Gallatin College Annual Assessment Reports

Each Workforce Program Director at Gallatin College has reviewed a third of their Program Outcomes annually starting in Fall 2014. Though they have tracked this differently, each program used the spreadsheets below that link each outcome with a sample assessment showing how and where the outcome is met within the program. Because there are multiple assignments linked with each outcome in each program only sample assignments are included below, but additional samples may be reviewed upon request. The resulting curriculum changes from these reviews are listed in the previous section (6. Curriculum Changes).

1. Associate of Applied Science (AAS) in Aviation

Aviation Program Outcomes:

1. Apply knowledge in aviation to adapt to emerging aviation trends.
2. Conduct themselves professionally and ethically.
3. Understand and analyze the role of aviation safety and human factors to the aviation industry.
4. Describe meteorology as it relates to aviation.
5. Independently fly and safely operate airplanes for which they are rated.
6. Demonstrate an understanding and the appropriate application of aeronautical principles, design characteristics, and operational limitations, for a variety of aircraft as it relates to the student's career goals.
7. Communicate effectively using both written and verbal skills.
8. Demonstrate proficiency in math computation for aviation and modern society.
9. Demonstrate effective skills in the use of computers and aviation related technology

Assessment Schedule:

	Year					
Outcome	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
1	**x**			**X**		
2	**x**			**X**		
3	**x**			**x**		
4		**X**			**X**	
5		**X**			**X**	
6		**X**			**X**	
7			**x**			**x**
8			**x**			**x**
9			**X**			**X**

2014-2015 Outcomes Reviewed:

1. Apply knowledge in aviation to adapt to emerging aviation trends.
2. Conduct themselves professionally and ethically.
3. Understand and analyze the role of aviation safety and human factors to the aviation industry.

Aviation – AAS Degree		Program Outcomes		
Course	**Cr**	**1**	**2**	**3**
AVFT 121 – Private Pilot – Fundamentals	5	I	I	I
AVFT 122 – Private Pilot – Flight	2			
AVFT 130 – Meteorology for Aviation	3	D		D
CAPP 120 – Intro to Computers	3			
AVFT 141 – Advanced Navigation Systems	3	D		
AVFT 143 – Instrument Ground	3	D		D
AVFT 142 – Instrument Flight	2			
AVFT 150 – Aviation Operations	3	D	D	
AVFT 171 – Aircraft Systems for Pilots	3	D		
AVFT 245 – Commercial Ground	3	M	D	D
AVFT 250 – Commercial Flight 1 Single Engine	2			
AVFT 252 – Commercial Flight 1 Multi Engine	2			
AVFT 260 – Aviation Safety	3	D	D	M
AVFT 251 – Commercial Flight 2 Single Engine	2			
AVFT 261 – Flight Instructor Theory	4	M	M	M
AVFT 262 – Advanced Aircraft Theory	3	M	M	M
AVFT 263 – Aviation Regulations and Prof. Conduct	3	M	M	D

2015-2016 Outcomes Reviewed:

4. Describe meteorology as it relates to aviation.
5. Independently fly and safely operate airplanes for which they are rated.
6. Demonstrate an understanding and the appropriate application of aeronautical principles, design characteristics, and operational limitations, for a variety of aircraft as it relates to the student's career goals.

Aviation – AAS Degree		Program Outcomes		
Course	**Cr**	**4**	**5**	**6**
AVFT 121 – Private Pilot – Fundamentals	5			I, D
AVFT 122 – Private Pilot – Flight	2	I, D	I, D	I
AVFT 130 – Meteorology for Aviation	3	M		I
CAPP 120 – Intro to Computers	3			
AVFT 141 – Advanced Navigation Systems	3	D		I
AVFT 143 – Instrument Ground	3	M		M
AVFT 142 – Instrument Flight	2	M	M	
AVFT 150 – Aviation Operations	3			
AVFT 171 – Aircraft Systems for Pilots	3			M
AVFT 245 – Commercial Ground	3	M		M
AVFT 250 – Commercial Flight 1 Single Engine	2	D	M	
AVFT 252 – Commercial Flight 1 Multi Engine	2	D	M	
AVFT 260 – Aviation Safety	3	D		D
AVFT 251 – Commercial Flight 2 Single Engine	2	D	M	
AVFT 261 – Flight Instructor Theory	4	M		M
AVFT 262 – Advanced Aircraft Theory	3	D		M
AVFT 263 – Aviation Regulations and Prof. Conduct	3			I

Aviation Program Outcome Assessment

Student assessment in the aviation program must take a multi-pronged approach. This approach is needed as there are two sets of standards that aviation students must meet. Those set by the Federal Aviation Administration (FAA), and the much higher standard demanded by employers and the aviation industry. As the director of the Gallatin College Aviation Program, it is my policy that the training standard for this program meet those demanded by employers and the aviation industry and assess aviation students to that higher standard. In this section I have provided examples of student assessment showing that the aviation curriculum meets the standards set by the FAA as well as evidence of student learning meeting the standard set forth for the GC aviation program. I have removed any personal student information which may have appeared on the included documents.

Sample Student Assessments

Lesson Plan Matrix – AVFT 121 Private Pilot Fundamentals

I have created an Excel spreadsheet that lists course lesson plans along with the overall objective for the class day. Also included with each lesson plan and lesson objective is the course learning outcome(s) that is covered in the lesson plan during that class period. Lastly, listed are specific notes that pertain to each class period. An example of a note catalogs what a CAT (Curriculum Assessment Tool) revealed about student learning during that class session. I find this matrix useful for assessment as it functions as a curriculum map identifying how each lesson plan, test, and quiz is attached to the course learning outcome or outcomes.

Advanced Navigation Test 1 and Final Exam

I have included this exam to provide insight into how my exams are structured. The FAA exclusively uses multiple choice questions in all FAA knowledge exams. Therefore, I also include multiple choice questions on my exams as well as short answer and fill-in-the-blank questions in order to assess the overall knowledge of my students, and more importantly, assess their conceptual understanding in regards to specific subject areas (Refer to section 2, Teaching Philosophy). Often with short answer and fill-in-the-blank questions a student may come up with only part of the answer. I encourage students to attempt to answer these questions even if they are unsure of the correct answer. This provides an opportunity to award partial credit and creates a study guide for future exams.

I have included several different documents as supplements to test 1 and the final exam. Included are the exam keys that provide evidence of my assessment and awarding of partial and full credit. I have also included a review sheet for Test 1. I often provide a study guide to students to help focus their study on a particular area and to provide examples of what they can expect an exam or quiz.

