Internal Program Review
Self-Study Report

Program Name
Aviation Maintenance

Credentials Offered
CAS Airframe – 63 Credits
CAS Powerplant- 61 Credits
AAS Aviation Maintenance Technology – 96 credits

Self-Study Completed by:
Wesley Walker, Instructor
Tod Dumas, Instructor
Tammy Burke, Trades Division Chair

Date Completed:
2019-2020

A. Introduction-
The collective public has very high expectations when it comes to the safety of aircraft flying overhead and the Federal Aviation Administration has charged Helena College-UM with providing quality meaningful instruction to prospective Aviation Maintenance Technicians to meet that challenge. Students are trained above and beyond the standards outlined in Federal Aviation Administration (FAA) Title 14 Code of Federal Regulations: 14 CFR 147 (FAR Part 147) and the guidelines set forth in the program approved curriculum. Upon completion of 1900 hours of course work, students will be prepared to take three written exams and sit with a Designated Maintenance Examiner qualified by the FAA to be given three Oral and Practical Exams. Upon completion of the required FAA tests, a student will be certificated by the FAA as a mechanic with either or both an airframe and powerplant rating. With additional general coursework through Helena College students are awarded an Associate of Applied Sciences Degree in Aviation Maintenance Technology.

B. Alignment with Mission, Strategic Goals and Core Themes-
Helena College Mission - Helena College, a comprehensive two-year college, provides access to and support of high quality lifelong educational opportunities for our diverse community.

The Aviation Maintenance Technology Program Mission aligns with the Helena College Mission through the provision of access to educational opportunities in the College service area. The Aviation Maintenance Technology program prepares entry-level technicians who are trained in the fundamentals of aircraft maintenance with respect to general aviation and the light utility helicopter industry. With this training, a technician will be prepared for employment in many different occupations in the aviation industry including: Fixed Base Operations, Repair Stations, Commuter Airlines, Air Cargo, Aircraft Restoration, Flight Schools and Aerial Fire Fighting, to name a few.

The strategic goals of Helena College are listed below:
Strategic goal #1 – promote student success and achievement
Strategic goal #2 – advance academic excellence and scholarship
Strategic goal #3 – build community engagement and partnerships
Strategic goal #4 – model and foster equity, inclusion, and cultural competency 1.
Strategic goal #5 – ensure institutional integrity

The goals of the Aviation Maintenance Technology Program align with the above goals as follows:
1. Provide students with the necessary experiences to become employable in the aviation maintenance industry at an entry level.
2. Provide students with the necessary lab activities according to CFR Part 147 standards to prepare students to sit for the Federal Aviation Administration AVMT certification exams.
3. Strive to instill in students a professional work ethic.
4. Provide students the knowledge of workplace hazards so students will be able to work safely in the aviation industry.

Helena College Core Themes:
1. Student Access and Success
2. High Quality Education
3. Community Enrichment

The Helena College Aviation Maintenance Technology Program is in alignment wit the core themes as follows:

Student Access and Success
The Aviation program provides high quality educational activities and programs. This is the only program in Montana in Aviation Maintenance Technology. It is a very rigorous program of study that is FAA-approved.
High Quality Education: The goal of this program is to maintain excellence, integrity, quality and reliability in all academic programming.
Community Enrichment – This program is currently meeting regional workforce needs as well as area and national needs. This program strengthens the community by preparing students to meet local, regional, state and national workforce needs and as stated above is the only program in Montana.

C. Alignment with Community Needs (Academic Programs Only) –
Aviation maintenance facilities in the state of Montana hire our graduates. Students enroll and complete the program are hired by aviation maintenance facilities and, due to the mechanical requirements of this program, students transfer from the 2-year to 4-year programs, particularly into engineering. Students matriculating from the Aviation Maintenance Technology program leave with a diverse skill sets working with wood structures, metal fabrication, composites, aircraft inspection, and engine repair. Students acquire thorough attention to detail and strong, positive work ethic. Students who complete the program are prepared to enter the Montana workforce.

D. Student Participation and Success –
This program has had consistent enrollment over the past five years. Retention and completion can be an issue due to students not completing the additional general education requirements as this is not needed for the certification exams (Airframe and Powerplant). Helena College is looking at ways to address this by embedding general education requirements into the curriculum. See data below in Appendix for further explanation.

