

# DRAFTING – MECHANICAL DESIGN

## Occupational Program

### LONG BEACH CITY COLLEGE

#### Curriculum Guide for Academic Year 2009-2010

#### Certificate of Achievement and/or Associate in Science or Certificate of Accomplishment

ALL INFORMATION CONTAINED HEREIN IS SUBJECT TO CHANGE WITHOUT NOTICE.

For possible updates to this guide please refer to the following website: <http://osca.lbcc.edu>

#### CAREER OPPORTUNITIES

Students learn entry-level job skills in mechanical drafting and design.

The Associate Degree will prepare students for a mechanical-design-related career, and appropriate course selection will facilitate transfer to a professional degree program.

The Core Skills Certificate of Achievement will prepare students for an entry-level position as a mechanical drafter trainee in a variety of design professional settings and will serve as a foundation for specialization.

The Advanced Skills Certificate of Achievement will prepare student for an advanced position as a mechanical drafter or intermediate level drafting position in a variety of design professional settings and will serve as a foundation for specialization.

#### DEPARTMENTAL ADMISSION REQUIREMENTS

None. For more departmental information call (562) 938-4718.

#### ASSOCIATE DEGREE REQUIREMENTS

Complete a minimum of **TWENTY (20)** units from the courses listed below with an overall grade point average of 2.0 and a "C" average in the drafting courses.

|                    |             |  | <b>UNITS</b> | <b>In Progress</b> | <b>Completed Grade</b> |
|--------------------|-------------|--|--------------|--------------------|------------------------|
| †                  | DRAFT 51A   | Industrial Drafting I (F, SP)                  | 3            |                    |                        |
| †                  | DRAFT 51B   | Industrial Drafting II (F, SP)                 | 3            |                    |                        |
| †                  | DRAFT 52A   | Advanced Industrial Drafting (F, SP)           | 3            |                    |                        |
| †                  | DRAFT 52B   | Descriptive Geometry (F, SP)                   | 3            |                    |                        |
|                    | DRAFT 60    | Geometric Dimensioning and Tolerancing (F, SP) | 3            |                    |                        |
|                    | DRAFT 201   | Introduction to Drafting (F, SP)               | 4            |                    |                        |
|                    | DRAFT 202AD | AutoCAD I, Fundamentals (F, SP)                | 3            |                    |                        |
|                    | DRAFT 203AD | AutoCAD II, Advanced Concepts (F, SP)          | 3            |                    |                        |
| <b>TOTAL UNITS</b> |             |  | <b>20</b>    |                    |                        |

#### CORE SKILLS CERTIFICATE OF ACHIEVEMENT REQUIREMENTS

Complete a minimum of **EIGHTEEN (18)** units from the courses listed below with an overall grade point average of 2.0 ("C" average) and a "C" average in the drafting courses.

|                    |             |  | <b>UNITS</b> | <b>In Progress</b> | <b>Completed Grade</b> |
|--------------------|-------------|--|--------------|--------------------|------------------------|
| †                  | DRAFT 51A   | Industrial Drafting I (F, SP)                  | 3            |                    |                        |
| †                  | DRAFT 51B   | Industrial Drafting II (F, SP)                 | 3            |                    |                        |
| †                  | DRAFT 52A   | Advanced Industrial Drafting (F, SP)           | 3            |                    |                        |
| †                  | DRAFT 52B   | Descriptive Geometry (F, SP)                   | 3            |                    |                        |
|                    | DRAFT 60    | Geometric Dimensioning and Tolerancing (F, SP) | 3            |                    |                        |
|                    | DRAFT 201   | Introduction to Drafting (F, SP)               | 4            |                    |                        |
|                    | DRAFT 202AD | AutoCAD I, Fundamentals (F, SP)                | 3            |                    |                        |
|                    | DRAFT 203AD | AutoCAD II, Advanced Concepts (F, SP)          | 3            |                    |                        |
| <b>TOTAL UNITS</b> |             |  | <b>18</b>    |                    |                        |

**ADVANCED SKILLS CERTIFICATE OF ACHIEVEMENT REQUIREMENTS**

Complete a minimum of **THIRTY TWO – THIRTY FOUR (32-34)** units from the courses listed below with an overall grade point average of 2.0 ("C" average) and a "C" average in the drafting courses.

