

MICHIGAN STATE UNIVERSITY

January 26, 2015

MEMORANDUM

TO: Dr. Douglas Estry, Associate Provost for Undergraduate Education
and Dean of Undergraduate Studies

FROM: Dr. John Gaboury, Associate Provost for Academic Services

RE: Request to Require a Grade of 2.0 in each ABM and FIM and EEP
course in the Bachelor of Science Degree in Environmental Economics
and Management

For Transmittal to the University Committee on Undergraduate
Education (UCUE)

The request referenced above is being sent to the University Committee on Undergraduate Education (UCUE) in accordance with the *Bylaws for Academic Governance*, 4.4.

UCUE Response Requested:

Please ask the UCUE to consider the request referenced above and provide consultative commentary prior to the March 5, 2015 Full Committee, UCC meeting. Please mail the related materials referenced under the heading Attachments at the end of this memorandum to the UCUE members.

The academic program and course requests referenced above will be included on the agenda for the February 26, 2015 meeting of Subcommittee B, University Committee on Curriculum (UCC). Requests that are approved by Subcommittee B on February 26 will be before the Full Committee, UCC, for action on March 5, 2015. Requests that are approved by the Full Committee on March 5 will be included in the March 17, 2015, Report of the UCC to the Faculty Senate.

If you have any questions, please call Joy Speas, University Curriculum Administrator at 5-8420.

Thank you for your help.

Attachments:

1. Request for Changes in an Academic Program form dated January 2, 2015: Bachelor of Science Degree in Environmental Economics and Management and attachments.



University Curriculum and Catalog

Hannah Admin. Building
426 Auditorium Road
Room 151A
East Lansing, MI 48824

517-355-8420
Fax: 517-353-1935

View a Program		Main Menu
Joy Speas, RO	Monday, 1/5/2015	
Program Name: Environmental Economics & Management		Program Request ID: 2858
Degree: BS Sequence Number: 3		
Effective Dates: Fall 2015 - Open Status: Interim Initial Action: Change		
Requested Date: 11/18/2014 10:54:05 AM		
1. Department/School/College:		
02036 Department of Agricultural, Food, and Resource Economics		
2. Name of Program:		
Prev: Environmental Economics&Policy New: Environmental Economics & Management		
3. Name of Degree:		
BS		
4. Type of Program:		
Prev: New: Major		
5. Effective Start Semester:		
Prev: Fall 2013 New: Fall 2015		
6. Target student audience for the program:		
Prev: all New: Undergraduate students interested in business and environment related careers		
7. Enrollment:		
What is the expected enrollment per year: Prev: 20 New: 50		
What is the minimum enrollment acceptable: 10		
8. Source of budget for the program:		
To align academic planning and curricular change, ALL requests for NEW funds must be included in the College's annual planning letter. Provost approval of new funds and the effective date for the new program must align. If funding is not approved, then the program request will not be forwarded to Faculty Senate.		
Internal reallocation		
If new funds, was this request included in the College's annual planning letter? Indicate yes or no. If no, then this is a department or college fund reallocation (If the program is implemented, no additional resources are required.).		
9. Projected Costs as compared to other programs in unit:		
Same		
10. Staff requirement:		
How many additional staff will be required: 0		
Who will provide the primary instruction. Describe any external linkages(industry, government, etc.):		
Prev: Mathematics Department – There will probably be very little change in the MTH 124 enrollment due to this change in requirement. We have been recommending MTH 124 to our students versus MTH 116 for two years. New:		
11. Will additional equipment be required:		
Approximate cost: 0		
Source of funding:		
12. Will additional library materials be required:		
Approximate cost: 0		
Source of funding:		

Prev: Only a change in the Math Requirement, no change in Library needs
New: NA

13. Will additional space be required:

Type:

Approximate amount:

14. If the program requirements contain a named concentration, do you wish for the concentration to be noted on the student's transcript?:

No

15. Detailed Description:

Explain the academic rationale behind the proposed change. Please address as many of the following items as apply. This information related to the program must be attached to the form.

- a. Background information including the considerations which precipitated the development of the program, and its relationship to similar programs offered at MSU and by other educational institutions. Supply a copy of standards of accrediting agencies and federal regulations related to the request as appropriate.

