DRAFTING – MECHANICAL DESIGN

Occupational Program

Curriculum Guide for Academic Year 2017-2018

Table of Contents

Students planning to **transfer** to a four-year college or university should refer to the ASSIST web site at 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

	Required Courses:		**UNITS**	**In Progress**	**Completed Grade**
	TEC 10	Introduction to Engineering Technology	1		
	DRAFT 51A	Industrial Drafting I	3		
†	DRAFT 51B	Industrial Drafting II	3		
†	DRAFT 52A	Advanced Industrial Drafting	3		
		TOTAL UNITS	**10**		

In addition, Students must choose Option A OR Option B:
Option A: Intended for students that wish to enter the field upon completion.

	Complete THREE-FOUR (3-4) units from the following:		**UNITS**	**In Progress**	**Completed Grade**
†	DRAFT 52B	Descriptive Geometry	3		
	DRAFT 60	Geometric Dimensioning and Tolerancing	3		
	DRAFT 210	3D Printing Fundamentals I (FDM)	1.5		
	DRAFT 211	Laser Cutting Fundamentals	1.5		
	TEC 60	Computer Aided Design and Drafting (CADD)	4		
	TEC 211	Print Reading for Industry	3		
		SUBTOTAL UNITS	**3-4**		

	In Addition, Complete one of the following application (software) options:		**UNITS**	**In Progress**	**Completed Grade**
	CATIA: Please choose TWO (2) courses from the following:				
	DRAFT 220	Introduction to CATIA	3		
	DRAFT 221	Intermediate CATIA	3		
	DRAFT 222	Advanced CATIA	3		
		CATIA SUBTOTAL UNITS	**6**		
	SolidWorks: Please choose TWO (2) courses from the following:				
	DRAFT 230	Introduction SolidWorks Level 1	3		
	DRAFT 231	Intermediate SolidWorks Level 2	3		
	DRAFT 232	Advanced SolidWorks Level 3	3		

		SolidWorks SUBTOTAL UNITS	**6**		
AutoCAD: Please choose TWO (2) course from the following:					
	DRAFT 202	AutoCAD I, Fundamentals	4		
	DRAFT 203	AutoCAD II, Advanced Concepts	4		
	DRAFT 204	3D Visualization/Animation	4		
		AutoCAD SUBTOTAL UNITS	**8**		
		OPTION A TOTAL UNITS	**9-12**		

Option B: Intended for students to enter advanced coursework.

Required Courses:			**UNITS**	**In Progress**	**Completed Grade**
†	DRAFT 52B	Descriptive Geometry	3		
	DRAFT 60	Geometric Dimension & Tolerancing	3		
	TEC 60	Computer Aided Design and Drafting (CAD)	4		
		OPTION B TOTAL UNITS	10		
		MAJOR TOTAL UNITS	**19-22**		

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

1. **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: Mechanical Design Major 19-22 Units
   General Education/ A.S. **§** 19 Units

2. **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.
3. **Residence for the Degree:** Complete at least 12 semester units of the required 60 semester units in residence at Long Beach City College in order for the college to grant an Associate of Arts and/or an Associate of Science 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 9.5-11 units** of the required 19-22 units 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. **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 .
7. 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:
Certificate of Achievement

			Required Courses: Core Skills *3907*	UNITS	In Progress	Completed Grade
	DRAFT 51A		Industrial Drafting I	3		
†	DRAFT 51B		Industrial Drafting II	3		
†	DRAFT 52A		Advanced Industrial Drafting	3		
	DRAFT 210		3D Printing Fundamentals (FDM)	1.5		
	DRAFT 211		Laser Cutting Fundamentals	1.5		
	TEC 10		Introduction to Engineering Technology	1		
	TEC 211		Print Reading for Industry	3		
			TOTAL UNITS	**16**		

			In Addition, Complete one of the following application (software) options:	UNITS	In Progress	Completed Grade
CATIA: Please choose ONE (1) courses from the following:						
	DRAFT 220		Introduction to CATIA	3		
	DRAFT 221		Intermediate CATIA	3		
	DRAFT 222		Advanced CATIA	3		
			CATIA SUBTOTAL UNITS	**3**		
SolidWorks: Please choose ONE (1) course from the following:						
	DRAFT 230		Introduction SolidWorks Level 1	3		
	DRAFT 231		Intermediate SolidWorks Level 2	3		
	DRAFT 232		Advanced SolidWorks Level 3	3		
			SolidWorks SUBTOTAL UNITS	**3**		
AutoCAD: Please choose ONE (1) course from the following:						
	DRAFT 202		AutoCAD Fundamentals	4		
	DRAFT 203		AutoCAD II, Advanced Concepts	4		
	DRAFT 204		3D Visualization/Animation	4		
			AutoCAD SUBTOTAL UNITS	**4**		
			Core Skills Certificate TOTAL UNITS	**19-20**		

