

Advanced Manufacturing Technology Computer Aided Design (CAD)

GENERAL INFORMATION

Everett Community College offers a number of pathways toward technical careers. The Advanced Manufacturing Technology program offers a two year Associate in Technical Arts (ATA) degree or a shorter term certificate to students seeking entry into or career advancement in the advanced manufacturing sector of the job market. It is designed to prepare students for careers in areas such as computer controlled machining, welding and fabrication, project management, composites design/repair, CAD based design technology, or a position coordinating all these activities. Students already working in manufacturing could select certain electives and a study path in consultation with their employers to better prepare them for lead and supervisory positions. This program also provides a flexible framework for the incorporation of credit from prior learning in industry or government. An early conference with one of the designated advisors is strongly suggested for success.

THE PROGRAM

The Advanced Manufacturing Technology – Computer Aided Design (CAD) Program is part of a cluster of programs. Four **Associate in Technical Arts degrees** and four **certificates in Advanced Manufacturing Technology** are offered, and may be pursued on a full-time or part-time basis at Everett Community College (EVCC).

ATA degree Programs (all are 92 credits):

- **Advanced Manufacturing Tech – Computer Aided Design**
 - **Advanced Manufacturing Tech – Composites***
 - **Advanced Manufacturing Tech - Precision Machining***
 - **Advanced Manufacturing Tech - Welding and Fabrication***
- * Described in a separate guide.

Certificate Programs :

- **Computer Aided Design (CAD) (44 credits)**
 - **Composites (36 credits)***
 - **Precision Machining (28 credits)***
 - **Welding and Fabrication (43 credits)***
- * Described in a separate guide.

The overall program is designed for maximum flexibility. A student might select certain technical classes now to serve a specific need, and then later add a few courses to achieve a recognized level of accomplishment in the form of one of our certificates. Then later still, the student might decide to add courses to their portfolio to obtain one of the associate degrees available in the manufacturing program. And, except where courses need to be taken consecutively, or prerequisites stipulate otherwise, students are free to take classes in the order best suited to their needs. Note, however, that while some courses within this degree program may be transferable to a university, the degree itself is not currently designed to be fully transferable toward a traditional bachelor's degree program.

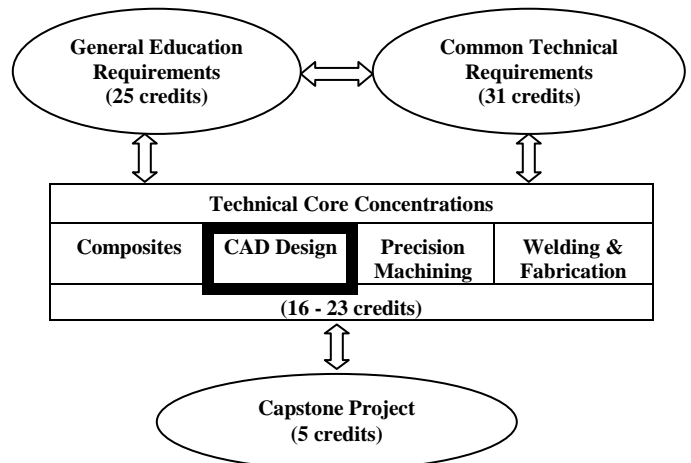
CREDIT FOR PRIOR LEARNING

Adults with work experience or completion of industry training programs may be eligible for college credit by following "External Credit" evaluation procedures. Students currently in high school may take selected technical courses while in high school and apply at that time for college credit.

External Credit: Call: 425-388-9008
E-Mail: zcline@everettcc.edu
Tech Prep: www.everettcc.edu/techprep
Or contact your high school counselor

THE COURSES

The courses for this program may be divided into four categories: general education requirements (25 credits), common technical requirements (31 credits), technical core concentration classes (16 to 23 credits), and the final capstone class (5 credits). Students seeking an ATA degree will take the number of credits shown in each area plus a number of technical elective classes until the total credit accumulations meets or exceeds the degree requirement. Note that a minimum of 16-23 credits need to come from any one technical concentration to qualify for that particular degree. The actual courses are listed further on in this curriculum guide. See the diagram below for an understanding of how the courses interrelate.