This redesigned and renamed major is the result of a major review of the entire undergraduate program of the Department of Agricultural, Food and Resource Economics (AFRE) that was carried out during 2012-13. The process involved SWOT analyses of the existing program, review of similar programs across the country, interviews with recruiters and alumni, analyses of industry trends and hiring practices, and faculty deliberations. The overall goals of the revised and redesigned undergraduate program were to increase the synergy between the three AFRE majors, improve quantitative and analytical skills, promote and require experiential learning activities, and to enhance placement and career success of students.

While CSUS undergraduate program in Environmental Studies and Sustainability is the closest in similarity to the EEM major, the focus of ESS both in terms of coursework and targeted careers are significantly different from EEM. EEM employs primarily a business/economics lens in analyzing environmental issues, while ESS takes a broader interdisciplinary approach to community sustainability.

- b. Rationale for changing the program at MSU.

The existing EEP major was facing several challenges including, relatively low enrollments, low synergy with the other two majors in FIM and ABM, and poor career/ job placement support and uncertain job market opportunities due to declining opportunities in the public/non-profit sector. At the same time, environmental and sustainability issues are increasingly seen as of high strategic and operational importance and a growth area in corporate management. For example, in a survey conducted by Massachusetts Institute of Technology and Boston Consulting Group in 2012, 92% of responding companies stated that they were addressing sustainability issues, 70% reported that sustainability was permanently on their agenda, and 56% responded that sustainability was necessary for being competitive. Similarly a Greenbiz survey showed that the number of firms with "open requisitions for environmental- and sustainability-related positions" rose from 8% percent 2009 to 31% by 2011.

To exploit these growing opportunities, it was decided to refocus the EEP major toward environmental economics and management, and to prepare students more for careers in environmental economics, management, and policy analysis in business organizations.

- c. Rationale for the program being housed in the primary administrative unit.

AFRE department already has a very strong program in environmental economics and policy with the previous major EEP. This refocus on environmental economics and management has natural synergies with the other two UG majors in ABM and FIM in terms of curriculum, faculty resources, experiential opportunities and job placement.

- d. Educational objectives of the program and their relationship to those of the college and the University.

The educational objectives of the program are to prepare students for careers in environmental economics and management primarily in business organizations and also to promote a business/economic approach to environmental issues in other organizations and the government. Sustainability is a major thrust of the College and University, and EEM major will contribute to these initiatives.

By taking the EEM program the students will learn to :

- a. **Think Analytically: Use economic and management theory to access information, critically analyze complex material**

from multiple sources, evaluate evidence, construct reasoned arguments, and communicate inferences and conclusions. Synthesize information within and across disciplines, identify and apply quantitative methods for defining and analyzing problems. Identify the credibility, use and misuse of scientific methods.

