

MontanaTech

Mechanical Engineering

To: Flathead Valley Community College (FVCC)

Effective Period: Fall 2018 – Spring 2019

Transfer Agreement between Montana Tech and FVCC for Students Transferring into Mechanical Engineering at Montana Tech

Summary

This agreement is valid for Flathead Valley Community College (FVCC) and Montana Tech.

This transfer agreement lists the courses, which transfer to Montana Tech from FVCC and indicates, which courses will fulfill specific curriculum requirements. Courses not listed on this agreement may transfer, but will not be used towards the Mechanical Engineering degree. The agreement has two main sections:

1. Courses that may be used to fulfil general education requirements (Humanities & Fine Arts, Social Science Core)
2. Courses that are equivalent to specific Montana Tech Mechanical Engineering Curriculum (Block Transfer and Core Class Transfer)

Montana Tech Mechanical Engineering Curriculum and General Education Requirements

Per the Montana University System requirements, all students seeking an Associate of Science or Baccalaureate Degree, will take 30-31 credits of general education core. The following requirements are described below:

- Communications (6 hours)
 - WRIT 121 & 321
- Humanities/Fine Arts (6 hours)
 - 6 credits of electives
- Mathematical Sciences (6 hours)
 - M 171 & M 172
- Physical & Life Sciences (6-7 hours) 1 course w/ lab required.
 - CHMY 141, CHMY 142 & CHMY 143
- Social Sciences (6 hours)
 - ECNS 203 and 3 more credits of electives

Approved courses meeting Montana Tech's undergraduate general education requirements are outlined at the following link:

http://catalog.mtech.edu/preview_program.php?catoid=8&poid=1370#humanitiesfineartscore

The mechanical engineering curriculum already has many of these courses built into the curriculum as set classes.

Equivalent Transfer Credits

The following equivalent transfer credits are the approved equivalent transfer.

Proposed Transfer Classes for Montana Technological University Mechanical Engineering Fall 2018 Curriculum					
Montana Tech Course #	Course Title	MTech Credits	FVCC Course	FVCC Credits	FVCC Credits Used
CHMY 141	College Chemistry I	3	CHMY 141	5	5
CHMY 142	College Chemistry Lab I	1	CHMY 141	0	0
EGEN 101	Intr Eng Calc & Probs	3	EGEN 111	3	3
EGEN 194	Intr Eng Seminar	1	EGEN 105	1	1
M 171	Calc I	3	M 171	5	3
WRIT 101/121	Tech Writing	3	WRIT 101/121	3	3
CHMY 143	College Chem II	3	CHMY 143	5	5
CHMY 144	College Chem II Lab	1	CHMY 143	0	0
EMEC 215	Intro to Mech CAD Modeling	1	EMEC 103 or DDSN 135	3	3
	Free Elective	3	COMX 111*	4	3
M 172	Calc II	3	M 172	5	3
PHSX 234, 235, 236, 237, & 238	General Physics	10	PHSX 220 & PHSX 222	10	10
CSCI 112/117/135	Programming with Matlab or C	3	EGEN 102	3	3
EGEN 201	Engr Mechanics-Statics	3	EGEN 201	4	3
EGEN 213	Survey of Met & Mat Eng	3	EMEC 250	3	3
M 273	Multivariable Calc	4	M 273	5	5
M 333	Intro Linear Algebra	3	M221	4	3
EGEN 202	Dynamics	3	EGEN 202	4	3
M 274	Introduction to Diff Equations	3	M 274	5	3
ECNS 203	Principles of Economics	3	ECNS 201 or 202	3	3
EGEN 305	Mech of Materials	3	EGEN 205	4	4
Montana Tech Transfer Credit Total:		63			

* May be any Writing, Science, Math, or Engineering Class with 3 or more Credits

Recommended Classes (COMX 111 or EELE 261)

EELE 201 and 202 are not included in this transfer list, because FVCC has not taught this course in the past and is not currently teaching the course.

