Students will learn how to use the computer as a tool effectively while developing their own method of creating digital artwork. Cross-platform issues will be addressed, as well as file preparation for various output media.

**ARTD 200 Graphic Design II – Lettering and Layout (3)**

6 hours lecture/laboratory

**Prerequisite:** ARTD 100

**Recommended preparation:** ARTD 150

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

The study of the historical roots and nomenclature of lettering forms and the development of grid systems to aid in the development of successful layout Designs. Design and assembly utilizing both hand skills and computer software will be taught.

**ARTD 210 Typography Design (3)**

6 hours lecture/laboratory

**Recommended preparation:** ARTD 150

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

Introduction to the historical roots and contemporary technology of typography. Provides a critical analysis of technical processes and elements through assignments that define its symbolic and communicative aspects.

**ARTD 220 Motion Design (3)**

6 hours lecture/laboratory

**Recommended preparation:** ART 241

**Note:** May be taken 3 times

**Transfer acceptability:** CSU

An introduction to the concepts and techniques of animation and multimedia for personal computers using After Effects. Emphasis will be placed on the role of the artist and in the development process and as a key link in determining the success of the final project.

**ARTD 250 New Media Studio (3)**

6 hours lecture/laboratory

**Prerequisite:** Enrollment based on portfolio review with list of criteria

**Note:** May be taken 3 times

**Transfer acceptability:** CSU

An advanced class using digital tools that focuses on collaborative creative projects. Joint concept development, communication, critical thinking and creative teamwork will be stressed. Emphasis will be placed on the integration of graphic design, illustration. 2-D and 3-D animation and fine art components into professional quality multimedia projects. Students from the Art Department will have the opportunity to collaborate with students from music and computer science.

**Art - Illustration (ARTI)**

Contact the Art Department for further information, (760) 744-1150, ext. 2302

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

**PROGRAMS OF STUDY**

**Illustration**

Provides students with specific skills necessary to prepare a portfolio for application to Illustration programs at 4-year schools. In addition develops creative conceptual and Illustrative skills for use in advertising and story Illustration.

**A.A. Degree Major**

<b>Program Requirements</b>		<b>Units</b>
ART 104	Design and Composition	3
ART 120	Life Drawing and Composition I	3
ART 125	Head Drawing	3
ART 166	History of Art II	3
ART 200	Color/Light and Theory	3
ART 220 or	Oil Painting I	
ART 225	Acrylic Painting I	3
ARTD 150	Digital Concepts and Techniques in Art	3
ARTI 100	Introduction to Illustration	3
ARTI 200	Rendering	3
ARTI 210	Illustration I	3
ARTI 220	Illustration II, Digital Techniques	3
ARTI 230	Illustration III, Experimental Techniques	3
ARTI 246	Digital 3D Design and Modeling	3
ARTI 247	Digital 3D Design and Animation	3
	Final Art Portfolio Review	0
<b>Electives (Select 3 units)</b>		
ART 121	Life Drawing and Composition II	3
ARTD 100	Graphic Design I	3
ART 197B	Topics in Art - Painting	.5-3
ART 197F	Topics in Art – Drawing	.5-3
ART 235	Watercolor Painting I	3
ART 296	Special Projects	1,2,3
ARTD 220	Motion Design	3
ARTD 250	New Media Studio	3
BUS 150	Advertising	3
BMGT 105	Small Business Management	3
CE 100	Cooperative Education	1,2,3,4
PHOT 100	Elementary Photography	3,5
<b>TOTAL UNITS</b>		<b>45</b>

**COURSE OFFERINGS**

**ARTI 100 Introduction to Illustration (3)**

6 hours lecture/laboratory

**Transfer acceptability:** CSU

A course on proportion and structure, quick sketching, gesture, and contour drawing. Included is the study of perspective and drawing of mechanical and natural forms by the use of line and value. Emphasis is placed on the evolutionary development of visual ideas.

**ARTI 200 Rendering (3)**

6 hours lecture/laboratory

**Recommended preparation:** ART 103, ARTI 100

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

Application of various media and techniques for illustrating known products and services or the illustration of design ideas for students in design and architecture. Emphasis is on the development of proficiency and the encouragement of comparison of student work with current professional work.

**ARTI 210 Illustration I, Traditional Techniques (3)**

6 hours lecture/laboratory

**Prerequisite:** ARTI 100

**Transfer acceptability:** CSU

Course work that reflects the types of assignments an illustrator may encounter in the industry, using a variety of traditional media and techniques. Contemporary principles of concept development and problem solving will be explored, using stylization, design, composition and color as methods of communication. Accurate analysis, historical reference, oral and graphic presentation of ideas, sketches and finished art will be stressed.

**ARTI 220 Illustration II, Digital Techniques (3)**

6 hours lecture/laboratory

**Prerequisite:** ARTI 200 and ARTI 210

**Note:** May be taken 2 times

**Transfer acceptability:** CSU

A course for advanced illustration students that focuses on creating

non-traditional professional level commercial artwork. Media experimentation, and combination of traditional methods with digital applications is used to create finished pieces that are conceptually and visually interesting and strong. Students are encouraged to develop and strengthen personal and distinctive approaches to Illustration. Portfolio preparation for admission to high quality 4-year art and Design programs, or for entry into to the work force will be examined and applied. Students will also gain insight into self-promotion and marketing strategies. Contracts, self-employment issues and billing procedures will be explained.

**ARTI 230 Illustration III – Experimental Techniques (3)**

*6 hours lecture/laboratory*

**Prerequisite:** ARTI 220

**Corequisite:** ARTI 210

**Note:** May be taken 3 times

**Transfer acceptability:** CSU

Coursework will reflect advanced illustration concepts, conceptually and technically. Students will combine experimental traditional and digital techniques to create projects that reflect a professional level of finish and format. Projects will focus on conceptual content and process, and represent a range of possible industry application, such as entertainment design, editorial illustration and illustrations for an interactive environment.

**ARTI 246 Digital 3D Design and Modeling (3)**

*6 hours lecture/laboratory*

**Recommended preparation:** ARTD 150

**Note:** May be taken 3 times

**Transfer acceptability:** CSU

Fundamentals of computerized 3-D modeling and Design. Hands on experience with modeling, lighting, developing texture maps and rendering

**ARTI 247 Digital 3D Design and Animation (3)**

*6 hours lecture/laboratory*

**Recommended preparation:** ARTD 220

**Note:** May be taken 3 times

**Transfer acceptability:** CSU

Concepts and techniques of 3-dimensional animation using ElectricImage software. The course will provide an understanding of the production, animation and postproduction process. Concepts and techniques of 3-dimensional animation using Maya software. The course will provide an understanding of the production, animation and postproduction process.



## Astronomy (ASTR)

Contact the Earth Sciences Department for further information, (760) 744-1150, ext. 2512. For transfer information, consult a Palomar College counselor.

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

### PLANETARIUM

Palomar College offers several types of planetarium programs for the community. School programs are presented on Tuesday and Thursday mornings for area elementary and secondary schools. The planetarium also offers two evening shows a month, open to the public. For further information, contact the planetarium at (760) 744-1150, ext. 2833 or the Earth Sciences Department.

### PROGRAM OF STUDY

#### Astronomy

Provides the student with sufficient background to begin upper division course work. Transfer students should consult the four-year college or university catalog for specific requirements or see a Palomar College counselor. Students pursuing a major in Astronomy at San Diego State University must complete a minor in Mathematics.

#### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
ASTR 100 Principles of Astronomy	3
ASTR 120 Planets, Moons and Comets	3
ASTR 105L Introduction to Astronomy Laboratory	1
MATH 140 Calculus/Analytic Geometry, First Course	5
MATH 141 Calculus/Analytic Geometry, Second Course	4
MATH 205 Calculus/Analytic Geometry, Third Course	4
PHYS 230 Principles of Physics	5
PHYS 231 Principles of Physics	5
PHYS 232 Principles of Physics	4
<b>TOTAL UNITS</b>	<b>34</b>

Recommended Electives: ASTR 210, 295

### COURSE OFFERINGS

#### ASTR 100 Principles of Astronomy (3)

3 hours lecture

**Transfer acceptability:** CSU; UC

The fundamental nature of the night sky as understood by pre-20th century scientists. Properties of the solar system, stars, black holes, galaxies, and extragalactic objects. Interstellar communication and extraterrestrial life.

#### ASTR 105L Introduction to Astronomy Laboratory (1)

3 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, ASTR 100, 120

**Transfer acceptability:** CSU; UC

Exploration of the techniques used in astronomy to determine the physical properties of stars and galaxies. The physical nature of light and the optical principles of a telescope are also explored. Measurements of planetary and stellar phenomena are used to investigate the astronomical methods of determining the size, composition and age of the universe.

#### ASTR 120 Planets, Moons, and Comets (3)

3 hours lecture

**Note:** Cross listed as GEOL 120

**Transfer acceptability:** CSU; UC

The astronomy and geology of the solar system, observations, dynamics, relativistic ideas, including theories of formation and evolution. Comparative survey of the atmospheres, surface

features and interiors of planets and satellites. Minor objects, such as comets and asteroids, will be included.

#### ASTR 197 The Universe: Contemporary Topics in the Space Sciences (1-3)

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

Selected topics in astronomy and space sciences, emphasizing current research and discoveries. Refer to the Class Schedule for specific topics covered.

#### ASTR 210 Life in the Universe (3)

3 hours lecture

**Prerequisite:** ASTR 100 or 120

**Transfer acceptability:** CSU

A scientific exploration of life in the universe using the findings of astronomy, biology, and chemistry. Topics include the development of life and its environments on Earth, the search for life in the cosmos, interstellar communications and travel, and the effects of contact.

#### ASTR 295 Directed Study in Astronomy (1,2,3)

Arrange 3, 6, or 9 hours laboratory with department chairperson

**Prerequisite:** ASTR 100 or 120

**Note:** May be taken 4 times for a maximum of 6 units

**Transfer acceptability:** CSU; UC - Credit determined by UC upon review of course syllabus.

Individual study in field, library, or laboratory for interested students.

## Athletics and Competitive Sports (ACS)

Contact the Athletics Program for further information, (760) 744-1150, ext. 2460

Palomar College offers intercollegiate sports for men and women. They include softball, basketball, golf, tennis, soccer, volleyball, swimming and diving, water polo, football, wrestling, cross country, and baseball. Teams will compete in one of four conferences: Mission Conference, Orange Empire Conference, South Coast Conference, and Pacific Coast Conference. Member colleges are located in the Los Angeles, Orange County, Riverside, and San Diego areas. In order to participate in intercollegiate athletics a student must fulfill the following requirements:

1. Obtain a physical clearance by the team physician.
2. Enroll in 12 units. Students are encouraged to register for a minimum of 9 units in courses other than Physical Education activity classes or Athletics and Competitive Sports classes.
3. Successfully complete 24 units prior to a second season of participation. A minimum of 18 units must be completed in courses other than Physical Education activity classes or Athletics and Competitive Sports classes.
4. Maintain a 2.0 or higher grade point average in all course work.
5. Participate in the Palomar College matriculation program which includes English, math and reading skills assessment.
6. Participate in the Palomar College Athletic Academic Advisement Program which includes:
  - a. Establishment of an Individual Education Plan prior to second semester of enrollment.