- a. Use microeconomics to analyze the behavior of consumers, firms, and markets in response to environmental and natural resource issues.
 - b. Use microeconomics to analyze the public policies affecting consumers, firms, taxpayers, and resource owners in response to environmental and resource issues.
 - c. Use management theories to analyze the strategic behavior of firms in response to environmental and resource issues.
 - d. Use economic and management theories to analyze environmental issues and policies.
 - e. Use financial analysis (partial budgeting, time value of money, asset valuation) to analyze the performance of firms.
 - f. Use quantitative analysis to interpret data related to the behavior of consumers, firms, and markets.
- b. Reason in an Integrated way: Integrate economic and management knowledge with other disciplines to make informed decisions that reflect humane social, and ethical values. Use a variety of inquiry strategies incorporating multiple views to make value judgments, solve problems, answer questions, and generate new understanding.**
- a. Identify and synthesize information from other disciplines that is relevant to the analysis of economic and managerial behavior related to environmental and resource issues.
 - b. Identify and synthesize information from a variety of sources (e.g., personal experience, academic disciplines, internships, study abroad) to analyze economic and managerial problems and to develop alternative solutions and perspectives on problems.
 - c. Identify ethical dilemmas that arise in the workplace, the stakeholders involved in such issues, the alternatives and consequences available to resolve such issues, the appropriate ethical frameworks used to evaluate alternatives, and the choice of action in such situations.
 - d. Recognize the ethical, social, and legal implications of business decisions and the resolution of these issues in firm governance and social responsibility.
- c. Communicate Effectively: Use a variety of media to communicate effectively with diverse audiences, identify the effect of context on communication strategies and practices, and engage in effective communication practices in a variety of situations and with a variety of media.**
- a. Communicate the results of analytical reasoning and explain the assumptions on which the analysis depends, both in writing and verbally, using graphical techniques where applicable.
 - b. Use tables and graphs to communicate about economic and management problems, analysis, and conclusions in written and verbal settings.
 - c. Communicate effectively in professional settings, including written reports, memoranda, cover letters, resumes and other written correspondence.
 - d. Communicate effectively in professional settings, including verbal presentations of analytical problems, analytical methods, and analytical results.
 - e. Communicate effectively about environmental risks to various stakeholders by learning the differences between scientific and public risk assessments and processes of risk communication.
- d. Become Effective Citizens: Participate and lead in local, national, or global communities, understand the structures of local, national, and global governance systems, act effectively within those structures, and apply knowledge and abilities to solve societal problems in ethical ways.**
- a. Use economic theory and methods to explain social phenomena, analyze social problems, and evaluate environmental and resource management policy alternatives.
 - b. Describe the process of making environmental policy in the United States and use public choice theory to analyze the behavior of voters, legislators, and interest groups in the national environmental policy process.
 - c. Understand decision perspectives of various interest groups, stakeholders and businesses and use that learning for effective communication and management
- e. Comprehend Cultural Diversity and its Managerial Implications: Comprehends global and cultural diversity within historical and societal contexts.**
- a. Identify and analyze the impact of cultural differences (e.g. history, beliefs, traditions, religions) on economic, managerial, and public policy issues related to environmental issues.
 - b. Identify and analyze how cultural, social, political, and legal factors (and their interaction) affect business decision-making related to environmental issues.
- e. Faculty who were instrumental in changing the program and faculty who will be responsible for implementing the program. (See Item 15)
- Key faculty instrumental in changing the program and who will be responsible for implementation include, James Hilker, Satish Joshi, Brent Ross, Richard Horan, Cloe Garnache, Robert Shupp, Larry Zink, David Schwiekhart, Chris Peterson and Laura Cheney.*
- f. Expected enrollment per year averaged over the next five years.
- The total enrollment in the EEM major is expected to increase from 40 in 2015-16 to 100-150 over the next five years.*
- g. Plan for evaluating the program. Plan for assessing student outcomes. For academic major programs, indicate the learning objectives/goals for students and how outcomes will be assessed. If these plans have not been submitted in the past, submit them with this request. The outcomes assessment form can be found at www.reg.msu.edu/ucc/assessment.asp

Each of the program learning outcomes will be assessed throughout the program using the following methods:

- a. Class assignments and exams
- b. Exercises in quantitative analyses using spreadsheets, graphs, basic calculus, and simulations
- c. Case analyses presenting unstructured real life decision situations requiring analyses from multiple perspectives
- d. Written analyses (short one page memos to relatively long project reports)
- e. Oral presentations in class and to external stakeholders
- f. Class projects that involve group work and external agencies/businesses
- g. Capstone courses
- h. Internship projects
- i. Interactions with academic advisors and faculty
- j. Internship and job placements
- k. Interviews of recruiters and Alumni
- l. Peer review of program
- m. Benchmarking with similar programs in other Universities

Course syllabi have detailed descriptions of assessment methods related to the planned program educational outcomes.

h. Program description including statement and specific requirements of the program as they will appear in the University catalog. Provide edited text of the current approved requirements from Academic Programs, indicating deletions (strikethrough) and additions (double-underline). Information contained in the catalog represents a University contract with students. Any deviation from college and University policies must be specifically requested.

See below.

i. If the program will be offered in a location other than the main campus in East Lansing, specify the location(s).

No

j. List the name and describe any certificate program that is associated with this degree program.

- Explain the relationship between the certificate program and this degree program.

- If a certificate program is being changed that is related to a degree program, please explain how the department/school/college will learn that the supervising faculty have endorsed the potential certificate holders as possessing specified skills or competency levels that render them eligible to receive the certificate and the degree.

No certificate program is being offered currently

k. Other information that will assist the Provost and the University-level committees in evaluating the request.