6 credits of Humanities and 3 credits of Social Science electives as specified by the following sections as set forth by the Montana University System and Montana Tech, may also be transferred in.

Humanities Core:

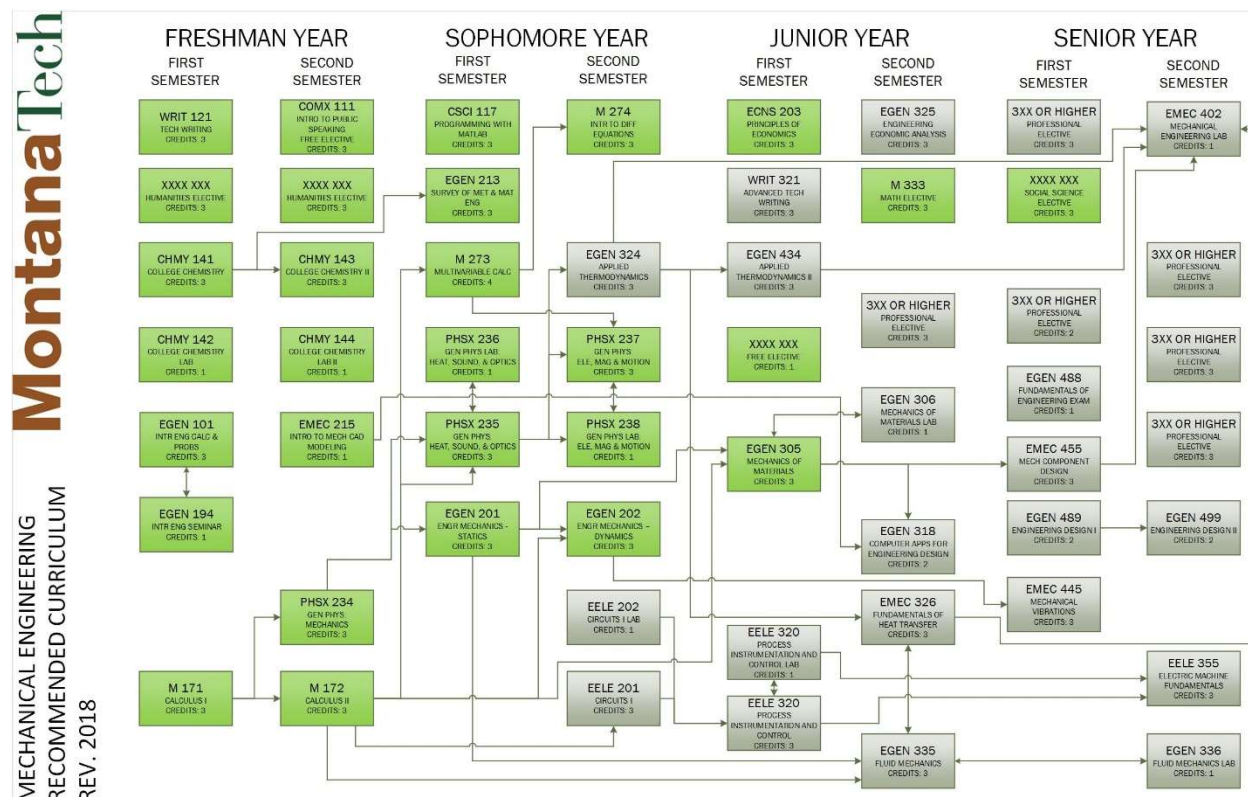
- BGEN 363 - Business Ethics and Decision Making 3 credits
- CHIN 101 - Elementary Chinese I 3 credits
- CHIN 102 - Elementary Chinese II 3 credits
- FILM 103 - Introduction to Film 3 credits
- FRCH 101 - Elementary French I 5 credits
- FRCH 102 - Elementary French II 5 credits
- GRMN 101 - Elementary German I 5 credits
- GRMN 102 - Elementary German II 5 credits
- HCI 316 - Health Care Ethics & Regulations 3 credits
- HSTA 101 - American History I 3 credits
- HSTA 102 - American History II 3 credits
- HSTA 255 - Montana History 3 credits
- HSTA 344W - The African-American Struggle for Equality 3 credits
- HSTA 350 - History Of Indians In Northwest 3 credits
- HSTR 101 - Western Civilization I 3 credits
- HSTR 102 - Western Civilization II 3 credits
- HSTR 201 - The 20th Century World I 3 credits
- HSTR 202 - The 20th Century World II 3 credits
- LIT 126 - Introduction to Poetry and Drama 3 credits
- LIT 112 - Introduction To Fiction 3 credits
- LIT 210 - American Literature I 3 credits
- LIT 211 - American Literature II 3 credits
- LIT 223 - British Literature I 3 credits
- LIT 224 - British Literature II 3 credits
- LIT 231 - Ancient to Ren World Literature 3 credits
- LIT 232 - Modern World Literature 3 credits
- LIT 373W - Literature and the Environment 3 credits
- MUSI 108 - Orchestra: TECH Symphony 1 credit
- MUSI 112 - Choir: Tech 1 credit
- MUSI 114 - Band: Tech 1 credit
- PHL 101 - Reason & Reality: Introduction to Philosophy 3 credits
- PHL 110 - Problems of Good & Evil: Introduction to Ethics 3 credits
- PHL 325W - Professional Ethics 3 credits
- PHL 360 - History of Philosophy 3 credits
- PTC 330 - Introduction to Game Design 3 credits
- SPNS 101 - Elementary Spanish I 3 credits
- SPNS 102 - Elementary Spanish II 3 credits

