

## 2022-23 Sustainable Bioproducts (Business) Course Plan College of Forest Resources & Environmental Science-Michigan Tech

Semester	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Total Credits (120 + 3 co- curriculars)
<b>First Year Fall</b>	BL1400 Principles of Biology (3)	BL1410 Principles of Biology Lab (1) Co-req: BL1400	MA1135 Calculus for Life Sciences (4) Prereq: MA1031 or MA1032	CH1150 University Chemistry Lecture (3) Coreq: MA1031 or MA1032 or MA1135	CH1151 University Chemistry Lab (1) Coreq:CH1150	UN1015 Composition (3)	15
<b>First Year Spring</b>	ACC2000 Accounting Principles (3)	FW1050 Natural Resources Professional (2)	BUS1100 Intro to Business (3)	UN1025 Global Issues (3)	HASS Gen Ed Requirement (3) See list	Co-curricular (1) See list	15
<b>Second Year Fall</b>	FW2030 Conservation of Nature (2)	PH1110 College Physics lecture (3)	PH1111 College Physics lab (1)	MA2720 Statistical Methods (4) Prereq: MA1030 or MA1032	Critical and Creative Thinking Gen Ed (3) Requirement See list	Co-curricular (1) See list	14
<b>Second Year Spring</b>	FW1035 Wood Anatomy (3)	EC2001 Principles of Economics (3) Pre-req: MA1135	BUS2200 Business Law (3)	Social Responsibility & Ethical Reasoning Gen Ed (3) See list	HASS Gen Ed Requirement (3) See list		15
<b>Third Year Fall</b>	FW3090 Mechanics of Wood Materials (3)	FW3097 Forest Biomaterials (3)	ENT3950 Enterprise III(1)	HASS Gen Ed Requirement (3) See list	Management Elective (3) See list below	Free Elective (3)	16
<b>Third Year Spring</b>	FW2081 Circular Economy (3)	FW4080 Forest Economics & Finance (3)	FIN3000 Principles of Finance (3)Pre-req: ACC2000 & MA1135	ENT3960 Enterprise(1)	Free elective (3)	HASS Gen Ed Requirement (3) See list	16
<b>Fourth Year Fall</b>	FW3313 Sustainability Science (3)	FW3098 Adding Value to Forest Biomaterials (2)	ENT4900 Senior Enterprise (2)	FW4050 Deterioration and Preservation of Biomaterials (3)	HU3120 Technical and Professional Communications (3)	Free Elective (3)	16
<b>Fourth Year Spring</b>	ENT4910 Senior Enterprise (2)	OSM3000 Operations and Supply Chain Mngt (3)	Internship Experience (2-4) See list below	MKT3000 Principles of Marketing (3)	Free elective (3-5)	Co-curricular (1) See list	16

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<b>Management Elective (Choose one)</b>		
<b>Course number</b>	<b>Course Title</b>	<b>Prerequisite</b>
ACC2100	Accounting Principles II	ACC2000
ACC3500	Managerial/Cost Accounting I	ACC2100
MGT2000	Team Dynamics and Decision Making	Sophomore or higher
MGT3100	Leadership Development	Sophomore or higher
MGT3800	Entrepreneurship	Junior or higher
MKT3600	Marketing Data Analysis	(MA2720 or BUS2100) and MKT3000
OSM3150	Intro to Supply Chain Management	OSM3000; Junior or higher

<b>Internship Experience (Choose 2-4 credits)</b>		
<b>Course number</b>	<b>Course Title</b>	<b>Prerequisite</b>
FW4000 must repeat for at least 2 credits total	Professional Experience (1)	Must have an approved internship before enrolling; permission of instructor
FW4840	Senior Research Thesis (4)	Permission of instructor; senior level; FW3190
UN3002	Undergraduate Cooperative Education 1 (2)	Departmental permission
Varies	Study Abroad (varies)	Requires prior approval from director

**2022-23 Sustainable Bioproducts (Circular Economy) Course Plan**  
**College of Forest Resources & Environmental Science-Michigan Tech**