Old Program

Environmental Economics and Policy

Environmental Economics and Policy prepares students for careers that require balancing environmental sustainability and economic development. The major develops economic analysis skills and basic environmental science knowledge and applies these skills and knowledge to analyze the role of environmental considerations in economic decisions of governments, firms and

households. The major prepares students for employment opportunities with state, federal and international government agencies, environmental interest groups, environmental consulting firms, and industry. The major also offers students the opportunity to prepare for graduate study in environmental economics or environmental policy studies programs.

Requirements for the Bachelor of Science Degree in Environmental Economics and Policy

1. The University requirements for bachelor's degrees as described in the Undergraduate Education section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Environmental Economics and Policy.

The University's Tier II writing requirement for the Environmental Economics and Policy major is met by completing Environmental Economics and Policy 404. That course is referenced in item 3. a. below.

The completion of the Environmental Economics and Policy mathematics requirement may also satisfy the College of Agriculture and Natural Resources and the University mathematics requirement.

2. The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree. Certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate.
3. The following requirements for the major:

a. All of the following courses (42 credits):

ACC	230	Survey of Accounting Concepts	3
CSE	101	Computing Concepts and Competencies	3
EC	201	Introduction to Microeconomics	3
EC	202	Introduction to Macroeconomics	3
EEP	255	Ecological Economics	3
EEP	260	World Food, Population and Poverty	3
EEP	320	Environmental Economics	3
EEP	404	Public Sector Budgeting and Program Evaluation (W)	3
EEP	405	Corporate Environmental Management	3
ESA	430	Environmental and Natural Resource Law	3
ESA	440	Environmental and Natural Resource Policy in Michigan	3
ESA	460	Natural Resource Economics	3
ESA	470	Theory and Practice in Community and Economic Development	3
GEO	221	Introduction to Geographic Information	3

Students who pass a waiver examination will not be required to complete Computer Science and Engineering 101.

b. One of the following courses (3 credits):

EC	335	Taxes, Government Spending and Public Policy	3
EC	435	Public Expenditures	3

c. One of the following courses (3 or 4 credits):

FW	203	Resource Ecology	3
GLG	201	The Dynamic Earth	4
ISB	202	Applications of Environmental and Organismal Biology	3

d. One of the following courses (3 or 4 credits):

STT	200	Statistical Methods	3
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	STT	201	Statistical Methods	4
	STT	315	Introduction to Probability and Statistics for Business	3
e.	The following course (3 credits):			
	MTH	124	Survey of Calculus I	3
f.	Professional electives: At least 15 credits in applied policy courses approved in writing by the student's academic advisor.			

New Program

Environmental Economics and Management

Environmental Economics and Management prepares students for careers that require successful reconciliation of environmental sustainability and economic performance goals for businesses. The major develops skills in core business disciplines, environmental economics, and environmental policy analyses, and applies these skills and knowledge to help manage or create environmentally-sustainable and socially-responsive business organizations that also deliver shareholder value. The major prepares students for employment opportunities with industry, environmental consulting firms, state and federal government agencies, and environmental interest groups. The major also offers students the opportunity to prepare for graduate study in business or environmental economics and policy studies programs.

Requirements for the Bachelor of Science Degree in Environmental Economics and Management

1. The University requirements for bachelor's degrees as described in the Undergraduate Education section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Environmental Economics and Management.

The University's Tier II Writing Requirement for the Environmental Economics and Management major is met by completing EEP 405. That course is referenced in item 3. a. below.

The completion of the Environmental Economics and Management mathematics requirement may also satisfy the College of Agriculture and Natural Resources and the University mathematics requirement.

2. The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree.

Certain courses referenced in requirement 3 below may be counted toward College requirements as appropriate.

Students must achieve a grade of at least 2.0 or higher in each ABM and FIM and EEP courses referenced in items 3. a. and in courses taken to fulfill requirements 3. b. and 3. c. and 3. d.

Agribusiness Management 435 may be used to fulfill requirement 3. b. if it is not used to fulfill requirement

3. c.

FIM 339 or ABM 437 may be used to fulfill requirement 3. b. if not used to fulfill requirement 3. c.

Agribusiness Management 130 may be used to fulfill requirement 3.b. if it is not used to fulfill requirement 3.d.

