

ARTICULATION AGREEMENT
Between
MICHIGAN TECHNOLOGICAL UNIVERSITY
and
NORTHWESTERN MICHIGAN COLLEGE

This Articulation Agreement is between Northwestern Michigan College (hereafter referred to as "NMC") and Michigan Technological University (hereafter referred to as "Michigan Tech").

Michigan Tech and NMC agree to establish a transfer plan to assist NMC students to transfer to complete a Bachelor of Science degree from Michigan Tech in one of the qualifying programs (Attachment A). Michigan Tech and NMC will maintain the integrity of their separate programs and enter into this agreement as equal and cooperating institutions.

Therefore, it is agreed that:

1. Michigan Tech shall continue full responsibility for planning and executing the educational program, including programming, administration, curriculum design and content, faculty administration, and criteria for student achievement for the qualifying programs leading to the Bachelor of Science degree. Michigan Tech shall have full accountability and responsibility to maintain the quality and appropriateness of the baccalaureate program of studies offered. NMC shall continue full responsibility for planning and executing of the courses as indicated in the Operational Plans (Attachment B) of this document including programming, administration, curriculum design and content, faculty administration, and criteria for student achievement.

Either Michigan Tech or NMC may change any aspect of their respective curriculum but no change will be made which will prevent any student at either institution who has taken courses in reliance on the published curriculum from enrolling at Michigan Tech due to the change in curriculum.

All students admitted to and enrolled at NMC pursuant to the curriculum proposed by this Agreement shall be solely NMC students, shall not be considered Michigan Tech students for any purpose and shall be entitled to all, and only those benefits and privileges granted by NMC to its students similarly enrolled, except in exclusive and mutually agreeable cases in which NMC and Michigan Tech collaborate to offer a supplementary course from MTU during the students' enrollment at NMC. All students admitted to and enrolled at Michigan Tech pursuant to the curriculum proposed by this Agreement shall no longer be considered NMC students for any purpose and shall be entitled to all, and only those benefits and privileges granted by Michigan Tech to its students similarly enrolled.

2. NMC shall allow potential Michigan Tech students to enroll, subject to standard admission procedures and criteria, for the first two years of courses required to fulfill the Bachelor of Science degree requirements at Michigan Tech with full privileges of an NMC student while at NMC.
3. Students from NMC who complete the Engineering Certificate at NMC will be guaranteed admission to Michigan Tech, subject to meeting a minimum cumulative grade point average of 2.75 and all other standard admission criteria. They must also file an application with the Michigan Technological University Admissions Office and indicate on the application that they have attended NMC and request participation in the articulation program. Students seeking admission to Michigan Tech and who have not completed the NMC Engineering Certificate pursuant to this agreement, must follow the standard Michigan Technological University application process and meet all other Michigan Tech standard admission criteria, including a minimum cumulative grade point average of 2.75, demonstrated proficiency in math and science, and submission of any required pre-entrance test scores.
4. NMC will collect and retain all tuition, fees and other applicable NMC charges from students during their enrollment at NMC in accord with standard NMC procedures. Michigan Tech will collect and retain all tuition, fees and other applicable Michigan Tech charges from students enrolled at Michigan Tech. NMC shall administer the financial aid program for the students enrolled pursuant to this Agreement for their years of the program with full privileges of NMC students. Michigan Tech shall administer the program for their students enrolled pursuant to this Agreement with full privileges of Michigan Tech students.
5. For National Student Loan Clearinghouse, Veterans Administration, Athletic Eligibility, and enrollment verification purposes, NMC will have processing responsibility during a student's first two years in the Program.
6. An official transfer evaluation of credits taken prior to enrolling at Michigan Tech will be completed by the Michigan Tech Transfer Services Office upon acceptance to Michigan Tech. Courses completed with a grade of "C" (2.0) or better at NMC will be eligible for credit transfer. Course grades for credits transferred are not factored into the grade point average for credits completed at MTU.
7. Michigan Tech and NMC will work cooperatively to maintain an Operational Plan (Attachment B) to facilitate and implement the terms for each qualifying program included in the Master Agreement. The Operational Plans include degree mapping and credit requirements for fulfillment of the Bachelor of Science degree. NMC and Michigan Tech agree to review the Operational Plans annually and notify each other in writing of any proposed changes and of any adopted changes promptly.
8. This Agreement applies only to NMC students seeking to enter Michigan Tech for the qualifying programs defined in Attachment A for a Bachelor of Science degree. Students are required to meet all prerequisites for Michigan Tech courses required in the Michigan Tech curriculum.

9. In collaboration with this Agreement, credits taken at Michigan Tech will transfer to NMC, in accordance with their relative coursework, to satisfy any qualifying degree or certificate requirements offered by NMC.

10. By signing this Agreement, NMC and Michigan Tech agree to enter into a relationship of continuous collaboration. Additional qualifying programs proposed for adoption in Attachment A may be included with an addendum to Attachment A with the written acceptance of both institutions and accompanied by its respective Operational Plan in Attachment B.

This document, recognized as the Master Agreement, represents a good faith agreement between NMC and Michigan Tech to offer qualifying programs in the best interest of students.

This Master Agreement is to be reviewed periodically or at the request of either participating institution but annually at a minimum. It shall be effective upon approval by both institution and shall remain in effect for five (5) years from the date of the last signature. It shall be subject to revision, modification or renewal by mutual written agreement.

This Master Agreement may be terminated by either NMC or Michigan Tech upon written notice to the other but in the event of any termination both institutions will permit those students who have pursued a course of study in reliance on the program provided by this Agreement to complete that course of study.

Liaisons:

**MICHIGAN TECHNOLOGICAL
UNIVERSITY**

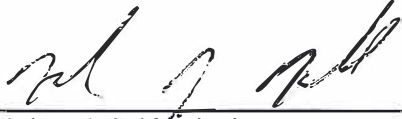
Cassy Tefft de Muñoz
Director, Educational Outreach
1400 Townsend Dr.
Houghton, MI 49931
Ph: 906-487-3102
Email: catefft@mtu.edu

**NORTHWESTERN MICHIGAN
COLLEGE**

Gerald O. Dobek
Sciences Department Head
1701 E. Front St.
Traverse City, MI 49686
Ph: 231-995-1271
Email: jdobek@nmc.edu

This Agreement is between the NMC and Michigan Tech, is enforceable only by NMC and Michigan Tech, and is not intended to create nor shall it create any rights in or be enforceable by any third party, including any student of either institution.

