Aerospace Technology Advanced Manufacturing

Associate of Applied Science • Technical Certificate

Information:
North Idaho College
Aerospace Center of Excellence (ACE)
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Overview

This program prepares students for entry-level employment in manufacturing specifically pertaining to composite fabrication and repair, quality assurance methods, CNC machine operation, and nondestructive testing. The curriculum is administered by qualified instructors in both lab and classroom settings and provides students with the knowledge and skills necessary to work in various phases of the aerospace advanced manufacturing field.

Program Outcomes

- Students will be able to fabricate and repair composites using industry recognized techniques.
- Students will be able to apply quality assurance techniques to composite processes.
- Students will implement personal and aircraft safety standards related to shop layout, equipment use, and the handling and storage of materials.
- Students will read and correctly interpret blueprints.
- Students will display precision manufacturing processes such as measuring, drilling, and fabricating components.
- Students will attach fasteners, metal components, brackets, and fittings to composite materials.
- Students will receive hands-on education with the industry's most current and sophisticated nondestructive testing equipment and methods including liquid penetrant, magnetic particle, and visual inspection processes with the option to learn eddy current, ultrasonic testing, and thermography testing.
- Students will learn the basics of materials and processes associated with nondestructive testing technology.
- Students will be able to apply nondestructive evaluation utilizing a number of techniques to deter¬mine the health of an engineered component or structure without affecting its usefulness.
- Students will demonstrate fundamental skills necessary to setup and operate CNC milling machines.
- Students will demonstrate an understanding of machining aircraft alloys and composites along with the basics of 5-axis and using a probe.

See reverse for program requirements

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Employment Outlook

- Employment in aerospace maintenance and manufacturing has continued to grow in northern Idaho, including 16 percent growth during the 2008-2009 recession years. This program was created in close cooperation with local industry, which continues to require more highly-skilled workers in aerospace and advanced manufacturing careers.
- On average, Idaho manufacturing workers earned $57,286 in 2010 – that's $18,186 higher than the all industry average of $39,100—underscoring manufacturing's importance to the Idaho economy. At the same time, manufacturing earnings were higher than all industry earnings in every state except Alaska and Hawaii.
- Idaho Department of Labor employment forecasts include a 20 percent projected increase in the aerospace, manufacturing, and machining industries from 2010 to 2020.
- According to research conducted by the Idaho Department of Labor, job opportunities in advanced manufacturing occupations increased 63.5 percent between 2010 and 2011, jumping from 296 openings to 484 openings.

Advanced Manufacturing in this region:

- Idaho Aerospace Alliance *www.idaero.org*
- Inland Northwest Aerospace Consortium *www.inwac.org*
- AGC AeroComposites *Hayden, ID*
- Quest Aviation *Sandpoint, ID*
- Aerocet *Priest River, ID*
- Triumph Composite Systems *Airway Heights, WA*
- ATC Manufacturing *Spokane Valley, WA*
- Multi-Fab *Spokane Valley, WA*
- C&D Zodiac *Newport, WA*

Aerospace Technology Advanced Manufacturing Associate of Applied Science

Program Requirements

Semester One

Course No.	Title	Credits
AERO 110	Safety/OSHA	1
AERO 111	Blueprint Reading	2
AERO 120	Intro to Composites	3
AERO 121	Composite Fabrication Methods/Applications	2
AERO 122	Composite Finish/Trim	1
AERO 123	Composite Assembly	2
AERO 130	Disassembly and Damage	1
MATH 123	Contemporary (or higher)	3-4
	Credits	**15-16**

Semester Two

Course No.	Title	Credits
AERO 131	Composite Repair	2
AERO 132	Complex Composite Repair	1
AERO 133	Electrical Bonding and Repair	1
AERO 140	Intro to Quality Assurance	3
AERO 141	Geometric Dimensioning and Tolerance	1
AERO 142	Composite Inspection	1
ENGL 101	English Composition (or higher) [1]	3
	Credits	**12**