3. The following requirements for the major(74 or 75:

a. All of the following courses (44 credits):

/	ABM	100	Decision-making in the Agri-Food System	3
/	ACC	230	Survey of Accounting Concepts	3
/	EC	201	Introduction to Microeconomics	3
/	EC	202	Introduction to Macroeconomics	3
/	EEP	260	World Food, Population and Poverty	3
/	EEP	255	Ecological Economics	3
/	EEP	320	Environmental Economics	3
/	EEP	405	Corporate Environmental Management(W)	3
/	EEP	460	Natural Resource Economics	3
/	EEP	210	Professional Seminar in Environmental Economics and Mgt.	1
/	EEP	410	Adv. Professional Seminar in Environmental Economics & Mgt.	1
/	FIM	202 ³	Data Analysis ^{for} in the Agri-Food System	3
/	FIM	220	Food Product Marketing	3
/	MKT	327	Introduction to Marketing	3
/	MTH	124	Survey of Calculus I	3
/	SCM	303	Introduction to Supply Chain Management	3

b. Three of the following courses (9 credits):

	ABM	130	Farm Management I	3
	ABM	222	Agribusiness and Food Industry Sales	3
	ABM	225	Commodity Marketing I	3
	ABM	337	Labor and Personnel Management in the Agri-Food System	3
	ABM	400	Public Policy Issues in the Agri-Food System	3
	ABM	422	Vertical Coordination in the Agri-Food System	3
	ABM	425	Commodity Marketing II	3
	ABM	427	Global Agri-Food Industries and Markets	3
	ABM	435	Financial Management in the Agri-Food System	3
	ABM	430	Farm Management II	3

CSUS	465	Environmental Law and Policy <i>and Natural Resource Law</i>	3
CSUS	464	Environmental and Natural Resource Policy in Michigan	3
CSUS	354	Water Resources Management	3
CSUS	429	Program Planning and Evaluation	3
EEP	404	Public Sector Budgeting and Program Evaluation (W)	3
FIM	224	Mkt Info & Intelligence Gathering <i>Information and Market</i> <i>in the Agri-Food Industry</i>	3
FIM	335	Food Marketing Management	3
FOR	466	Natural Resource Policy and Planning <i>Geographic Information Systems</i>	3
FW	419	Applications of GIS <i>GIS</i> to Natural Resource Management	3
MGT	325	Management Skills and Processes	3

c. One of the following courses (3 credits):

ABM	435	Financial Management in the Agri-Food System	3
ABM	437	Agribusiness Strategic Management (W) OR	
FIM	439	Food Business Analysis and Strategic Planning (W)	3

d. One of the following courses (3 credits):

ABM	130	Farm Management I	3
FI	320	Introduction to Finance	3

e. One of the following courses (3 or 4 credits):

STT	200	Statistical Methods	3
STT	201	Statistical Methods	4
STT	315	Introduction to Probability and Statistics for Business	3

f. One of the following courses (3 credits):

ABM	303	Economics of Decision Making	3
EC	301	Intermediate Microeconomics	3

g. One of the following, as approved by the academic advisor (3 credits):

EEP	493	Prof Internship in EEM	3
EEP	490	Independent & Supervised Study (Undergraduate Research) <i>Study Abroad</i>	3

h. 6 credits from a single science discipline with 3 credits at the 300 or 400 level. As approved by the academic advisor.

16. Are there admissions requirements for this program?:

Grade or grade-point average requirements and if so in which course(s), portfolio requirement, audition, essay, etc. If there are not admission requirements other than those required by the University policy indicate "none".

none

17. Type(s) of change(s):

This redesigned and renamed major is the result of a major review of the entire undergraduate program of the Department of Agricultural, Food and Resource Economics (AFRE) that was carried out during 2012-13. The goal is to refocus the EEP major toward environmental management, and to prepare students more for careers in environmental management and policy analysis in business organizations.

18. Students who will be affected by the proposed changes:

Students who would currently enroll in EEP Major

19. Will the proposed change(s) have a negative impact on students? If so, which ones?:

no

Describe impact and explain what accommodations will be made:

20. Reason(s) for change(s):

Result of extensive program review.