Private Pilot – Fundamentals Quiz chapter 4

This quiz is comprised entirely of questions extracted from the FAA Private Pilot Knowledge Exam that are related to the subject areas covered in chapter 4 of the textbook. In giving this quiz, students can see how the FAA Knowledge Exam is structured and worded. It also offers the opportunity to assess student's preparedness for the FAA exam as well as an assessment into a specific subject area (In this case, the National Airspace System). I have included the answer key for this quiz as well. Included with the correct answer is a reference to where the question/answer can be found in both the FAA Private Pilot Knowledge Exam test guide and the course textbook. Providing this information helps to create better study habits for the student in preparing for not only course exams, but FAA knowledge exams.

Student research paper

I have included a student research paper involving an aviation related incident or accident required for AVFT 143 – Instrument Ground. I believe it is Important for students to be assessed with methods other than just quizzes and exams. This paper is a great tool that I can utilize to assess writing and critical thinking skills. One of the requirements for this assignment is to provide a reflection on two preselected questions that provide an opportunity for students offer their own thoughts and opinions and not just the dry facts of the incident.

Federal Aviation Administration - FAA

The FAA knowledge test measures mastery of the aeronautical knowledge areas listed in Title 14 of the Code of Federal Regulations (14 CFR) part 61. I have provided examples of the first time success rates for the FAA knowledge exam. An assessment of student first attempt pass rates identifies if FAA required subject areas are successfully covered in classroom. Below is a description of the specific areas of operation (AOA) that students are required to demonstrate mastery of knowledge. Documents included correlate to the description below and demonstrate how a student is evaluated based on the FAA's Airmen Certification Standards (ACS). FAA personnel have access to these student progress reports allowing them the ability to verify our student training and curriculum is meeting the standard set forth by the FAA.

Stage / Stage Name:	1 / **Ground Stage 1**
Stage Description:	The student will be introduced to pilot training, aviation opportunities, human factors in aviation, and become familiar with aerodynamic principals as well as the flight environment. The student will also obtain a basic knowledge of safety of flight, airports, aeronautical charts, airspace, radio communications, and air traffic control services, including the use of radar. In addition, the student will learn radio procedures and the common sources of flight information.
Stage Completion Standards:	This stage is complete when the student can demonstrate understanding during oral quizzing by instructor at completion of lesson. Instructor reviews incorrect responses to ensure student understanding prior to progression.
Scoring System:	S- Satisfactory, U – Unsatisfactory, I - Incomplete

One minute paper

This type of formative assessment is a simple and valuable exercise to gauge the effectiveness of a particular day's lesson plan. This assessment also functions as a quick method for student feedback that can help to reveal areas of weakness in a specific lesson for individual students.

Aviation Curriculum Changes from Program Outcome Assessment

The Associate of Applied Science in Aviation program is designed to prepare students for numerous career paths within the aviation industry. Currently aviation graduates are prepared for most entry level jobs with the exception of initial employment with FAR part 121 operators (airlines). The program must contain a breadth of curriculum that offers our students training in multiple areas within the aviation industry, which due to economic and regulatory changes, is in a continuous state of flux. The following program and course changes are in response to student, program, employer, and industry needs and help maintain a viable program that fully prepares graduates for entrance into the aviation industry:

- Aviation Program Restructuring to Qualify for Authorization to Certify Graduates for the R-ATP
- 2 + 2 – Aviation plus Business Programs
- Merging of AVFT 121 – Private Pilot Fundamentals and AVFT 123 – Basic Air Navigation
- AVFT 261 – Flight Instructor Theory increase of credit
- Aviation Flight Course Restructuring

2. **Certificate in Applied Science (CAS) in Bookkeeping**

Bookkeeping Program Outcomes:

1. Analyze and process basic financial transactions through the accounting cycle for sole proprietorships, partnerships, and corporations.
2. Prepare and analyze financial statements in accordance with Generally Accepted Accounting Principles (GAAP).
3. Communicate financial information to internal and external users to make business decisions.
4. Demonstrate proficiency in using computer software to perform bookkeeping and business tasks and prepare financial reports.
5. Perform basic office functions using standard and emerging technologies typical in entry-level accounting positions.
6. Prepare and process payroll records and reports in compliance with federal and state requirements.
7. Communicate orally and in writing at a professional level necessary for successful employment in a business environment.
8. Apply critical thinking skills to make decisions that demonstrate awareness of social responsibility as well as legal and ethical standards within the accounting profession.

Assessment Schedule:

	Year					
Outcome	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
1	**x**			**x**		
2	**x**			**x**		
3	**x**			**x**		
4		**x**			**x**	
5		**x**			**x**	
6			**x**			**x**
7			**x**			**x**
8			**x**			**x**

2014-2015 Outcomes Reviewed:

1. Analyze and process basic financial transactions through the accounting cycle for sole proprietorships, partnerships, and corporations.
2. Prepare and analyze financial statements in accordance with Generally Accepted Accounting Principles (GAAP).
3. Communicate financial information to internal and external users to make business decisions

Bookkeeping – CAS Degree		**Program Outcomes**		
Course	**Cr**	**1**	**2**	**3**
ACTG 101: Accounting Procedures I	4	M	D	D
ACTG 180: Payroll Accounting	4			D
CAPP 120: Intro to Computers	3			
CAPP 156: Microsoft Excel	3			D
COMX 102: Interpersonal Skills in the Workplace	1			
WRIT 104: Workplace Communications	2			
ACTG 102: Accounting Procedures II	4	M	M	M
ACTG 205: Computerized Accounting	3	D	M	M
ACTG 122: Accounting & Business Decisions	3			M
ACTG 125: QuickBooks	3	M	M	M
TASK 127: Business Office Procedures	3			

Sample Assignments [that show how well students meet each learning outcome ("**M**" level)]:

Outcome 1: Accounting Cycle Project (ACTG101)
Outcome 2: Final Exam (ACTG102)
Outcome 3: Budgeting Project (ACTG205)

2015-2016 Outcomes Reviewed

4. Demonstrate proficiency in using computer software to perform bookkeeping and business tasks and prepare financial reports.
5. Perform basic office functions using standard and emerging technologies typical in entry-level accounting positions.

Bookkeeping – CAS Degree		Program Outcomes	
Course	**Cr**	**4**	**5**
ACTG 101: Accounting Procedures I	4		
ACTG 180: Payroll Accounting	4		
CAPP 120: Intro to Computers	3	I	I
CAPP 156: Microsoft Excel	3	D	D
COMX 102: Interpersonal Skills in the Workplace	1		
WRIT 104: Workplace Communications	2		D
ACTG 102: Accounting Procedures II	4		
ACTG 205: Computerized Accounting	3	M	
ACTG 122: Accounting & Business Decisions	3		
ACTG 125: QuickBooks	3	M	
TASK 127: Business Office Procedures	3	D	M

Bookkeeping Curriculum Changes from Program Outcome Assessment

From her prior professional experience, the Program Director noted one key area missing in the Bookkeeping curriculum: general office management. Bookkeepers often find themselves in a position in which they must wear "many hats," including managing the front office. As a result, a new course was designed in Spring 2013 to specifically address these skills (TASK 127 – Business Office Procedures). The main topics of this course include Microsoft Outlook, records management and filing systems, processing mail, credit and collections, computer systems, and ten-key typing. Business Math (M108) was removed from the curriculum to allow space for this new course.