**MICHIGAN TECHNOLOGICAL
UNIVERSITY**



Richard J. Koubek
President

August 7, 2019
Date

**NORTHWESTERN MICHIGAN
COLLEGE**



Timothy J. Nelson
President

August 7, 2019
Date

ATTACHMENT A
(Revised 10/20/2022)

QUALIFYING PROGRAMS

NMC	MTU
Engineering Certificate Program	Biomedical Engineering
	Chemical Engineering
	Civil Engineering
	Electrical Engineering
	Mechanical Engineering
	Electrical Engineering Technology
	Mechanical Engineering Technology
Environmental Sciences	Geology
	Applied Geophysics

ATTACHMENT B

Operational Plans for Qualifying Programs

Biomedical Engineering

OPERATIONAL PLAN MICHIGAN TECHNOLOGICAL UNIVERSITY and NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide degree mapping for the implementation of the Master Agreement between Northwestern Michigan College and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in **BIOMEDICAL ENGINEERING** and in all respects is subject to the Master Agreement.

1 st Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr			
ENG 111	English Composition	4	UN 1015 HU 1XXX	Composition HASS Elective	3 1			
EGR 101	Intro to Engineering	1	ENG 1XXE	ENG Elective	1			
EGR 113	Engineering Graphics I	3	ENG 1102	Engrg Modeling & Design	3			
MTH 141	Calculus I	5	MA 1160 MA 1XXX	Calculus I STEM Math Elective	4 1			
BIO 227, 227L	Human A&P I	4	BL2010/2011	Anatomy/Physiology I	4			
17			17					

2 nd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr			
CIT 110	Programming Design	3	ENG 1101	Engrg Analysis & Prob	3			
CHM 150, 150R, 150L	General Chemistry I	5	CH 1150/51/53	University Chemistry I	5			
MTH 142	Calculus II	5	MA 2160 MA 1XXX	Calculus II STEM Math Elective	4 1			
BIO 228, 228L	Human A&P II	4	BL2020/2021	Anatomy/Physiology II	4			
17			17					

3 rd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr			
* PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3			
* PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3			
* HST 101 /111/112	History	4	SS 2502 /00/01 SS1XXX	History HASS Elective	3 1			
10			10					

4 th Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr			
MTH 241	Calculus III	5	MA 3160 MA 1XXX	Calculus III STEM Math Elective	4 1			

Master MTU - NMC

PHY 221, 221R, 221L	P&P Physics I	5	PH 2100/1100 TRU XXXX	University Physics I Unassigned Transfer	4 1
EGR 201	Statics	3	BE 3300	Biomechanics I	3
* GEO 109	World Reg. Geography	3	UN 1025	Global Issues	3

16

16

5th Semester**NMC****MTU**

Number	Course Name	Cr	Number	Course Name	Cr
MTH 251	Diff. Eq.	4	MA 2320/3520	Diff. Eq. / Linear Alg.	4
PHY 222, 222R, 222L	P&P Physics II	5	PH 2200/1200 TRU XXXX	University Physics II Unassigned Transfer	4 1
EGR 221	Material Science	3	BE 2800	Biomaterials I	3
CHM 151, 151R, 151L	General Chemistry II	5	CH 1160/61/63	University Chemistry II	5

17

17

*General Education required courses - some selected NMC courses may satisfy MTU Gen. Ed. requirements and Michigan Transfer Agreement. See an advisor for Gen. Ed. courses and applicable MTA requirements. NMC 77 credits transfer to MTU 69 program + 8 credits electives. 3rd semester is summer term. Up to 3 additional credits of Physical Education may transfer.

Courses at MTU**Junior year****6th Semester****7th Semester**

BE 2700	Signals and Systems	3	BE 2110	Stat Methods for BME	3
EE 3010	Circuits & Instrumentation	3	BE 3350	Human Biomechanics	3
BE 2400	Cell & Molecular Biology	3	BE 3700	Bio-Instrumentation	3
			BE 3701	Bio-Instr. Lab	1
BE 3400	Lab Techniques	2	BE 3550	Fluid Mechanics	4
BE 3800	Biomaterials II	3	BE 4900	Design Fundamentals	2
		14			16

Senior Year**8th Semester****9th Semester**

BE 4901	Design Project I	2	BE 4910	Design Project II	2
	Technical Elective I	3		Technical Elective III	3
	Technical Elective II	3		Technical Elective IV	3
	Science Elective	3		HASS Elective	3
	HASS Gen. Ed. (3000+)	3		HASS Gen. Ed. (3000+)	3
		14			14

MTU 58 credits.


Program Total: 135 Credits

Does not include 3 Credits of Physical Education required for Graduation. One additional Composition Course (NMC ENG 112) required for MTA completion. Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. All program specific courses require a 2.0 (C) grade for transfer. Students may require additional courses necessary to meet the minimum Mathematical and English Composition pre-requisites. NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

This Operational Plan is reviewed and renewed annually unless a review is requested by administrative staff of either institution in the interim.

MICHIGAN TECHNOLOGICAL
UNIVERSITY

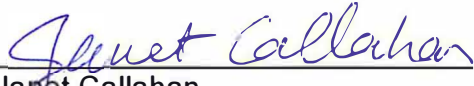
NORTHWESTERN MICHIGAN
COLLEGE


Sean J. Kirkpatrick
Chair, Biomedical Engineering

8/5/2019
Date


Gerald O. Dobek
Sciences Department Head

7 Aug 2019
Date


Janet Callahan
Dean, College of Engineering

8/5/2019
Date


Debra Pharo
Academic Chair

8/7/2019
Date

Chemical Engineering

OPERATIONAL PLAN MICHIGAN TECHNOLOGICAL UNIVERSITY and NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide degree mapping for the implementation of the Master Agreement between Northwestern Michigan College and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in **CHEMICAL ENGINEERING** and in all respects is subject to the Master Agreement.