|   |                                      |  | <b>UNITS</b> | <b>In Progress</b> | <b>Completed Grade</b> |
|---|--------------------------------------|--|--------------|--------------------|------------------------|
| †   | DRAFT 51A                            | Industrial Drafting I (F, SP)                  | 3            |                    |                        |
| †   | DRAFT 51B                            | Industrial Drafting II (F, SP)                 | 3            |                    |                        |
| †   | DRAFT 52A                            | Advanced Industrial Drafting (F, SP)           | 3            |                    |                        |
| †   | DRAFT 52B                            | Descriptive Geometry (F, SP)                   | 3            |                    |                        |
|   | DRAFT 60                             | Geometric Dimensioning and Tolerancing (F, SP) | 3            |                    |                        |
|   | DRAFT 201                            | Introduction to Drafting (F, SP)               | 4            |                    |                        |
|   | DRAFT 202AD                          | AutoCAD I, Fundamentals (F, SP)                | 3            |                    |                        |
|   | DRAFT 203AD                          | AutoCAD II, Advanced Concepts (F, SP)          | 3            |                    |                        |
|   | DRAFT 204                            | 3D Visualization/Animations (F, SP)            | 4            |                    |                        |
|   | MACHT 50A                            | Machine Tool Operation and Practices (F, SP)   | 3            |                    |                        |
| †   | MACHT 50B                            | Machine Tool Operation and Practices(F, SP)    | 3            |                    |                        |
| <b>Subtotal Units</b>   |                                      |  | <b>29</b>    |                    |                        |
| <b>Select <i>THREE (3) - FIVE (5)</i> units from the following:</b> |                                      |  |              |                    |                        |
| †*  | MATH 130                             | Intermediate Algebra                           | 5            |                    |                        |
| <b>OR</b>   |                                      |  |              |                    |                        |
| †*  | A more advanced level of Mathematics |  | 3-5          |                    |                        |
| <b>Subtotal Units</b>   |                                      |  | <b>3-5</b>   |                    |                        |
| <b>TOTAL UNITS</b>  |                                      |  | <b>32-34</b> |                    |                        |

**RECOMMENDED course but not required:**

|  |             |   |         |  |  |
|--|-------------|---|---------|--|--|
|  | DRAFT 273AD | Work Experience – Mechanical Drafting   | 4       |  |  |
|  | TEC 60AD    | Computer Aided Design & Drafting (CADD) | 3:3:3:3 |  |  |

**LEGEND**

† This course has a prerequisite; prerequisite courses must be completed with at least a "C" or "P" grade (see catalog or schedule of classes).  
 \* This course is an exception to the "double-counting" rule; it may be double-counted.  
 (SP = Spring) (S = Summer) (F = Fall) (INF = Infrequently) = Represents general frequency of course offering

**GRADUATION REQUIREMENTS**

**For CERTIFICATE OF ACHIEVEMENT:**

This certificate is a one to two year program in occupational/technical areas at Long Beach City College which provides training in job skills and employment opportunities. Complete the required units with a minimum cumulative grade point average of 2.0 ("C" average), with the drafting courses (identified with a #) with a "C" average. Fifty percent (50%) or more of the unit requirements for this field of concentration must be completed in residence (credit earned by exam, where applicable, may be included).

**For ASSOCIATE IN SCIENCE DEGREE:**

The Associate Degree is a two-year college degree awarded by Long Beach City College which includes general education courses and a major. In addition to these requirements, complete the A.S. degree requirements specified in the catalog. The requirements for general education/proficiency and the field of concentration need to be from the same catalog year. This catalog year may be any year between the year of initial enrollment to the present, provided continuous enrollment is maintained throughout (see the catalog for definition of "continuous enrollment"). Fifty per cent (50%) or more of the unit requirements for this field of concentration must be completed in residence (credit earned by exam, where applicable, may be included).

**NOTE:** To receive a certificate or degree you must submit completed application forms in the Admissions and Records Office during your final semester of course work.

In general, "double-counting" is not allowed. That is, one course may not be used to fulfill both a field of concentration requirement and to fulfill a general education requirement.

**SUGGESTED SEQUENCE OF COURSES**

This is not an educational plan, as course offerings, student schedules, and circumstances vary. Students must meet all the prerequisites in order to be eligible for the sequence of courses.

A suggested full-time sample sequence of courses for the required 60 units to reach an Associate Degree includes:

|                              |              |                               |             |
|------------------------------|--------------|-------------------------------|-------------|
| <b><u>First Semester</u></b> |              | <b><u>Second Semester</u></b> |             |
| DRAFT 51A                    | 3 units      | DRAFT 51B                     | 3 units     |
| DRAFT 201                    | 4            | G.E. Course                   | 1-3         |
| Math Course                  | 3-5          | DRAFT 202AD                   | 3           |
| English Course               | 3            | G.E. Course                   | 1-3         |
| <b>Semester Total</b>        | <b>13-15</b> | <b>Semester Total</b>         | <b>8-12</b> |
| <b><u>Third Semester</u></b> |              | <b><u>Fourth Semester</u></b> |             |
| DRAFT 52A                    | 3 units      | DRAFT 203AD                   | 3 units     |
| G.E. Course                  | 1-3          | G.E. Course                   | 3           |
| MACHT 50A                    | 3            | MACHT 50B                     | 3           |
| G.E. Course                  | 3            | DRAFT 52B                     | 3           |
| DRAFT 60                     | 3            | DRAFT 204                     | 4           |
| <b>Semester Total</b>        | <b>13-15</b> | <b>Semester Total</b>         | <b>16</b>   |

**CERTIFICATES OF ACCOMPLISHMENT**

FOR OFFICE USE ONLY: 4015

***Name of Certificate: AutoCAD I, Fundamentals  
(108 Hours)***

| REQUIRED COURSES                               | UNITS    | In Progress | Completed Grade |
|--|----------|-------------|-----------------|
| DRAFT 202AD    AutoCAD 1, Fundamentals (F, SP) | 3        |             |                 |
| <b>TOTAL UNITS</b>                             | <b>3</b> |             |                 |