E. Student Learning Outcomes and/or Program Goals –
The Goals of the Aviation Maintenance Technology Program are as follows:
1. Read and interpret Federal Aviation Regulations, aircraft service manuals, directives and bulletins to properly complete aircraft maintenance and repairs.
2. Prepare logbook entries and properly document the repairs completed on an aircraft.
3. Complete proper jacking procedures, ground handling and servicing on aircraft.
4. Prepare weight and balance computations and properly prepare the required documentation.

5. Evaluate sheet metal, composite structure, fabric covering and structural damage in order to prepare and complete the necessary repairs in accordance with approved procedures.
6. Complete repair and maintenance on various airframe components and systems.
7. Complete repair and maintenance on aircraft reciprocating and turbine engines.
8. Return an aircraft to service after maintenance and repair.
9. Inspect, remove and install non-repairable items such as propellers and aircraft accessories and instruments.

F. Curriculum and Instruction (Academic Programs Only) –

The aviation program had an intensive review in the year 2017. In order to meet the collective bargaining agreement and provide fair wages for instructors, curriculum was realigned using the Carnegie unit. Due to this process, a summer semester was added to the program. Approval was granted by the Montana University System Board of Regents, the Department of Education and NWCCU (accreditor). The curriculum is as listed below:

HELENA COLLEGE
University of Montana

Aviation Maintenance Technology A.A.S.

Associate of Applied Science

Required Courses

Course #	Course Title	CR	Pre - Requisites
First Semester (21-24 credits*) – Fall, General			
AVMT 100	Intro to Aviation Maintenance / Mathematics & Basic Physics	3	
AVMT 105	Basic Electricity	3.5	
AVMT 110	Aircraft Drawings / Weight & Balance	3	
AVMT 115	Materials & Processes / Fluid Lines & Fittings / Cleaning & Corrosion Control	4	
AVMT 120	Ground Operation & Servicing	1.5	
AVMT 125	Maintenance Publications / Forms & Records / Mechanic Privileges & Limitations	3	
AVMT 130	Basic Aerodynamics	3	
***M 111T*	*Technical Math*	*3*	
Second Semester (21 credits*) – Spring, Airframe			
AVMT 135	Assembly & Rigging / Airframe Inspection	4	
AVMT 140	Sheet Metal	4	
AVMT 145	Composites & Plastics	4	
AVMT 150	Wood Structures	2	
AVMT 175	Aircraft Electrical Systems	1.75	
AVMT 187	Aircraft Instrument Systems / Communication & Navigation Systems	2.25	
WRIT 121T	Technical Writing	3	
Third Term (18 credits) – Summer, Airframe			
AVMT 155	Aircraft Covering & Finishes	2	
AVMT 160	Aircraft Welding	3	
AVMT 165	Hydraulic & Pneumatic Power Systems	3.5	
AVMT 170	Aircraft Landing Gear Systems	3	
AVMT 180	Aircraft Fuel Systems / Fire Protection Systems / Ice & Rain Control Systems	3	
AVMT 185	Cabin Atmosphere Control Systems	1.5	
COMX 106	Communicating in a Dynamic Workplace	2	
Third Semester (16.5-19.5 credits*) – Fall, PowerPlant			
AVMT 225	Reciprocating Engines & Systems I	5.5	
AVMT 230	Reciprocating Engines & Systems II	5.5	
AVMT 240	Engine Instrument Systems	3	
AVMT 250	Engine Fire Protection Systems	2.5	
***M 111T*	*Technical Math*	*3*	
Fourth Semester (15.75 credits) – Spring, PowerPlant			
AVMT 235	Turbine Engines & Systems	8	
AVMT 245	Engine Electrical Systems	3.75	
AVMT 255	Propellers & Unducted Fans	4	

G. Faculty/Staff Profile

The Aviation Maintenance Technology program employs two full-time instructors and also has additional adjunct instruction (due to the high number of credits in this program)
Full-time instructors include:
Tod Dumas – Licensed A&P
Wesley Walker – Licensed A&P

H. Fiscal and Physical Resources –

Helena College supports the Aviation Maintenance Technology program with adequate resources; however, replacement equipment for this area is extremely expensive. It is fortunate that the industry also does not have a great deal of advanced technology and therefore Helena College is able to maintain relevance of this program with minimal upgrades of equipment. The advisory board for this program does meet twice yearly and informs the College of any

additional needs for the program. Please see attached information in Appendix for data regarding resources.

I. Recommendations and Preliminary Implementation Plan

1. Increase AAS Completion rate by integrating general education courses.
2. Establish industry partnerships that will support Helena College students in apprenticeship/internship experiences.
3. Update equipment as able to maintain relevancy and quality.