1 st Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
ENG 111	English Composition	4	UN 1015 HU 1XXX	Composition HASS Elective	3 1			
EGR 101	Intro to Engineering	1	ENG 1XXE	ENG Elective	1			
MTH 141	Calculus I	5	MA 1160 MA 1XXX	Calculus I STEM Math Elective	4 1			
CHM 150,R,L	General Chemistry I	5	CH 1150/51/53	University Chemistry I	5			
* GEO 109	World Reg. Geo.	3	UN 1025	Global Issues	3			
18			18					

2 nd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
CIT 110	Programming Design	3	ENG 1101	Engrg Analysis & Prob	3			
CHM 151,R,L	General Chemistry II	5	CH 1160/61/63	University Chemistry II	5			
MTH 142	Calculus II	5	MA 2160 MA 1XXX	Calculus II STEM Math Elective	4 1			
EGR 113	Engineering Graphics I	3	ENG 1102	Engrg Modeling & Design	3			
16			16					

3 rd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
* PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3			
* PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3			
* HST 101 /111/112	History	4	SS 2502/00/01 SS1XXX	History HASS Elective	3 1			
10			10					

4 th Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
MTH 241	Calculus III	5	MA 3160 MA 1XXX	Calculus III STEM Math Elective	4 1			
PHY 221, 221R, 221L	P&P Physics I	5	PH 2100/1100 TRU XXXX	University Physics I Unassigned Transfer	4 1			
CHM 250,L	Organic Chemistry I	5	CH 2410/11 CH 2XXX	Organic Chemistry I	4 1			
15			15					

5 th Semester			NMC			MTU		
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Master MTU - NMC

Number	Course Name	Cr	Number	Course Name	Cr
MTH 251	Diff. Eq.	4	MA 2320/3520	Diff. Eq. / Linear Alg.	4
PHY 222, 222R, 222L	P&P Physics II	5	PH 2200/1200 TRU XXXX	University Physics II Unassigned Transfer	4 1
CHM 251,L	Organic Chemistry II	5	CH 2420/21	Organic Chemistry II	5

14

14

*Gen. Ed. required courses – some selected NMC courses may satisfy MTU requirements and Michigan Transfer Agreement. See advisor for Gen. Ed. courses and applicable MTA requirements. NMC 73 credits transfer to MTU 65 program + 8 credits electives. 3rd and 6th semester are summer sessions. Up to 3 additional credits of Physical Education may transfer.

Courses at MTU

6th Semester - Summer

CM 2110	Fund of ChE I	3
CM 2120	Fund of ChE II	3
		<u>6</u>

Junior year

7th Semester

CH 3510/11	Phy Chem I	5
CM 3110/15	Transport I	6
EC 3400	Econ. Desc. Analysis	3

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Senior Year

9th Semester

CM 4110	UO Lab	3
CM 4310	Pro Safety / Envir	3
CM 4855	ChE Design I	3
	Tech. Elective	3
	HASS Gen. Ed. (3000+)	3
		<u>15</u>

8th Semester

CM 3120	Transport II	3
CM 3230	Thermo	4
CM 3310	Process Control	3
CM 3510	Chem Reac Eng	3
	Tech. Elective	3

 16

10th Semester

CM 4120	Chem Plant Lab	3
CM 4860	ChE Design II	2
CM 4861	ChE Design II Lab	1
	Core Eng'g. Elective	5
	HASS Gen. Ed. (3000+)	3
		<u>14</u>

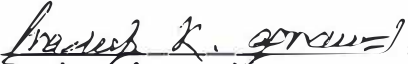
MTU 65 credits

Program Total: 131 Credits

Does not include 3 Credits of Physical Education required for Graduation. One additional Composition Course (NMC ENG 112) required for MTA completion. Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. All program specific courses require a 2.0 (C) grade for transfer. Students may require additional courses necessary to meet the minimum Mathematical and English Composition pre-requisites. NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

This Operational Plan is reviewed and renewed annually unless a review is requested by administrative staff of either institution in the interim.

MICHIGAN TECHNOLOGICAL
UNIVERSITY


Pradeep Agrawal
Chair, Chemical Engineering

August 5, 2019
Date



Janet Callahan
Dean, College of Engineering

8/5/2019
Date

NORTHWESTERN MICHIGAN
COLLEGE


Gerald O. Dobek
Sciences Department Head

7 Aug 2019
Date


Debra Pharo
Academic Chair

8/7/2019
Date

Civil Engineering

OPERATIONAL PLAN MICHIGAN TECHNOLOGICAL UNIVERSITY and NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide degree mapping for the implementation of the Master Agreement between Northwestern Michigan College and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in **CIVIL ENGINEERING** and in all respects is subject to the Master Agreement.

1 st Semester			MTU		
NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
ENG 111	English Composition	4	UN 1015 HU 1XXX	Composition HASS Elective	3 1
# EGR 101	Intro to Engineering	1	# ENG 1XXE	ENG Elective	1
EGR 113	Engineering Graphics I	3	ENG 1102	Engrg Modeling & Design	3
MTH 141	Calculus I	5	MA 1160 MA 1XXX	Calculus I STEM Math Elective	4 1
CHM 150, 150R,150L	General Chemistry I	5	CH 1150/51/53	University Chemistry I	5
18			18		

2 nd Semester			MTU		
NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
CIT 110	Programming Design	3	ENG 1101	Engrg Analysis & Prob	3
EGR 131	Elementary Surveying	5	SU 2000 SU 1000 TRU XXXX	Surveying Surveying Eng. Orient. Unassigned Transfer	2 1 2
MTH 142	Calculus II	5	MA 2160 MA 1XXX	Calculus II STEM Math Elective	4 1
* GEO 109	World Reg. Geography	3	UN 1025	Global Issues	3
16			16		

3 rd Semester			MTU		
NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
* PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3
* PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3
* HST 101 /111/112	History	4	SS 2502 /00/01 SS1XXX	History HASS Elective	3 1
10			10		

4 th Semester			MTU		
NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
MTH 241	Calculus III	5	MA 3160 MA 1XXX	Calculus III STEM Math Elective	4 1
PHY 221, 221R, 221L	P&P Physics I	5	PH 2100/1100 TRU XXXX	University Physics I Unassigned Transfer	4 1

