

# DRAFTING – MECHANICAL DESIGN

## Occupational Program

### Curriculum Guide for Academic Year 2013-2014

#### Table of Contents

Associate in Science Degree, p. 1  
 Certificates of Achievement, p. 2  
 Recommended, but not required, classes, p. 3  
 Suggested Sequence of Classes, p. 3  
 Certificates of Accomplishment, p. 3  
     AutoCAD I, Fundamentals (108 hours), p. 3  
     AutoCAD II, Advanced Concepts (108 hours), p. 4  
     AutoCAD III, Visualization, Rendering, Animation (108 hours), p. 4  
     CAD Professional (324 hours), p. 4  
     3D Studio MAX – Modeling Technician (108 hours), p. 4  
     3D Studio MAX – Texture and Lighting Technician (108 hours), p. 4  
     3D Studio MAX – Animation Technician (108 hours), p. 4  
     3D Studio MAX – Technical Design Animator (324 hours), p. 4  
 Career Opportunities, p. 5  
 Program Mission and Outcomes, p. 5  
 Legend, p. 5

Students planning to **transfer** to a four-year college or university should refer to the ASSIST web site at [www.assist.org](http://www.assist.org) and **consult a counselor** before beginning a program of study. Please call 562-938-4561 for the LAC, or (562) 938-3920 for PCC to schedule a meeting with a counselor. Students may also wish to visit the Transfer Center on either campus.

Program of study leading to:  
**Associate in Science (A.S.) Degree**

<b>Complete EIGHTEEN - TWENTY (18-20) UNITS from:</b>			UNITS	In Progress	Completed Grade
DRAFT 51A	Industrial Drafting I	3			
† DRAFT 51B	Industrial Drafting II	3			
† DRAFT 52A	Advanced Industrial Drafting	3			
† DRAFT 52B	Descriptive Geometry	3			
DRAFT 60	Geometric Dimensioning and Tolerancing	3			
DRAFT 201	Introduction to Drafting	4			
DRAFT 202	AutoCAD I, Fundamental	3			
DRAFT 203	AutoCAD II, Advanced Concepts	3			
DRAFT 204	3D Visualization/Animation	4			
TEC 60	Computer Aided Design and Drafting (CADD)	3			
<b>TOTAL UNITS</b>		<b>18-20</b>			

For graduation with an **Associate in Science (A.S.) Degree with a major in Drafting – Mechanical Design:**

- Minimum Unit Requirements:** Any course that appears on a curriculum guide and the General Education Pattern (Plan A) may fulfill both major and general education requirements (Approved by College Curriculum Committee Spring 2012). For this degree, complete a minimum of 60 units in courses numbered 1-599. Please note that additional elective units may be required to meet this minimum based upon courses selected to fulfill General Education for the Associate Degree.

**Drafting – Mech. Design Major:** 18-20 units  
**General Education/A.S.:** 19 units
- Scholarship:** Maintain an **overall grade point average (GPA) of 2.0** (“C” average) based on all accredited college work applied to the degree, no matter where completed. For this **field of concentration, complete each course above with a grade of “C” or better**, or “P” if course is graded on a P/NP basis.

**Associate Degree requirements continue on the following page:**

**Associate Degree requirements continued from the previous page:**

3. **Residence for the Degree:** Complete at least 30 units of the required 60 in residence at LBCC, or complete in residence at LBCC at least 20 units within the last 30 units of work applied to the degree.
4. **Residence for the Field of Concentration:** Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 9-10 units** of the required 18-20 must be **completed at Long Beach City College**. Credit earned by exam, where applicable, may be included.
5. **General Education and Proficiency Requirements:** Complete the required A.A./A.S. General Education and Proficiency requirements\*, otherwise known as "Plan A". For Plan A requirements, refer to the general catalog or view it online at <http://osca.lbcc.edu> .
6. Complete and submit the degree application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the "Important Dates" link to view the actual deadline for each semester.

\*The requirements for general education/proficiency and the field of concentration (major) 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".

**Program of study leading to:  
Certificates of Achievement**

**Certificate: Core Skills 3907**

<b>REQUIRED COURSES: Complete 18-19 units from the following courses</b>			<b>UNITS</b>	<b>In Progress</b>	<b>Completed Grade</b>
	DRAFT 51A	Industrial Drafting I	3		
†	DRAFT 51B	Industrial Drafting II	3		
†	DRAFT 52A	Advanced Industrial Drafting	3		
†	DRAFT 52B	Descriptive Geometry	3		
	DRAFT 60	Geometric Dimensioning and Tolerancing	3		
	DRAFT 201	Introduction to Drafting	4		
	DRAFT 202	AutoCAD I, Fundamentals	3		
	DRAFT 203	AutoCAD II, Fundamentals	3		
<b>Core Skills Certificate of Achievement TOTAL UNITS</b>			<b>18-19</b>		

**Certificate: Advanced Skills 3913**

<b>REQUIRED COURSES</b>			<b>UNITS</b>	<b>In Progress</b>	<b>Completed Grade</b>
†	DRAFT 51A	Industrial Drafting I	3		
†	DRAFT 51B	Industrial Drafting II	3		
†	DRAFT 52A	Advanced Industrial Drafting	3		
†	DRAFT 52B	Descriptive Geometry	3		
	DRAFT 60	Geometric Dimensioning and Tolerancing	3		
<b>Subtotal Units</b>			<b>15</b>		

