Maintenance Technology

College of Rural Alaska
Tanana Valley Campus
(907) 474-5081
Certificate; Degree: A.A.S.
Minimum Requirements for Certificate: 31-49 credits; for Degree: 64-69 credits

Maintenance technology offers an A.A.S. degree and four certificate programs. Students may earn a certificate in airframe, powerplant, aviation maintenance technology, or ground vehicle maintenance technology.

After receiving an aviation maintenance technology certificate or ground vehicle maintenance technology certificate, students may elect to complete the A.A.S. degree in maintenance technology. To enhance employability, students are encouraged to complete the A.A.S. degree program.

The aviation maintenance technology certificate program allows students to complete requirements for the Federal Aviation Administration mechanics certificate with both airframe and powerplant ratings in as little as one year. While the aviation maintenance program covers many major subject areas, special emphasis is placed on those skills most sought after in the Alaska job market. This intensive curriculum uses classroom and "hands on" laboratory instruction to prepare students for entry into the aviation field. After completing the program, students are eligible to take the Federal Aviation Administration examinations for the airframe and powerplant ratings. This qualifies program graduates for entry level positions in the maintenance, repair, overhaul and modification of aircraft.

Students interested in qualifying for an FAA airframe mechanics certificate may choose to earn only the airframe certificate. Students interested in qualifying for an FAA powerplant mechanics certificate may choose to earn only the powerplant certificate.

The ground vehicle maintenance technology certificate program offers students training in the maintenance and repair of trucks, buses, light duty trucks, automobiles and heavy equipment. This one-year certificate program emphasizes "hands-on" training and in-class experience as students perform preventive maintenance inspections, determine causes of equipment problems and make necessary repairs and adjustment from tune-ups to complete engine and equipment overhauls. Students work on large truck, small truck and passenger car fuel, electrical and air systems, diesel engines, gasoline engines, transmissions, differentials, and crawler tractor undercarriages, steering and final drives.

Admission to the aviation maintenance technology program concentration is at the discretion of the program faculty and requires an interview with the faculty advisor.

UNDERGRADUATE PROGRAM

MAJOR

Aviation Maintenance Technology—Certificate

1. Complete the certificate requirements (page 30).
2. Complete the following general requirements:
   - AFPM 145—Basic Mathematics 1
   - AFPM 146—Basic Electricity 2
   - AFPM 147—Physics for Mechanics 0.5
   - AFPM 148—Aircraft Drawing 1
   - AFPM 149—Fluid Lines and Fitting 0.5
   - AFPM 150—Materials and Processes 2
   - AFPM 151—Cleaning and Corrosion Control 1
   - AFPM 152—Federal Aviation Regulations 1
   - AFPM 153—Weight and Balance 1
   - AFPM 154—Ground Operations and Servicing 0.5
3. Complete the following airframe structures requirements:
   - AFPM 261—Non Metallic Structures 1
   - AFPM 262—Aircraft Coverings 1
   - AFPM 263—Aircraft Finishes 0.5
   - AFPM 264—Sheet Metal Structures 3
   - AFPM 265—Aircraft Welding 1.5
   - AFPM 266—Assembly and Rigging 1.5
   - AFPM 267—Airframe Inspections 0.5
   - AFPM 270—Airframe Testing 0.5
4. Complete the following airframe systems and components requirements:
   - AFPM 230—Aircraft Electrical Systems 2.5
   - AFPM 253—Transport Category Aircraft 1
   - AFPM 254—Ice and Rain Control Systems 0.5
   - AFPM 256—Communications and Navigation Systems 0.5
   - AFPM 258—Cabin Atmosphere Control Systems 1
   - AFPM 259—Hydraulic and Pneumatic Systems 1.5
   - AFPM 260—Aircraft Landing Gear Systems 1.5
5. Complete the following powerplant theory and maintenance requirements:
   - AFPM 235—Aircraft Reciprocating Engines 4.5
   - AFPM 240—Turbine Engines 2
   - AFPM 271—Powerplant Inspections 0.5
   - AFPM 272—Powerplant Testing 0.5
6. Complete the following powerplant systems and components requirements:
   - AFPM 231—Powerplant Electrical Systems 1.5
   - AFPM 244—Lubrication Systems 1.5
   - AFPM 245—Ignition Systems 2
   - AFPM 246—Fuel Metering Systems 2
   - AFPM 248—Induction Systems 0.5
   - AFPM 249—Powerplant Cooling Systems 0.5
   - AFPM 250—Powerplant Exhaust Systems 0.5
   - AFPM 252—Propellers 2
7. Complete the following combined systems and components requirements:
   - AFPM 251—Fuel Systems 1.5
   - AFPM 255—Fire Protection Systems 0.5
   - AFPM 257—Instrument Systems 0.5