Based on feedback from members of the Bookkeeping Advisory Board in December 2012, Microsoft Access was removed from the curriculum. Recent changes have not been made because the Council members believe the curriculum is well-suited for a position in bookkeeping as it currently stands, however, the addition of an income tax preparation course as an elective will be presented to the Council in December for discussion.

3. Professional Certificate (PC) in Business Management

Business Management Professional Certificate Outcomes:

1. Objectively evaluate their concepts and plans for moving forward with their business plans.
2. Develop a working knowledge of business fundamentals such as management principles, marketing, product/service development, sales, and basic accountancy.
3. Understand and be capable of building a business infrastructure for business operations, processes and financial decision making.
4. Explore risk and success factors in the marketplace, develop a media strategy.
5. Understand how to access human, financial, and business resources.
6. Create an environment that encourages interaction with other entrepreneurs and professionals.
7. Identify and meet market needs, learn to respond to changes that can impact business.
8. Build an actionable business plan; and be an effective and prepared leader.

Assessment Schedule:

	Year					
Outcome	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
1	**x**			**x**		
2	**x**			**x**		
3			**x**			**x**
4		**x**			**x**	
5		**x**			**x**	
6			**x**			**x**
7			**x**			**x**
8	**x**			**x**		**x**

2014-2015 Outcomes Reviewed:

1. Objectively evaluate their concepts and plans for moving forward with their business plans.
2. Develop a working knowledge of business fundamentals such as management principles, marketing, product/service development, sales, and basic accountancy.

8 Build an actionable business plan; and be an effective and prepared leader.

Business Management Professional Certificate		**Program Outcomes**						
Course	**Cr**	**1**	**2**					**7**
BGEN 105: Intro. to Business	3		I					I
ACTG 101: Accounting Procedures I	4		M					
BMGT 215: Human Resource Management	3		D					
BMGT 210: Small Business Entrepreneurship	3	M	D					D
BMKT 240: Advertising	3		M					M
ACTG 122: Accounting & Business Decisions	3		M					
ACTG 125: QuickBooks	2		M					
BMKT 222: Customer Service & Marketing	3		M					M
BGEN 235: Business Law	3		M					
TASK 127: Business Office Procedures	3							
BMKT 112: Applied Sales	3		M					M

Sample Assignments [that show how well students meet each learning outcome ("**M**" level)]:

Outcome 1: Business Plan (BMGT210)
Outcome 2: Final Paper (BGEN105)
Outcome 8: Business Plan (BMGT210)

Business Management Professional Certificate		Program Outcomes	
Course	Cr	4	5
BGEN 105: Intro. to Business	3	I	I
ACTG 101: Accounting Procedures I	4		D
BMGT 215: Human Resource Management	3		M
BMGT 210: Small Business Entrepreneurship	3	D	D
BMKT 240: Advertising	3	M	
ACTG 122: Accounting & Business Decisions	3		D
ACTG 125: QuickBooks	2		D
BMKT 222: Customer Service & Marketing	3	M	
BGEN 235: Business Law	3		M
TASK 127: Business Office Procedures	3		I
BMKT 112: Applied Sales	3	M	

2015-2016 Outcomes Reviewed:

4. Explore risk and success factors in the marketplace, develop a media strategy.
5. Understand how to access human, financial, and business resources.

Business Management Curriculum Changes from Program Outcome Assessment

In 2015, the Business Management Advisory Board recommended the following curriculum changes for the program: removing BGEN105 Introduction to Business, addition of BMKT225 Marketing as a required course, making BMKT240 Advertising an elective, switching semesters of BMGT215 Human Resource Management and BMGT210 Small Business Entrepreneurship, and adding other courses as electives. These changes were implemented in Fall 2016 to better meet student needs and align the curriculum with industry requirements.

4. Certificate of Applied Science (CAS) in CNC Machine Technology

CNC Machine Technology Program Outcomes:

1. Operate computer numerically controlled (CNC) machines, such as lathes, mills, precision measuring tools, and related attachments and accessories.
2. Perform machining functions, such as cutting, drilling, shaping, and finishing products and component parts.
3. Understand and exercise the following skills: CNC terminology, setup, programming, operations, and troubleshooting; Blueprint reading; Machining; Lathe and mill operations; Technical mathematics; Computer literacy; CAD/CAM systems; Shop and safety practices; Equipment capabilities; Regulations and laws
4. Obtain National Institute for Metalworking Standards (NIMS) Skills credentials.
5. Complete Haas V-F Series Milling Machine and GUI control setup.
6. Knowledge and operations of Gibbscam and G-code.

2014-2015 Outcomes Reviewed:

1. Operate computer numerically controlled (CNC) machines, such as lathes, mills, precision measuring tools, and related attachments and accessories.
2. Perform machining functions, such as cutting, drilling, shaping, and finishing products and component parts.

CNC Machine Technology - CAS		Program Outcomes	
Course	**Cr**	**1**	**2**
M 111 – Technical Mathematics	3		
MCH 103 – Intro to Computer Aided Manufacturing	2	I	I
MCH 120 – Blueprint Reading	2		
MCH 130 – Machine Shop	3		D
MCH 231 – CNC Turning Operations Level 1	3	D	D
MCH 234 – CNC Milling Operations Level 1	3	D	D
MCH 232 – CNC Turning Operations Level 2	3	M	M
MCH 235 – CNC Milling Operations Level 2	3	M	M
MCH 230 – Tooling and Fixtures Used in CNC	2	M	M
MCH 104 – Intro to Computer Aided Manufacturing	2	I	
MCH 122 – Introduction to GibbsCAM	3	D	

2015-2016 Outcomes Reviewed:

3. Understand and exercise the following skills: CNC terminology, setup, programming, operations, and troubleshooting; Blueprint reading; Machining; Lathe and mill operations; Technical mathematics; Computer literacy; CAD/CAM systems; Shop and safety practices; Equipment capabilities; Regulations and law.
4. Obtain National Institute for Metalworking Standards (NIMS) Skills credentials.