Master MTU - NMC

EGR 201	Statics	3	MEEM 2110	Statics	3
ENV 111	Physical Geology	4	GE 2000	Understanding the Earth	3
			GE 1100	Geo. Eng. & Sci. Orient.	1

17

17

5th Semester

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
MTH 251	Diff. Eq.	4	MA 2320/3520	Diff. Eq. / Linear Alg.	4
PHY 222, 222R, 222L	P&P Physics II	5	PH 2200/1200	University Physics II	4
			TRU XXXX	Unassigned Transfer	1
EGR 221	Material Science	3	MSE 2100	Material Science	3
EGR 202	Mechanic of Materials	3	MEEM 2150	Mechanic of Materials	3

15

15

EGR 101 substitutes for CEE 1000

*Gen. Ed. required courses – some selected NMC courses may satisfy MTU requirements and Michigan Transfer Agreement. See advisor for Gen. Ed. courses and applicable MTA requirements. NMC 76 credits transfer to MTU 66 program + 10 credits electives. 3rd semester is summer term. Up to 3 additional credits of Physical Education may transfer.

Courses at MTU

6th Semester

7th Semester

CEE 3332	Fundamentals of Construction	3
ENG 3200	Thermo / Fluids	4
CEE 3401	Transportation Engineering	3
MA 3710	Statistics	3
CEE 3202	Structural Analysis	3
		16

CEE 1001	Sustain. and CE Prac.	1
CEE 3620	Water Resources	4
CEE 3331	Professional Practice	2
CEE 3101	Civil Eng. Materials	3
CEE 3810	Soil Mechanics	4
CEE 4213	Structural Concrete	4
		18

Senior Year

9th Semester

EC 3400	Econ. Decision Analysis	3
	Professional Elective I	3
	Professional Elective II	3
	HASS Gen. Ed. (3000+)	3
		12

CEE 4905	Senior Design	3
	Professional Elective	3
CEE 3503	Environmental Engrg.	3
	HASS Gen. Ed. (3000+)	3
		12

MTU 58 credits.

Program Total: 134 Credits

Does not include 3 Credits of Physical Education required for Graduation. One additional Composition Course (NMC ENG 112) required for MTA completion. Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. All program specific courses require a 2.0 (C) grade for transfer. Students may require additional courses necessary to meet the minimum Mathematical and English Composition pre-requisites. NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

This Operational Plan is reviewed and renewed annually unless a review is requested by administrative staff of either institution in the interim.

MICHIGAN TECHNOLOGICAL
UNIVERSITY



Audra Morse
Chair, Civil and Environmental
Engineering

8/5/2019

Date

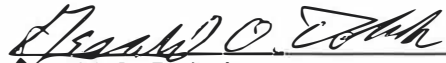


Janet Callahan
Dean, College of Engineering

8/5/2019

Date

NORTHWESTERN MICHIGAN
COLLEGE



Gerald O. Dobek
Sciences Department Head

7 Aug 2019

Date



Debra Pharo
Academic Chair

8/7/2019

Date

Electrical Engineering

OPERATIONAL PLAN MICHIGAN TECHNOLOGICAL UNIVERSITY and NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide degree mapping for the implementation of the Master Agreement between Northwestern Michigan College and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in **ELECTRICAL ENGINEERING** and in all respects is subject to the Master Agreement.

1 st Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
ENG 111	English Composition	4	UN 1015	Composition	3	HU 1XXX	HASS Elective	1
# EGR 101	Intro to Engineering	1	# ENG 1XXE	ENG Elective	1			
EGR 113	Engineering Graphics I	3	ENG 1102	Engrg Modeling & Design	3			
MTH 141	Calculus I	5	MA 1160	Calculus I	4	MA 1XXX	STEM Math Elective	1
* GEO 109	World Reg. Geography	3	UN 1025	Global Issues	3			
16			16					

2 nd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
CIT 110	Programming Design	3	ENG 1101	Engrg Analysis & Prob	3			
CHM 150, 150R, 150L	General Chemistry I	5	CH 1150/51/53	University Chemistry I	5			
MTH 142	Calculus II	5	MA 2160	Calculus II	4	MA 1XXX	STEM Math Elective	1
13			13					

3 rd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
* PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3			
* PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3			
* HST 101, 111,112	History	4	SS 2502/00/01	History	3	SS1XXX	HASS Elective	1
	MTU online course		EE 1110	Ess. Math for EE	1			
10			11					

NOTE: Students required to complete MTU EE 1110 (1 credit) before enrolling in EGR 211.

4 th Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
MTH 241	Calculus III	5	MA 3160	Calculus III	4	MA 1XXX	STEM Math Elective	1
PHY 221, 221R, 221L	P&P Physics I	5	PH 2100/1100	University Physics I	4	TRU XXXX	Unassigned Transfer	1
EGR 211	Elect. Circuits I	3	EE 2111	Electric Circuits I	3			
13			13					

5 th Semester			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
MTH 251	Diff. Eq.	4	MA 2320/3520	Diff. Eq. / Linear Alg.	4
PHY 222, 222R, 222L	P&P Physics II	5	PH 2200/1200 TRU XXXX	University Physics II Unassigned Transfer	4 1
EGR 221	Material Science	3	MSE 2100	Material Science	3
12			12		

MTU ECE Department approval granted to substitute EGR101/ENG1XXE for EE1111 (7/24/2019).

*Gen. Ed. required courses – some selected NMC courses may satisfy MTU requirements and Michigan Transfer Agreement. See advisor for Gen. Ed. courses and applicable MTA requirements. NMC 64 credits transfer to MTU 57 program + 7 credits electives. MTU 1 credit (EE 1110) prior to transfer. 3rd and 6th semesters are summer sessions. Up to 3 additional credits of Physical Education may transfer.