MECHANICAL ENGINEERING
RECOMMENDED CURRICULUM

MontanaTech

- ## Student's Transfer Starting ME Curriculum

MECHANICAL ENGINEERING
RECOMMENDED CURRICULUM
REV. 2018



The students 2018-2019 curriculum will be the following with all the completed courses green, which account for 74 out of the required 136 credits to earn a degree in Mechanical Engineering.

CURRICULUM WORKSHEET											
Mechanical Engineering Fall 2018				Name: _____							
				Advisor: _____				Date: _____			
	Course #	Course Title	Semester	Grade	Credits	Math/Sci	Eng Sci	Design	HSS	Other	Total
Freshman First Semester	CHMY 141	College Chemistry I			3	3					
	CHMY 142	College Chemistry Lab I			1	1					
	EGEN 101	Intr Eng Calc & Probs			3		3	D			
	EGEN 194	Intr Eng Seminar			1		1				
	M 171	Calc I			3	3					
	WRIT 1XX	¹ Writing Elective			3					3	
		Humanities Elective			3				3		17
Freshman Second Semester	CHMY 143	College Chem II			3	3					
	CHMY 144	College Chem Lab II			1	1					
	EMEC 215	Intro to Mech CAD Modeling			1		1	D			
	M 172	Calc II			3	3					
	PHSX 234	Gen Phys-Mechanics			3	3					
	COMX 111	² Free Elective			3					3	
		Humanities Elective			3				3		17
Sophomore First Semester	CSCI 1XX	³ Programming Elective			3					3	
	EGEN 201	Engr Mechanics-Statics			3		3				
	EGEN 213	Survey of Met & Mat Eng			3		3				
	M 273	Multivariable Calc			4	4					
	PHSX 235	Gen Phys-Heat, Sound & Optics			3	3					
	PHSX 236	Gen Phys-Heat, Sound & Optics Lab			1	1					17
Sophomore Second Semester	EELE 201	Circuits I for Engineering			3		3				
	EELE 202	Circuits I for Engineering Lab			1		1				
	EGEN 202	Dynamics			3		3				
	EGEN 324	Applied Thermodynamics			3		3				
	M 274	Introduction to Diff Equations			3	3					
	PHSX 237	Gen Phys-Ele, Magn & Motion			3	3					
	PHSX 238	Gen Phys-Ele, Magn & Motion Lab			1	1					17
Junior First Semester	ECNS 2XX	⁴ Economics Elective			3				3		
	EELE 320	Process Instr & Control			3		3	D			
	EELE 320	Process Instr & Control Lab			1		1				
	EGEN 305	Mech of Materials			3		3				
	EGEN 434	*Applied Thermodynamics II			3		3	D			
	WRIT 321	Advanced Technical Writing			3					3	
		² Free Elective			1					1	17
Junior Second Semester	EGEN 306	Mech of Materials Lab			1		1				
	EGEN 318	Comp Apps for Engineering Design			2		2	D			
	EGEN 325	Engineering Economic Analysis			3		3				
	EGEN 335	Fluid Mechanics			3		3				
	EMEC 326	*Fundamentals of Heat Transfer			3		3	D			
	M 333	⁵ Math Elective (FVCC M 221 = M 333)			3	3					
		*Professional Electives, 300 or higher			3		3	D			18
Senior First Semester	EGEN 488	Fundamentals of Engineering Exam			1		1				
	EGEN 489	Engineering Design I			2		2	D			
	EMEC 445	Mechanical Vibrations			3		3	D			
	EMEC 455	*Mech Component Design			3		3	D			
		*Professional Electives, 300 or higher			3		3	D			
		*Professional Electives, 300 or higher			2		2	D			
		Social Science Elective			3				3		17
Senior Second Semester	EELE 355	Electric Machine Fundamentals			3		3				
	EGEN 336	Fluid Mechanics Lab			1		1				
	EGEN 499	Engineering Design II			2		2	D			
	EMEC 402	Mech Engineering Lab			1		1				
		*Professional Electives, 300 or higher			3		3	D			
		*Professional Electives, 300 or higher			3		3	D			
		*Professional Electives, 300 or higher			3		3	D			16
					136	35	76		12	13	136