- b. Academic assessment of course progress following the 4th, 8th, and 12th week of each semester.
- c. Fulfilling tutorial or study hall requirements as assigned by the instructor advisor.

### INTERCOLLEGIATE ATHLETIC COURSE OFFERINGS

Courses numbered under 100 are not intended for transfer credit.

#### ACS 50 Introduction to Collegiate Athletics (1) 1 hour lecture

Program for matriculation, study skills, eligibility rules, substance abuse, responsibilities of being a student athlete, training, and nutrition.

The following courses provide students with the opportunity to develop advanced skills and the strategies in specific sports which will be applied to competitive situations. A minimum of 175 hours of student participation is required.

ACS 101	Intercollegiate Softball (Women)	(2)
ACS 110	Intercollegiate Basketball (Men/Women)	(2)
ACS 115	Intercollegiate Golf (Men/Women)	(2)
ACS 120	Intercollegiate Tennis (Men/Women)	(2)
ACS 125	Intercollegiate Soccer (Men/Women)	(2)
ACS 130	Intercollegiate Volleyball (Men/Women)	(2)
ACS 135	Intercollegiate Swim/Diving (Men/Women)	(2)
ACS 140	Intercollegiate Water Polo (Men/Women)	(2)
ACS 145	Intercollegiate Football (Men)	(2)
ACS 150	Intercollegiate Wrestling (Men)	(2)
ACS 155	Intercollegiate Baseball (Men)	(2)
ACS 160	Intercollegiate Cross Country (Men/Women)	(2)

*Note: Each course may be taken 3 times*

**Transfer acceptability:** CSU; UC - max credit combined with PE activity courses, 4 units

## Automotive Technology (AT)

Contact the Trade and Industry Department for further information, (760) 744-1150, ext. 2545

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

### PROGRAMS OF STUDY

#### Auto Body Work

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
R AT 50 Auto Body Repair I	4
R AT 51 Auto Body Repair II	4
R AT 55 Auto Refinishing I	4
R AT 56 Auto Refinishing II	4

##### Elective Courses (Select 6 Units)

AT 100 Auto Maintenance and Minor Repair	3
AT 105 Automotive Electricity	2
CE 100 Cooperative Education	1,2,3,4
IT 100 Technical Mathematics	3
WELD 100 Welding I	3
<b>TOTAL UNITS</b>	<b>22</b>

The Auto Body Work program is also offered in ROP Auto Technology.

#### Auto Chassis and Drive Lines

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
IT 100 Technical Mathematics	3
R AT 50 or WELD 100 Auto Body Repair I Welding I	3,4
AT 105 Automotive Electricity	2
AT 120 Automatic Transmissions and Drive Lines	3
AT 130 Automotive Brakes	3
AT 135 Front End Alignment and Wheel Service	3
AT 140 Front Drive Transmissions	4
AT 197 Associated Studies in Automotives	3
AT 220 Advanced Automatic Transmissions	3
<b>TOTAL UNITS</b>	<b>27-28</b>

#### Electronic Tune-Up and Computer Control Systems

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
IT 100 Technical Mathematics	3
AT 105 Automotive Electricity	2
AT 110 Automotive Tune-up and Engine Analysis	3
AT 115 Automotive Carburetion and Fuel Systems	3
AT 197 Associated Studies in Automotives	3
AT 210 Specialized Automotive Electronics	3
AT 215 Automotive Emission Control	3

##### Electives (Select 6-7 units)

AT 100 Auto Maintenance and Minor Repair	3
AT 140 Front Drive Transmissions	4
AT 145 Auto Emissions/Diagnosis	3
DMT 70/ RDMT 70 or DMT 55/ Med-Duty Diesel Engine Tune-up	
RDMT 55 Heavy-Duty Diesel Tune-up/Analysis	3
WELD 100 Welding I	3
CE 100 Cooperative Education	2,3
<b>TOTAL UNITS</b>	<b>26-27</b>

#### Mechanics - General

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
IT 100 Technical Mathematics	3
AT 197 Associated Studies in Automotives	3
AT 105 Automotive Electricity	2
AT 110 Automotive Tune-up and Engine Analysis	3
AT 120 Automatic Transmissions and Drive Lines	3
AT 125 Automotive Machining	3
AT 130 Automotive Brakes	3
AT 225 Automotive Engine Rebuilding	3
AT 140 Front Drive Transmissions	4
R AT 50 or WELD 100 Auto Body Repair I Welding I	2,3,4

##### Electives (Select 2 courses)

AT 100 Auto Maintenance and Minor Repair	3
AT 115 Automotive Carburetion and Fuel Systems	3
CE 100 Cooperative Education	2,3,4
<b>TOTAL UNITS</b>	<b>34-38</b>

### COURSE OFFERINGS

#### **AT 100 Auto Maintenance and Minor Repair (3)** 2 hours lecture-3 hours laboratory

**Transfer acceptability:** CSU

Designed for the student with little or no background in the automotive field. The course covers many maintenance and minor repair items as well as basic theory of operation. The areas

covered include batteries, cooling systems, drive belts, lubrication, brakes, tires, and consumer education.

**AT 105 Automotive Electricity (2)**

*4 hours lecture/laboratory*

Auto electrical systems including A.C. generators, batteries, solid-state starters, wiring diagrams, and/or electrical troubleshooting that includes solid-state and low voltage-low amperage systems.

**AT 110 Automotive Tune-Up and Engine Analysis (3)**

*2 hours lecture-3 hours laboratory*

The use of tune-up testing and diagnostic equipment; the study of conventional and electronic ignition systems; compression, cylinder balance, and dynamometer testing.

**AT 115 Automotive Carburetion and Fuel Systems (3)**

*2 hours lecture-3 hours laboratory*

The principles, technical knowledge, and work experience in the field of carburetion. Specific topics include single, dual, and four-barrel carburetors; fuel injection; fuel supply systems; and combustion evaluation instruments.

**AT 120 Automatic Transmissions and Drive Lines (3)**

*2 hours lecture-3 hours laboratory*

The hydraulic and mechanical function and repair of automatic transmissions. The disassembly, inspection, reassembly, and testing of three speed conventional transmissions, clutches, universal joints, and differentials.

**AT 125 Automotive Machining (3)**

*6 hours lecture/laboratory*

The various testing and machining operations involved in an automotive machine shop. Areas covered include cylinder head service and repair, pin fitting, cylinder boring, milling, align boring, and various other automotive machining and measuring techniques.

**AT 130 Automotive Brakes (3)**

*2 hours lecture-4 hours laboratory*

The hydraulic and mechanical function of automotive brake systems. Brake troubleshooting, complete system repair, and overhaul of power, drum, and disc brakes. Preparation for the State Brake License.

**AT 135 Front End Alignment and Wheel Service (3)**

*2 hours lecture-4 hours laboratory*

The repair and adjustment of the undercarriage of the automobile. Included are such areas as steering, geometry, turn radius, ball joints, toe track, camber, caster, suspension, bearing service, wheel balance, and tire wear identification. Preparation for the State Lamp License.

**AT 140 Front Drive Transmissions (4)**

*3 hours lecture-3 hours laboratory*

Training in recent production of import and domestic front drive power trains including manual transmission, automatic transmission, differential systems, and drive axles.

**AT 145 Auto Emissions, Diagnosis, Drivability, and Repair (3)**

*6 hours lecture/laboratory*

Auto emissions diagnosis and repair using an individual baseline approach and loaded-mode testing equipment to solve emission failures. Includes use of scan tools, digital storage oscilloscopes, and inflight analyzers to logically repair the vehicles.

**AT 196 Special Problems in Automotives (1,2,3)**

*3, 6, or 9 hours laboratory*

**Recommended preparation:** Completion of a minimum of 12 units in Automotive Technology (may include 6 concurrent Automotive Technology units)

**Note:** May be taken four times

Special study in an area of interest related to automotives; generally research in nature. The content to be determined by the need of the student under signed contract with the instructor.

**AT 197 Associated Studies in Automotives (3)**

*3 hours lecture*

Applied science and technology as related to the automotive field. Areas covered include metrics, Ohms Law and electron theory, metal alloys and their properties and uses, thermal expansion, gas laws, limits and fits, and friction and torque.

**AT 210 Specialized Automotive Electronics (3)**

*2 hours lecture-3 hours laboratory*

**Recommended preparation:** AT 105 or 110

Electronic principles as they pertain to the automobile. Identification, diagnosis, repair, and verification of malfunctioning electronic components is the major objective of the course. Computer controls fundamentals and diagnosis of GM systems, 1981-1990.

**AT 215 Automotive Emission Control (3)**

*3 hours lecture-2 hours laboratory*

**Recommended preparation:** AT 110 and 115

Auto emission controls as prescribed by Federal Law and California Air Resources Board. Analysis and testing of emission controls will be presented. Study of current laws for state exam preparation.

**AT 220 Advanced Automatic Transmissions (3)**

*6 hours lecture/laboratory*

**Prerequisite:** AT 120

Advanced specialized training in automatic transmissions currently in use in General Motors, Ford, and Chrysler cars and light trucks.

**AT 225 Automotive Engine Rebuilding (3)**

*2 hours lecture-4 hours laboratory*

The complete rebuilding of at least one automobile engine using the machine tools and techniques of industry.

## Biology (BIOL)

Contact the Life Sciences Department for further information, (760) 744-1150, ext. 2275

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

### PROGRAMS OF STUDY

#### Biology – General

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
BIOL 200 Foundations of Biology I	5
BIOL 201 Foundations of Biology II	5
ZOO 100 or General Zoology	4
ZOO 101/101L Animal Kingdom	4
<b>Group One (Select 3-4 units)</b>	
BOT 101/101L General Botany	4
BOT 110 Botany of Spring Wildflowers	4
BOT 115 Plants and People	3
<b>Group Two (Select 4-5 units)</b>	
BIOL 114/114LEcosystem Biology	4.5-5
BIOL 118/118LGeneral Ecology	4
BIOL 130 or Marine Biology	4
BIOL 131/131LMarine Biology	4
ZOO 115 or Natural History of Animal Life	4
ZOO 116/116L Natural History of Animal Life	4

**Group Three (Select 9-11 units)**

Biology	Any course not used above (100 and up)
Botany	Any course not used above
Microbiology	Any course
Zoology	Any course not used above

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**MINIMUM TOTAL UNITS 32**

Recommended Courses: BIOL 215; CHEM 100, 110, 110L, 115, 115L; MATH 110, 115, 135; CSIS 105

**Biology - Preprofessional**

Provides intensive lower division preparation for pursuing advanced studies in biological science, premedical, pre dental, or preveterinarian programs leading towards a Bachelor's degree and beyond.

Students are advised to consult catalogs of the institution to which they plan to apply to determine special or additional requirements, or see a Palomar College Counselor.