CNC Machine Technology - CAS		Program Outcomes	
Course	**Cr**	**3**	**4**
M 111 – Technical Mathematics	3	I	
MCH 103 – Intro to Computer Aided Manufacturing	2	I	
MCH 120 – Blueprint Reading	2	D	
MCH 130 – Machine Shop	3	D	M
MCH 231 – CNC Turning Operations Level 1	3	D	
MCH 234 – CNC Milling Operations Level 1	3	D	
MCH 232 – CNC Turning Operations Level 2	3	D	M
MCH 235 – CNC Milling Operations Level 2	3	D	M
MCH 230 – Tooling and Fixtures Used in CNC	2	D	
MCH 104 – Intro to Computer Aided Manufacturing	2	D	
MCH 122 – Introduction to GibbsCAM	3	D	

CNC Machine Technology Curriculum Changes from Program Outcome Assessment

Gallatin College's CNC Machining Technology Program is now in its third year and has seen several changes to its curriculum in response to our industry advisory, student feedback after they enter the work force and the higher caliber of incoming students to the CNC Machining Program.

The first major change has been to consolidate two courses with complementary content MCH103 and MCH 104. These two classes are online classes using a platform called "Learn Haas CNC" by Immerse2Learn. When the courses were designed the content was spread over two semesters due to the expected workload. Based on the rate of execution and the high motivation of the students neither portion was sufficient to be an independent class, so they were combined into a single class.

The second major change is exchanging the 2 credit "Blueprint Reading" class for a 3 credit "Intro to Solidworks" class. The CNC Machining Advisory Board suggested more CAD instruction in response to a change in local industry. The objectives previously covered in Blueprint Reading have been distributed throughout other courses in the program.

5. Associate of Applied Science (AAS) in Design Drafting Technology

Design Drafting Technology Program Outcomes:

Upon program completion, the successful will be able to:

1. Read and Understand Shop Drawings, Construction Drawings and Details
2. Do takeoffs and estimates of materials from printed plans
3. Have a strong understanding of the materials and processes that are a part of home construction and manufacturing.
4. Create Construction Documents and Shop Drawings for Architects, Engineers and Manufacturers
5. Visualize and measure 3D objects and buildings and recreate them in computer-aided design software (CAD)
6. Render objects and buildings for presentation in programs including: Adobe Photoshop, AutoCAD Architecture, and 3DS Max
7. Create a complete set of permit ready residential plans
8. Draw a site plan and thematic maps (including topography) using CAD software and GIS data
9. Prepare and present professionally themselves and their portfolio and projects
10. Use Critical Thinking Techniques to solve problems, especially as related to Design Drafting disciplines
11. Understand computer hardware vocabulary, basic hardware maintenance, software installation and updating, and basics of home and small office networking
12. Assess their skills and talents and present themselves in a way so that they can follow a career path that they will enjoy and benefit from.

Outcome Assessment Schedule:

	Year					
Outcome	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
1	**X**			**X**		
2	**X**			**X**		
3	**X**			**X**		
4	**X**			**X**		
5		**X**			**X**	
6		**X**			**X**	
7		**X**			**X**	
8		**X**			**X**	
9			**X**			**X**
10			**X**			**X**
11			**X**			**X**
12			**X**			**X**

2014-2015 Outcomes Reviewed

1. Read and Understand Shop Drawings, Construction Drawings and Details
2. Do takeoffs and estimates of materials from printed plans
3. Have a strong understanding of the materials and processes that are a part of home construction and manufacturing.
4. Create Construction Documents and Shop Drawings for Architects, Engineers and Manufacturers

Design Drafting Technology – AAS Degree		**Program Outcomes**			
Course	**Cr**	**1**	**2**	**3**	**4**
CSTN 148 - Blueprint Codes and Est.	2	M	M	I	
CSTN 173 - Arch Construct and Material	3	D	D	D	D
DDSN 112 - Professional Practices	3				
DDSN 113 - Technical Drafting	3	I			I
DDSN 118 - CAD 1	4				I
(DDSN 101 – CAD 1 A)	2				I
(DDSN 102 – CAD 1 B)	2				D
DDSN 124 - Descriptive Geometry	4				D
DDSN 166 - Revit 1	3				D
DDSN 186 - CAD 2	3				
DDSN 244 - GIS and Mapping	3				
DDSN 245 - Civil Drafting	3				
DDSN 255 - Machine Drafting	3			D	D
DDSN 256 - Machine Drafting - 2	3			M	M
DDSN 265 - Architectural Drafting	3			M	M
DDSN 266 - Revit 2	3				M
DDSN 275 - Computer Rendering	3				
DDSN 276 - Presentation & Animation	3				
DDSN 298 - Internship	4				
DDSN 299 – Capstone: Portfolio	3				
ITS 280 – Computer Repair & Maintenance	3				
MFTG 205 – Manufacturing Processes	3			D	D

2015-2016 Outcomes Reviewed:

5. Visualize and measure 3D objects and buildings and recreate them in computer-aided design software (CAD)
6. Render objects and buildings for presentation in programs including: Adobe Photoshop, AutoCAD Architecture, and 3DS Max
7. Create a complete set of permit ready residential plans
8. Draw a site plan and thematic maps (including topography) using CAD software and GIS data

Design Drafting Technology – AAS Degree		Program Outcomes			
Course	**Cr**	**5**	**6**	**7**	**8**
CSTN 148 - Blueprint Codes and Est.	2				
CSTN 173 - Arch Construct and Material	3				
DDSN 112 - Professional Practices	3				
DDSN 113 - Technical Drafting	3	D	D	D	
DDSN 118 - CAD 1	4	I		D	
(DDSN 101 – CAD 1 A)	2	I			
(DDSN 102 – CAD 1 B)	2	D		I	
DDSN 124 - Descriptive Geometry	4	D			I
DDSN 166 - Revit 1	3	D		D	
DDSN 186 - CAD 2	3	D			
DDSN 244 - GIS and Mapping	3				M
DDSN 245 - Civil Drafting	3				M
DDSN 255 - Machine Drafting	3	D			
DDSN 256 - Machine Drafting - 2	3	M			
DDSN 265 - Architectural Drafting	3	M		M	D
DDSN 266 - Revit 2	3	M		D	
DDSN 275 - Computer Rendering	3	M	M		
DDSN 276 - Presentation & Animation	3	M	M		
DDSN 298 - Internship	4				
DDSN 299 – Capstone: Portfolio	3	M	M		
ITS 280 – Computer Repair & Maintenance	3				
MFTG 205 – Manufacturing Processes	3				

Design Drafting Curriculum Changes from Program Outcome Assessment

This past summer Gallatin College hired a new Program Director for the Design Drafting program. This past fall, the new director has worked to edit the program catalogue requirements and sequence of classes to prepare students for broader job positions within residential and commercial architecture, machining and industrial manufacturing industries – all growing in Gallatin County. Historically this program has catered to residential architecture only, but in response to regional market data, meetings with industry leaders and feedback from program graduates, Gallatin College sees the potential in diversifying the program's curriculum to meet these growing industry needs.

