

Advanced Manufacturing Technology Composites

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 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 –Composites Program is part of a cluster of programs. Three **Associate in Technical Arts degrees** and three **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 – Composites**
 - **Advanced Manufacturing Tech – Computer Aided Design***
 - **Advanced Manufacturing Tech - Welding and Fabrication***
- * Described in a separate guide.

Certificate Programs :

- **Composites (36 credits)**
 - **Computer Aided Design (CAD) (44 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.

In general, the Associate of Technical Arts (ATA) degree has limited transferability to a university for a bachelor's degree. However, Central Washington University offers a Bachelor of Applied Science with a specialization in Administrative Management that accepts the ATA degree. Go to www.uceverett.org for more information.

CREDIT FOR PRIOR LEARNING

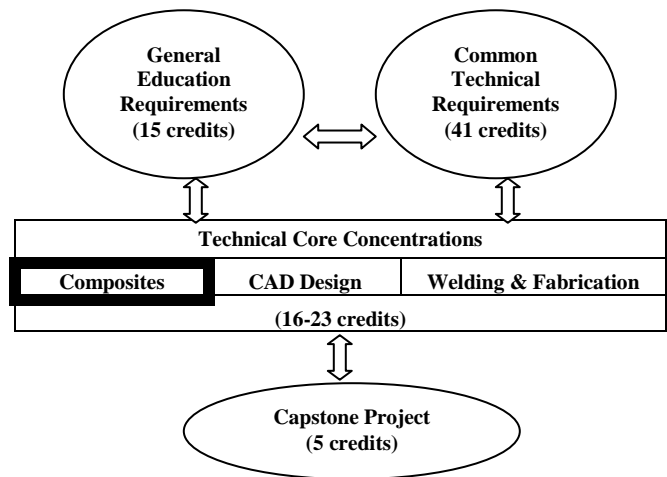
Adults with work experience or completion of industry training programs may be eligible for college credit by following "External Credit" evaluation procedures. Students currently in high school may take selected technical courses while in high school and apply at that time for college credit.

External Credit: Contact Enrollment Services
Call: 425-388-9219

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 (15 credits), common technical requirements (41 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
CAD (Pheeson Liaw)	425-267-0160
CAD (Robert Osnes)	425-388-9383
Welding (Dan Minzel)	425-388-9447
Composites (Pat Murphy)	425-388-9534

ATA Degree: Advanced Manufacturing Tech – Composites

92 credits

The courses required for an **Associate in Technical Arts Degree in Advanced Manufacturing Tech – Composites** 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: _____

COMPLETION of Diversity Course (BUS 110D suggested):

(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 (15 credits minimum)					
Diversity Course: _____	_____	5	_____	_____	_____
ENGL 098 or ENGL& 101	Intro to College Writing or English Composition I	5	_____	_____	_____
CMST& 210 or 220	Interpersonal Communication or Public Speaking	5	_____	_____	_____
COMMON TECHNICAL REQUIREMENTS (41 credits minimum)					
CL 101	Computer Literacy	5	_____	_____	_____
ENG T 100	Engineering Graphics 2D AutoCAD I	4	_____	_____	_____
ENG T 101 (or MATH 099 or higher)*	Introduction to Graphics and Measurements	5	_____	_____	_____
ENG T 102 (or PHYS 102 or higher)	Technical Problem Analysis	5	_____	_____	_____
ENG T 105	Precision, Fits, Tolerancing and GD&T (CAD based)	4	_____	_____	_____
ENGR& 114 (or ENG T 108)	Engineering Graphics (Solid Works I)	4	_____	_____	_____
ENG T 112 (or PHYS 102 or higher)	Pneumatic, Hydraulic and Electrical Circuits	5	_____	_____	_____
ENG T 230 (or CHEM&140 or higher)	Manufacturing Materials & Processes	3	_____	_____	_____
HLTH 141 (or WELD 154)	Industrial Safety	3	_____	_____	_____
MFG T 110	Introduction to Manufacturing	3	_____	_____	_____
COMPOSITES TECHNICAL CORE REQUIREMENTS* (20 credits minimum)					
CT 101	Introduction to Composites	5	_____	_____	_____
CT 121	Materials Used in Composites	5	_____	_____	_____
CT 201	Design and Manufacture of Composite Materials	5	_____	_____	_____
CT 221	Inspection and Repair of Composite Materials	5	_____	_____	_____
TECHNICAL ELECTIVES (11 credits minimum - see page 4 for suggestions)					
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
CAPSTONE PROJECT REQUIREMENTS (5 credits – required for completion of ATA degree. Follows all other classes.)					
MFG T 229	Manufacturing Team Project	5	_____	_____	_____
ENGR 298	Interdisciplinary Design Project	5	_____	_____	_____
MINIMUM REQUIRED CREDITS		92	Min 2.0 cumulative GPA		

* Students seeking the Welding and Fabrication pathway in this degree may substitute MATH 075 and WELD 150 for ENG T 101.