			Recommended But Not Required:	UNITS	In Progress	Completed Grade
	DRAFT 201		Introduction to Drafting	4		
†	DRAFT 52B		Descriptive Geometry	3		
†	TEC 60		Computer Aided Design and Drafting (CAD)	4		

			Required Courses: Advanced Skills *3913*	UNITS	In Progress	Completed Grade
	DRAFT 51A		Industrial Drafting I	3		
†	DRAFT 51B		Industrial Drafting II	3		
†	DRAFT 52A		Advanced Industrial Drafting	3		
	DRAFT 60		Geometric Dimension & Tolerancing	3		
	TEC 10		Introduction to Engineering Technology	1		
	TEC 211		Print Reading for Industry	3		
			TOTAL UNITS	**16**		

			In Addition, Complete one of the following application (software) options:	UNITS	In Progress	Completed Grade
CATIA: Please complete the NINE (9) units from the following:						

DRAFT 220	Introduction to CATIA	3		
DRAFT 221	Intermediate CATIA	3		
DRAFT 222	Advanced CATIA	3		
	CATIA SUBTOTAL UNITS	**9**		

SolidWorks: Please complete the NINE (9) units from the following:

DRAFT 230	Introduction SolidWorks Level 1	3		
DRAFT 231	Intermediate SolidWorks Level 2	3		
DRAFT 232	Advanced SolidWorks Level 3	3		
	SolidWorks SUBTOTAL UNITS	**9**		

AutoCAD: Please choose TWO (2) course from the following:

DRAFT 202	AutoCAD Fundamentals	4		
DRAFT 203	AutoCAD II, Advanced Concepts	4		
DRAFT 204	2D Visualization/Animation	4		
	AutoCAD SUBTOTAL UNITS	**8**		
	Advanced Certificate SUBTOTAL UNITS	**24-25**		

In Addition, Please select ONE (1) course from the following:		**UNITS**	**In Progress**	**Completed Grade**
† DRAFT 52B	Descriptive Geometry	3		
TEC 60	Computer Aided Design and Drafting (CADD)	4		
	SUBTOTAL UNITS	**3-4**		

Please then select ONE (1) course from the following:		**UNITS**	**In Progress**	**Completed Grade**
ELECT 225	Algebra & Trigonometry for Technicians	4		
† MATH 110 **OR**	First Course in Algebra **OR**	5		
Higher math course	Any math course higher than Math 110			
	SUBTOTAL UNITS	**4-5**		

In Addition, Please select ONE (1) course from the following:		**UNITS**	**In Progress**	**Completed Grade**
DRAFT 210	3D Printing Fundamentals (FDM)	1.5		
DRAFT 211	Laser Cutting Fundamentals	1.5		
	SUBTOTAL UNITS	**1.5**		
	TOTAL UNITS	**32.5-35.5**		

Recommended But Not Required:		**UNITS**	**In Progress**	**Completed Grade**
DRAFT 201	Introduction to Drafting	4		

For graduation with a **Drafting – Mechanical Design Certificate of Achievement(Core Skills and Advanced Skills):**

1. Complete each of the **REQUIRED COURSES** listed above with a **minimum grade of** "**C**".
2. Complete fifty percent (50%) or more of the unit requirements for this field of concentration in residence; this means at **least 16.5-18 units** of the required 32.5 must be **completed 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.lbccRefer 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:

First Semester		Units	Second Semester		Units
DRAFT 51A		3	DRAFT 51B		3
DRAFT 201		4	DRAFT 202		3
	Semester Total	**7**		**Semester Total**	**6**
Third Semester			**Fourth Semester**		
DRAFT 52A		3	DRAFT 203		3
DRAFT 60		3	DRAFT 52B		3
	Semester Total	**6**	DRAFT 204		4
				Semester Total	**10**

Program of study leading to:

Certificates of Accomplishment

Certificate: AutoCAD I, Fundamentals (108 Hours) 4015

REQUIRED COURSES		UNITS	In Progress	Completed Grade
DRAFT 202	AutoCAD 1, Fundamentals	4		
	TOTAL UNITS	**4**		

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

REQUIRED COURSES		UNITS	In Progress	Completed Grade
DRAFT 203	AutoCAD II, Advanced Concepts	4		
	TOTAL UNITS	**4**		

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

REQUIRED COURSES		UNITS	In Progress	Completed Grade
DRAFT 204	3D Visualization/Animation	4		
	TOTAL UNITS	**4**		

Certificate: CAD Professional (324 Hours) 4018

REQUIRED COURSES		UNITS	In Progress	Completed Grade
DRAFT 202	AutoCAD 1, Fundamentals	4		
DRAFT 203	AutoCAD II, Advanced Concepts	4		
DRAFT 204	3D Visualization/Animation	4		
	TOTAL UNITS	**12**		

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:

- 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.
- Develop career awareness, planning, employability skills, work habits, and foundation knowledge necessary for success in the workplace
- 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.