¹Writing Elective is either WRIT 101 or 121 with 121 preferred.

²Free Electives are 1XX and higher. COMX 111 (Intro to Public Speaking) recommended. HPER credits are limited to 1 credit.

³Programming Elective is either CSCI 112, 117, or 135 with 117 preferred.

⁴Economics Elective is either ECNS 201, 202, or 203 with 203 preferred.

⁵Math Elective is either M 333 (Linear Algebra) or STAT 332 (Statistics) with M 333 preferred.

Note: Internship credits are limited to 4 credits at 2 credits per semester.

*This course is designated as a Core Class.

#Professional Electives are specifically listed below and include one of the following Focus Areas:

Control Systems: EELE 203, EELE 321, EELE 421, M426
Nanotechnology: EELE 203, CHMY 371, EELE 321, EGEN 474, EMAT 351
Mechanical Design: EMEC 448, EMEC 457, EMEC 4XX, EMEC 4XY, EMEC 4XZ
Welding: EWLD 314, EWLD 340, EWLD 341, EWLD 443, EWLD 444, EWLD 475, EWLD 476

The following Professional Electives are approved:

CHMY 371	Physical Chemistry - Quantum Chemistry and Spectroscopy
EELE 203	Circuits II for Engineering
EELE 308	Signals and Systems Analysis
EELE 321	Intro to Feedback Control
EELE 421	Feedback Control II
ECIV 312	Structures I
EGEN 474	Introduction to Micro/Nanoelectromechanical Systems
EGEN 492	Rocket Propulsion
EGEN 492	Aerospace Propulsion
EGEN 498	Internship
EMAT 351	Fundamentals of Materials
EMEC 429	Mechanical Component Design Lab
EMEC 448	HVAC
EMEC 457	Kinematics
EMEC 4XX	Product Development
EMEC 4XY	Impact Dynamics
EMEC 4XZ	Machine Design II
ENGR 5710	Advanced Fluids
ENGR 5850	Advanced Mechanics of Materials
EWLD 314	Intro to Welding Engineering
EWLD 340	Welding Process Applications
EWLD 341	Welding Process Applications Lab
EWLD 440	Design of Welded Connections
EWLD 443	Physics of Welding
EWLD 444	Physics of Welding Lab
EWLD 475	Robotics and Automated Welding
EWLD 476	Nondestructive Examination