Certificate: Advanced Manufacturing Tech – Composites

36 credits

The courses required for a **Certificate in Advanced Manufacturing Tech – Composites** 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.
For more information, go to www.everettcc.edu/ccn

Student Name: _____

<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 (or MATH 099 or higher)	Introduction to Graphics and Measurements	5	_____	_____	_____
ENGL 098 (or ENGL& 101)	Intro to College Writing or English Composition I	5	_____	_____	_____
ENG T 230	Manufacturing Materials & Processes	3	_____	_____	_____
CT 101	Introduction to Composites	5	_____	_____	_____
CT 121	Materials Used in Composites	5	_____	_____	_____
CT 201	Design and Manufacture of Composite Materials	5	_____	_____	_____
CT 221	Inspection and Repair of Composite Materials	5	_____	_____	_____
HLTH 141 (or WELD 154)	Industrial Safety	3	_____	_____	_____
MINIMUM REQUIRED CREDITS		36		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.

Courses listed with an ampersand in the course number (e.g. ENGL&101) reflect the new Common Course Numbering System.
For more information, go to www.everettcc.edu/ccn

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>
ENGL 098 or ENGL& 101	5	CL 101	5	ENG T 100	4
ENG T 101	5	ENG T 102	5	HLTH 141/WELD 154	3
CT 101	5	MFG T 110	3	CT 201	5
		CT 121	5	Electives	2
	TOTAL		TOTAL		TOTAL
	15		18		14

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>
BUS 110D	5	ENGR & 114	4	MFG T 229	5
CMST& 210 or 220	5	ENG T 112	5	ENG T 105	4
CT 221	5	Electives	5	Electives	4
ENG T 230	3				
	TOTAL		TOTAL		TOTAL
	18		14		13

DEGREE ELECTIVES

You must complete at least 11 elective credits to satisfy the ATA degree requirements in this program. These should be technical in nature, but need not be if your selection enhances your ultimate employability. Any college level English course, for example, would enhance your communication skills and be considered acceptable. Please browse through the college catalog and examine the wide variety of courses offered at EvCC. The following list is presented for your convenience and represents some of the more commonly selected elective courses.

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

COMPUTER AIDED DESIGN

ENG T 185 Introduction to CAD with Catia v5
ENG T 193 Intermediate CAD with Catia v5
ENG T 203 Computer Aided Design: AutoCAD
ENG T 259 Engineering Graphics: 3D CAD-CAM (SW)

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 CNC Plasma Cutting
WELD 295 Work Experience Internship

OTHER TECHNICAL SUGGESTIONS

ACCT 110 Small Business Accounting
BUS& 101 Introduction to Business
BUS 105 Small Business Essentials
BUS 154 Fundamentals of Supervision
BT 100 Beginning Keyboarding
BT 162 Job Search and Professional Development
BT 242 Excel
BT 243 Advanced Excel Applications
CS 117 Intro to Computer Networking
CS 280 Project Management
ECON 101D Understanding Economics
ENG T 104 Electro-mechanical Blueprint Reading
ENGR& 104 Introduction to Design
GRAPH 100 Intro to Digital Studio
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
PHOTO 110 Photography I: Basic Elements

ENGLISH COURSES

You may select any English course, ENGL& 101 or higher, or any Communications course (CMST).

MATHEMATICS COURSES

You may select any Math course, Math 081 or higher. Math 095 and Math 131 are particularly recommended for Advanced Manufacturing.

SCIENCE COURSES

You may select any physics, chemistry, or engineering course.

INTERNSHIP

MFG T 171
MFG T 172

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, genetic information or status as a disabled or Vietnam era veteran in its program and activities, or employment. The Vice President of Instruction and 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)388-9216. The Vice President of Administrative Services/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 2010**. 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