

# Maintenance Technology

College of Rural Alaska  
Tanana Valley Campus  
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## Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 31-49 credits;  
for Degree: 64-69 credits

Maintenance technology offers an A.A.S. degree and certificates in four areas: airframe, powerplant, airframe and powerplant or ground vehicle maintenance.

Students who receive a certificate in airframe and powerplant or ground vehicle maintenance may elect to complete the A.A.S. degree in maintenance technology to enhance their employability.

Students in the airframe and powerplant certificate program may complete requirements for the Federal Aviation Administration mechanic's certificate with both airframe and powerplant ratings in as little as one year. The aviation maintenance program covers many subject areas, but it places special emphasis on those skills most sought after in the Alaska job market. Through classroom and hands-on laboratory instruction, this intensive curriculum prepares students for entry into the aviation field. Graduates who pass the FAA examinations for the airframe and powerplant ratings are qualified for entry-level positions in the maintenance, repair, overhaul and modification of aircraft.

Students interested in qualifying for an FAA airframe mechanic's certificate may choose to earn only the airframe certificate, and those who wish to qualify for an FAA powerplant mechanic's certificate may choose to earn only the powerplant certificate.

The ground vehicle maintenance technology certificate program offers training in the maintenance and repair of trucks, buses, light-duty trucks, automobiles and heavy equipment. This one-year 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 and differentials; and crawler tractor undercarriages, steering and final drives.

Admission to the airframe and powerplant program concentration is at the discretion of the program faculty and requires an interview with the faculty advisor.

## Airframe and Powerplant—Certificate Program

1. Complete the general university requirements (page 76.).
2. Complete the certificate requirements. (See page 78. As part of the certificate requirements, the communication, computation and human relations content is embedded in the major required courses for this program.)
3. 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 |
4. 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 |
5. 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 |
6. 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 |
7. 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   |
8. 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 |
9. Minimum credits required .....

### Airframe—Certificate Program

1. Complete the general university requirements (page 76.).
2. Complete the certificate requirements. (See page 78. As part of the certificate requirements, the communication, computation and human relations content is embedded in the major required courses for this program.)
3. 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 |
4. 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 |
5. 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 |

6. 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 |
7. Minimum credits required .....

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### Powerplant—Certificate Program

1. Complete the general university requirements (page 76.).
2. Complete the certificate requirements. (See page 78. As part of the certificate requirements, the communication, computation and human relations content is embedded in the major required courses for this program.)
3. 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 |

4. 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 |
5. 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   |
6. 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 |
7. Minimum credits required .....

*Note: This is a one-year program, usually starting at the end of May or beginning of June. Entry at other times is allowed only with departmental approval. A personal background check and drug test will be required prior to acceptance into the airframe and powerplant, airframe or powerplant certificate programs.*

### Ground Vehicle Maintenance—Certificate Program

#### Concentrations: Automotive, Diesel/Heavy Equipment, Power Generation

1. Complete the general university requirements (page 76).
2. Complete the certificate requirements (page 78).
3. Complete the following:

|  |   |
|--|---|
| AUTO 110—Auto/Diesel Electrical Systems Fundamentals ..... | 4 |
| AUTO 113—Gasoline Fuel Delivery Systems .....              | 4 |
| DSLTL 135—Internal Combustion Engines .....                | 5 |
4. Complete and pass an applied math proficiency exam to complete certificate requirements.
5. 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 .....

#### Diesel/Heavy Equipment

- a. Complete the following:

|  |   |
|--|---|
| DSLTL 123—Heavy Duty Braking Systems .....             | 2 |
| DSLTL 201—Manual Transmissions and Differentials ..... | 4 |
| DSLTL 253—Diesel Fuel Delivery Systems .....           | 5 |
| MECN 210—Hydraulics .....                              | 2 |
| WMT 103—Welding I .....                                | 3 |
| WMT 105—Welding II .....                               | 3 |
- b. Minimum credits required .....

**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 .....38

\* 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.

**Major—A.A.S. Degree**

**Concentrations: Automotive, Airframe and Powerplant, Diesel/Heavy Equipment**

- 1. Complete the general university requirements (page 76).
- 2. Complete the A.A.S. degree requirements (page 79).
- 3. Complete 1 of the following concentrations:\*

**Automotive**

- a. Complete the requirements for the ground vehicle maintenance –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

**Airframe and Powerplant**

- a. Complete the requirements for the airframe and powerplant certificate .....49
- b. Minimum credits required .....64

**Diesel/Heavy Equipment**

- a. Complete the requirements for the ground vehicle maintenance –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.

Note: Page numbers refer to the UAF 2005-2006 academic catalog, which can be viewed online at [www.uaf.edu/catalog/](http://www.uaf.edu/catalog/).