Semester	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Total Credits (120 + 3 co- curriculars)
<b>First Year Fall</b>	BL1400 Principles of Biology (3)	BL1410 Principles of Biology Lab (1) Co-req: BL1400	MA1135 Calculus for Life Sciences (4) Prereq: MA1031 or MA1032	CH1150 University Chemistry Lecture (3) Coreq: MA1031 or MA1032 or MA1135	CH1151 University Chemistry Lab (1) Coreq: CH1150	UN1015 Composition (3)	15
<b>First Year Spring</b>	EC2001 Principles of Economics (3) Pre-req: MA1135	FW1050 Natural Resources Professional (2)	BUS1100 Intro to Business (3)	UN1025 Global Issues (3)	HASS Gen Ed Requirement (3) See list	Co-curricular (1) See list	15
<b>Second Year Fall</b>	FW2030 Conservation of Nature (2)	PH1110 College Physics lecture (3)	PH1111 College Physics lab (1)	MA2720 Statistical Methods (4) Prereq: MA1030 or MA1032	Critical and Creative Thinking Gen Ed (3) Requirement See list	Co-curricular (1) See list	14
<b>Second Year Spring</b>	FW2081 Circular Economy (3)	FW1035 Wood Anatomy (3)	Free Elective (5)	Social Responsibility and Ethical Reasoning Gen Ed Requirement (3) See list	HASS Gen Ed Requirement (3) See list		17
<b>Third Year Fall</b>	FW3097 Forest Biomaterials (3)	FW3090 Mechanics of Wood Materials (3)	Fine Art Elective-See list below(3)	Eng/Business Elective (3) See list below	ENT3950 Enterprise III(1)	EC3300 Industrial Organization (3)	14
<b>Third Year Spring</b>	MKT3000 Principles of Marketing (3)	Engineering/Business Elective (3) See list below	ENT3960 Enterprise (1)	HASS Gen Ed Requirement (3) See list	HASS Gen Ed Requirement (3) See list	Free elective (3)	16
<b>Fourth Year Fall</b>	FW3098 Adding Value to Forest Biomaterials (2)	FW3313 Sustainability Science (3)	FW4050 Deterioration and Preservation of Biomaterials (3)	ENT4900 Senior Enterprise (2)	ENG4515 Sustainability and Resilience(3)	Free elective (3)	16
<b>Fourth Year Spring</b>	ENT4910 Senior Enterprise (2)	OSM3000 Operations and Supply Chain Mngt (3)	Internship Experience (2-4) See list below	HU3120 Technical and Professional Communications (3)	Free elective (3-5)	Co-curricular (1) See list	16

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Fine Arts Elective (Choose one)			
Course number	Course Title	Prerequisite	Semester
ART1110	Art + Design Studio (3)	Restricted to FR,SO, & JR	Fall, Summer
ART2110	Outdoor Sculpture (3)	None	Summer-alt even
ART2160	Creative Practices (3)	None	On demand
ART2190	Art and Nature (3)	None	Fall

Internship Experience (Choose 2-4 credits)			
Course number	Course Title	Prerequisite	Semester
FW4000 must repeat for a minimum of 2	Professional Experience (1)	Must have an approved internship before enrolling;	All
FW4840	Senior Research Thesis (4)	Permission of instructor; senior level; FW3190	All
UN3002	Undergraduate Cooperative Education 1 (2)	Departmental permission	All
Varies	Study Abroad (varies)	Requires prior	All

Eng/Business Elective (Choose 6 credits)			
Course number	Course Title	Prerequisite	Semester
CM3979	Alternative Energy (1)	CH1150 & MA1135	Fall
CMG4800	Sustainable Construction (3)	JR or SR	Spring
MEEM4685	Env Resp Design & Manuf (3)	SR only	Alt. Spring-even years
MGT2000	Team Dynamics (3)	SO,JR or SR	Fall, Spring
MGT3800	Entrepreneurship (3)	JR or SR	Fall
MSE4760	Env Eng for Materials Processing (3)	JR or SR	Fall
MSE4777	Distrib Additive Manufacturing (3)	None	Fall
Any ENT course not already required	Varies	Varies	Varies