**IN ADDITION, complete TWELVE (12) UNITS from the following:**

†	DRAFT 201	Introduction to Drafting	4		
	DRAFT 202	AutoCAD I, Fundamentals	3		
	DRAFT 203	AutoCAD II, Advanced Concepts	3		
	DRAFT 204	3D Visualization/Animations	4		
	TEC 60	Computer Aided Design	3		
	ENGR 50	Introduction to Engineering	1		
<b>Subtotal Units</b>			<b>12</b>		

**Certificate of Achievement requirements continue on the following page.**

**Certificate of Achievement requirements continued from the previous page.**

**IN ADDITION, complete FOUR – FIVE (4 – 5) UNITS from the following:**

			UNITS	
†	MATH 815 OR	Preparation for Algebra OR	4 OR	
	MATH 110	First Course in Algebra	5	
		<b>Subtotal Units</b>	<b>4-5</b>	
		<b>TOTAL UNITS</b>	<b>31-32</b>	

For graduation with a **Core Skills or Advanced Skills Certificate of Achievement:**

1. Complete the **REQUIRED COURSES** listed above with a **minimum cumulative grade point average of 2.0** (“C” average) and a “C” average in the drafting courses.
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means  
 For the **Core Skills Certificate**, complete at **least 9 units** of the required 18 at **Long Beach City College**.  
 For the **Advanced Skills Certificate**, complete at **least 15.5-16** of the required 31-32 at **Long Beach City College**.  
 Credit earned by exam, where applicable, may be included.
3. Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.lbcc.edu/> . Refer to the Schedule of Classes (<http://schedule.lbcc.edu>) and click the “Important Dates” link to view the actual deadline for each semester.

### Suggested Sequence of Classes

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:

<u>First Semester</u>	<u>Units</u>	<u>Second Semester</u>	<u>Units</u>
DRAFT 51A	3	DRAFT 51B	3
DRAFT 201	4	DRAFT 202	3
<b>Semester Total</b>	<b>7</b>	<b>Semester Total</b>	<b>6</b>
<u>Third Semester</u>	<u>Units</u>	<u>Fourth Semester</u>	<u>Units</u>
DRAFT 52A	3	DRAFT 203	3
DRAFT 60	3	DRAFT 52B	3
<b>Semester Total</b>	<b>6</b>	<b>Semester Total</b>	<b>4</b>
		<b>Semester Total</b>	<b>10</b>

### Program of study leading to: **Certificates of Accomplishment**

**Certificate: AutoCAD I, Fundamentals (108 Hours) 4015**

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
DRAFT 202	AutoCAD 1, Fundamentals	3		
	<b>TOTAL UNITS</b>	<b>3</b>		

**Certificate: AutoCAD II, Advanced Concepts (108 Hours) 4016**

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
DRAFT 203	AutoCAD II, Advanced Concepts	3		
	<b>TOTAL UNITS</b>	<b>3</b>		

**Certificates of Accomplishment continued on the following page.**

Certificates of Accomplishment continued from the previous page.

**Certificate: AutoCAD III, Visualization, Rendering, Animation (108 Hours) 4017**

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
DRAFT 204	3D Visualization/Animation	4		
<b>TOTAL UNITS</b>		<b>4</b>		

**Certificate: CAD Professional (324 Hours) 4018**

<u>REQUIRED COURSES</u>		UNITS	In Progress	Completed Grade
DRAFT 202	AutoCAD 1, Fundamentals	3		
DRAFT 203	AutoCAD II, Advanced Concepts	3		
DRAFT 204	3D Visualization/Animation	4		
<b>TOTAL UNITS</b>		<b>10</b>		

**Certificate: 3D Studio MAX – Modeling Technician (108 Hours) 4027**

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

**Certificate: 3D Studio MAX – Texture and Lighting Technician (108 Hours) 4025**

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

**Certificate: 3D Studio MAX – Animation Technician (108 Hours) 4026**

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

**Certificate: 3D Studio MAX – Technical Design Animator (324 Hours) 4028**

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

For graduation with a **Certificate of Accomplishment**:

1. Complete the above required units with a minimum grade point average of 3.0 (“B” average).
2. Fifty percent (50%) or more of the required units must be completed in residence at LBCC.

Complete and submit the certificate application form to the Admissions and Records office during your final semester of course work. These forms are available in the Admissions and Records office, or online at <http://admissions.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.

## Program Mission and Outcomes

To create an educational environment where students can achieve their individual goals by providing the knowledge and skills to enter the design field of their choice by using the latest technologies and industry trends.

Outcomes:

- Students develop career awareness, planning, employability skills, work habits, and foundation knowledge necessary for success in the workplace.
- Students will be able to establish mastery of basic knowledge and skills and apply advanced technologies relevant to entering the Mechanical drafting and design field at an entry or advanced level
- Students possess the necessary technical knowledge and communication skills to identify, articulate and solve problems pertaining to the industrial manufacturing environment and perform tasks required within the mechanical design drafting professions.

## Legend

† This course has a prerequisite. Prerequisite courses must be complete with at least a “C” or “P” grade. Refer to the General Catalog (<http://www.lbcc.edu/cat/index.html>), the Schedule of Classes (<http://schedule.lbcc.edu/>), or the online Credit Course Outline (<http://wdb-asir.lbcc.edu/coursecurriculum/coursedetails/>) for specific prerequisite information.