**A.A. Degree Major or Certificate of Achievement**

Program Requirements	Units
BIOL 200 Foundations of Biology I	5
BIOL 201 Foundations of Biology II	5
CHEM 110/110L General Chemistry and Laboratory	5
CHEM 115/115L General Chemistry and Laboratory	5
CHEM 220 Organic Chemistry	5
CHEM 221 Organic Chemistry	5
MATH 140 Calculus/Analytic Geometry, First Course	5
MATH 141 Calculus/Analytic Geometry, Second Course	4
<b>TOTAL UNITS</b>	<b>39</b>

Recommended Electives: BIOL 215; MATH 205; PHYS 230, 231, 232; ZOO 203

**COURSE OFFERINGS**

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

\*UC credit limitations –

- BIOL 100, 101/101L, 102 and 200 combined: maximum credit, 4 units
- No credit for BIOL 100 and 101/101L if taken after 200 or 201
- No credit for BIOL 102 if taken after 100, 101/101L or 200 or 201
- BIOL 105, 106/106L and ZOO 145/145L combined: maximum credit, 4 units
- BIOL 114/114L, 118/118L combined: maximum credit, 4 units
- BIOL 130 and 131/131L combined: maximum credit 4 units
- BIOL 185, FCS 165, FCS 185, and HE 165 combined: maximum credit, one course
- BIOL 215, MATH 120, SOC 205, and PSYC 205 combined: maximum credit, one course

**BIOL 45A Field Studies in Natural History (.5-3)**

1 to 6 hours lecture/laboratory

**Note:** May be taken four times; designed for families. Recommended for children between the ages of 8-14. Parent or guardian must accompany children. See class schedule or contact the Life Sciences Department for locality to be visited, and more information. Fee charged.

Field studies of plant and animal species encountered in various habitats, including systematics and major structural and functional characteristics of the taxonomic groups to which these species belong, and emphasizing each species particular adaptations that favor its survival in its natural habitat.

**BIOL 47 Biology 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

Topics in Biology. See class schedule for specific topic covered. Course title will designate subject covered.

**BIOL 100 General Biology (4)**

3 hours lecture-3 hours laboratory

**Note:** Not open to students with prior credit in BIOL 101 or 101L, BIOL 102, BIOL 105, BIOL 106/106L.

**Transfer acceptability:** CSU; UC\*; CAN BIOL 2

Basic principles of general biology as they relate to the cellular, organismic, and population levels of organization. Includes cell ultrastructure and function, energy transfer, reproduction, genetics, evolution, diversity of organisms, and ecology. *Not recommended for students interested in Biology, Zoology, Botany, Premed, or related majors (see Biology 200 and Biology 201).*

**BIOL 101 General Biology (Lecture) (3)**

3 hours lecture

**Note:** Not open to students with prior credit in BIOL 100

**Transfer acceptability:** CSU; UC\*; BIOL 101+101L= CAN BIOL 2

Basic principles of general biology as they relate to the cellular, organismic, and population levels of organization. Includes cell ultrastructure and function, energy transfer, reproduction, genetics, evolution, diversity of organisms, and ecology.

**BIOL 101L General Biology (Laboratory) (1)**

3 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, BIOL 101 or BIOL 114

**Note:** Not open to students with prior credit in BIOL 100, BIOL 102, BIOL 105, BIOL 106/106L.

**Transfer acceptability:** CSU; UC\*; BIOL 101+101L= CAN BIOL 2

Laboratory exercises in cell structure and function, energy transfer, reproduction, genetics, and ecology. *This is a general education course intended for non-science majors.*

**BIOL 102 Molecules and Cells (4)**

3 hours lecture-3 hours laboratory

**Recommended preparation:** MATH 50

**Transfer acceptability:** CSU; UC\*

The basic principles of biological systems including the chemistry of life, cell structure and function, energy transfer, reproduction, and genetics.

**BIOL 105 Biology with a Human Emphasis (4)**

3 hours lecture-3 hours laboratory

**Note:** Not open to students with prior credit in BIOL 100, BIOL 101/101L, BIOL 102, BIOL 106/106L.

**Transfer acceptability:** CSU; UC\*

Principles of cellular, organismal and population biology as exemplified by, and relating to, the human organism. Laboratory includes study of cells, tissues, and mammalian organ systems.

**BIOL 106 Biology with a Human Emphasis (Lecture) (3)**

3 hours lecture

**Note:** Not open to students with prior credit in BIOL 100, BIOL 101/101L, BIOL 102, BIOL 105

**Transfer acceptability:** CSU; UC

Principles of cellular, organismal and population biology as exemplified by, and relating to, the human organism.

**BIOL 106L Biology with a Human Emphasis (Laboratory) (1)**

3 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, BIOL 106

**Note:** Not open to students with prior credit in BIOL 100, BIOL 101/101L, BIOL 102, BIOL 105

**Transfer acceptability:** CSU; UC

Laboratory experiences designed to demonstrate cellular structure and function as they relate to the human organism. An examination of major body systems is included.

**BIOL 107 Evolutionary Biology (3)**

3 hours lecture

**Transfer acceptability:** CSU; UC

Biological concepts related to the origin of species and the evolution of the diversity of life. Topics include scientific process, basic chemistry, biochemistry, genetics, evolutionary mechanisms, speciation, and evolution of major taxonomic groups of organisms.

- BIOL 110 Human Genetics (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU; UC  
 Principles of human inheritance including gene transmission, genetic diseases, pedigree analysis, molecular genetics, immunogenetics, and population genetics; relationships to other fields of study will be emphasized.
- BIOL 114 Ecosystem Biology (Lecture) (3)**  
*3 hours lecture*  
**Note:** See also BIOL 114L  
**Transfer acceptability:** CSU; UC\*  
 Basic principles of general biology as they relate to exemplary ecosystems.
- BIOL 114L Ecosystem Biology (Laboratory) (1.5-2)**  
*4 ½ or 6 hours laboratory*  
**Prerequisite:** Completion of, or concurrent enrollment in, BIOL 101 or 114  
**Note:** A fee is required, and additional costs may be incurred. Contact the Life Sciences Department or see the schedule of classes for specific information about the laboratory field sites, dates and fees. **Transfer acceptability:** CSU; UC\*  
 Laboratory and field experiences to illustrate and observe biology as it relates to exemplary ecosystems. Typical field sites include the Greater Yellowstone ecosystem, Central America, or the Sea of Cortez.
- BIOL 118 General Ecology (Lecture) (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU; UC\*  
 Basic concepts of evolution, population ecology, community ecology, and ecosystem ecology.
- BIOL 118L General Ecology (Laboratory) (1)**  
*3 hours laboratory*  
**Prerequisite:** Completion of, or concurrent enrollment in, BIOL 118  
**Transfer acceptability:** CSU; UC\*  
 Provides hands-on experiences with ecological concepts, methods, and problem-solving techniques by using the plants and animals of local communities in their natural settings. The majority of laboratory sessions will be devoted to off-campus field studies.
- BIOL 130 Marine Biology (4)**  
*3 hours lecture-3 hours laboratory*  
**Note:** Not open to students with prior credit in BIOL 131 or 131L  
**Transfer acceptability:** CSU; UC\*  
 An introduction to marine biology with an emphasis on the adaptations, classification, and ecology of marine organisms as well as current issues in marine biology. A survey of local marine organisms and habitats. Participation on field trips as scheduled is required.
- BIOL 131 Marine Biology (Lecture) (3)**  
*3 hours lecture*  
**Note:** Not open to students with prior credit in BIOL 130  
**Transfer acceptability:** CSU; UC\*  
 An introduction to marine biology with an emphasis on the adaptations, classification, and ecology of marine organisms as well as current issues in marine biology.
- BIOL 131L Marine Biology (Laboratory) (1)**  
*3 hours laboratory (1)*  
**Prerequisite:** Completion of, or concurrent enrollment in, BIOL 131  
**Note:** Not open to students with prior credit in BIOL 130  
**Transfer acceptability:** CSU; UC\*  
 A survey of local marine organisms and local marine habitats. A field trip oriented course; participation on field trips as scheduled is required.
- BIOL 135 Marine Mammals: Biology and Ecology (3)**  
*3 hours lecture*  
**Note:** Cross listed as ZOO 125  
**Transfer acceptability:** CSU; UC  
 Basic biology and ecology of marine mammals. Special emphasis on behavior, adaptations, and conservation.
- BIOL 160 Biotechnology Preparatory Course (5)**  
*3 hours lecture-6 hours laboratory*  
**Recommended preparation:** MATH 50  
**Transfer acceptability:** CSU  
 This course is intended as a preparation course for students interested in further studies in biotechnology. The course provides the basic knowledge in math, chemistry, biology, and microbiology for additional biotechnology coursework. Topics include the fundamental chemical processes common in prokaryotic and eukaryotic biology, chemistry of biomolecules, cellular and molecular biology, gene expression and genetic engineering. The laboratory experience provides basic skills and techniques essential to advanced biotechnology courses.
- BIOL 161 Biotechnology Methods (4)**  
*2 hours lecture, 6 hours laboratory*  
**Prerequisite:** MATH 50, BIOL 100 and CHEM 100, or MATH 50 and BIOL 102, or MATH 50 and BIOL 160, or MATH 50 and BIOL 200  
**Transfer acceptability:** CSU  
 Biotechnology Methods includes current basic theory and laboratory skills used in biotechnology industry. Lectures cover concepts such as recombinant DNA technology and basic protein biochemistry. The laboratory illustrates lecture topics through preparing a recombinant plasmid, transformation of the recombinant plasmid into a suitable bacterial host, verification of the process by identification and analysis of the recombinant bacteria, growth of the recombinant bacteria, expression of the protein encoded by the recombinant plasmid and purification and analysis of the expressed protein.
- BIOL 185 Science of Human Nutrition (3)**  
*3 hours lecture*  
**Note:** Cross listed as FCS 185  
**Transfer acceptability:** CSU; UC  
 Science of food, nutrients, and other substances therein; processes by which the organism ingests, digests, absorbs, transports, utilizes, and excretes food substances. Emphasis on biological, chemical, and physiological implications to human nutrition.
- BIOL 195A Field Studies in Natural History (1,2,3)**  
*2, 4, or 6 hours lecture/laboratory*  
**Note:** Fee charged; may be taken 4 times  
**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.  
 Field studies of plant and animal species encountered in various habitats, including systematics and major structural and functional characteristics of the taxonomic groups to which these species belong, and emphasizing each species' particular adaptations that favor its survival in its natural habitat. See Class Schedule for locality to be visited.
- BIOL 195B Field Studies in Ecology (1,2,3)**  
*2, 4, or 6 hours lecture/laboratory*  
**Note:** Fee charged; may be taken 4 times  
**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.  
 Field study of the fauna and biota of selected geographic regions, with emphasis placed upon field identification, observation and interpretation of behavioral and ecological interrelationships of living things to their environment and to one another. See Class Schedule for locality to be visited.
- BIOL 195C Field Studies in Marine Biology (1,2,3)**  
*2, 4, or 6 hours lecture/laboratory*  
**Note:** Fee charged; may be taken 4 times  
**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.  
 Field study of the fauna and biota of marine intertidal and subtidal habitats of selected geographic regions, with emphasis placed upon field identification, observation and interpretation of behavioral and ecological interrelationships of living things to their environment and to one another. See Class Schedule for locality to be visited.
- BIOL 195D Field Studies in Island Ecology (1,2,3)**  
*2, 4, or 6 hours lecture/laboratory*  
**Note:** Fee charged; may be taken 4 times

**Transfer acceptability:** CSU

Field study of the unique ecology of islands, emphasizing systematics, speciation, observation and interpretation of the interactions of indigenous and exotic biota, and how the biotic communities of the study island(s) have adapted to the special limitations of their confined environments. See *Class Schedule for locality to be visited*.