8. Minimum credits required 49

Note: This program is a one-year course, usually starting at the end of May or beginning of June. Entry at other times is allowed only with departmental approval.

Note: A student may request credit by examination for some AFPM class. See the department for details.

Note: Most courses are scheduled between 7:40 a.m. and 4:10 p.m. Monday through Friday.

Airframe—Certificate

1. Complete the certificate requirements (page 30).
2. Complete the following general requirements:
   - AFPM 145—Basic Mathematics 1
   - AFPM 146—Basic Electricity 2
   - AFPM 147—Physics for Mechanics 0.5
   - AFPM 148—Aircraft Drawing 1
   - AFPM 149—Fluid Lines and Fitting 0.5
   - AFPM 150—Materials and Processes 2
   - AFPM 151—Cleaning and Corrosion Control 1
   - AFPM 152—Federal Aviation Regulations 1
   - AFPM 153—Weight and Balance 1
   - AFPM 154—Ground Operations and Servicing 0.5
3. Complete the following airframe structures requirements:
   - AFPM 261—Non Metallic Structures 1
   - AFPM 262—Aircraft Coverings 1
   - AFPM 263—Aircraft Finishes 0.5
   - AFPM 264—Sheet Metal Structures 3
   - AFPM 265—Aircraft Welding 1.5
   - AFPM 266—Assembly and Rigging 1.5
   - AFPM 267—Airframe Inspections 0.5
   - AFPM 270—Airframe Testing 0.5
4. Complete the following airframe systems and components requirements:
   - AFPM 230—Aircraft Electrical Systems 2.5
   - AFPM 253—Transport Category Aircraft 1
   - AFPM 254—Ice and Rain Control Systems 0.5
   - AFPM 256—Communications and Navigation Systems 0.5
   - AFPM 258—Cabin Atmosphere Control Systems 1
   - AFPM 259—Hydraulic and Pneumatic Systems 1.5
   - AFPM 260—Aircraft Landing Gear Systems 1.5
5. Complete the following combined systems and components requirements:
   - AFPM 251—Fuel Systems 1.5
   - AFPM 255—Fire Protection Systems 0.5
   - AFPM 257—Instrument Systems 0.5
6. Minimum credits required 31

Powerplant—Certificate

1. Complete the certificate requirements (page 30).
2. Complete the following general requirements:
   - AFPM 145—Basic Mathematics 1
   - AFPM 146—Basic Electricity 2
   - AFPM 147—Physics for Mechanics 0.5
   - AFPM 148—Aircraft Drawing 1
   - AFPM 149—Fluid Lines and Fitting 0.5
   - AFPM 150—Materials and Processes 2
   - AFPM 151—Cleaning and Corrosion Control 1
   - AFPM 152—Federal Aviation Regulations 1
   - AFPM 153—Weight and Balance 1
   - AFPM 154—Ground Operations and Servicing 0.5
3. Complete the following powerplant theory and maintenance requirements:
   - AFPM 235—Aircraft Reciprocating Engines 4.5
   - AFPM 240—Turbine Engines 2
   - AFPM 271—Powerplant Inspections 0.5
   - AFPM 272—Powerplant Testing 0.5
4. Complete the following powerplant and systems components requirements:
   - AFPM 231—Powerplant Electrical Systems 1.5
   - AFPM 244—Lubrication Systems 1.5
   - AFPM 245—Ignition Systems 2
   - AFPM 246—Fuel Metering Systems 2
   - AFPM 248—Induction Systems 0.5
   - AFPM 249—Powerplant Cooling Systems 0.5
   - AFPM 250—Powerplant Exhaust Systems 0.5
   - AFPM 252—Propellers 2
5. Complete the following combined systems and components requirements:
   - AFPM 251—Fuel Systems 1.5
   - AFPM 255—Fire Protection Systems 0.5
   - AFPM 257—Instrument Systems 0.5
6. Minimum credits required 31