Curriculum changes in this program have included (for 2017-2018 catalogue) increasing the Blueprint Codes & Estimating from 2 to 3 credits to include commercial codes, omitting Descriptive Geometry as a math requirement and using Business Math instead to reflect current industry usage and adding a second Solidworks course (which will require a title and number change through CCN). There are also curriculum changes within the CAD courses to better align with engineering curricula while meeting industry needs.

6. Associate of Applied Science (AAS) in Interior Design

Interior Design Program Outcomes:

1. Understand the theory and history of design and apply design principles and elements to their projects.
2. Communicate in the language of interior design using listening, verbal, and written skills to interact with clients and industry professionals.
3. Communicate graphically according to current architectural and NKBA standards using both hand and computer drafting techniques.
4. Demonstrate research abilities and critical thinking in space planning, selection of finish materials, and application of codes for residential and commercial projects.
5. Increase their body of knowledge in a wide variety of areas including construction methods, finish materials, color and lighting technologies, residential and commercial codes, sustainability, and professional practice.
6. Employ up-to-date industry methods to create presentations and information organization for a wide variety of applications by using hand and/or computer drafting, rendering and modeling programs.

Outcome Assessment Schedule:

	Year					
Outcome	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
1	**x**			**X**		
2	**x**			**X**		
3		**X**			**x**	
4		**X**			**X**	
5			**x**			**x**
6			**X**			**X**

2014-2015 Outcomes Reviewed:

1. Understand the theory and history of design and apply design principles and elements to their projects.
2. Communicate in the language of interior design using listening, verbal, and written skills to interact with clients and industry professionals.

Interior Design – AAS Degree		Program Outcomes	
Course	**Cr**	**1**	**2**
IDSN 101 - Intro to Interior Design	3	I	I
IDSN 110 - Hist of Int Dsgn I Ancnt-1900	3	I	
IDSN 130 - Interior Design Graphics	3		I
IDSN 131 - Presentation Drawing	3		
IDSN 135 - Fundamentals of Space Planning	3	D	I
IDSN 225 - Light/Color/Lighting Systems	3	D	D
CSTN 173 - Arch Construct and Material	3		D
IDSN 122 - Textiles and Interior Finishes	3		D
IDSN 240 - Studio I Residential	4	D	M
IDSN 266 - Kitchen and Bath	4	D	M
IDSN 298 – Internship	3-5		D
IDSN 111 - Hist Int Dsgn II 1900-Contemp	3	D	
IDSN 250 - Studio II Commercial*	4	M	M
IDSN 267 - Kitchen and Bath II*	4	M	M
IDSN 275 - Professional Practices*	3		M
IDSN 292 - Independent Study	1-3	M	M
DDSN 118-CAD 1			I

Sample Assignments Showing Outcome Assessment:

IDSN 240: Project 2, Phase I & II
IDSN 250: Studio 2 Project A-1-5
IDSN 267: K&B II Final Project
IDSN 275: Courthouse Project

2015-2016 Outcomes Reviewed:

3. Communicate graphically according to current architectural and NKBA standards using both hand and computer drafting techniques.
4. Demonstrate research abilities and critical thinking in space planning, selection of finish materials, and application of codes for residential and commercial projects.

Interior Design – AAS Degree		Program Outcomes	
Course	**Cr**	**3**	**4**
IDSN 101 - Intro to Interior Design	3	I	I
IDSN 110 - Hist of Int Dsgn I Ancnt-1900	3		I
IDSN 130 - Interior Design Graphics	3	I	I
IDSN 131 - Presentation Drawing	3	I	
IDSN 135 - Fundamentals of Space Planning	3	D	D
IDSN 225 - Light/Color/Lighting Systems	3	D	D
CSTN 173 - Arch Construct and Material	3	I	D
IDSN 122 - Textiles and Interior Finishes	3	D	D
IDSN 240 - Studio I Residential	4	M	M
IDSN 266 - Kitchen and Bath	4	M	M
IDSN 298 – Internship	3-5		D
IDSN 111 - Hist Int Dsgn II 1900-Contemp	3		D
IDSN 250 - Studio II Commercial*	4	M	M
IDSN 267 - Kitchen and Bath II*	4	M	M
IDSN 275 - Professional Practices*	3	M	
IDSN 292 - Independent Study	1-3	M	M
DDSN 118-CAD 1		I	

Interior Design Program Outcome Assessment

Sample Student Assessment

I assess students by three main methods providing evidence of competence, recall and application and analysis. These three main categories provide the framework for their required demonstration of proficiency, specifically in the class material and generally program wide. Class material is developed in line with published class outcomes and industry requirements. Following is a description of the methodology and a **sample** of each type of assessment. **Full examples** are included after this summary in the same order as presented here.

Recall provides a memorization of key terms, ideas, relationships and basic concepts. Students are asked to identify information from memory. Recall is used heavily in assessment in first year, first semester classes such as IDSN 101 Intro to Interior Design. This class requires students to have memorized vocabulary, materials and categories of information classifying design. Examples of these types of questions follow:

History of Interior Design, Ancient IDSN 110 or Contemporary IDSN 111

Fill in the blanks-	
In whose tomb was the object on the right found? 1._____ How are the colors achieved in the patterns? For instance the black stripes on the head dress. 2. _____ List one other piece of furniture found in this tomb: 3. _____	

IDSN 101 Intro to Interior Design

Multi-select question: Millwork is:

a. Trim around doors
b. Trim around windows
c. Raw lumber delivered for framing a house
d. Sheets of plywood that go under hardwood flooring