**BIOL 195E Field Studies in Tropical Biology (1,2,3)**  
2, 4, or 6 hours lecture/laboratory

**Note:** Fee charged; may be taken 4 times

**Transfer acceptability:** CSU

Field study in the fauna and flora of selected tropical regions, with emphasis placed upon field identification, observation and interpretation of behavioral and ecological interrelationships of living things to their environment and to one another. See *Class Schedule for locality to be visited*.

**BIOL 197 Biology 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 Biology. See *Class Schedule* for specific topic offered. Course title will designate subject covered.

**BIOL 200 Foundations of Biology I (5)**

3 hours lecture-6 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, CHEM 110

**Transfer acceptability:** CSU; UC\*

Molecular and cellular biology. Transmission, molecular, and population genetics. Aspects of reproduction of prokaryotes and eukaryotes. Principles of evolution and systematics. Recommended for biology majors.

**BIOL 201 Foundations of Biology II (5)**

3 hours lecture-6 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, BIOL 200

**Transfer acceptability:** CSU; UC\*

An examination of the diversity of life, as seen in the Eubacteria, Archaea, and Eukarya, emphasizing the integration of structure and function, development, life histories, phylogenetics, animal behavior, and ecology. Recommended for biology majors.

**BIOL 215 Introduction to Biostatistics (4)**

3 hours lecture-3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in MATH 110, and a minimum grade of 'C' in BIOL 201

**Note:** This course does not qualify for mathematics credit

**Transfer acceptability:** CSU; UC\*; max credit for one course: BIOL 215, PSYC 205, or SOC 205 and MATH 120, one course

An introduction to the quantitative analysis of biological data. Founded on the principles of the scientific process, this course provides experience in the design of biological experiments and the appropriate analysis and interpretation of biological data.

**BIOL 295 Directed Study in Life Science (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 skills and/or proficiencies in biology 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.

**Botany (BOT)**

Contact the Life Sciences Department for further information, (760) 744-1150, ext. 2275

**COURSE OFFERINGS****BOT 100 General Botany (4)**

3 hours lecture-3 hours laboratory

**Note:** Not open to students with prior credit in BOT 101 or 101L.

**Transfer acceptability:** CSU; UC – BOT 100 and 101/101L combined: maximum credit, 4 units; CAN BIOL 6

The diversity, structure, and function of major plant groups including cellular metabolism, soil-water relationships, classification, genetics, life cycle patterns, growth, and the basic ecological and evolutionary concepts of botany. *This is a general education course intended for non-science majors.*

**BOT 101 General Botany Lecture (3)**

3 hours lecture

**Note:** Not open to students with prior credit in BOT 100

**Transfer acceptability:** CSU; UC – BOT 100 and 101/101L combined: maximum credit, 4 units

The diversity, structure, and function of major plant groups including cellular metabolism, soil-water relationships, classification, genetics, life cycle patterns, growth, and the basic ecological and evolutionary concepts of botany.

**BOT 101L General Botany Laboratory (1)**

3 hours laboratory

**Prerequisite:** Completion of, or concurrent enrollment in, BOT 101

**Note:** Not open to students with prior credit in BOT 100

**Transfer acceptability:** CSU; UC – BOT 100 and 101/101L combined: maximum credit, 4 units

A laboratory course in plant biology. Special emphasis on the structure, growth, function, genetics, and life cycles of major plant groups. *This is a general education course intended for non-science majors.*

**BOT 110 Botany of Spring Wildflowers (4)**

3 hours lecture-3 hours laboratory

**Transfer acceptability:** CSU; UC

The identification, distribution, and interrelationships of plants in their natural environment; ecological principles; and representative plant communities. Special emphasis will be given to the study of plant families and the use of taxonomic keys.

**BOT 115 Plants and People (3)**

3 hours lecture

**Transfer acceptability:** CSU; UC – No credit if taken after 100 or 101/101L

The role of plants in the world ecosystem, including past and present cultural and economic uses for food, medicine, and industrial products. Principles of plant structure and function, with selected topics on plant diversity, plant adaptations, and the interrelationships between plants and people will also be discussed.

**BOT 195 Field Study of Native Plants (1,2,3)**

2, 4 or 6 hours lecture/laboratory

**Note:** May be taken 4 times

**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.

Extended field study of the flora of selected geographical areas including habitats, adaptations, and identification of native and naturalized species. See *Class Schedule for locality to be visited*. Fee charged.

**BOT 197 Botany 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 Botany. See *Class Schedule* for specific topic offered. Course title will designate subject covered.

## Business Education (BUS)

See also Accounting, Business Management, International Business, Legal Studies, Office Information Systems, Paralegal Studies, Real Estate

Contact the Business Education Department for further information, (760) 744-1150, ext. 2488

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

### PROGRAMS OF STUDY

#### Advertising, Marketing, and Merchandising

This program is designed to provide a general academic background of coursework pertinent to entry-level employment and/or upper division education in the field of product or service distribution.

#### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
ACCT 103 and Financial Accounting	
ACCT 104 or Accounting Electronic Spreadsheet Lab	
BUS 105 Bookkeeping Fundamentals	3,5
BUS 110 Business Mathematics	3
BUS 115 Business Law	3
BUS 140 Selling for Business	3
BUS 145/	
FASH 125 Retailing/Promotion	3
BUS 150 Advertising	3
BUS 155 Marketing	3
<b>Electives (Select 10-11 units)</b>	
BUS 100 Introduction to Business	3
BUS 125 Business English	3
BUS 136 Personal Finance	3
BUS 157 E-Commerce	3
BUS 158 Marketing Internship	3
BUS 170 Word Processing for Business - Basic	1
BUS 205 Business Writing	3
BMGT 110 Human Resource Management	3
BMGT 105 Small Business Management	3
CSIS 105 or Computer Concepts/Microcomputer Applications	
CSIS/	
RCSIS 120 Microcomputer Applications	3
MATH 120 Elementary Statistics	3
OIS 101 Beginning Keyboarding	3
SPCH 100 Oral Communication	3
<b>TOTAL UNITS</b>	<b>31 - 34</b>

Recommended Elective: BUS 171

#### Business Administration

Provides a program to prepare the student for transfer. Since requirements vary at each four-year school, transfer students must consult with a counselor, or a Business Education Department advisor, to develop a program for the specific school they wish to attend.

#### A.A. Degree Major

Program Requirements	Units
ACCT 103 Financial Accounting	4
ACCT 104 Accounting Electronic Spreadsheet Lab	1
ACCT 108 Managerial Accounting	4
BUS 115 or Business Law	
BUS 117 Legal Environment of Business3	
BUS 175 Excel for Business	1
BUS 205 Business Writing	3
CSIS 105 or Computer Concepts/Microcomputer Applications	
CSIS/	
RCSIS 120 Microcomputer Applications	3
ECON 100 or Basic Economics	

ECON 101 and Principles of Economics (Macro)	
ECON 102 Principles of Economics (Micro)	3,6
MATH 120 Elementary Statistics	3
MATH 130 Calculus for the Social Sciences	4
<b>TOTAL UNITS</b>	<b>29 - 32</b>

#### Business - General

This program is primarily designed for students who are seeking an overview of business educational opportunities prior to a career commitment in a particular area.

#### A.A. Degree Major

Program Requirements	Units
ACCT 103 and Financial Accounting	
ACCT 104 or Accounting Electronic Spreadsheet Lab	
BUS 105 Bookkeeping Fundamentals	3,5
BUS 100 Introduction to Business	3
BUS 110 Business Mathematics	3
BUS 115 Business Law	3
BUS 125 Business English	3
BUS 155 Marketing	3
BMGT 101 or Introduction to Management	
BMGT 105 Small Business Management	3
CSIS 105 or Computer Concepts/Microcomputer Applications	
CSIS/	
RCSIS 120 Microcomputer Applications	3
<b>Electives (Select 6-9 units)</b>	
ACCT 108 Managerial Accounting	4
ACCT 115 Sales Tax, Payroll Taxes, and Employee Benefits	2
BUS 116 Business Law	3
BUS 130 Intro Purchasing and Supply Chain Management	3
BUS 140 Selling for Business	3
BUS 145/	
FASH 125 Retailing/Promotion	3
BUS 150 Advertising	3
BUS 157 E-Commerce	3
BUS 158 Marketing Internship	3
BUS 205 Business Writing	3
OIS 101* or Beginning Keyboarding	
OIS 102 Intermediate Keyboarding	3
<b>TOTAL UNITS</b>	<b>30 - 35</b>

\* Not required if acceptable level skill has been completed in high school. Students excused from OIS 101 must substitute an elective.

Recommended Electives: BUS 170, 171; PSYC 100; ECON 101

#### Call Center Representative

Provides a program to prepare the student for an entry-level position in a call services center.

#### Certificate of Proficiency

Program Requirements	Units
CSIS/	
RCSIS 170 Windows	1
BUS 122 Call Center Services	3
BUS 125 Business English	3
BUS 140 Selling for Business	3
<b>TOTAL UNITS</b>	<b>10</b>

#### E-Business

Provides a program, which prepares students in the basic skills necessary to use e-commerce in an ever changing and competitive entrepreneurial market.

#### Certificate of Proficiency

Program Requirements	Units
BMGT 105 Small Business Management	3
BUS 155 Marketing	3
BUS 157 E-Commerce	3
GC 217 Online Store Design I	3

**Electives (Select 3 units)**

BUS 138	Business Ethics	2
BUS 142	Customer Service	1
BUS 180	Access for Business	1
BUS 190	Internet for Business	1
GC 218	Online Store Design II	3
GC 290	Copyright Graphic Designers/Web Developers	1
GC 291	Contracts Graphic Designers/Web Developers	1
GC 292	Legal Issues Graphic Designers/Web Developers	3
<b>TOTAL UNITS</b>		<b>15</b>

**Entrepreneurship**

Provides a program to prepare the student for owning and managing a business.

**Certificate of Proficiency**

<b>Program Requirements</b>		<b>Units</b>
BMGT 105	Small Business Management	3
BUS 105	Bookkeeping Fundamentals	3
BUS 155	Marketing	3
BUS 157	E-Commerce	3
BUS 170	Word Processing for Business - Basic	1
BUS 175	Excel for Business	1

**Electives (Select 3 units)**

BUS 138	Business Ethics	2
BUS 142	Customer Service	1
BUS 171	Word Processing for Business - Advanced	1
BUS 180	Access for Business	1
BUS 185	PowerPoint for Business	1
BUS 190	Internet for Business	1
<b>TOTAL UNITS</b>		<b>17</b>

**Internet**

The Internet program is also offered in Graphic Communications.