J. Program Review Data Summary –

See attached data below in Appendix section.

K. Appendix (Additional data or exhibits)

Appendix A

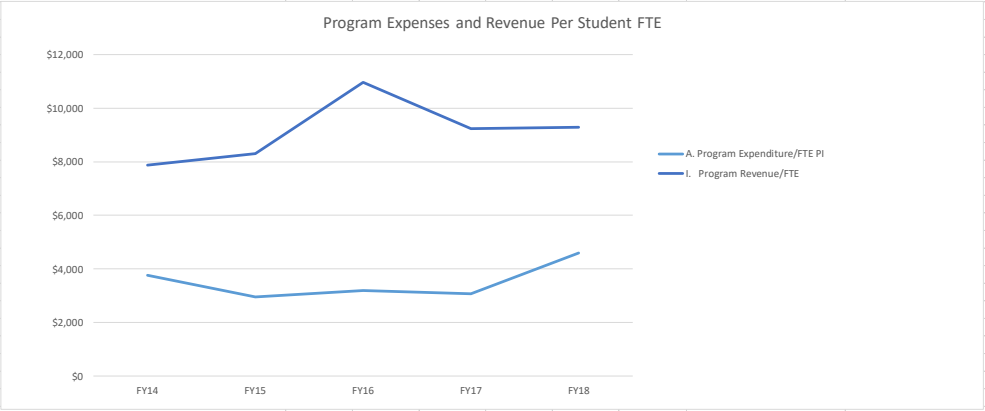
Aviation Maintenance Technology 2013-2018

Program Review Data Summary

Fiscal and Physical Resources

Data Definition: Instructional costs include program personnel and operatiing expenses	FY14	FY15	FY16	FY17	FY18	5 Year Ave	Program Notes	Source
A. Program Expenditure/FTE **PI**	$3,768	$2,948	$3,185	$3,075	4,601	$3,515		Institutional Research/Finance
B. Average HC Program Expenditure/FTE	$5,032	$4,881	$5,354	$6,512	$8,252	$6,006		Institutional Research/Finance
C. Program Expenditure/Completion	$11,305	$18,280	$5,945	$12,738	$11,885	$12,031		Institutional Research/Finance
D. Average HC Program Expenditure/Completion	$13,353	$18,071	$12,712	$16,356	$15,599	$14,101		Institutional Research/Finance
E. Student Program Fees-Fund Balance	$5,386	$4,608	$4,512	$0	$2,702	$3,442	H60390	Institutional Research/Finance
F. Student Program Fees-Fund Expenditures	$6,788	$75	$0	$0	$5,406	$2,454	H60390	Institutional Research/Finance
G. Total Program Expense	$101,746	$91,398	$89,169	$153,348	$142,625	$115,657	Personnel+Operating	Institutional Research/Finance
H. Total Program Revenue	$208,878	$257,548	$330,671	$267,641	$269,120	$266,772	State Approp+Tuition	Institutional Research/Finance
I. Program Revenue/FTE	$7,882	$8,308	$10,967	$9,229	$9,280	$8,663	Total Revenue/FTE	Institutional Research/Finance

KPI or **PI** | **K**ey **P**erformance **I**ndicator or **P**erformance **I**ndicator for Program Effectivness under Strategic Enrollment Planning/Management