DEPARTMENT LEVEL APPROVAL STATUS

Approved: Department of Agricultural, Food, and Resource Economics
12/11/2014 2:26:38 PM by James Hilker for Steven Hanson, Chairperson

SIGNOFFS STATUS

Signed Off: Department of Mathematics
12/11/2014 2:47:09 PM by Pavel Sikorskii for Yang Wang, Chairperson

Signed Off: Department of Accounting and Information Systems
12/11/2014 3:40:21 PM by Lynn Zelenski for Vallabh Sambamurthy, Chairperson

Signed Off: Department of Community Sustainability
12/18/2014 4:29:47 PM by Frances Kaneene for Michael D. Kaplowitz, Chairperson

Signed Off: Department of Economics
12/11/2014 2:41:44 PM by Margaret Lynch for Carl Davidson, Chairperson

No Response by: Department of Finance

Signed Off: Department of Fisheries and Wildlife
12/19/2014 1:29:19 PM by James Schneider for Michael Jones, Acting Chairperson

Comments: Please note: At present, we're offer only 2 sections of FW 419 and do not plan to add additional sections.

Signed Off: Department of Forestry
12/12/2014 8:32:22 AM by David Macfarlane for Richard K. Kobe, Chairperson

Signed Off: Department of Management
12/15/2014 4:46:20 PM by Robert Wiseman for Robert M. Wiseman, Chairperson

Signed Off: Department of Marketing
12/18/2014 4:27:37 PM by R. Dale Wilson for R. Dale Wilson, Chairperson

No Response by: Department of Statistics and Probability

No Response by: Department of Supply Chain Management

COLLEGE LEVEL APPROVAL STATUS

Approved: College of Agriculture and Natural Resources
1/2/2015 11:03:44 AM by Kelly Millenbah for Kelly Millenbah, Associate Dean

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Request to change the name of the **Bachelor of Science** degree in **Environmental Economics and Policy** to **Environmental Economics and Management** in the in the Department of Agricultural, Food, and Resource Economics. The University Committee on Undergraduate Education (UCUE) will consider this request.

Students admitted to the major prior to Fall 2015 will graduate with a Bachelor of Science degree in Environmental Economics and Policy.

Students admitted to the major Fall 2015 and forward will graduate with a Bachelor of Science degree in Environmental Economics and Management.

2. Request to change the requirements for the **Bachelor of Science** degree in **Environmental Economics and Management** in the Department of Agricultural, Food, and Resource Economics. The University Committee on Undergraduate Education (UCUE) will consider this request.

- a. Under the heading **Requirements for the Bachelor of Science Degree in Environmental Economics and Management** make the following changes:

- (1) In item 1., replace paragraph two with the following:

The University's Tier II writing requirement for the Environmental Economics and Management major is met by completing Environmental Economics and Policy 405. That course is referenced in item 3. a. below.

- (2) In item 2., add the following:

Students must achieve a grade of at least 2.0 or higher in each ABM and FIM and EEP course referenced in items 3. a. and in courses taken to fulfill requirements 3. b., 3. c., and 3. d.

Agribusiness Management 435 and 437 and Food Industry Management 339 may be used to fulfill requirement 3. b. if it is not used to fulfill requirement 3. c.

Agribusiness Management 130 may be used to fulfill requirement 3. b. if it is not used to fulfill requirement 3. d.

- (3) Replace item 3. with the following:

The following requirements for the major:

- a. All of the following courses (44 credits):

ABM	100	Decision-making in the Agri-Food System	3
ABM	210	Professional Seminar in Agribusiness Management	1
ABM	410	Advanced Professional Seminar in Agribusiness Management	1
ACC	230	Survey of Accounting Concepts	3
EC	201	Introduction to Microeconomics	3
EC	202	Introduction to Macroeconomics	3
EEP	255	Ecological Economics	3
EEP	260	World Food, Population and Poverty	3
EEP	320	Environmental Economics	3
EEP	405	Corporate Environmental Management (W)	3
EEP	460	Natural Resource Economics	3
FIM	203	Data Analysis for the Agri-Food System	3
FIM	220	Food Product Marketing	3
MKT	327	Introduction to Marketing	3
MTH	124	Survey of Calculus I	3
SCM	303	Introduction to Supply Chain Management	3
- b. Three of the following courses (9 credits):