As the vast web of global and local information networks grow, several skills and forms of literacy are becoming essential for anyone who wants to obtain the full benefits of the Communications Age. An individual's ability to capitalize on the opportunities offered by interactive communications requires mastery of these information and communication proveniences:

- Navigational skills - The ability to move smoothly among arrays of autonomous and globally interconnected information, contacts, forums, and discussion groups in
- order to locate and connect to information and expertise from relevant sources.
- Information literacy - An understanding of which information is most useful, relevant, and reliable, as well as the ability to analyze, distill, integrate, compose, and classify information to create knowledge.
- Distribution skills - Frameworks for rethinking methods of packaging, presenting, providing access, and disseminating information and knowledge in this new medium.
- Communications literacy - Integrating new forms of information, knowledge, and message development into evolving patterns of organizational and interpersonal communication.

This certificate offers preparation skills for the above areas of emphasis involving the Internet.

**A.A. Degree Major or Certificate of Achievement**

<b>Program Requirements</b>		<b>Units</b>
BUS 157	E-Commerce	3
CSIS/ RCSIS 137	Web Site Development with HTML	2

GC/ RGC 202 or	Web Page Layout I	3
GC 230 and	Web Page Layout I – Part I	1.5
GC 231	Web Page Layout I – Part II	1.5
LT 154	Information for Life Long Learning	3
	Emphasis Requirements	14-18
<b>TOTAL UNITS</b>		<b>25-29</b>

***Emphasis in Business Education***

<b>Emphasis Requirements</b>		<b>Units</b>
BMGT 105	Small Business Management	3
BUS 140	Selling for Business	3
BUS 150	Advertising	3
BUS 155	Marketing	3
BUS 170	Word Processing for Business – Basic	1
BUS 171	Word Processing for Business - Advanced	1

***Emphasis in Graphic Communication***

<b>Emphasis Requirements</b>		<b>Units</b>
GC 144	Web Graphics	3
GC/RGC 203	Interactive Publishing with PDF's	3
GC 206	Web Multimedia	3
GC 212	Web Page Layout II	3
GC 215	Designing for Web Standards I	
GC 217 or	Online Store Design I	
GC 229	Interactive Streaming Media	3

**Retail Management**

A comprehensive program designed to prepare current and future retail employees for the fast paced challenges in a competitive retail environment. This certificate has been endorsed by the Western Association of Food Chains and its member companies.

**Certificate of Achievement**

<b>Program Requirements</b>		<b>Units</b>
ACCT 103	Financial Accounting	4
ACCT 104	Acct Electronic Spreadsheet Lab	1
BMGT 101	Introduction to Management	3
BMGT 110	Human Resource Management	3
BUS 110	Business Mathematics	3
BUS 145/ FASH 125	Retailing/Promotion	3
BUS 155	Marketing	3
BUS 205	Business Writing	3
OIS 120	Intro to Office Info Systems	3
SPCH 115	Interpersonal Communication	3
<b>TOTAL UNITS</b>		<b>29</b>

**Salesperson - Retail**

This program is designed to prepare students for entry into the retail sales force. Students will gain a working knowledge of sales techniques and customer service principles within the marketing environment. Emphasis will be placed on a consultative approach toward encouraging sales.

**Certificate of Proficiency**

<b>Program Requirements</b>		<b>Units</b>
<b>(Select 3 classes totaling 9 units)</b>		
BUS 140	Selling for Business	3
BUS 145/ FASH 125	Retailing/Promotion	3
BUS 150	Advertising	3
BUS 155	Marketing	3

**Elective Courses (Select 6 units)**

BUS 100	Introduction to Business	3
BUS 110	Business Mathematics	3
BUS 138	Business Ethics	2
BUS 142	Customer Service	1
<b>TOTAL UNITS</b>		<b>15</b>



## COURSE OFFERINGS

- BUS 100 Introduction to Business (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU; UC  
 Preparation for survival within the global economy. Topics such as small business management, managerial theory, international business, and marketing represent several important class components. Includes strong career guidance component.
- BUS 105 Bookkeeping Fundamentals (3)**  
*3 hours lecture*  
**Note:** Not open to students who have completed ACCT 103  
**Transfer acceptability:** CSU;  
 Comprehensive coverage of the basic bookkeeping cycle, including journalizing, posting, worksheet and financial statements; payroll records; petty cash systems; reconciliation of bank statements. Designed to give practical preparation for bookkeeping positions.
- BUS 110 Business Mathematics (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU  
 Theory and practical application to business situations of computing trade and cash discounts, commissions, payrolls, property taxes, interest, bank discount, compound interest, present value, annuities, sinking funds, insurance, consumer credit, and depreciation.
- BUS 115 Business Law (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU; UC – BUS 115, 116, 117 combined: maximum credit, one course; CAN BUS 8  
 Law in its relationships to business contracts, agency, bailment, and sales.
- BUS 116 Business Law (3)**  
*3 hours lecture*  
**Recommended preparation:** A minimum grade of "C" in BUS 115  
**Transfer acceptability:** CSU; UC – BUS 115, 116, 117 combined: maximum credit, one course  
 Law in its relationships to negotiable instruments, partnerships, corporations, real property, insurance, wills and estates, and bankruptcy.
- BUS 117 Legal Environment of Business (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU; UC – BUS 115, 116, 117 combined: maximum credit, one course; CAN BUS 12  
 Business legal systems, sources of law, social and ethical influences, judicial and administrative systems, contracts, torts, bankruptcy, agency, business organizations, securities regulation, regulation of property, and protection of intellectual property interests.
- BUS 122 Call Center Services (3)**  
*3 hours lecture*  
 Preparation for employment in a call center telemarketing environment. Includes purpose and effectiveness of a call center; technologies used; ergonomics; professional procedures; customer service and customer psychology; and interpersonal and telecommunication skills.
- BUS 125 Business English (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU  
 Practical approaches to solving the common problems of English language usage, as specifically applied to business-oriented written material. Coverage includes business vocabulary, spelling, grammar, idioms, sentence structure, and punctuation.
- BUS 130 Introduction to Purchasing and Supply Chain Management (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU  
 Basic principles in purchasing and supply chain management, relationship management, application of processes, inventory management, source selection, obtaining and evaluating offers, buying techniques, contract writing and legal aspects.
- BUS 136 Personal Finance (3)**  
*3 hours lecture*  
**Note:** Cross listed as FCS 136  
**Transfer acceptability:** CSU  
 A study of the effective management of personal and family resources. Budgeting, buying of goods and services, banking, credit, taxation, investing, insurance, home ownership, estate planning, and consumer protection.
- BUS 138 Business Ethics (2)**  
*2 hours lecture*  
**Transfer acceptability:** CSU  
 This course provides a systems approach for making business decisions that are responsible, practical, and defensible. It examines the gray zone of ethical quandaries and provides a methodical process for selecting alternative solutions that are ethical and good for business.
- BUS 140 Selling for Business (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU  
 A study of the working principles of selling in a business environment including prospecting for customers, understanding buying behavior, developing a sales presentation, closing the sale while delivering the best customer service, and maintaining professional relationships.
- BUS 142 Customer Service (1)**  
*1 hour lecture*  
**Transfer acceptability:** CSU  
 This course covers the entire spectrum of customer service, which includes anything a business does for a customer in order to enhance the customer experience. Central focus of the course is recognition that it is much more costly to attract new customers than it is to maintain current customers.
- BUS 145 Retailing/Promotion (3)**  
*3 hours lecture*  
**Note:** Cross listed as FASH 125  
**Transfer acceptability:** CSU  
 Principles and techniques of retailing, promotion, and advertising pertinent to retail policies and procedures. Includes psychological aspect of retailing. Working foundation for those looking forward to employment in this area.
- BUS 150 Advertising (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU  
 A study of advertising media and methods as sales promotional tools in marketing activities including, but not limited to, such areas as the production and evaluation of advertisements and advertising media.
- BUS 155 Marketing (3)**  
*3 hours lecture*  
**Transfer acceptability:** CSU  
 A study of the role and functions of marketing in the wholesale and retail distribution of industrial and consumer goods and services, to familiarize students with marketing policies and practices, integration of marketing activities, and pertinent government regulations.
- BUS 157 E-Commerce (3)**  
*3 hours lecture*  
**Recommended preparation:** BUS 190  
**Transfer acceptability:** CSU  
 Addresses the methods by which a business can harness the powers of the Web to sell its product. Examines planning an e-business, web site creation and hosting, e-commerce stores, electronic payment issues and security, marketing an e-business, copyright, and privacy policy issues.
- BUS 158 Marketing Internship (3)**  
*3 hours lecture*  
**Note:** Course not offered every semester  
**Transfer acceptability:** CSU  
 A group process whereby students form their own promotions company. Students will work with a local business owner for the purpose of creating and implementing a promotional event to be held on campus, at the client's place of business, or at another

location, as identified through the research component of their plan. Students will engage in activities which include, but are not limited to, market research, advertising, public relations, and budgeting.

### **BUS 165 Keyboarding (1)**

2 hours lecture/laboratory

**Note:** May be open entry/open exit

**Transfer acceptability:** CSU

Touch-typing of alphabetic, numeric, and symbol keys on a computer keyboard; development of speed and accuracy on straight copy; introduction to basic business document formatting.

### **BUS 170 Word Processing for Business – Basic (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Recommended preparation:** A keyboarding speed of 20 net words a minute

**Note:** May be open entry/open exit; May be taken 4 times with different subject matter; Maximum of 4 completions in any combination of BUS 170, BUS 171; This course cannot be used to satisfy the Office Information Systems A.A. Degree/Certificates.

**Transfer acceptability:** CSU

Hands-on application with Microsoft Word. Students will create, save, close, open, edit, and print a variety of business documents utilizing the following software features: finding and replacing text, moving and copying text; spell, thesaurus, grammar, and auto text; character, paragraph, page, and document formatting; envelopes tables; columns; borders and special characters; footnotes and endnotes; draw objects and graphics; hyperlinks; styles and templates; outlines; smart tags; and headers/footers. Class Schedule will designate software package covered.

### **BUS 171 Word Processing for Business – Advanced (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Recommended preparation:** A minimum grade of "C" in BUS 170

**Note:** May be open entry/open exit; May be taken 4 times with different subject matter; Maximum of 4 completions in any combination of BUS 170, BUS 171; This course cannot be used to satisfy the Office Information Systems A.A. Degree/Certificates.

**Transfer acceptability:** CSU

Refinement of basic word processing skills and practice of the more sophisticated software features of merge; labels; fields; footnotes and endnotes; index and table of contents; macros; master and subdocuments; customizing Word; on-screen forms; charts; bookmarks and cross-referencing; creating and editing Word web pages; comparing and merging documents; linking and embedding objects; and tracking changes. In addition, more advanced printing, file management, and integration of related software will be covered. The Class Schedule will designate software version covered.

### **BUS 175 Excel for Business (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Recommended preparation:** BUS 110

**Note:** May be open entry/open exit; may be taken 4 times

**Transfer acceptability:** CSU

Introduction to a currently used computer spreadsheet application program. Concepts include defining and designing spreadsheets; creating, editing, formatting, printing, manipulating data, and using spreadsheets within practical applications designed for the business environment. Class Schedule will designate software package covered.