FOR OFFICE USE ONLY: 4016

***Name of Certificate: AutoCAD II, Advanced Concepts (108 Hours)***

| REQUIRED COURSES                                     | UNITS    | In Progress | Completed Grade |
|--|----------|-------------|-----------------|
| DRAFT 203AD    AutoCAD II, Advanced Concepts (F, SP) | 3        |             |                 |
| <b>TOTAL UNITS</b>                                   | <b>3</b> |             |                 |

FOR OFFICE USE ONLY: 4017

***Name of Certificate: AutoCAD III, Visualization, Rendering, Animation (108 Hours)***

| REQUIRED COURSES                                | UNITS    | In Progress | Completed Grade |
|---|----------|-------------|-----------------|
| DRAFT 204    3D Visualization/Animation (F, SP) | 4        |             |                 |
| <b>TOTAL UNITS</b>                              | <b>4</b> |             |                 |

FOR OFFICE USE ONLY: 4017

***Name of Certificate: CAD Professional  
(324 Hours)***

| REQUIRED COURSES   |             |                                       | UNITS     | In Progress | Completed Grade |
|--------------------|-------------|---------------------------------------|-----------|-------------|-----------------|
|                    | DRAFT 202AD | AutoCAD 1, Fundamentals (F, SP)       | 3         |             |                 |
|                    | DRAFT 203AD | AutoCAD II, Advanced Concepts (F, SP) | 3         |             |                 |
|                    | DRAFT 204   | 3D Visualization/Animation (F, SP)    | 4         |             |                 |
| <b>TOTAL UNITS</b> |             |                                       | <b>10</b> |             |                 |

FOR OFFICE USE ONLY: 4027

**Name of Certificate: 3D Studio MAX – Modeling Technician (108 Hours)**

| REQUIRED COURSES   |             |                                     | UNITS    | In Progress | Completed Grade |
|--------------------|-------------|-------------------------------------|----------|-------------|-----------------|
|                    | DRAFT 251AD | 3D Modeling for Technical Animation | 3        |             |                 |
| <b>TOTAL UNITS</b> |             |                                     | <b>3</b> |             |                 |

FOR OFFICE USE ONLY: 4025

**Name of Certificate: 3D Studio MAX – Texture and Lighting Technician (108 Hours)**

| REQUIRED COURSES   |             |   | UNITS    | In Progress | Completed Grade |
|--------------------|-------------|---|----------|-------------|-----------------|
|                    | DRAFT 252AD | Textures/Lighting – Technical Animation | 3        |             |                 |
| <b>TOTAL UNITS</b> |             |   | <b>3</b> |             |                 |

FOR OFFICE USE ONLY: 4026

**Name of Certificate: 3D Studio MAX – Animation Technician (108 Hours)**

| REQUIRED COURSES   |             |                                     | UNITS    | In Progress | Completed Grade |
|--------------------|-------------|-------------------------------------|----------|-------------|-----------------|
|                    | DRAFT 253AD | 3D Technical Animation & Production | 3        |             |                 |
| <b>TOTAL UNITS</b> |             |                                     | <b>3</b> |             |                 |

FOR OFFICE USE ONLY: 4028

**Name of Certificate: 3D Studio MAX – Technical Design Animator (324 Hours)**

| REQUIRED COURSES   |             |   | UNITS    | In Progress | Completed Grade |
|--------------------|-------------|---|----------|-------------|-----------------|
|                    | DRAFT 251AD | 3D Modeling for Technical Animation     | 3        |             |                 |
|                    | DRAFT 252AD | Textures/Lighting – Technical Animation | 3        |             |                 |
|                    | DRAFT 253AD | 3D Technical Animation & Production     | 3        |             |                 |
| <b>TOTAL UNITS</b> |             |   | <b>9</b> |             |                 |

| LEGEND  |  |
|---|--|
| † This course has a prerequisite; prerequisite courses must be completed with at least a "C" or "P" grade (see catalog or schedule of classes). |  |
| (SP = Spring) (S = Summer) (F = Fall) (INF = Infrequently) = Represents general frequency of course offering                                    |  |

## CERTIFICATE OF ACCOMPLISHMENT REQUIREMENTS

**For CERTIFICATE OF ACCOMPLISHMENT:**

This certificate certifies a competency in a given area and requires less than 18 units. Fifty percent (50%) or more of the unit requirements for this field of concentration must be completed in residence. Complete the required units at Long Beach City College with an overall minimum grade point average of "B". Submit a completed application for the certificate in the Admissions and Records Office after completion of required units.

***Students interested in transferring to a university to continue their study in this field of concentration or other majors are strongly advised to consult an LBCC academic counselor and refer to the ASSIST website ([www.assist.org](http://www.assist.org)) for major preparation information. Counselors can clarify the different major and admissions requirements at a university. Students may visit the Student Success/Transfer Services Center to access further educational resources. If you need to set up an appointment to see a counselor or schedule the SOAR Test, call LAC (562)938-4561 or PCC (562)938-3920.***