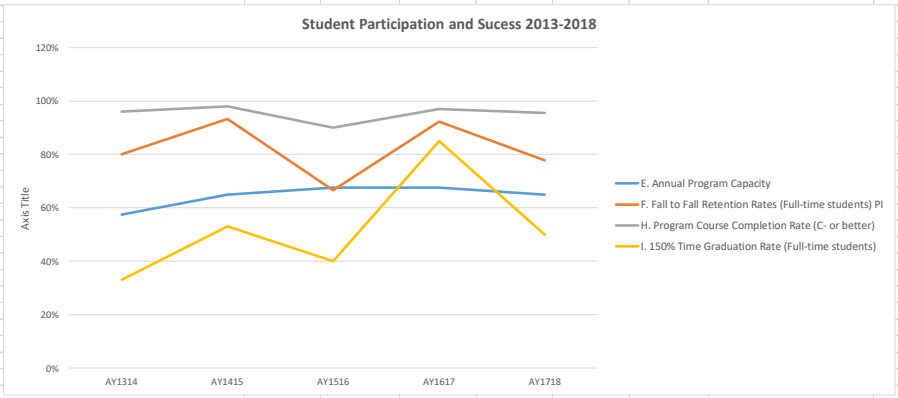


HELENA COLLEGE
University of Montana

Student Participation and Success								
Data Definition:	AY1314	AY1415	AY1516	AY1617	AY1718	5 Year Ave	Program Notes	Source
A. Transfer rates to 4-year colleges (AA/AS)	N/A	N/A	N/A	N/A	N/A	**N/A**		Institutional Research
B. Program Capacity (Headcount)	40	40	40	40	40	**40**		Institutional Research
C. Annual Headcount Enrollment (Unduplicated)	23	26	27	27	26	**26**		Institutional Research
D. Annual FTE Enrollment **PI**	27	31	28	29	31	**29**		Institutional Research
E. Annual Program Capacity	58%	65%	68%	68%	65%	**65%**		Institutional Research
F. Fall to Fall Retention Rates (Full-time students) **PI**	80%	93%	67%	92%	78%	**85%**	Fall 2013-2017 Cohorts	Institutional Research
G. Fall to Fall Retention Rates (Part-time students) **PI**	N/A	N/A	N/A	0%	0%	**0%**	Fall 2013-2017 Cohorts	Institutional Research
H. Program Course Completion Rate (C- or better)	96%	98%	90%	97%	96%	**95%**	Fall+Spring Semester/2	Institutional Research
I. 150% Time Graduation Rate (Full-time students)	33%	53%	40%	85%	50%	**52%**	Fall 2011-2015 Cohorts	Institutional Research
J. 150% Time Graduation Rate (Part-time students)	N/A	N/A	N/A	N/A	N/A	**N/A**	Fall 2011-2015 Cohorts	Institutional Research
K. Annual Degree & Certificate Completions	9	5	15	7	12	**10**		Institutional Research
L. Degree Production Rates – *proportion of degrees/certificates granted per 100 FTE* **PI**	33	16	54	24	39	**33**		Institutional Research
M. Pass Rates on Occupation/industry Specific Licensing or Certification Exams (as applicable) **PI**	AMA=100% AMP=100% AMG=100%	AMA=100% AMP=100% AMG=100%	AMA=N/A AMP=83% AMG=100%	AMA=100% AMP=86% AMG=100%	AMA=80% AMP=80% AMG=100%	**AMA=95%** **AMP=90%** **AMG=100%**	2014-2018	FAA Airmen Knowledge Test Statistics

Denotes Items that are Core Theme Indicators for Helena College

KPI or **PI** — **K**ey **P**erformance **I**ndicator or **P**erformance **I**ndicator for Program Quality and/or Effectiveness under Strategic Enrollment Planning/Management



Aviation Maintenance Technology 2013-2018

Program Review Data Summary

Alignment with Community Needs (CTE Only)

Data Definition:	Current MT	Projected MT	Current U.S.	Projected U.S.			Program Notes	Source
A. Provide the total number of projected job openings from related occupations for Montana and the U.S.	515	575	132,000	138,500			Projected annual openings MT: 47 Projected annual openings US: 10,900	Montana Research & Analysis Bureau/Bureau of Labor Statistics (2017-2017 Projections). US DOL (2016-2016 Projections)
B. Provide percent change in job openings for related occupations for Montana and the U.S.		+12%		+5%				Montana Research & Analysis Bureau/Bureau of Labor Statistics (2017-2017 Projections). US DOL (2016-2016 Projections)
C. Provide the median hourly wage or annual salary for related occupations	$54,290		$61,020				Average Starting Salary (AY1617): $33,764	Montana Research & Analysis Bureau/Bureau of Labor Statistics (2017-2017 Projections). US DOL (2016-2016 Projections)
Data Definition:	AY1213	AY1314	AY1415	AY1516	AY1617	5 Year Ave	Program Notes	Source
D. Provide 5 years of job placement rates for all program graduates **PI**	82%	56%	80%	80%	71%	74%	% of graduates employed at least 1 quarter following graduation	OCHE & Bureau of Labor Statistics https://www.mus.edu/data/WorkforceTool/default.asp
E. For applied programs with program admission provide five years of student application totals	N/A	N/A	N/A	N/A	N/A	N/A		Program Records
F. For applied programs with program admission provide five years of students accepted totals	N/A	N/A	N/A	N/A	N/A	N/A		Program Records

Denotes Items that are Core Theme Indicators for Helena College

KPI or **PI** **K**ey **P**erformance **I**ndicator or **P**erformance **I**ndicator for Program Effectivness under Strategic Enrollment Planning/Management