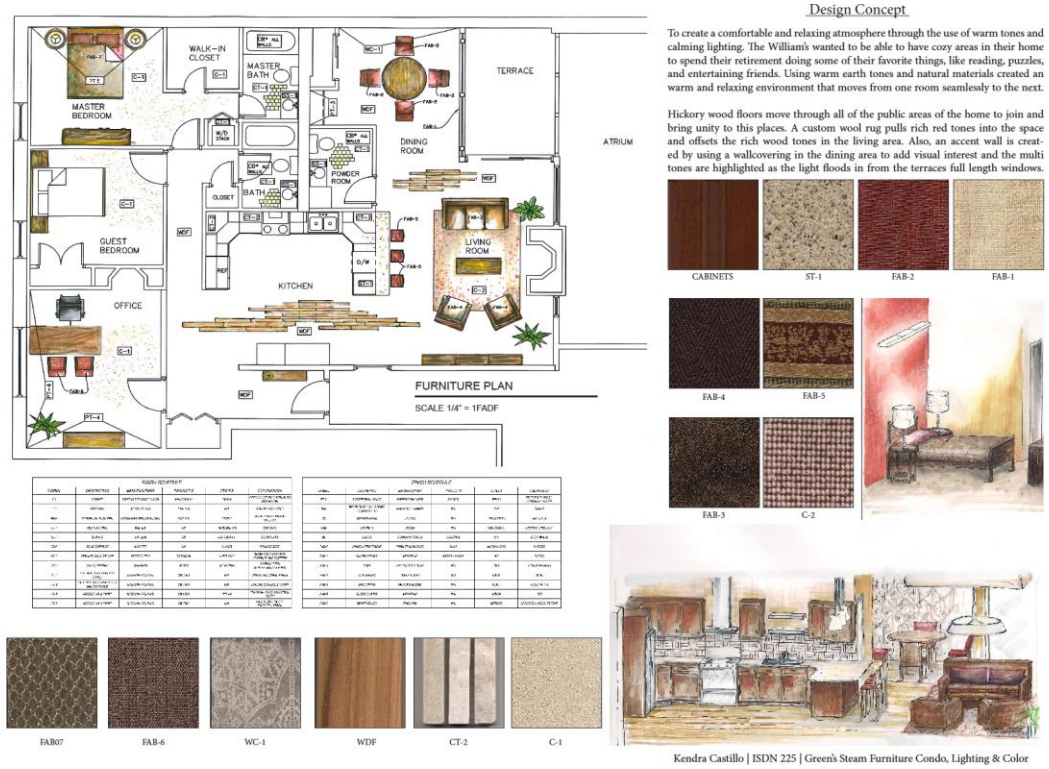
Once students have this base layer of knowledge, application of questions that require an explanation of these ideas and concepts can take place. These questions usually fall toward the end of the semester. **Application** requires the student to put material into a process. Since all of design is a process, these types of questions provide feedback on how able the class is to utilize the information being taught. In this question, the key to the first part is whether students understand how to go about the process of organizing a job into steps, then if they can insert information from an earlier project into this process.

Use of industry vocabulary in outlining the process is key to evaluating student competence. Example of IDSN 101 second quiz question.

1. In making decisions about furniture to place in an 8' x 10' multi-use room, what would be your process? Be sure to organize your thoughts and answer in the right order. List the types of furniture you would use based on our furniture scavenger hunt and your considerations regarding textile, pattern and placement. Be specific and clear about your choices and reasoning.

Analysis requires students to draw connections between design projects and the principles and processes they have been learning. This type of assessment often relies on work-style projects designed to give the student multiple options in materials and design solutions. Students must choose not only how they will create a design solution, but also be prepared to defend why this is the best solution for the problem. This process of self-evaluation, where they justify their stand, is usually in the form of critique sessions as the student presents both their preliminary and final solution. Most of these projects require students to demonstrate skill sets from earlier classes in an accomplished manner along with the new information. These problem based assignments can range from a semester long project or can be broken up into smaller parts depending on the level of the class. The sample below provides the design solution using new elements taught in IDSN 225 Light, Color and Lighting Systems but requiring mastery of earlier classes and skill sets. For instance the solution that is being asked of the student

requires a depth of understanding utilizing memorized facts and a demonstration of skill sets such as graphic ability. As the student moves toward synthesis of cause and effect of their choices in color and materiality and the impact of light on those interior finishes, they should understand/defend the cause and effect of light and color on the clients living in the space. Students must not only find their design solution, but also present it verbally and graphically clear, exhibiting the rules of design in all aspects of their solution presentation.



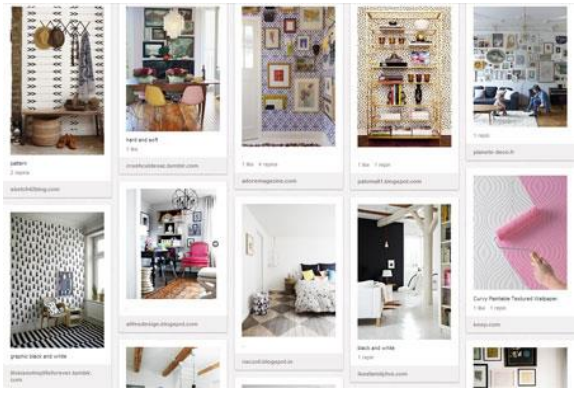
All student feedback for projects is graded by a **rubric** that lays out the attributes and deficiencies in the submission. Following is a portion of the rubric, (complete rubric follows), illustrating the comments on aspects of the project above. (This rubric is for an anonymous student submitting the same project.)

CONTENT/INFORMATION: 67/90 points	9-10	7-8	2-6	0-1
	The project contains accurate and well thought out information	The project, for the most part contains accurate and well thought out information	The requirements are not fully met, yet still able to draw logical conclusion.	Missing or incomplete, unable to draw a logical conclusion
Combine the two units to contain: One master bedroom One guest room One office with private entrance Terrace and view from the public space Enlarged kitchen with more functional space		7- The powder room opens to the living and dining room, this room should have visual/acoustic privacy. The hallway uses too much space- move the powder room here. Then the kitchen could be larger, it is too small for this condo space.		

Two full baths, one powder Maintain the same amount of closets and storage One W/D Demising wall between units can be removed up to 50%				
25% maximum remodel	10			
Lighting Plan: lighting selection suitability, graphic communication		6- The scan of your trace is dark and messy, put white paper behind your trace when scanning to increase the whiteness. You did not keep the scan at ¼" scale.		
Lighting Schedule: clarity of legend and key, appropriate lighting selections		6- The symbols for your recessed cans and the Lumen Art RDP are too close to identify on plan. You need to tie in the spec to the symbol on the plan in order to be clear. Bedroom sconce is listed without spec number: 100-890-ch Most of your specifications are not complete: Living room sconce does not list fitter or finish only glass. Living room/ Entry etc. do not list finish/ suspension/fabric. L1, 2 and 3 are an apartment quality light fixture that often causes discomfort through glare and has a large presence on the ceiling. If mounted at 10'-0" can we expect 50w MR-16's to wash the bookcase etc. or create a hot spot? Remember Wild Joe's field trip? L 4 is inappropriate to a remodel that would have an electrician on hand to hard wire in the sconce. Why bother with batteries and weak light? Master choice of bar light and sconces do not relate.		
Program Statement: clear language, no sales-speak	9- Misspelling!			
Furniture Plan: creativity in solving client's program, use of color transitions, neatness and graphic communication			6- The living room is not fully visualized, it has just the minimum. You need to address the needs of the client, what would they need to have in that living room besides the standard sofa and chair? The drafting is too inconsistent, the lighting keys too small, doorways etc. are not correct.	