Courses at MTU

6th Semester (Summer Track A)					
EE 3120	Electric Energy Systems		3		
EE 2112	Electric Circuits II		4		
			<u>7</u>		
Junior year					
7th Semester (Fall)				8th Semester (Spring)	
CS 1111	Intro. C / C++	3	EE 2174	Digital Logic & Lab	4
EE 3131	Electronics and Lab	4	EE 3901	Design Fundamentals	2
EE 3160	Signals & Systems	3	EE 3180	Intro. Prob. & Ran. Sig.	3
EE 3140	Electromagnetics	3	EE 3261	Control Systems	3
	HASS Elective	1		EE Elective	3
		<u>14</u>			<u>15</u>
Senior Year					
9th Semester (Fall)				10th Semester (Spring)	
EE 4901	EE Design 1	2	EE 4910	EE Design 2	2
EE 4250	Modern. Comm. Systems	3		EE Elective	3
EE 3171	Microcontroller Appl.	4		EE Elective	3
	EE Elective	3		EE Elective	3
	HASS Gen. Ed. (3000+)	3		HAAS Gen. Ed. (3000+)	3
		<u>15</u>			<u>14</u>

MTU 66 credits.

Program Total: 130 Credits

Does not include 3 Credits of Physical Education required for Graduation. One additional Composition Course required for MTA completion. Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses.

All program specific courses require a 2.0 (C) grade for transfer. Students may require additional courses necessary to meet the minimum Mathematical and English Composition pre-requisites.

NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

This Operational Plan is reviewed and renewed annually unless a review is requested by administrative staff of either institution in the interim.

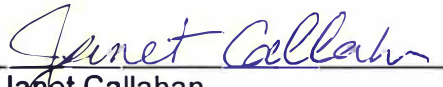
MICHIGAN TECHNOLOGICAL
UNIVERSITY



Glen E. Archer
Interim Chair, Electrical and
Computer Engineering

8-5-19

Date



Janet Callahan
Dean, College of Engineering

8/5/2019

Date

NORTHWESTERN MICHIGAN
COLLEGE



Gerald O. Dobek
Sciences Department Head

7 Aug 2019

Date



Debra Pharo
Academic Chair

8/7/2019

Date

Electrical Engineering Technology

OPERATIONAL PLAN MICHIGAN TECHNOLOGICAL UNIVERSITY and NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide degree mapping for the implementation of the Master Agreement between Northwestern Michigan College and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in **ELECTRICAL ENGINEERING TECHNOLOGY** and in all respects is subject to the Master Agreement.

1 st Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
ENG 111	English Composition	4	UN 1015 HU 1XXX	Composition HASS Elective	3 1			
EGR 101	Intro to Engineering	1	ENG 1XXE	ENG Elective	1			
# CIT 110	Programming Logic and Design	3	# EET 2241	C++ and MATLAB Programming	3			
MTH 141	Calculus I	5	MA 1160 MA 1XXX	Calculus I STEM Math Elective	4 1			
* PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3			
16			16					
2 nd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
* PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3			
MTH 142	Calculus II	5	MA 2160 MA 1XXX	Calculus II STEM Math Elective	4 1			
EGR 113	Engineering Graphics I	3	MET 1020	Tech. Computer App.	3			
* GEO 109	World Reg. Geo.	3	UN 1025	Global Issues	3			
14			14					
3 rd Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
* HST 101 /111/112	History	4	SS 2502/00/01 SS 1XXX	History HASS Elective	3 1			
^ HST 230	History of Michigan	3	SS 3540	History of Michigan	3			
7			7					
4 th Semester			NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr	Number	Course Name	Cr
MTH 131	Intro to Prob & Stats	3	MA 2710	Intro to Statistical Analy	3			
PHY 221, 221R, 221L	P&P Physics I	5	PH 2100/1100 TRU XXXX	University Physics I Unassigned Transfer	4 1			
EGR 201	Statics	3	MEEM 2110	Statics and Strength	3			
ENG 112	English Composition	4	HU 1XX5	HASS Comm. / Comp.	4			
15			15					

NOTE: Students required to complete MTU EE 1110 (1 credit) before enrolling in EGR 211.

Master MTU - NMC

5 th Semester			MTU		
NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
^ MUS 129	History of Rock and Roll	3	FA 3625	History of Rock	3
EGR 202	Mechanic of Materials	3	MEEM 2150	Mechanic of Materials	3
EGR 203	Dynamics	4	MET 2130	Dynamics	3
			TRU XXXX	Unassigned Transfer	1
EGR 211	Electrical Circuits I	3	EET 1120	Circuits 1	4

13

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Transfer credit for CIT 110 as EET 2141 remains to be approved. May require modification of CIT 110 content.

*Gen. Ed. required courses – some selected NMC courses may satisfy MTU requirements and Michigan Transfer Agreement. See advisor for Gen. Ed. courses and applicable MTA requirements. ^HASS Gen. Ed. courses – some selected NMC courses satisfy MTU HASS requirements and meet the 3000+ level course requirements. See advisor for Gen. Ed. courses and applicable MTU requirements. NMC 65 credits transfer to MTU 58 program +7 credits electives. MTU EE1100 1 credit. 3rd semester and 6th semester are summer sessions. Up to 3 additional credits of Physical Education may transfer.

Courses at MTU

6th Semester

EET 2120	Circuits II w/Lab	4
EET 2220	Electronic Devices and Circuits	4
		8

Junior Year

7th Semester

EET 2141	Digital Elect. And Micro. Fund.	4
EET 2233	Electrical Machinery	4
EET 2413	Data Communications	3
EET 3373	Intro. to Prog. Controllers	3
		14

8th Semester

EET 2142	Dig. Dsgn. and Mod VHDL	3
EET 3281	Elect. Proj. Dev. and Tblsh	3
EET 4253	LabVIEW Prog. for Data	3
HU 3120	Tech. and Prof. Comm.	3
OSM 4300	Project Management	3
		15

Senior Year

9th Semester

EET 3141	Computer Arch. and Dsgn.	4
EET 3225	Special Electronic Devices	4
EET 4141	Microcontroller Interfacing	4
EET 4460	Senior Project I	3
		15

10th Semester

EET 3141	Program. Logic Devices	3
EET 3367	Communication Systems	4
EET XXX	Elective	4
EET 4480	Senior Project II	3
EET 4999	Prof. Practice in EET	1
		15

NMC 65 credits

MTU 68 credits

Program Total: 133 Credits

Does not include 3 Credits of Physical Education required for Graduation. Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. All program specific courses require a 2.0 (C) grade for transfer. Students may require additional courses necessary to meet the minimum Mathematical and English Composition pre-requisites. NMC and MTU course offerings and/or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

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Master MTU - NMC

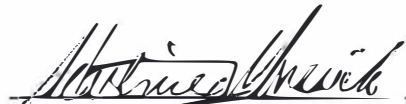
**MICHIGAN TECHNOLOGICAL
UNIVERSITY**



Daniel R. Fuhrmann
Director, CNSA/MERET Division
Interim Associate Dean, Curriculum
and Instruction

8/5/2019

Date



Adrienne Minerick
Dean, College of Engineering

8/6/19

Date

**NORTHWESTERN MICHIGAN
COLLEGE**



Gerald O. Dobek
Sciences Department Head

7 Aug 2019

Date



Debra Pharo
Academic Chair

8/7/2019

Date

Mechanical Engineering

OPERATIONAL PLAN MICHIGAN TECHNOLOGICAL UNIVERSITY and NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide degree mapping for the implementation of the Master Agreement between Northwestern Michigan College and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in **MECHANICAL ENGINEERING** and in all respects is subject to the Master Agreement.