GETTING STARTED AT EVCC

Our Enrollment Services Office provides information about application, advising, orientation and registration for new and continuing students. Students interested in the program should talk to an advisor prior to selecting classes for the first quarter:

Counseling, Advising and Career Center	425-388-9263
Enrollment Services	425-388-9219
Manufacturing and CAD (Robert Osnes)	425-388-9383
Welding (Dan Minzel)	425-388-9447
Machining (Tom Clemans)	425-238-3919
Composites (Pat Murphy)	425-388-9534

ATA Degree: Advanced Manufacturing Tech – Computer Aided Design (CAD) 92 credits

The courses required for an **Associate in Technical Arts Degree in Advanced Manufacturing Tech – Computer Aided Design (CAD)** are listed below. Students should meet with an advisor and maintain this checklist while at Everett Community College. The quarter before expected completion, this checklist should be submitted with a diploma application to the Enrollment Services Office. EvCC does not offer every course each quarter, so please consult a class schedule and an advisor to plan course selections. Note that to earn this degree, each of these courses must be completed with a grade of 2.0 or higher.

Courses listed with an ampersand in the course number (e.g. ENGL&101) reflect the new Common Course Numbering System.
Courses in [brackets] are the "old" course numbers and may be used to satisfy requirements. For more information, go to www.everettcc.edu/ccn

Student Name: _____ **Advisor Signature:** _____ **Date:** _____

COMPLETION of Diversity Course (recommend BUS 110D):

(Where Completed/Course Title) (Year Completed) (Grade)

<u>Course Number</u>	<u>Course Title</u>	<u>Credits</u>	<u>Quarter Planned</u>	<u>Quarter completed</u>	<u>Grade</u>
GENERAL EDUCATION REQUIREMENTS (25 credits minimum)					
BUS 110D	Business Communications	5	_____	_____	_____
CL 101	Computer Literacy	5	_____	_____	_____
ENGL 098D or ENGL& 101D	Intro to College Writing or English Composition I	5	_____	_____	_____
ENG T 101	Introduction to Graphics and Measurements	5	_____	_____	_____
CMST& 210 or 220 [SPCH 100 or 101]	Interpersonal Communication or Public Speaking	5	_____	_____	_____
COMMON TECHNICAL REQUIREMENTS (31 credits minimum)					
ENG T 100	Engineering Graphics Fundamentals	4	_____	_____	_____
ENG T 102	Technical Problem Analysis	5	_____	_____	_____
ENG T 105	Precision, Fits, Tolerancing and GD&T	4	_____	_____	_____
ENGR& 114 [123]	Engineering Graphics	4	_____	_____	_____
ENG T 112	Pneumatic, Hydraulic and Electrical Circuits	5	_____	_____	_____
ENG T 230	Manufacturing Materials & Processes	3	_____	_____	_____
HLTH 141	Industrial Safety	3	_____	_____	_____
MFG T 110	Introduction to Manufacturing	3	_____	_____	_____
COMPUTER AIDED DESIGN TECHNICAL CORE REQUIREMENTS (16 credits minimum)					
ENG T 185	Introduction to CAD with Catia v5	4	_____	_____	_____
ENG T 193	Intermediate CAD with Catia v5	4	_____	_____	_____
ENG T 203	Computer Aided Design: AutoCAD	4	_____	_____	_____
ENG T 259	Engineering Graphics: 3D Modeling II	4	_____	_____	_____
ELECTIVES – SELECT FROM THE LIST ON PAGE 4 (15 credits minimum)					
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
CAPSTONE PROJECT REQUIREMENTS (5 credits – required for completion of ATA degree. Follows all other classes.)					
ENG T 199	Special Projects	5	_____	_____	_____
MFG T 229	Manufacturing Team Project	5	_____	_____	_____