ABM	130	Farm Management I	3
ABM	222	Agribusiness and Food Industry Sales (W)	3

	ABM	225	Commodity Marketing I	3
	ABM	337	Labor and Personnel Management in the Agri-Food System	3
	ABM	400	Public Policy Issues in the Agri-Food System	3
	ABM	422	Vertical Coordination in the Agri-Food System	3
	ABM	425	Commodity Marketing II	3
	ABM	427	Global Agri-Food Industries and Markets	3
	ABM	430	Farm Management II	3
	ABM	435	Financial Management in the Agri-Food System	3
	ABM	437	Agribusiness Strategic Management (W)	3
	CSUS	354	Water Resources Management	3
	CSUS	429	Program Planning and Evaluation	3
	CSUS	464	Environmental and Natural Resource Policy in Michigan	3
	CSUS	465	Environmental and Natural Resource Law	3
	EEP	404	Public Sector Budgeting and Program Evaluation (W)	3
	FIM	224	Information and Market Intelligence in the Agri-Food Industry	3
	FIM	335	Food Marketing Management	3
	FIM	439	Food Business Analysis and Strategic Planning (W)	3
	FOR	466	Natural Resource Policy	3
	FW	419	Applications of Geographic Information Systems to Natural Resource Management	3
	MGT	325	Management Skills and Processes	3
c.			One of the following courses (3 credits):	
	ABM	435	Financial Management in the Agri-Food System	3
	ABM	437	Agribusiness Strategic Management (W)	3
	FIM	439	Food Business Analysis and Strategic Planning (W)	3
d.			One of the following courses (3 credits):	
	ABM	130	Farm Management I	3
	FI	320	Introduction to Finance	3
e.			One of the following courses (3 or 4 credits):	
	STT	200	Statistical Methods	3
	STT	201	Statistical Methods	4
	STT	315	Introduction to Probability and Statistics for Business	3
f.			One of the following courses (3 credits):	
	ABM	303	Economics of Decision Making	3
	EC	301	Intermediate Microeconomics	3
g.			One of the following courses as approved by the academic advisor (3 credits):	
	EEP	490	Independent and Supervised Study	3
	EEP	493	Professional Internship in Environmental Economics and Policy	3
			Study Abroad as approved by academic advisor	3
h.			6 credits from the same science discipline with at least 3 credits at the 300 or 400 level, as approved by the academic advisor.	

Effective Fall 2015.

~~ENVIRONMENTAL ECONOMICS AND POLICY~~ MANAGEMENT *Management*

Environmental Economics and ~~Policy~~ prepares students for careers that require balancing environmental sustainability and economic development. The major develops economic analysis skills and basic environmental science knowledge and applies these skills and knowledge to analyze the role of environmental considerations in economic decisions of governments, firms and households. The major prepares students for employment opportunities with state, federal and international government agencies, environmental interest groups, environmental consulting firms, and industry. The major also offers students the opportunity to prepare for graduate study in environmental economics or environmental policy studies programs.

Requirements for the Bachelor of Science Degree in Environmental Economics and Policy Management

- The University requirements for bachelor's degrees as described in the *Undergraduate Education* section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Environmental Economics and ~~Policy~~.
 The University's Tier II writing requirement for the Environmental Economics and ~~Policy~~ major is met by completing Environmental Economics and Policy ~~404~~. That course is referenced in item 3. a. below.

Management
Management
 405

The completion of the Environmental Economics and ~~Policy~~ mathematics requirement may also satisfy the College of Agriculture and Natural Resources and the University mathematics requirement.

- The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree.
 Certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate.

Insert (1)

- The following requirements for the major:

CREDITS

a.	All of the following courses:	42 <u>44</u>	<i>Insert (2)</i>
	ACC 230 Survey of Accounting Concepts	3	
	CSE 401 Computing Concepts and Competencies	3	
	EC 201 Introduction to Microeconomics	3	
	EC 202 Introduction to Macroeconomics	3	
	EEP 255 Ecological Economics	3	
	EEP 260 World Food, Population and Poverty	3	
	EEP 320 Environmental Economics	3	
	EEP 404 Public Sector Budgeting and Program Evaluation (W)	3	
	EEP 405 Corporate Environmental Management <i>(W)</i>	3	
	ESA 430 Environmental and Natural Resource Law	3	
	ESA 440 Environmental and Natural Resource Policy in Michigan	3	
<i>EEP</i>	ESA 460 Natural Resource Economics	3	
	ESA 470 Theory and Practice in Community and Economic Development	3	
	GEO 221 Introduction to Geographic Information	3	
	<i>Students who pass a waiver examination will not be required to complete Computer Science and Engineering 401.</i>		
b.	One of the following courses:	3	
	EC 335 Taxes, Government Spending and Public Policy	3	
	EC 435 Public Expenditures	3	
c.	One of the following courses:	3 or 4	<i>2</i>
	FW 203 Resource Ecology	3	
	GLC 201 The Dynamic Earth	4	
	ISB 202 Applications of Environmental and Organismal Biology	3	
<i>e</i> , <i>d</i> .	One of the following courses:	3 or 4	
	STT 200 Statistical Methods	3	
	STT 201 Statistical Methods	4	
	STT 315 Introduction to Probability and Statistics for Business	3	
e.	The following course:	3	<i>2</i>
	MTH 424 Survey of Calculus I	3	
f.	Professional electives: At least 16 credits in applied policy courses approved in writing by the student's academic advisor.		

Insert (3)

Insert (4)

Insert 1

Students must achieve a grade of at least 2.0 or higher in each ABM and FIM and EEP course referenced in items 3. a. and in courses taken to fulfill requirements 3. b., 3. c., and 3. d.

Agribusiness Management 435 and 437 and Food Industry Management 339 may be used to fulfill requirement 3. b. if it is not used to fulfill requirement 3. c.

Agribusiness Management 130 may be used to fulfill requirement 3. b. if it is not used to fulfill requirement 3. d.

Insert 2

ABM	100	Decision-making in the Agri-Food System	3
ABM	210	Professional Seminar in Agribusiness Management	1
ABM	410	Advanced Professional Seminar in Agribusiness Management	1
FIM	203	Data Analysis for the Agri-Food System	3
FIM	220	Food Product Marketing	3
MKT	327	Introduction to Marketing	3
MTH	124	Survey of Calculus I	3
SCM	303	Introduction to Supply Chain Management	3

Insert 3

b.	Three of the following courses (9 credits):			
	ABM	130	Farm Management I	3
	ABM	222	Agribusiness and Food Industry Sales (W)	3
	ABM	225	Commodity Marketing I	3
	ABM	337	Labor and Personnel Management in the Agri-Food System	3
	ABM	400	Public Policy Issues in the Agri-Food System	3
	ABM	422	Vertical Coordination in the Agri-Food System	3
	ABM	425	Commodity Marketing II	3
	ABM	427	Global Agri-Food Industries and Markets	3
	ABM	430	Farm Management II	3
	ABM	435	Financial Management in the Agri-Food System	3
	ABM	437	Agribusiness Strategic Management (W)	3
	CSUS	354	Water Resources Management	3
	CSUS	429	Program Planning and Evaluation	3
	CSUS	464	Environmental and Natural Resource Policy in Michigan	3
	CSUS	465	Environmental and Natural Resource Law	3
	EEP	404	Public Sector Budgeting and Program Evaluation (W)	3
	FIM	224	Information and Market Intelligence in the Agri-Food Industry	3
	FIM	335	Food Marketing Management	3
	FIM	439	Food Business Analysis and Strategic Planning (W)	3
	FOR	466	Natural Resource Policy	3
	FW	419	Applications of Geographic Information Systems to Natural Resource Management	3
	MGT	325	Management Skills and Processes	3
c.	One of the following courses (3 credits):			
	ABM	435	Financial Management in the Agri-Food System	3
	ABM	437	Agribusiness Strategic Management (W)	3
	FIM	439	Food Business Analysis and Strategic Planning (W)	3
d.	One of the following courses (3 credits):			
	ABM	130	Farm Management I	3
	FI	320	Introduction to Finance	3

- f. One of the following courses (3 credits):
 - ABM 303 Economics of Decision Making 3
 - EC 301 Intermediate Microeconomics 3
- g. One of the following courses as approved by the academic advisor (3 credits):
 - EEP 490 Independent and Supervised Study 3
 - EEP 493 Professional Internship in Environmental Economics and Policy 3
 - Study Abroad as approved by academic advisor 3
- h. 6 credits from the same science discipline with at least 3 credits at the 300 or 400 level, as approved by the academic advisor.