Rubrics allow uniform grading and keep points from being counted twice. I create each rubric as I create the project sheet so that the design solution is graded on exactly what the student was requested to provide. Most often students are handed the rubric with the project sheet at the start of the project so that they have all grading points in front of them. That being said, some still don't understand the relationship between an analytical problem, their solution and a rubric grading method. For some, these classes are the first time that their design work is evaluated beyond completion of all items leading to comments such as "I spent a lot of time on this" or "This project cost me a lot of money". Unfortunately length of time and money spent do not equate to good design, or a well-executed project, a lesson that is hard to learn.

While a goal of mine is to work toward fostering creation of new and original work, most younger students at this two-year level of instruction have had less time to develop sophistication in design and its use. The goal of demonstrating original creation and its assessment is one that I am currently working toward. Across academia, design programs are wrestling with how to pull students from copies of internet idea generators such as Pinterest and pushing beyond to actual creation. Program wide we are addressing this by requiring all materials and components of a design solution to be fully researched and documented. Basically, we are asking them is to provide the manufacturer and order codes for all components in their design. This short circuits the Pinterest 'idea board' (as seen on the left), as a final submission. This requirement channels the students toward real life materials, product representatives and personalized design solutions leading to independent thinking and creativity.



inspirationfeed.com450 × 303

While the program moves toward fuller exposure to all aspects of the design world, the goal will continue to allow students time and travel to see design in all its aspects. As students are exposed to a broader variety of design projects creativity and its assessment will evolve and include a larger portion of points on projects.

Interior Design Curriculum Changes from Program Outcome Assessment

National Accreditations: Transition out of NKBA and into NASAD

2012-2015: National Kitchen and Bath association (NKBA). From year 14-15 a 'teach out' of the NKBA standards was implemented so students enrolled under the understanding they would be graduating from a NKBA accredited school would maintain that credential.

2014-Present: The National Association of Schools of Art and Design (NASAD) accreditation allowed Gallatin College's Interior Design program to join MSU's Arts and Architecture College in assuring that we maintain national standards for excellent in art and design. (NASAD accreditation report available for this program)

Class Outcome Organization

Master Skill's list: This document took each of our classes in the program and listed all the skills taught in that class. Skills were then refined by degree of mastery. If a skill was only *introduced* it received an (I), if *reinforced* it received an (R), skills that required mastery were given an (E) for *emphasized*.

Contact hours in several classes were added by re-designating lab and lecture hours in IDSN 130 Graphics, IDSN 131 Presentation, IDSN 240 Studio I, IDSN 250 Studio II, IDSN 266 Kitchen and Bath I and IDSN 267 Kitchen and Bath II.

Class Order: In 2013 prerequisites were added, strengthened and enforced to keep students accountable and on track. WRIT 101 (College Writing) was brought up from third semester to first to give students trying out the program classes that would transfer should they decide that Interior Design was not for them. CAD (computer-aided drafting) was moved to first semester, giving students a longer range of time to master and use it in other classes as they progressed through the program. M 108 Business Math and COMX 115 Interpersonal Communications also moved up to second semester to give students a better foundation for other program courses.

IDSN 275 Professional Practice now has more depth with the addition of pro-bono work, speed Interviews, cross disciple projects and online digital portfolio reviews.

IDSN 298 Field Study changed to an internship and ten weeks of online sharing between students to allow them to discuss everything from how they secured their job, how that job impacted their ideas of the industry, to their dream job and inspirational mentor.

Digital changes: CAP 120 was dropped as a requirement in 2014. The new requirement allows for one additional digital class.

New Courses

IDSN 150 Technology Lab This class will bridge the gap by providing a resource for students to work on homework with guided assistance by digitally trained faculty.

IDSN 255 Environmental Studio replaces Kitchen and Bath II and allows students to work on a studio project employing and studying sustainable methodology.

Advisory Board

Comments from Advisory Board meetings led to these changes as discussions about students understanding construction was a key asset in their mind when hiring. CSTN 173 Construction and Materials moved from the broad depth covering all construction methods from sky scrapers to pre-tensioned bridges, to primarily wood frame residential. And in 2014 communication with industry partners at large was expanded.

Dual-degree Option

A popular change in the Interior Design program was the addition of the dual degree option. This allows our degree-seeking students to earn a Bachelors of Business along with an Interior Design degree in five years. This option adds to the other dual degree option that we offer with the Architecture department. While not a true dual degree agreement, in 2012 we outlined the classes that the Interior Design Program could accept allowing those students to earn their undergraduate Environmental Design degree while simultaneously earning the AA in Interior Design. In 2015 we amended the required classes again accepting Architecture Art History classes. With the growth in rigor in our second year studio classes we also changed the required studio classes to include Studio I, II, and Environmental Studio.

7. Certificate in Applied Science (CAS) in Medical Assisting

1. Graduate skilled entry level medical assistants who are cross-trained to work in all areas of a physician's office or other ambulatory care setting. This includes competency in:
    a. the front office
    b. the clinical area assisting with patients
    c. the laboratory performing CLIA waived tests.
2. Participate in a 200 hour externship experience in a designated health care setting.
3. Pass the national medical assisting exam.

Assessment Schedule:

	Year					
Outcome	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
1a	**x**			**x**		
1b	**x**			**x**		
1c		**x**			**x**	
2		**x**			**x**	
3			**x**			**x**

2014-2015 Outcomes Reviewed:

1. Graduate skilled entry level medical assistants who are cross-trained to work in all areas of a physician's office or other ambulatory care setting. This includes competency in:
    a. the front office
    b. the clinical area assisting with patients

Medical Assistant – CAS Degree		**Program Outcomes**		
Course	**Cr**	**1a**	**1b**	
AH 140 - Pharmacology	2	I,D	I,D	
AHMS 144 - Medical Terminology	3	I,D	I,D	
BIOH 112 - Human Form & Function I	3		I,D	
AHMA 201 - MA Clinical Procedures I	4			
AHMA 203 - MA Clinical Procedures II	4		I,D	
AHMA 280 - Med Assisting Exam Prep	1			
AHMS 100 - Math Applications Health	3	I,D	I,D	
AHMS 158 - Legal and Regulatory Aspects of Healthcare	2	I,D	I,D	
AHMS 220 - Medical Office Procedures	3	I,D		
BIOH 113 - Human Form and Function II	3		I,D	
AHMA 298 - Medical Assisting Externship	4			

2015-2016 Outcomes Reviewed:

1. Graduate skilled entry level medical assistants who are cross-trained to work in all areas of a physician's office or other ambulatory care setting. This includes competency in:
   c. the laboratory performing CLIA waived tests.
2. Participate in a 200 hour externship experience in a designated health care setting

Medical Assistant – CAS Degree		Program Outcomes		
Course	**Cr**	**1c**	**2**	
AH 140 - Pharmacology	2			
AHMS 144 - Medical Terminology	3	I,D		
BIOH 112 - Human Form & Function I	3	I,D		
AHMA 201 - MA Clinical Procedures I	4	I,D		
AHMA 203 - MA Clinical Procedures II	4			
AHMA 280 - Med Assisting Exam Prep	1			
AHMS 100 - Math Applications Health	3	I,D		
AHMS 158 - Legal and Regulatory Aspects of Healthcare	2	I,D		
AHMS 220 - Medical Office Procedures	3			
BIOH 113 - Human Form and Function II	3	I,D		
AHMA 298 - Medical Assisting Externship	4		M	

Assessment Documentation:

Documentation to show mastery in the programmatic outcomes:

2-3 competencies from each of the following courses to show skill acquisition.