MINIMUM REQUIRED CREDITS 92 Min 2.0 cum. GPA

Certificate: Advanced Manufacturing Tech – Computer Aided Design (CAD)

44 credits

The courses required for a **Certificate in Advanced Manufacturing Tech – Computer Aided Design (CAD)** are listed below and represent a subset of the classes required for an Associate degree. Students should meet with an advisor and maintain this checklist while at Everett Community College. The quarter before expected completion, this checklist should be submitted with a diploma application to the Enrollment Services Office. EvCC does not offer every course each quarter, so please consult a class schedule and an advisor to plan course selections. Note that to earn this certificate, each course must be completed with a grade of 2.0 or higher.

Courses listed with an ampersand in the course number (e.g. ENGL&101) reflect the new Common Course Numbering System.
 Courses in [brackets] are the "old" course numbers and may be used to satisfy requirements. For more information, go to www.everettcc.edu/ccn

Student Name: _____ **Advisor Signature:** _____ **Date:** _____

<u>Course Number</u>	<u>Course Title</u>	<u>Credits</u>	<u>Quarter Planned</u>	<u>Quarter completed</u>	<u>Grade</u>
ENG T 101	Introduction to Graphics and Measurements	5	_____	_____	_____
ENGL 098D or ENGL& 101D	Intro to College Writing or English Composition I	5	_____	_____	_____
ENG T 100	Engineering Graphics Fundamentals	4	_____	_____	_____
ENG T 105	Precision, Fits, Tolerancing and GD&T	4	_____	_____	_____
ENGR& 114 [123]	Engineering Graphics	4	_____	_____	_____
ENG T 185	Introduction to CAD with Catia v5	4	_____	_____	_____
ENG T 193	Intermediate CAD with Catia v5	4	_____	_____	_____
ENG T 203	Computer Aided Design: AutoCAD	4	_____	_____	_____
ENG T 230	Manufacturing Materials & Processes	3	_____	_____	_____
ENG T 259	Engineering Graphics: 3D Modeling II	4	_____	_____	_____
HLTH 141	Industrial Safety	3	_____	_____	_____
MINIMUM REQUIRED CREDITS		44		Min 2.0 cum. GPA	

RECOMMENDED SEQUENCE OF COURSES

The courses required for a degree have been listed below in a suggested sequence for students who start their classes in Fall, and who wish to complete a degree in two years. Note that the certificate is a subset of the degree, and classes should be scheduled accordingly. This sequence takes into account the prerequisites the various classes have, as well as when these classes are most likely to be scheduled. EvCC does not offer every course each quarter, so please consult a class schedule and an advisor to plan course selections.

FIRST YEAR

FALL QUARTER		WINTER QUARTER		SPRING QUARTER	
<u>Course</u>	<u>Credits</u>	<u>Course</u>	<u>Credits</u>	<u>Course</u>	<u>Credits</u>
ENG T 101	5	ENGL 098/ ENGL& 101	5	ENG T 203	4
ENG T 100	4	ENGR& 114 [123]	4	CL 101	5
MFG T 110	3	ENG T 230	3	HLTH 141	3
Electives	3	ENG T 105	4	ENG T 259	4
TOTAL	15	TOTAL	16	TOTAL	16

SECOND YEAR

FALL QUARTER		WINTER QUARTER		SPRING QUARTER	
<u>Course</u>	<u>Credits</u>	<u>Course</u>	<u>Credits</u>	<u>Course</u>	<u>Credits</u>
ENG T 185	4	ENG T 102	5	MFG T 229	5
CMST& 210 or 220 [SPCH 100 or 101]	5	BUS 110D	5	ENG T 112	5
Elective (s)	4	Elective	5	ENG T 193	4
				Elective	3
TOTAL	13	TOTAL	15	TOTAL	17

DEGREE ELECTIVES

The courses listed below represent the core technical courses for the other options in the Advanced Manufacturing Technology Program and are acceptable electives for this ATA degree. Select at least 7 credits from this list. Please consult an advisor for applicability of courses that are not listed below.