Ground Vehicle Maintenance—Certificate
Concentrations: Automotive, Diesel/Heavy Equipment and Power Generation

1. Complete the certificate requirements (page 30).
2. Complete the following:
   - AUTO 110—Auto/Diesel Electrical Systems Fundamentals 4
   - AUTO 113—Gasoline Fuel Delivery Systems 4
   - DSLT 135—Internal Combustion Engines 5
3. Complete and pass an applied math proficiency exam to complete certificate requirements.
4. Complete 1 of the following concentrations:

Automotive

a. Complete the following:
   - AUTO 106—Auto/Diesel Engine Cooling and Climate Control Systems . 4
   - AUTO 107—Hydraulic Brake and Traction Control Systems 4
   - AUTO 108—Suspension, Steering and Wheel Alignment 4
   - AUTO 111—Automotive Electronic System Fundamentals 4
   - AUTO 114—Auto/Diesel Emission Control Systems 4

b. Minimum credits required 33

Diesel/Heavy Equipment

a. Complete the following:
   - DSLT 123—Heavy Duty Breaking Systems 2
   - DSLT 201—Manual Transmissions and Differentials 4
   - DSLT 253—Diesel Fuel Delivery Systems 5
   - MECN 210—Hydraulics 2
   - WMT 103—Welding I 3
   - WMT 105—Welding II 3

b. Minimum credits required 32

Power Generation

a. Complete the following:
   - MECN 201—Advanced Mobile Equipment Electronics 2
   - MECN 202—Principles of Electric Drive Vehicles 2
   - MECN 203—Basic Power Generation 3
   - MECN 204—Basic Alternating Current Electrician Skills 2
   - MECN 205—Uninterruptable Power Supplies 1
   - MECN 206—Emergency Backup Power Generation 1
   - MECN 207—Power Generation Governors 2
   - MECN 208—Alternative Fuels 2
   - AUTO, DSLT or MECN electives* 4

b. Minimum credits required 32

** Any AUTO, DSLT or MECN elective credits.*

Note: A student may request credit by examination for any AUTO, DSLT or MECN class. See department coordinator for details.

Maintenance Technology—A.A.S. Degree
Concentrations: Automotive, Aviation Maintenance Technology and Diesel/Heavy Equipment

1. Complete the general university requirements (page 28).
2. Complete the A.A.S. degree requirements (page 31).
3. Complete 1 of the following concentrations:*

Automotive

a. Complete the requirements for the Ground Vehicle Maintenance Technology - Automotive Certificate 33
b. Complete the following maintenance technology A.A.S. degree core courses:
   - AUTO 209—Automatic Transmissions and Transaxles 5
   - AUTO 215—Engine Analyzers, Scopes and Scan Tools 4
   - AUTO 219—The Auto/Diesel Repair Business 2
   - DSLT 201—Manual Transmissions and Differentials 4
   - DSLT 253—Diesel Fuel Delivery Systems 5

c. Minimum credits required 68

Aviation Maintenance Technology

a. Complete the requirements for the Aviation Maintenance Technology Certificate 49
b. Minimum credits required 64

Diesel/Heavy Equipment

a. Complete the requirements for the Ground Vehicle Maintenance Technology - Diesel/Heavy Equipment Certificate 32
b. Complete the following maintenance technology A.A.S. degree core courses:
   - DSLT 202—Heavy Duty Automatic Transmissions 2
   - DSLT 255—Final Drives, Tracked Vehicles 2
   - AUTO 106—Auto/Diesel Engine Cooling and Climate Control Systems . 4
   - AUTO 107—Hydraulic Brake and Traction Control Systems 4
   - AUTO 108—Suspension, Steering and Wheel Alignment 4
   - AUTO 114—Auto/Diesel Emission Control Systems 4
   - AUTO 219—The Auto/Diesel Repair Business 2

c. Minimum credits required 69

** Student must earn a C grade or better in each course.*

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