### **BUS 180 Access for Business (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Note:** May be open entry/open exit; may be taken 4 times

**Transfer acceptability:** CSU

Introduction to a currently used computer database program. Skills include planning, designing, and using a database; tables; forms and sub forms; reports; queries; and relationships within practical applications designed for the business environment. Class Schedule will designate software package covered.

### **BUS 185 PowerPoint for Business (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Note:** May be open entry/open exit; may be taken 4 times

**Transfer acceptability:** CSU

Introduction to a currently used computer presentations program to produce effective presentations using overheads, 35mm photographic slides, or on-screen slides. Skills include defining and designing presentations; preparing slides using the slide, slide sorter, outline, notes page, and slide show views; formatting and animating the presentation; and applying templates within practical applications applied to the business environment. Class Schedule will designate software package covered.

### **BUS 186 MICROSOFT PUBLISHER (1)**

2 hours lecture/laboratory

**Recommended preparation:** R CSIS 170 and R CSIS 127 or BUS 170 or OIS 136.1

**Note:** May be open entry/open exit, cross listed as R CSIS 130, may be taken 4 times.

Hands-on applications of Microsoft Publisher, a comprehensive software package that combines text, graphics, illustrations, and photographs to produce typeset quality documents for local printer output or for commercial printing. Includes: newsletters; brochures; flyers; web pages; business cards; letterheads and envelopes; advertising and marketing materials; and greeting cards; PDF and web file formats; and printing options.

### **BUS 187 Project for Business (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Note:** May be open entry/open exit; may be taken 4 times with different subject matter

**Transfer acceptability:** CSU

Hands-on application with Microsoft Project, a comprehensive software package that includes the processes of initiating, planning, executing, controlling, and closing a project to meet project goals. Students will identify ways of completing projects more efficiently and effectively by covering the topics of planning a project; creating a project schedule; communicating project information; assigning resources and costs to a project; tracking the progress of and closing a project; and, sharing project information with other people and applications.

### **BUS 188 Voice Recognition (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Note:** May be open entry/open exit; may be taken 4 times with different subject matter

**Transfer acceptability:** CSU

Hands-on application with a current voice recognition software package. Training includes training the software to recognize the user's voice; speaking accurately to improve the user's voice profile; opening and closing programs; selecting words and phrases; creating lines and paragraphs; fixing mistakes; capitalizing/moving/inserting/saving/opening/printing documents; customizing the software; formatting a variety of business documents; managing applications and documents; and, managing keyboard and mouse control techniques.

### **BUS 190 Internet for Business (1)**

Course requires 32 hours lecture/laboratory. Students should refer to course listing in Class Schedule for scheduling options.

**Note:** May be open entry/open exit, may be taken 2 times

**Transfer acceptability:** CSU

Basic concepts of navigating the Internet and Intranet including terminology, bookmarks/favorites, copying/pasting web pages, search sites/engines, file transfer, e-mail, and attachments with practical applications designed for the business environment.

### **BUS 197 Business 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

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

**BUS 205 Business Writing (3)**

*3 hours lecture*  
**Prerequisite:** A minimum grade of "C" in BUS 125 or eligibility determined through the Business English placement process  
**Recommended preparation:** ENG 100  
**Transfer acceptability:** CSU  
 Principles of effective writing applied to business communications. Develops skill in analysis, organization, composition, and presentation of various types of letters, memos, and reports to elicit the desired responses. Formal analytical report required.

## Business Management (BMGT)

Contact the Business Education Department for further information, (760) 744-1150, ext. 2488

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

### PROGRAMS OF STUDY

#### Business Management

This program includes a selection of courses that provides academic preparation to individuals who are seeking employment, or are currently employed, within the management structure of business.

#### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
<b>Core Courses (Select 18-20 units)</b>	
ACCT 103 and Financial Accounting	
ACCT 104 or Acct Electronic Spreadsheet Lab	
BUS 105 Bookkeeping Fundamentals	3, 5
BUS 100 Introduction to Business	3
BUS 110 Business Mathematics	3
BUS 115 Business Law	3
BUS 155 Marketing	3
BUS 205 Business Writing	3
CSIS 105 or Computer Concepts/Microcomputer CSIS/	
RCSIS 120 Microcomputer Applications	3
ECON 100 or Basic Economics	
ECON 101 or Principles of Economics (Macro)	
BUS 136 Personal Finance	3
MATH 120 Elementary Statistics	3
PSYC 100 Introduction to Psychology	3
SPCH 100 Oral Communication	3
<b>Management Courses (Select 8-9 units)</b>	
BMGT 101 Introduction to Management	3
BMGT 105 Small Business Management	3
BMGT 110 Human Resource Management	3
BMGT 115 Organizational Theory and Design	3
BMGT 125 Introduction to Labor Relations	3
BMGT 130 Management/Leadership Issues	3
BMGT 197 Business Management Topics	.5-4
<b>Elective Courses (Select 3-4 units)</b>	
ACCT 108 Managerial Accounting	4
BUS 130 Intro Purchase/Supply Chain Management	3
BUS 140 Selling for Business	3
BUS 145/	
FASH 125 Retailing/Promotion	3
BUS 157 E-Commerce	3
BUS 158 Marketing Internship	3
BUS 170 Word Processing for Business - Basic	1
BUS 171 Word Processing for Business - Advanced	1
BUS 187 Project for Business	
1	
BUS 197 Business Topics	.5-4
RE 100 Real Estate Principles	3
CE 100 Cooperative Education	1,2,3,4
<b>TOTAL UNITS</b>	<b>29 – 33</b>

### COURSE OFFERINGS

**BMGT 101 Introduction to Management (3)**

*3 hours lecture*  
**Transfer acceptability:** CSU  
 A leadership course designed to enhance understanding of responsibilities associated with management in business. Topics will cover management styles and human behavior factors associated with managing staff.

**BMGT 105 Small Business Management (3)**

*3 hours lecture*  
**Transfer acceptability:** CSU  
 For owners and managers of small businesses. Analysis of personal qualifications, forms of ownership, sources of information, financing, planning, legal problems, record keeping, advertising, insurance, sales promotions, credit, public relations, and current aids to successful management.

**BMGT 110 Human Resource Management (3)**

*3 hours lecture*  
**Transfer acceptability:** CSU  
 A survey of the history and present status of human resource management in the United States. Emphasis on modern techniques of recruitment, placement, wage administration, communications, training, labor relations, and employer-employee relationships in modern industry and business.

**BMGT 115 Organizational Theory and Design (3)**

*3 hours lecture*  
**Transfer acceptability:** CSU  
 Policies and methods of organization in business enterprises of various types and sizes. Functional components of business organization: planning, controlling, coordinating, and directing to meet organizational objectives. Establishing lines of authority and functions of departments or units with emphasis on systems management.

**BMGT 125 Introduction to Labor Relations (3)**

*3 hours lecture*  
**Transfer acceptability:** CSU  
 Introduction to, and development of, an appreciation for labor relations; review of procedures involved in negotiation and administration of labor agreements; development of an understanding of the involvement of labor and management in a collective bargaining agreement; and an overview of the general nature of the labor-management relationship and labor law as they currently exist in the United States.

**BMGT 130 Management/Leadership Issues (3)**

*3 hours lecture*  
**Transfer acceptability:** CSU  
 Examination of current issues in management and leadership including: organizing, staffing, decision making, motivating, communicating, and applying such skills to a business organization. Concepts related to group dynamics, change, conflict, organizational communications, and productivity are explored.

**BMGT 197 Business Management 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  
 Topics in Business Management. See Class Schedule for specific topic offered. Course title will designate subject covered.

## Cabinet and Furniture Technology (CFT)

Contact the Trade and Industry Department for further information, (760) 744-1150, ext. 2545

Associate in Arts degree requirements, Certificate of

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

### PROGRAMS OF STUDY

#### Cabinetmaking and Furniture Design

Provides the student with the theory and skills needed for employment in the field of cabinetmaking and furniture design.

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
CFT 100 Fundamentals of Woodworking	2,3,4
CFT 105 Machine Woodworking/Furniture	2,3,4
CFT 110 Machine Tool Joinery I	2,3,4
CFT 111 Machine Tool Joinery II	2,3,4
CFT 153 Studio Furniture Design I	2,3,4
CFT 165 Cabinet/Face Frame Construction	2,3,4
CFT 167 Cabinetmkg/32mm European Construction	2,3,4
CFT 195 Finishing Tech/Touch-Up/Repair	2,3,4

##### Group One (Select 12 units)

CFT 149 Hand Joinery I	2,3,4
CFT 150 Hand Joinery II	2,3,4
CFT 151 Veneering Technology I	2,3,4
CFT 152 Veneering Technology II	2,3,4
CFT 155 Classic American Chair Designs	2,3,4
CFT 157 Chair/Seating Prototype Construction	2,3,4
CFT 158 Chair/Seating Production Manufacturing	2,3,4
CFT 161 Tables/Prototype Construction	2,3,4
CFT 162 Tables/Production Manufacturing	2,3,4

##### Group Two (Select 12 units)

CFT 120 Advanced Furniture Lab	.5-3
CFT 130 Stringed Instrument Making	2,3,4
CFT 141 Making Woodworking Tools	.5,1,2,3
CFT 142 The Art and Craft of Planemaking	.5,1,2,3
CFT 143 Decorative Box Making	2,3,4
CFT 144 Production Furniture Making (Toys)	.5,1
CFT 154 Studio Furniture Design II	2,3,4
CFT 156 Advanced Classic American Chair Design	2,3,4
CFT 163 Laminate Fabrication	.5,1
CFT 164 Cabinet Installation	.5,1
CFT 166 Cabinetmaking/Production & Manufacturing	2,3,4
CFT 168 Cabinetmaking/Architectural Millwork	2,3,4
CFT 169 Cabinetmaking/Computer Cabinet Layout	.5,1,2,3
CFT 170 Workbench Design and Production	2,3,4
CFT 171 Furniture for the Wood Shop	2,3,4
CFT 172 Turbo CAD for Cabinets and Furniture	2,3,4
CFT 175 Jigs and Fixtures	2,3,4
CFT 180 Wood Bending And Lamination	2,3,4
CFT 185 Machine Tool Set-Up and Maintenance	2,3,4
CFT 186 Machine Tool/Production Carving	1,2,3,4
CFT 187 Introduction to Carving	1,2,3,4
CFT 188 Intermediate Carving	1,2,3,4
CFT 189 Advanced Carving	1,2,3,4
CFT 190 Specialty and Manufactured Hardware	.5,1,2,3
CFT 196 Special Problems in CFT	1-6
CFT 197 Cabinet and Furniture Technology Topics	.5-4
CFT 198 Advanced Wood Finishing	2,3,4
CFT 295 Directed Study in Woodworking	1,2,3,4,5,6

**TOTAL UNITS**

**40 – 56**

#### Cabinetmaking and Millwork

Provides the student with the theory and skills needed for employment in the cabinet and millwork industry.