Semester Three

Course No.	Title	Credits
AERO 151	Intro to CNC Mill	3
AERO 152	CNC Mill Setup and Operation	3
AERO 153	Aerospace CNC Mill Operation	3
AERO154	5-Axis Setup and Operation	3
	Social Science/Human Relations/ Interpersonal Communications [2]	3
	A.A.S. English Composition Requirement [2]	3
	Credits	**18**

Semester Four

Course No.	Title	Credits
AERO 101	Aviation Science	3
AERO 170	Visual Inspection Materials and Processes	2
AERO 171	Liquid Penetrant Theory	1
AERO 174	Magnetic Particle Theory	1
AERO 177	Eddy Current Theory	2
AERO 180	Ultrasonic Theory	2
AERO 183	Thermographic Theory	1
AERO 190	Nondestructive Testing/Inspection Lab	2
	A.A.S. General Education Requirement	3-4
	Credits	**17-18**
	Total Credits	***62-64***

Notes:

[1] Satisfies the A.A.S. degree general education requirement.

[2] Select from the A.A.S. degree requirements listed on NIC 2013-14 catalog page 54.

Aerospace Technology Advanced Manufacturing Technical Certificate

[each term includes a postsecondary certificate]

Aerospace Technology Core Certificate

Semester One

Course No.	Title	Credits
AERO 110	Safety/OSHA (Core)	1
AERO 111	Blueprint Reading (Core)	2
AERO 120	Intro to Composites (Core)	3
MATH 022	Technical Math (*Math 123 or higher) (Core)	3

Aerospace Composite Technician Certificate

AERO 121	Composite Fabrication Methods/Applications	2
AERO 122	Composite Finish/Trim	1
AERO 123	Composite Assembly	2
AERO 130	Disassembly and Damage	1
	Credits	**15**

Aerospace Repair and Quality Assurance Certificate

Semester Two

Course No.	Title	Credits
AERO 140	Intro to Quality Assurance	3
AERO 131	Composite Repair	2
AERO 132	Complex Composite Repair	1
AERO 133	Electrical Bonding and Repair	1
AERO 141	Geometric Dimensioning and Tolerance	1
AERO 142	Composite Inspection	1
ENG 099*	Fundamentals for Writing *or higher	3
	Credits	**12**

Aerospace Technology CNC Mill Operation Certificate

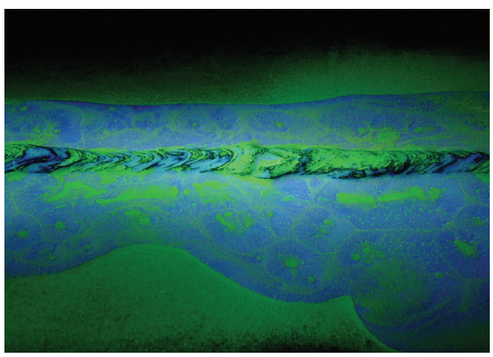
Semester Three

Course No.	Title	Credits
AERO 151	Intro to CNC Mill	3
AERO 152	CNC Mill Setup and Operation	3
AERO 153	Aerospace CNC Mill Operation	3
AERO 154	5-Axis Setup and Operation	3
ATEC 117	Occupational Relations and Job Search	2
	Credits	**14**

Aerospace Technology NDT/I certificate

Semester Four

Course No.	Title	Credits
AERO 101	Aviation Science	3
AERO 170	Visual Inspection Materials and Processes	2
AERO 171	Liquid Penetrant Theory	1
AERO 174	Magnetic Particle Theory	1
AERO 177	Eddy Current Theory	2
AERO 180	Ultrasonic Theory	2
AERO 183	Thermographic Theory	1
AERO 190	Nondestructive Testing/Inspection Lab	2
	Credits	**14**
	Total Credits	**55**



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