1 st Semester NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
ENG 111	English Composition	4	UN 1015 HU 1XXX	Composition HASS Elective	3 1
EGR 101	Intro to Engineering	1	ENG 1XXE	ENG Elective	1
EGR 113	Engineering Graphics I	3	ENG 1102	Engrg Modeling & Design	3
MTH 141	Calculus I	5	MA 1160 MA 1XXX	Calculus I STEM Math Elective	4 1
* GEO 109	World Reg. Geography	3	UN 1025	Global Issues	3
16			16		

2 nd Semester NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
CIT 110	Programming Design	3	ENG 1101	Engrg Analysis & Prob	3
CHM 150, 150R, 150L	General Chemistry I	5	CH 1150/51/53	University Chemistry I	5
MTH 142	Calculus II	5	MA 2160 MA 1XXX	Calculus II STEM Math Elective	4 1
EGR 221	Material Science	3	MSE 2100	Material Science	3
16			16		

3 rd Semester NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
* PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3
* PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3
* HST 101 /111/112	History	4	SS 2502 /00/01 SS1XXX	History HASS Elective	3 1
ENG 112	English Composition	4	HU 1XX5	HASS Comm. / Comp	4
14			14		

4 th Semester NMC			MTU		
Number	Course Name	Cr	Number	Course Name	Cr
MTH 241	Calculus III	5	MA 3160 MA 1XXX	Calculus III STEM Math Elective	4 1
PHY 221, 221R, 221L	P&P Physics I	5	PH 2100/1100 TRU XXXX	University Physics I Unassigned Transfer	4 1
EGR 201	Statics	3	MEEM 2110	Statics	3

Master MTU - NMC

EGR 220	Engineering Practice I	2	MEEM 2901	Mech. Eng. Practice I	2
EGR 232	Introductory Thermo	3	MEEM 2201	Introductory Thermo	3

18

1

5th Semester

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
MTH 251	Diff. Eq.	4	MA 2320/3520	Diff. Eq. / Linear Alg.	4
PHY 222, 222R, 222L	P&P Physics II	5	PH 2200/1200 TRU XXXX	University Physics II Unassigned Transfer	4 1
EGR 202	Mechanic of Materials	3	MEEM 2150	Mechanic of Materials	3
EGR 203	Dynamics	4	MEEM 2700 TRU XXXX	Dynamics Unassigned Transfer	3 1

16

16

*General Education required courses - some selected NMC courses may satisfy MTU Gen. Ed. requirements and Michigan Transfer Agreement. See an advisor for Gen. Ed. courses and applicable MTA requirements. NMC 80 credits transfer to MTU 71 program + 9 credits electives. 3rd semester is a summer session. Up to 3 additional credits of Physical Education may transfer.

Courses at MTU

Junior year

6th Semester

MEEM 2911	Mechanical Eng. Practice II	3
EC 3400	Economic Decision Analysis	3
MA 3710	Statistics	3
EE 3010	Circuits & Instrumentation	3
MEEM 3901	Mechanical Eng. Practice III	2
		14

7th Semester

MEEM 3750	Dynamic Systems	4
MEEM 3600	Intro. to Manuf.	3
MEEM 3400	Mech. Sys. Desg. & Analy	3
MEEM 3911	Mech. Eng. Practice IV	3
		13

Senior Year

8th Semester

MEEM 3201	Intro. Fluid Mech. & Heat Trans.	4
MEEM 4901	Senior Design I	2
	Technical Elective I	3
	Technical Elective II	3
	HASS Gen. Ed. (3000+)	3
		15

9th Semester

MEEM 4911	Senior Design II	2
	Technical Elective III	3
	Technical Elective IV	3
	Technical Elective V	3
	HAAS Gen. Ed. (3000+)	3
		14

NOTE: A minimum of six (6) credits of MTU Technical Electives must be MEEM courses.

MTU 56 credits.

Program Total: 136 Credits

Does not include 3 Credits of Physical Education required for Graduation. Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. All program specific courses require a 2.0 (C) grade for transfer. Students may require additional courses necessary to meet the minimum Mathematical and English Composition pre-requisites. NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

This Operational Plan is reviewed and renewed annually unless a review is requested by administrative staff of either institution in the interim.

MICHIGAN TECHNOLOGICAL
UNIVERSITY



William W. Predebon
Chair, Mechanical Engineering-
Engineering Mechanics

8/5/2019

Date

NORTHWESTERN MICHIGAN
COLLEGE



Gerald O. Dobek
Sciences Department Head

7 Aug 2019

Date



Janet Callahan
Dean, College of Engineering

8/5/2019

Date



Debra Pharo
Academic Chair

8/7/2019

Date

Mechanical Engineering Technology (2021-22)

OPERATIONAL PLAN

MICHIGAN TECHNOLOGICAL UNIVERSITY

and

NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide degree mapping for the implementation of the Master Agreement between Northwestern Michigan College and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in MECHANICAL ENGINEERING TECHNOLOGY and in all respects is subject to the Master Agreement.