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
CFT 100 Fundamentals of Woodworking	2,3,4
CFT 105 Machine Woodworking/Furniture	2,3,4
CFT 165 Cabinet/Face Frame Construction	2,3,4
CFT 167 Cabinetmkg/32mm European Const	2,3,4
CFT 168 Cabinetmaking/Architectural Millwork	2,3,4
CFT 195 Finishing Tech/Touch-Up/Repair	2,3,4

##### Group One (Select 12 units)

CFT 110 Machine Tool Joinery I	2,3,4
CFT 111 Machine Tool Joinery II	2,3,4
CFT 151 Veneering Technology I	2,3,4
CFT 152 Veneering Technology II	2,3,4
CFT 153 Studio Furniture Design I	2,3,4
CFT 166 Cabinetmaking/Production & Manufacturing	2,3,4
CFT 169 Cabinetmaking/Computer Cabinet Layout	.5,1,2,3
CFT 185 Machine Tool Set-up and Maintenance	2,3,4

##### Group Two (Select 12 units)

CFT 97 Cabinet and Furniture Technology Topics	.5-4
CFT 120 Advanced Furniture Lab	.5-3
CFT 142 The Art and Craft of Planemaking	.5,1,2,3
CFT 143 Decorative Box Making	2,3,4
CFT 149 Hand Joinery I	2,3,4
CFT 150 Hand Joinery II	2,3,4
CFT 154 Studio Furniture Design II	2,3,4
CFT 155 Classic American Chair Designs	2,3,4
CFT 156 Adv Classic American Chair Design	2,3,4
CFT 157 Chair/Seating Prototype Construction	2,3,4
CFT 158 Chair/Seating Production Manufacturing	2,3,4
CFT 161 Tables/Prototype Construction	2,3,4
CFT 162 Tables/Production Manufacturing	2,3,4
CFT 163 Laminate Fabrication	.5,1
CFT 164 Cabinet Installation	.5,1
CFT 170 Workbench Design and Production	2,3,4
CFT 171 Furniture for the Wood Shop	2,3,4
CFT 172 Turbo CAD for Cabinets and Furniture	2,3,4
CFT 175 Jigs and Fixtures	2,3,4
CFT 180 Wood Bending And Lamination	2,3,4
CFT 186 Machine Tool/Production Carving	1,2,3,4
CFT 187 Introduction to Carving	1,2,3,4
CFT 188 Intermediate Carving	1,2,3,4
CFT 189 Advanced Carving	1,2,3,4
CFT 190 Specialty and Manufactured Hardware	.5,1,2,3
CFT 196 Special Problems in CFT	1-6
CFT 197 Cabinet and Furniture Technology Topics	.5-4
CFT 198 Advanced Wood Finishing	2,3,4
CFT 295 Directed Study in Woodworking	1,2,3,4,5,6

**TOTAL UNITS**

**36 - 48**

#### Furniture Making

Provides the student with the theory and skills needed for employment in the field of furniture production and manufacturing.

##### A.A. Degree Major or Certificate of Achievement

Program Requirements	Units
CFT 100 Fundamentals of Woodworking	2,3,4
CFT 105 Machine Woodworking/Furniture	2,3,4
CFT 110 Machine Tool Joinery I	2,3,4
CFT 111 Machine Tool Joinery II	2,3,4
CFT 151 Veneering Technology I	2,3,4
CFT 152 Veneering Technology II	2,3,4
CFT 153 Studio Furniture Design I	2,3,4
CFT 154 Studio Furniture Design II	2,3,4
CFT 157 or Chair/Seating Prototype Construction	2,3,4
CFT 161 Tables/Prototype Construction	2,3,4
CFT 195 Finishing Tech/Touch-Up/Repair	2,3,4

##### Group One (Select 5-6 units)

CFT 149 Hand Joinery I	2,3,4
CFT 150 Hand Joinery II	2,3,4

CFT 155	Classic American Chair Designs	2,3,4
CFT 180	Wood Bending And Lamination	2,3,4
CFT 187	Introduction to Carving	1,2,3,4
CFT 188	Intermediate Carving	1,2,3,4

**Group Two (Select 5-6 units)**

CFT 97	Cabinet and Furniture Technology Topics	.5-4
CFT 120	Advanced Furniture Lab	.5-3
CFT 130	Stringed Instrument Making	2,3,4
CFT 141	Making Woodworking Tools	.5,1,2,3
CFT 142	The Art and Craft of Planemaking	.5,1,2,3
CFT 143	Decorative Box Making	2,3,4
CFT 144	Production Furniture Making (Toys)	.5,1
CFT 156	Advanced Classic American Chair Design	2,3,4
CFT 158	Chair/Seating Production Manufacturing	2,3,4
CFT 162	Tables/Production Manufacturing	2,3,4
CFT 165	Cabinet/Face Frame Construction	2,3,4
CFT 166	Cabinetmaking/Production & Manufacturing	2,3,4
CFT 167	Cabinetmaking/32mm European Construction	2,3,4
CFT 168	Cabinetmaking/Architectural Millwork	2,3,4
CFT 169	Cabinetmaking/Computer Cabinet Layout	.5,1,2,3
CFT 170	Workbench Design and Production	2,3,4
CFT 171	Furniture for the Wood Shop	2,3,4
CFT 172	Turbo CAD for Cabinets and Furniture	2,3,4
CFT 175	Jigs and Fixtures	2,3,4
CFT 185	Machine Tool Set-Up and Maintenance	2,3,4
CFT 186	Machine Tool/Production Carving	1,2,3,4
CFT 189	Advanced Carving	1,2,3,4
CFT 190	Specialty and Manufactured Hardware	.5,1,2,3
CFT 196	Special Problems in CFT	1-6
CFT 197	Cabinet and Furniture Technology Topics	.5-4
CFT 198	Advanced Wood Finishing	2,3,4
CFT 295	Directed Study in Woodworking	1,2,3,4,5,6

**TOTAL UNITS** 30 – 52

**COURSE OFFERINGS**

Courses numbered under 100 are not intended for transfer credit.

**CFT 70 Drawing for the Construction/Cabinet/ Millwork Trades (3)**

2 hours lecture-3 hours laboratory

**Note:** Cross listed as DT 70

Planning, drawing, interpreting, estimating construction, and cabinet work and millwork drawing.

**CFT 97 Cabinet and Furniture Technology 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

Topics in Cabinet and Furniture Technology. See Class Schedule for specific topic covered. Course title will designate subject covered.

**CFT 100 Fundamentals of Woodworking (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Transfer acceptability:** CSU

An introductory course in design and construction of wood products. Survey, use, care and selection of woodworking machines and hand tools. Explanation of the basic techniques of milling, joinery, assembly, and finishing.

**CFT 105 Machine Woodworking/Furniture (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 100

**Note:** May be taken 2 times

Study, design, and development of practical applications for basic cabinet construction as utilized by the wood products industry. Includes partitions, face frame, carcass, and basic door and drawer construction. Operation of woodworking machines, tools and processes, techniques, and care and suitability of tools and machines.

**CFT 110 Machine Tool Joinery I (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 105

**Note:** May be taken 3 times; maximum of 4 completions in any combination of CFT 110, CFT 111

Through the construction of a specific furniture project, students will advance to a sophisticated level of joinery and design-utilizing mortise and tenon, dovetails, frame and panel, and other joinery appropriate to fine furniture. With the addition of advanced machinery training, students will be able to develop and build a custom design of their choice, creating heirloom furniture in either traditional or contemporary styling.

**CFT 111 Machine Tool Joinery II (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 110

**Note:** May be taken 3 times; maximum of 4 completions in any combination of CFT 110, CFT 111

Completion of student built cabinet furniture project that incorporated solid wood and traditional joinery in its design. Students will explore door and drawer construction methods, furniture hardware, and various finishing choices. Creation of special moldings and spindle turnings for decorating the carcass will also be explored.

**CFT 120 Advanced Furniture Lab (.5-3)**

1 ½ - 9 hours laboratory

**Prerequisite:** CFT 100

**Note:** May be taken 4 times

Laboratory for students who need additional lab time to complete difficult, complex projects. Students will work under the supervision of an instructor.

**CFT 130 Stringed Instrument Making (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 100

**Note:** May be taken 4 times

Through the fabrication of a steel stringed guitar, students will study the: history, tone theory, construction processes, materials, finishing and set up of stringed instruments. Students will work together, production style, milling raw lumber from local sources into guitar part blanks. Students will then work individually constructing their own guitar. Traditional and modern methods of construction and fabrication are explored.

**CFT 141 Making Woodworking Tools (.5,1,2,3)**

1, 2, 4, or 6 hours lecture/laboratory

**Note:** May be taken 4 times

Making traditional woodworking tools used to make furniture and chairs. Topics include the history and uses of tools, materials and design, layout of the stock, equipment needed to make and finish the tools, sharpening and fitting the blades, forging and heat treating

steel parts. Types of tools include spoke shaves, shaving horses, steaming devices and bending forms.

**CFT 142 The Art and Craft of Planemaking (.5,1,2,3)**

1, 2, 4, or 6 hours lecture/laboratory

**Prerequisite:** CFT 100

**Note:** May be taken 3 times

This course will teach students to make wooden hand planes. Through the use of lecture, handouts, demonstrations and videos, the following topics will be covered: the history of planemaking; tuning and using wooden and metal planes; designing a plane; making and tuning laminated planes; cutting, tempering and sharpening a plane iron; designing, making and using a wooden plane.

**CFT 143 Decorative Box Making (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 105

**Note:** May be taken 2 times

Concentrates on the skills and techniques needed to make finely crafted heirloom quality boxes. Types of boxes include: jewelry, cigar humidor, and silver chest. Topics include: design, function, selection of materials, construction techniques, partitions, linings, hardware, assembly techniques, hinge installation, and finishing techniques.