3 credits maximum allowed from the following Project Management courses:

ECIV 307	Construction Estimating and Bidding
MIN 458	Mine Management
MPEN 5020	Project and Engineering Management

3 credits taken from the following math/statistics classes:

M 405	Advanced Engineering Mathematics I
M 410	Numerical Computing for Engineering and Science
M 426	Mathematical Modeling
M 435	Advanced Calculus I
STAT 421	Probability Theory
STAT 432	Regression and Model Building

Associate of Science (AS) Degree at FVCC

If students follow the above plan, they will be required to take 1 additional 3 credit course to fulfil the FVCC general education core. FVCC has 3 credits, of Math compared to 6 credits at Montana Tech, and requires 3 credits of Global Issues (G). The global issues three credits are additional to the requirements for degree at Montana Tech, but fulfill the AS degree requirements. The following is taken from the FVCC catalog for the AS degree.

The Associate of Science (AS) degree is a general transfer degree. This degree indicates that the student has completed a course of study equivalent to the first two years of a bachelor degree. This degree does not officially include a major or minor course of study.

With an Associate of Science degree from FVCC, a student can transfer to any Montana University System school with junior class status and be guaranteed that the lower division general education core requirements have been completed for the transfer school.

To receive the AS degree, the following requirements must be met:

- I. Completion of 60 semester credits in courses numbered 100 level and above. A course cannot satisfy more than one general education core or graduation requirement.
- II. Completion of the General Education Core Curriculum* (30 credits).
- III. Completion of Additional Degree Requirements: six semester credits of Mathematics (M) and/or Natural Science (NL or N or L).
- IV. Final cumulative grade point average of 2.0 or above. A grade of “C-” or better is required for all courses other than electives unless otherwise stated.
- V. At least 20 semester credits earned at FVCC and the final 10 credits earned at FVCC.
- VI. A limit of 15 semester credits graded “S” may count toward the Associate degree. Check with transfer institution regarding the acceptance of “S” credits.

*Refer to the General Education Core Curriculum for a list of courses meeting these requirements.

The following graduation checklist will be used for those students at FVCC that are seeking to transfer to Montana Tech, but want to complete a AS degree at FVCC and then transfer. The recommended courses are filled in to help the student decide on the courses that would help them in an engineering degree.

Course Type	✓	Course Designation	Min. Credits	# of Courses	Courses Completed	Grade	Credits
General Education Core*		WRITING (W)	3	1 W	WRIT 101 or 121		3
		COMMUNICATIONS (C)	3	1 C	COMX 111		3
		MATHEMATICS (M)	3	1 M	M 171		5
		HUMANITIES (H) / FINE ARTS (F)	6	1 H and 1 H or 1 F	PHL 110H or any 1 H ARTZ 231F or any 1 H or 1 F		6
		SOCIAL SCIENCES (A, B)	6	1 A and 1 B	Any from Group A ECNS 201		6
		NATURAL SCIENCE (NL, N)	6	1 NL 1 NL or 1 N	CHMY 141 or 143 or PHSX 220 or 222 CHMY 141 or 143 or PHSX 220 or 222		10
		GLOBAL ISSUES (G)	3	1 G	ECNS 202		3
General Education Core Subtotal Credits:							36
Additional Degree Requirements		Mathematics (M) or Natural Science (NL, N, L)	6	6 credits from M, NL, N, or L courses	M 172		10
					M 273		
Additional Degree Requirments Subtotal Credits:							10
Major Requirements or Electives		Differential Equations			M 274		5
		Intro Engineering Comp Apps			EGEN 102		3
		Solidworks			EMEC 103 or DDSN 135		3
		Introduction to General Engineering			EGEN 105		1
		Engineering Communications			EGEN 111		3
		Engineering Mech: Statics			EGEN 201		4
		Engineering Mech: Dynamics			EGEN 202		4
		Mechanics of Materials			EGEN 205		4
General Education Core Subtotal Credits:							27
Total Credits:							73