## 2022-23 Sustainable Bioproducts (Structures) Course Plan College of Forest Resources & Environmental Science-Michigan Tech

Semester	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Total Credits (120 + 3 co-curriculars)
<b>First Year Fall</b>	BL1400 Principles of Biology (3)	BL1410 Principles of Biology Lab (1) Co-req: BL1400	MA1135 Calculus for Life Sciences (4) Prereq: MA1031 or MA1032	CH1150 University Chemistry Lecture (3) Coreq: MA1031 or MA1032 or MA1135	CH1151 University Chemistry Lab (1) Coreq: CH1150	UN1015 Composition (3)	15
<b>First Year Spring</b>	EC2001 Principles of Economics (3) Pre-req: MA1135	FW1050 Natural Resources Professional (2)	CEE1001-Sustainable and Civil Eng. Practice (1)	BUS1100 Intro to Business (3)	UN1025 Global Issues (3)	HASS Gen Ed Requirement (3) See list	15
<b>Second Year Fall</b>	FW2030 Conservation of Nature (2)	PH1110 College Physics lecture (3)	PH1111 College Physics lab (1)	MA2720 Statistical Methods (4) Prereq: MA1030 or MA1032	Critical and Creative Thinking Gen Ed (3) Requirement See list	Co-curricular (1) See list	14
<b>Second Year Spring</b>	FW2081 Circular Economy (3)	FW1035 Wood Anatomy (3)	Social Responsibility and Ethical Reasoning Gen Ed Requirement (3) See list	HASS Gen Ed Requirement (3) See list	Co-curricular (1) See list	Free elective (1)	15
<b>Third Year Fall</b>	FW3090 Mechanics of Wood Materials (3)	FW3097 Forest Biomaterials (3)	Business Elective (3) See list below	ENT3950 Enterprise III(1)	CMG3250 Structural Analysis & Design (3)	Free elective (3)	16
<b>Third Year Spring</b>	ENT3960 Enterprise (1)	Any ENT course not already required (1-2)	CMG 2120 Statics and Strength of Material Construct	HASS Gen Ed Requirement (3) See list	Free Elective (9)		17
<b>Fourth Year Fall</b>	FW3313 Sustainability Science (3)	FW3098 Adding Value to Forest Biomaterials (2)	CMG4800 Sustainable Construction (3)	ENT4900 Senior Enterprise (2)	FW4050 Deterioration and Preservation of Biomaterials (3)	HU3120 Technical and Professional Communications (3)	16
<b>Fourth Year Spring</b>	ENT4910 Senior Enterprise (2)	CEE4233 Structural Timber Design (3)	HASS Gen Ed Requirement (3) See list	Internship Experience (3) See list below	MKT3000 Principles of Marketing (3)	Co-curricular (1) See list	15

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<b>Business Elective (Choose one)</b>		
<b>Course number</b>	<b>Course Title</b>	<b>Prerequisite</b>
ACC2000	Accounting Principles 1 (3)	None
BUS2200	Business Law (3)	None
FIN3000	Principles of Finance (3)	None
MGT2000	Team Dynamics and Decision	May not be a freshman
MGT3100	Leadership Development (3)	May not be a freshman
OSM3000	Operations and Supply Chain	MA1135 and MA2720; JR or SR

<b>Internship Experience (Choose one)</b>		
<b>Course number</b>	<b>Course Title</b>	<b>Prerequisite</b>
FW4000 must repeat for a total of 2 credits	Professional Experience (1)	Must have an approved internship before enrolling; permission of instructor
FW4840	Senior Research Thesis (4)	Permission of instructor; senior level; FW3190
UN3002	Undergraduate Cooperative Education 1 (2)	Departmental permission
Varies	Study Abroad (varies)	Requires prior approval from