- CFT 144 Production Furniture Making (Toys)** (.5-1)  
 1 to 2 hours lecture/laboratory  
*Note:* May be taken 2 times  
 Methods and techniques of manufacturing production are learned through lecture and demonstration. Skills are acquired as these methods and techniques are applied in extensive lab work in a production mode. To enable the production of relatively large quantities with varied complexity, this course utilizes the manufacture of quality wooden toys, which are donated to local charities.
- CFT 149 Hand Joinery I** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 105  
*Note:* May be taken 2 times  
 Exploration of hand tool techniques with application to fine furniture. Skills will be developed through the construction of sample joints and a simple project. Topics include: marking and layout tools, cutting tools, use of the workbench and its accessories, hand saws and their use, Japanese vs. Western tools, dovetail joinery, mortise and tenon joinery, squaring and sizing with a hand plane, sharpening hand tools and building a simple carcass.
- CFT 150 Hand Joinery II** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 149  
*Note:* May be taken 2 times  
 Comprehensive study of specialized woodworking techniques. The emphasis of this course will be on the development of hand tool skills. Learning exercises will be completed making traditional joinery typical of fine furniture.
- CFT 151 Veneering Technology I** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 105  
*Note:* May be taken 2 times  
 Introduction to the use of veneers in furniture making. Topics include: understanding veneer as a material, cutting and seaming veneer, pressing veneer using traditional and modern methods, creating sunbursts and other multi-piece matches, using and maintaining various cutting tools and sawing your own veneer.
- CFT 152 Veneering Technology II** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 151  
*Note:* May be taken 2 times  
 Study and practice of advanced veneering techniques which includes working with radius shapes, hand and machine marquetry techniques, hammer veneering, and installation of bandings and stringings. Students will demonstrate their abilities in the construction of a small piece of furniture.
- CFT 153 Studio Furniture Design I** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 105  
*Note:* May be taken 2 times  
 Exploration of historical design concepts and their application to contemporary work. Development of drawing skills needed to design one of a kind studio furniture.
- CFT 154 Studio Furniture Design II** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 153  
*Note:* May be taken 2 times  
 Implementation of students' design concepts created in CFT 153. Exploration of market opportunities and client relationships.
- CFT 155 Classic American Chair Designs** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Note:* May be taken 4 times; maximum of 4 completions in any combination of CFT 155, CFT 156  
 Chair making which emphasizes the use of traditional chair making tools to shape raw wood into chair parts. Topics include the history of Windsor and Ladder Back chair designs; harvesting raw materials from a tree; proper sharpening of the hand tools; shaping, steam bending, kiln drying and assembling the chair parts; seat weaving; and traditional finishing appropriate to each chair style.
- CFT 156 Advanced Classic American Chair Designs** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 155  
*Note:* May be taken 4 times; maximum of 4 completions in any combination of CFT 155, CFT 156  
 Chair making which emphasizes the use of traditional chair making tools to shape raw wood into chair parts. Skill development and improved craftsmanship is emphasized while learning to make more complex chairs. Advanced chair designs include: bow back, continuous arm, writing arm, double and triple settees and fan back Windsor chairs; Appalachian style three-slat side chair, four-slat arm chair, bar stools, youth rocker and six-slat rocking chair.
- CFT 157 Chair and Seating/Prototype Construction** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 105  
*Note:* May be taken 3 times  
 In-depth study of production chair making. History of chair making and seating. Design and application of pattern making techniques on student-selected projects.
- CFT 158 Chair and Seating/Production Manufacturing** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 157  
*Note:* May be taken 3 times  
 Chair and seating construction; production and advanced machine tool techniques as they relate to chair making. Fine joinery, theory, and advanced techniques.
- CFT 161 Tables/Prototype Construction** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 105  
*Note:* May be taken 3 times  
 Table design and construction. Machine tool operations necessary to produce various table leg, trussel, and base designs.
- CFT 162 Tables/Production Manufacturing** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 161  
*Note:* May be taken 3 times  
 Development and refinement of table making skills, processes, and procedures. Construction of extension and drop-leaf style tables. Joinery and hardware unique to table making.
- CFT 163 Plastic Laminate Fabrication Techniques** (.5,1)  
 1 or 2 hours lecture/laboratory  
*Note:* May be taken 2 times  
 This course examines the manufacturing process for plastic laminate products, including tools, adhesives, jigs, application and installation techniques. Lectures, demonstrations, and hands-on exercises will give students the opportunity to develop the proficiency and knowledge to design, build and install plastic laminate products.
- CFT 164 Cabinet Installation** (.5,1)  
 1 or 2 hours lecture/ laboratory  
*Note:* May be taken 2 times  
 Installation of both face frame and European (32mm) cabinetry. Topics include: Understanding wall structure, measuring and planning for installation, review of cabinet construction with emphasis on installation, in-depth discussion of the tools, jigs, and techniques used for installation, installation of lower face frame cabinets, installation of upper European (32mm) cabinets, finished scribing of molding.
- CFT 165 Cabinetmaking/Face Frame/Construction** (2,3,4)  
 4, 6, or 8 hours lecture/laboratory  
*Prerequisite:* CFT 105  
*Note:* May be taken 3 times  
 Traditional face frame cabinet construction as applied in kitchens and bathrooms with design, layout, and material analysis. Hands-on experience in carcass construction, face frames, partitions, and construction of doors and drawers.

**CFT 166 Cabinetmaking/Production and Manufacturing (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 165**Note:** May be taken 3 times

Designed to give students the knowledge and ability to enter the cabinetmaking business. Manufacturing and production techniques will be examined along with design, assembly, and installation. Students will learn to bid on jobs, estimate materials, provide client satisfaction, and produce quality work on a profitable basis.

**CFT 167 Cabinetmaking/32mm European Construction (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 105**Note:** May be taken 3 times

European 32mm production methods as used in cabinetmaking. European design and space utilization; European machinery, hardware, and the latest in European systems. Influence of the 32mm system on the American cabinetmaking industry.

**CFT 168 Cabinetmaking/Architectural Millwork (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 105**Note:** May be taken 3 times

Historical and modern architectural millworking techniques used in frame and panel systems, doors, fireplaces, wall systems, staircases, and built-in components. Hands-on experience on student-selected projects may include woodcarving, woodturning, construction of doors and windows and the production/installation of moldings.

**CFT 169 Cabinetmaking/Computer Cabinet Layout (5,1,2,3)**

1, 2, 4 or 6 hours lecture/laboratory

**Prerequisite:** CFT 105**Note:** May be taken 4 times

Selection and application of appropriate software as developed for the cabinet industry. Development of industrial standard cabinet plans and specifications utilizing personal-size computer and software programs.

**CFT 170 Workbench Design and Production (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 100**Note:** May be taken 2 times

Design and construction of the most basic of woodworking tools, a workbench. Process rough lumber to maximize yield and minimize waste. Students will be allowed to customize the size of their bench to fit individual requirements within limits. However, mass-production techniques will not be sacrificed. In addition, a broad review of woodworking vises and other bench accessories will be conducted so that students will be able to further customize their own bench.

**CFT 171 Furniture for the Wood Shop (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 100**Note:** May be taken 4 times

The individual student will be required to design and construct one or more projects from a broad range of furniture-quality accessories for the woodworking shop such as tool totes, tool boxes, chests and cabinets (both stationary and portable), step stools, saw horses or workbench accessories. Particular attention will be paid to artistic and functional design, utility, material selection and joinery techniques. Skills in spindle turning, marquetry and inlay, compound angle joinery, coopering, and veneering will be developed and employed depending on the project selected.

**CFT 172 TurboCAD for Cabinets & Furniture (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Note:** May be taken 3 times

Introduction to TurboCAD and to basic CAD concepts and their direct application to the design and drawing of custom cabinets and furniture, as an alternative to "pencil & paper" drawing. Topics will include: extensive 2D and 3D drawing, modifying, and

editing tools; the production of measured, shop drawings as an essential first step in the construction of a project; rendering, as a tool in the visualization of concept design.

**CFT 175 Jigs and Fixtures (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 105**Note:** May be taken 4 times

Theory of production tooling, fixtures, and jigs; design and develop practical applications of production tooling, fixtures and jigs as used in current machines within the industry. Field trips to local industries will allow students to further understand tooling as used in the trades.

**CFT 180 Wood Bending and Lamination/Wood Technology (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 105**Note:** May be taken 4 times

Principles and practical applications of both wood bending and lamination. Mechanical and chemical means of bending wood studied and developed, specific structure and properties of wood are developed.

**CFT 185 Machine Tool Set-up and Maintenance (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 100**Note:** May be taken 4 times

Set up, repair, rebuild, and maintain tools and machines used in the wood-related industries. Machine tool operations studies and applied. Consumer information developed to acquaint student with machines and tools within the field. Planned maintenance schedules developed and applied.

**CFT 186 Machine Tool/Production Carving (1,2,3,4)**

2, 4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 105**Note:** May be taken 4 times for a maximum of 9 units

Introductory woodcarving course using hand and power machine tools. Design considerations, carving techniques, production carving, and incorporation of woodcarving into cabinetmaking, furniture construction, and architectural millwork.

**CFT 187 Introduction to Carving (1,2,3,4)**

2, 4, 6, or 8 hours lecture/laboratory

**Note:** May be taken 4 times; maximum of 4 completions in any combination of CFT 187, CFT 188, CFT 189

This beginning course in carving introduces students to the tools and techniques used in carving wood. The course includes specifics of available tools, their proper handling and maintenance, as well as discussions of layout and carving methods as applied to furniture and architectural millwork.

**CFT 188 Intermediate Carving (1,2,3,4)**

2, 4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 187**Note:** May be taken 4 times; maximum of 4 completions in any combination of CFT 187, CFT 188, CFT 189

This course examines methods relating to both low and high relief carving, as well as incised lettering. More complex layout and carving techniques are undertaken. Concepts such as setting-in and blocking-out are introduced while modeling, introduced in the beginning course, is more fully developed.

**CFT 189 Advanced Carving (1,2,3,4)**

2, 4, 6, or 8 hours lecture/laboratory

**Note:** May be taken 4 times; maximum of 4 completions in any combination of CFT 187, CFT 188, CFT 189

Advanced carving is a topical study of specific carving applications as they relate to furniture or architectural millwork. Topics are largely gathered from period styles and may include ball and claw feet, Newport shells, and Philadelphia rococo, as well as contemporary interpretations, Art Nouveau, and maritime themes. See Class Schedule for specific period styles/themes to be emphasized.

**CFT 190 Specialty and Manufactured Hardware (1,2,3)**

1, 2, 4, or 6 hours lecture/laboratory

**Note:** May be taken 4 times

Survey of traditional, contemporary, European, and Oriental market hardware found in the cabinet and furniture industries, including consumer applications. Exploration and application of various system solutions for given problem(s). Study and application of hinges, K-D fasteners, fastening systems, joint systems, drawer guides, and runners.

**CFT 195 Finishing Technology/Touch-Up and Repair (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 100

Finishes as used in the wood-related fields. Study and use of penetrating, surface, epoxy, catalytic, and resin surface finishes. Preparation to include staining, filling, and glazing. Chemistry of lacquers, urethanes, oils, and enamels. Instruction and practice in the touch-up of existing finishes through use of French polishing, burn-in sticks, and dry aniline staining. Repair of fine furniture as necessary prior to finishing.

**CFT 196 Special Problems in Cabinet and Furniture Technology (1,2,3,4,5,6)**

3, 6, 9, 12, 15, or 18 hours laboratory

**Prerequisite:** CFT 100 or 105

**Note:** May be taken 4 times

A research course through individual contract concentrating in the area of Cabinet and Furniture Technology.

**CFT 197 Cabinet and Furniture Technology 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

Topics in Cabinet and Furniture Technology. See class schedule for specific topic covered. Course title will designate subject covered.

**CFT 198 Advanced Wood Finishing (2,3,4)**

4, 6, or 8 hours lecture/laboratory

**Prerequisite:** CFT 195

Wood finishing history, processes, and application of multiple colors and complex finishes on furniture. Topics include media, solvents and tools used to apply media, faux finishes, gilding, coloring the finishing materials, turning broken or missing parts, and veneer repair.

**CFT 295 Directed Study in Woodworking (1,2,3,4,5,6)**

48, 96, 144, 192, 240, 288 hours laboratory

**Prerequisite:** CFT 105

Independent study in furniture making, cabinet making, shop layout, design, operation, and maintenance for students who have demonstrated advanced skills and/or proficiencies in Cabinet and Furniture Technology subjects and have the initiative to work independently on projects or research outside the context of regularly scheduled classes. Registration requires prior approval of supervising instructor.