Courses listed with an ampersand in the course number (e.g. ENGL&101) reflect the new Common Course Numbering System. Courses in [brackets] are the "old" course numbers and may be used to satisfy requirements. For more information, go to www.everettcc.edu/ccn

COMPOSITES TECHNOLOGY*

CT 101	Introduction to Composites
CT 121	Materials Used in Composites
CT 201	Design and Manufacture of Composite Materials
CT 221	Inspection and Repair of Composite Materials

PRECISION MACHINING TECHNOLOGY

MFG T 107	Precision Machining
MFG T 106	Prec. Machine Shop – Machine Operations
MFG T 109	Introduction to CNC Machining
MFG T 108	Prec. Machine Shop – CNC Programming

WELDING/FABRICATION TECHNOLOGY

WELD 111	Basic Layout
WELD 151	Carbon Steel Metallurgy for the Trades
WELD 152	Welding Base Materials: Processes & Procedures
WELD 153	Non-Ferrous Metallurgy for the Trades
WELD 191	Basic Arc
WELD 192	Advanced Arc
WELD 193	Basic Pipe
WELD 194	Gas Tungsten Arc Welding (TIG)
WELD 195	Gas Metal Arc/Flux Core Arc Welding
WELD 210	Heavy Plate Fabrication
WELD 211	Sheet Metal Fabrication
WELD 212	Pipefitting & Pipe Systems Fabrication
WELD 213	Practical Fabrication & Adv. Welding Techniques
WELD 225	Welding Skills Building
WELD 285	Computer Numerical Control CNC Plasma Cutting
WELD 295	Work Experience Internship

OTHER TECHNICAL ELECTIVES

ACCT 110	Small Business Accounting
BUS& 101	Introduction to Business
BUS 105	Small Business Essentials
BUS 154	Fundamentals of Supervision
CS 117	Intro to Computer Networking
CS 280	Systems Analysis and Project Management
ECON 101	Understanding Economics
ENG T 104	Electro-mechanical Blueprint Reading
ENG T 199	Special Projects – Internship
ENGR& 104 [101] or [BUS 102]	Intro to Design
ENVS 150	Land Use Planning & Regulation
GEOG 205	Physical Geography with GIS, GPS, and Remote Sensing labs
GIS 200	Introduction to Computer Cartography
GIS 201	Introduction to Geographic Information Systems
GIS 205	Applications in Geographic Information Systems
GIS 250	Internship in Geographic Information Systems
GIS 299	Independent Study – Visual Basic for GIS

Everett Community College does not discriminate on the basis of race, religion, creed, color, national origin, age, sex, sexual orientation, marital status, the presence of any physical, sensory or mental disability, or status as a disabled or Vietnam era veteran in its program and activities, or employment. The Vice President of Student Services has been designated to handle inquiries regarding student-related non-discrimination policies and can be reached at 2000 Tower Street, Everett, WA 98201, or by phone at (425)388-9589. The Vice President of Human Resources has been designated to handle employment-related inquiries regarding the non-discrimination policies and can be reached at 2000 Tower Street, Everett, WA 98201, or by phone at (425)388-9232. This publication is effective **SEPTEMBER 2009**. The College reserves the right to change courses, programs, degrees and requirements. It is the student's responsibility to be aware of correct information by routinely checking with Enrollment Services and/or the advisors listed in this publication. Requirements applicable to all certificates and degrees are published in the College Catalog. Nothing contained herein shall be construed to create any offer to contract or any contractual rights.

For more information, call 425-388-9219, Everett Community College, 2000 Tower Street, Everett, WA 98201, www.everettcc.edu