1st Semester

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
ENG 111	English Composition	4	UN 1015 HU 1XXX	Composition HASS Elective	3 1
EGR 101	Intro to Engineering	1	ENG 1XXE	ENG Elective	1
MTH 141	Calculus I	5	MA 1160 MA 1XXX	Calculus I STEM Math Elective	4 1
CHM 150, 151, 150R,	General Chemistry I	5	CH 1150/51/53	University Chemistry I	5
15			15		

2nd Semester

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
MFG 113	Machining I	3	MET 2153 TRU XXXX	Machine Tool Funds. & App Unassigned Transfer	2 1
EGR 221	Material Science	3	MSE 2100	Material Science & Engr	3
MTH 142	Calculus II	5	MA 2160 MA 1XXX	Calculus II STEM Math Elective	4 1
CIT 110	Programming Logic and Design	3	ENG 1101	Engr Anal & Prob Solving	3
* GEO 109	World Reg. Geo.	3	UN 1025	Global Issues	3
17			17		

3rd Semester (Summer) NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
* PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3
* PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3
* HST 101 /111/112	History	4	SS 2502/00/01 SS1XXX	History HASS Elective	3 1
10			10		

Mechanical Engineering Technology

4th Semester

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
MTH 131	Intro to Prob & Stats	3	MA 2710	Intro to Statistical Analy	3
PHY 221, 221R	P&P Physics I	5	PH 2100/1100 TRU XXXX	University Physics I Unassigned Transfer	4 1
EGR 201	Statics	3	MET 2110	Applied Statics	3
ENG 112	English Composition	4	HU 1XX5	1XX5 - HASS Communication/Comp	4
EGR 232	Introductory Thermo	3	MET 3700	Applied Thermo	3

18

18

5th Semester

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
EGR 202	Mechanics of Mat.	3	MET 2150	Applied Strength of Material	3
PHY 222, 222R, 222L	P&P Physics II	5	PH 2200/1200 TRU XXXX	University Physics II Unassigned Transfer	4 1
EGR 203	Dynamics	4	MET 2130	Dynamics	4
EGR 211	Electrical Circuits I	3	EET 1121 (sub for 1411)	Basic Electronics	3

15

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* Gen. Ed. required courses – some selected NMC courses may satisfy MTU requirements and Michigan Transfer Agreement. See advisor for Gen. Ed. courses and applicable MTA requirements.

NMC 75 credits transfer to MTU 63 program + 12 credits electives.

The 3rd semester is a summer session. Up to 3 additional credits of Physical Education may transfer.

Courses at MTU

Junior year

7th Semester

8th Semester

MET 3500	Manuf. Process	4	MET 2400	Pract. App. in Para.	3	
MET 3242	Machine Design I	3	EET 3131	Instrumentation	3	
MET 3400	App. Fluid Mech.	3	MET 3451	Machine Design II	3	
EET 2233	Electrical Machinery	4	MET 4460	Prod. Desg. and Dev.	2	
					Technical Elective	3

14

14

Mechanical Engineering Technology

Senior Year

9th Semester

EC 3400	Economic Decs. Analy	3
MET 4210	App. Quality Techn.	3
MET 4575	Senior Project I	2
MET 4300	App. Heat Transfer	3
HU 3120	Tech. and Prof. Comm.	3

14

10th Semester

MET 4999	Prof. Pract. Seminar	1
MET 4675	Senior Project II	2
MET 4360	Thermal-Fluids Lab	1
	Technical Elective	4
	HASS Gen. Ed. (3000+)	3
	HASS Gen. Ed. (3000+)	3

14

MTU 56 credits - Program Total: 131 Credits

[Does not include 3 Credits of Physical Education required for Graduation.]

Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. All program specific courses require a 2.0 (C) grade for transfer.

Students may require additional courses necessary to meet the minimum Mathematical and English Composition prerequisites. NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

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MICHIGAN TECHNOLOGICAL
UNIVERSITY


NORTHWESTERN MICHIGAN
COLLEGE



2/21/22

Janet Callahan, MTU
Date
Dean, College of Engineering

Debra A. Pharo, NMC
Date
Academic Chair



2-15-2022



14 February 2022

John Irwin, MTU
Date
Chair, Manufacturing and Mechanical
Engineering Technology

Gerald O. Dobek, NMC
Date
Sciences Department Head

4th Semester (Sp) NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
ENV 112	Historical Geology	4	GE 3320 TRU XXXX	Earth History Unassigned Transfer	3 1
ENG 112	English Composition	4	HU 1XX5	HASS Comm./ Comp	4
MTH 251	Diff. Eq.	4	MA2320/30 MA 3520	Elem. Linear Algebra Elem. Differential Eq.	2 2
MTH 131	Prob. & Statistics	3	MA 2720 *	Statistical Methods	3
GEO 115	Intro to GIS	3	GE 2010	Intro to Geo. Info. Systems	3

18

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* one credit waived at MTU

NMC 68 credits transfer to MTU 61 program + 7 credits electives.

Up to 3 additional Co-Curricular credits may transfer.

Courses at MTU

Junior year

5th Semester - Fall

GE 1200	Intro Data Sci for Earth Res	1
GE 3010	Intro to Field Methods	1
GE 2300	Intro to Mineralogy	3
EC 3400	Econ Decision Analysis	3
PH 2400	Univ. Physics IV-W/MP	3
GE xxxx	Advanced Geo. Elect.	3
		14

6th Semester - Spring

GE 3050	Structural Geology	3
GE 2310	Intro to Petrology	3
GE 3250	Comp Geosciences	3
GE 3040	Fund. of Geophysics	3
MA 4515	Intro. Partial Diff. Eq.	5
		17

7th Semester - Summer

GE 4090	Field Geo. w/Eng. App.	5
GE 4091	Field Geophysics	5

Senior Year

8th Semester - Fall

GE 3100	Depositional Systems	3
	Geology Elective	3
	Advanced Geo. Elect.	3
	HASS Elective	3
	Co-Curricular	1

10

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9th Semester – Spring

PH 2300	Univ. Physics III-Fluids/Thermo	2
	Upper level HASS Elective	3
	Advanced Geo. Elect.	3
	Advanced Geo. Elect.	3
	<u>Co-Curricular</u>	<u>2</u>
		13

MTU 67 credits.

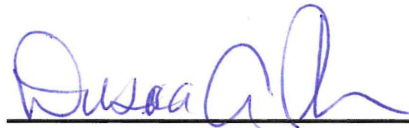
Program Total: 125 credits to fulfill all degree requirements. This model schedule shows 135 credits, including Co-Curricular credits at MTU.

Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. A minimum grade of C (2.0 on a 4.0 scale) must be earned in each course intended for transfer to MTU.

NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

Janet Callahan Digitally signed by Janet Callahan
Date: 2022.10.05 16:50:28 -04'00'

Janet Callahan, MTU **Date**
Dean, College of Engineering

 10/19/22

Debra Pharo, NMC **Date**
Academic Chair

Aleksey Smirnov Digitally signed by Aleksey
Smirnov
Date: 2022.10.05 12:47:15 -04'00'

Aleksey Smirnov, MTU **Date**
Chair, Geological and Mining
Engineering and Sciences

 18 Oct. 2022

Gerald O. Dobek, NMC **Date**
Sciences Department Head

Geology
OPERATIONAL PLAN
MICHIGAN TECHNOLOGICAL UNIVERSITY
and
NORTHWESTERN MICHIGAN COLLEGE

This Operational Plan is to provide mapping for the implementation of the Master Agreement between Northwestern Michigan College (NMC) and Michigan Technological University (Michigan Tech) relating to a Bachelor of Science degree in **Geology** and in all respects is subject to the Master Agreement.

1st Semester (Fa)

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
ENG 111	English Composition	4	UN 1015 HU 1XXX	Composition HASS Elective	3 1
GEO 115	Intro to GIS	3	GE 2010	Intro to Geo. Info. Systems	3
PHY 221/221L	P&P Physics I	4	PH 2100/1100	University Physics I	4
PHY 221R	P&P Physics I Res	1	TRU XXXX	Unassigned Transfer	1
MTH 141	Calculus I	5	MA 1160 MA 1XXX	Calculus I STEM Math Elective	4 1
		17			17

2nd Semester (Sp)

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
PHY 222/221L	P&P Physics II	4	PH 2200/1200	University Physics II	4
PHY 222R	P&P Physics II Re	1	TRU XXXX	Unassigned Transfer	1
ENV 111	Physical Geology	4	GE 1100 GE 2000	Geo Eng & Sci Understanding Earth	1 3
MTH 142	Calculus II	5	MA 2160 MA 1XXX	Calculus II STEM Math Elective	4 1
HST 230	History of Michigan	3	SS 3540	History of Michigan	3
		17			17

3rd Semester (Sum)

NMC

MTU

Number	Course Name	Cr	Number	Course Name	Cr
GEO 109	World Regional Geo	3	UN 1025	Global Issues	3
MTH 131	Prob. & Statistics	3	MA 2720 *	Statistical Methods	3
		6			6

* one credit waved at MTU

Number	Course Name	Cr	Number	Course Name	Cr
MTH 241	Calculus III	5	MA 3160	Calculus III	4
			MA 1XXX	STEM Math Elective	1
CHM 150	General Chemistry I	5	CH 1150/51/53	University Chemistry II	5
ENV 117	Meteorology & Climatology	4	GE 2640	Atm. Obsv./Meteorology	3
			TRU XXXX	Unassigned Transfer	1
PSY 101	Intro to Psychology	3	PSY 2000	Intro to Psychology	3
17			17		

Number	Course Name	Cr	Number	Course Name	Cr
CHM 151	General Chemistry II	5	CH 1160/61/63	University Chemistry II	5
ENV 112	Historical Geology	4	GE 3320	Earth History	3
			TRU XXXX	Unassigned Transfer	1
ENG 112	English Composition	4	HU 1XX5	HASS Comm./ Comp	4
PHL 101	Intro to Philosophy	3	HU 2700	Intro to Philosophy	3
16			16		

NMC 73 credits transfer to MTU 65 program + 8 credits electives.

Up to 3 additional credits of Physical Education may transfer.

Courses at MTU

Junior year

5th Semester - Fall

GE 3010	Intro to Field Methods	1
GE 1200	Intro Data Sci for Earth Res	1
GE 2300	Intro to Mineralogy	3
EC 3400	Econ Decision Analysis	3
GE 3200	Geochemistry	3
GE 3850	Geohydrology	3
	Co-curricular	1

6th Semester - Spring

GE 3050	Structural Geology	3
GE 2310	Intro to Petrology	3
GE 3250	Comp Geosciences	3
	Upper Level HASS Elective	3
	Co-Curricular	1

15

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Senior Year

7th Semester - Summer

GE 4091	Field Geo. w/Eng. App.	5
GE 4090	Field Geophysics	5
		<hr/>
		10

8th Semester - Fall

GE 3100	Depositional Systems	3
GE xxxx	Geology Elective	3
GE xxxx	Geology Elective	3
	Upper level HASS Elective	3
	Co-Curricular	1
		<hr/>
		13

9th Semester – Spring

GE 3040	Fundamentals of Geophysics	3
GE XXXX	Geology Elective	3
<u>GE XXXX</u>	<u>Advanced Geology Elective</u>	<u>3</u>
		9

MTU 60 credits.

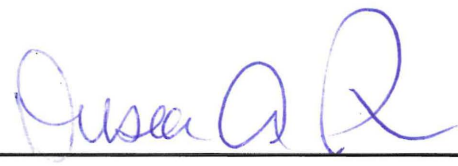
Program Total: 125 credits to fulfill all degree requirements. This model schedule shows a total of 133 credits, including co-curricular credits at MTU.

Once all MTA requirements are met, the student will receive an Associate Degree from Northwestern Michigan College. Any course not completed at NMC will require completion at MTU, including all prerequisite courses. A minimum grade of C (2.0 on a 4.0 scale) must be earned in each course intended for transfer to MTU.

NMC and MTU course offerings and / or delivery methods are subject to change. Students are required to meet with an academic advisor during each semester to maintain continuity with program requirements.

Janet Callahan Digitally signed by Janet Callahan
Date: 2022.10.05 16:50:13 -04'00'

Janet Callahan, MTU Date
Dean, College of Engineering

 10/19/22

Debra Pharo, NMC Date
Academic Chair

Aleksey Smirnov Digitally signed by Aleksey Smirnov
Date: 2022.10.05 12:49:32 -04'00'

Aleksey Smirnov, MTU Date
Chair, Geological and Mining Engineering and Sciences

 18 Oct. 2022

Gerald O. Dobek, NMC Date
Sciences Department Head