AH140, BIOH112, BIOH113, AHMA 201, AHMA 203, AHMS 158, and AHMS 220

The final in AHMS 144 and AHMS 100

The scores of the mock national exam for AHMA280.

The RMA (AMT) scores for the previous year's graduating class.

8. Certificate in Applied Science (CAS) in Health Information Coding

Health Information Coding Program Outcomes:

1. Graduate skilled entry level medical coders who can abstract patient information and combine it with universally recognized coding systems to assign and sequence diagnostic codes (ICD9, ICD10, HCPCS).
2. Graduate skilled entry level medical coders who can abstract patient information and combine it with universally recognized coding systems to assign and sequence procedural codes (CPT).
3. Code complete case studies using a computerized encoder program.
4. Perform billing and reimbursement procedures.
5. Pass the national coding exam.

2014-2015 Outcomes Reviewed

1. Graduate skilled entry level medical coders who can abstract patient information and combine it with universally recognized coding systems to assign and sequence diagnostic codes (ICD9, ICD10, HCPCS).
2. Graduate skilled entry level medical coders who can abstract patient information and combine it with universally recognized coding systems to assign and sequence procedural codes (CPT).

Health Information Coding – CAS Degree		Program Outcomes	
Course	**Cr**	**1**	**2**
AH 140 - Pharmacology	2	I	I
AHMS 144 - Medical Terminology	3	I	I
BIOH 112 - Human Form & Function I	3	I	I
BIOH 113 - Human Form and Function II	3	I	I
AHMS 160 - Beginning Procedural Coding	4		I
AHMS 162 - Beginning Diagnostic Coding	4	I	
AHMS 156 - Medical Billing Fundamentals	3		
AHMS 158 - Legal and Regulatory Aspects of Healthcare	2	I,D	I,D
AHMS 100 - Math Applications Health	3		
AHMS 250 - Advanced Medical Coding	4	D	D
AHMS 298A Professional Practice Experience	1		

1.) Documentation to show mastery in the programmatic outcomes:

The final exam for AHMS 160 and 162

2-3 competencies from each of the following classes to show skill acquisition:
AHMS156, AHMS158, AHMS250

Printout from the computerized coding case studies showing competency.

CCA(AHIMA) scores for the previous year's graduating class.

2015-2016 Outcomes Reviewed:

3. Code complete case studies using a computerized encoder program.
4. Perform billing and reimbursement procedures.

Health Information Coding – CAS Degree		Program Outcomes	
Course	**Cr**	**3**	**4**
AH 140 - Pharmacology	2		
AHMS 144 - Medical Terminology	3		
BIOH 112 - Human Form & Function I	3		
BIOH 113 - Human Form and Function II	3		
AHMS 160 - Beginning Procedural Coding	4		
AHMS 162 - Beginning Diagnostic Coding	4		
AHMS 156 - Medical Billing Fundamentals	3		I,D
AHMS 158 - Legal and Regulatory Aspects of Healthcare	2		
AHMS 100 - Math Applications Health	3		I
AHMS 250 - Advanced Medical Coding	4		
AHMS 298A Professional Practice Experience	1	M	

Allied Health Curriculum Changes from Program Outcome Assessment

Program assessment is done continuously in all programs and feedback to make changes comes from varied sources. In the case of Allied Health this includes advisory board suggestions, RMA exam study guides, passing rate of RMA exam, student feedback after students take RMA exam, industry feedback from externships, and student evaluations.

Advisory Board

The Allied Health advisory board is made up of a very active group of healthcare professionals who give feedback in the annual meeting as well as via emails when they come across something they know will be of interest or concern for our medical assistant program. They keep the Program Director updated on job opportunities as well as changing health care regulations and policies. For example, they addressed how the meaningful use act might impact our medical assistant program and they gave great interviewing tips to pass on to students in the program. In addition, they promote the hiring of medical assistants from Gallatin College within their institutions.

RMA Exam

Each course in the medical assisting curriculum was cross matched with the content in published study guides for the RMA (AMT) national exam. The details, down to vocabulary terms, were noted if it was present in the study guides and not already a part of the courses content. Terms, diseases, medical background, and vocabulary terms were inserted into the appropriate courses weekly objectives. One goal is to pass the RMA(AMT) exam while the second goal is to acquire the content knowledge that is applicable in the current workforce setting.

Welding Technology Curriculum Changes from Program Outcome Assessment

The Welding Technology Program at Gallatin College, Montana State University has developed and utilizes a curriculum that follows the American Welding Society's SENSE (levels I, II, II), NCCER (levels one, two and three) and is a direct result of regional advisory board input.

In response to the board's recommendation for a realistic fabrication experience, the weld shop has purchased through grants and Perkins monies additional machinery and tooling. The program is presently aligning its outcomes to the needs of the community and utilizing the BOR CCN to appropriately match the course with the outcomes that are actually being taught. An example of this is the inclusion of the WLDG 151 and WLDG 154 into the CAS.

Due to the limited success of "Technical Math" (M111), Gallatin College designed an internal WLDG rubric math class that matches the outcomes of M111, but utilizes welding and fabrication specific examples and problems. This class has been very successful because it's timely lessons have been horizontally integrated into the WLDG 151, 117, 110 and 205 for maximum reinforcement of concept. Our intention is to publish this out to our dual enrollment partners for evaluation and possible inclusion as a dual enrollment opportunity in the high school setting.

Due to the unique manufacturing/fabrication businesses found in Southwest Montana and the direct desires of continuing students, Gallatin College has a growing number of students taking both the Welding Technology and CNC programs. The two program are examining their offerings in an effort to meld the two into an AAS of Industrial Manufacturing Technology. Our present expectation contains a terminal focused route and a more open transfer route for completion of this degree. Additionally, our expectations are to offer tracks that will allow students to receive an AAS degree in Advanced Manufacturing with a variety of focus, such as welding, CNC, Design Drafting, Interior Design and possibly Photonics.