Michigan State University

Agriculture, Food, & Natural Resources Education

Student Handbook (5th Edition)

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Michigan State University
Agriculture, Food, & Natural Resources Education Student Handbook (5th Edition)

AFNRE Programmatic Overview

Preparation of educators to teach in AFNRE secondary programs requires a unique curriculum comprising a blend of pedagogy, natural science, technical agriculture and natural resource management, and community sustainability courses to address the program outcomes specified by the National Association for Career and Technical Education (CTE) Career Cluster Agriculture, Food and Natural Resources. The CTE defines the AFNR Career Cluster as:

The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.

Michigan State University as the Land Grant University for Michigan is the only institution positioned to offer a program that prepares an educator to be highly qualified to teach in this career cluster.

Due to changes in recent years, careers in agriculture, food and natural resources (AFNR) offer some of the most abundant opportunities for Michigan's future workforce. More than ever, several complex issues exist for agriculture and natural resources. The U.S. Department of Education aims to incorporate green- and sustainability-related knowledge and skills standards into the existing National Career Clusters including AFNR. Food safety issues such as national outbreaks of *E. coli*, concerns over food quality, transportation costs, climate change, and renewed focus on health benefits of fresh produce have led to a greater interest by the public in local and organic food systems. Wildlife-livestock disease issues such as Chronic Wasting Disease (CWD) relate to public health concerns and create new avenues for study. Finally, Michigan's agricultural lands and natural resources are vital to the economy through agritourism and natural resources-based enterprises. Sustaining these lands affects overall community well-being. MSU's teacher preparation program in Agriculture, Food and Natural Resources Education is unique in the country, with its focus on AFNR sustainability for the benefit of communities in Michigan, the U.S. and the world.

Community Sustainability is an interdisciplinary department within the College of Agriculture and Natural Resources, with the purpose of educating scholars and practitioners who are prepared to address current and future challenges across inter-related issues in agriculture, food, natural resources, recreation, tourism and communities. The Department has a multidisciplinary faculty committed to scholarly programs to prepare teachers in cross-cutting areas that assist in the development of sustainable agriculture, food, natural resources and communities.

AFNRE Educational Objectives

The educational objectives of the AFNRE program include those related to the sustainability core and those related more specifically to agricultural, food and natural resources education. For the sustainability core, the objectives are that students will demonstrate proficiency in the following areas: critical thinking, systems thinking, ecological literacy, economic literacy, boundary crossing, community, equity, civic engagement, leadership, ethics, initiative and practical skills. (These are spelled out in more detail in an attachment to our Assessing Student Outcomes form.)

The educational objectives specific to the AFNRE major are based on the Michigan Standards for Preparation of Teachers – Agriscience and Natural Resources (HX). A summary of how the educational objectives are categorized is presented here and the details can be found at the URL address below.

In summary, graduates of the program will fully understand and be able to apply:

- Program Development Content Knowledge (HX 1.0)
- Technical Content Knowledge (HX 2.0)
- Instructional Material Development Content Knowledge (HX 3.0)
- Program Management Content Knowledge (HX 4.0)
- Leadership Development Content Knowledge (HX 5.0)
- Supervised Agricultural Experience Content Knowledge (HX 6.0)
- Career Education Content Knowledge (HX 7.0)

Additionally, see the American Association for Agricultural Education (AAAE) Standards for a list of competencies required for Teacher Education in Agriculture majors. Standards can be found at the following URL address: http://www.aaaeonline.org/files/ncatestds.pdf

Programmatic Considerations for Students

Applying to Michigan State University as an incoming freshman

Students interested in studying Agriculture, Food, and Natural Resources Education should apply prior to beginning their senior year of high school at the beginning of MSU's open application period. *This usually occurs in mid-August.* If you have questions about the open application period or the application process you should contact The Admissions Office at: http://admissions.msu.edu/Default.asp. **The enrollment code for the Agriculture, Food, and Natural Resources Education major is 5379.**

Applying to Michigan State University as a transfer student

Students interested in studying Agriculture, Food, and Natural Resources Education and are currently at another 4-year institution or community college should apply when appropriate based on advising from Michigan State University AFNR Education (Dr. Michael Everett, everettm@msu.edu, 517-432-0292). If you have questions about transfer student enrollment or the application process you should contact The Admissions Office at: http://admissions.msu.edu/admission/transfer.asp. Additionally, as a transfer student you should consider working with your current advisor to select appropriate classes that transfer to MSU. A Website can be found at: http://www.transfer.msu.edu/. **The enrollment code for the Agriculture, Food, and Natural Resources Education major is 5379.**

Applying to the College of Education as a current MSU student

MSU students and transfer students will need to apply to the College of Education as part of the process to become certified as a Michigan School-based Educator. Students at MSU should apply during the fall of their sophomore year at MSU. Students that are transferring into MSU should apply the fall semester that they arrive on campus. The following Website link includes directions related to the application process. http://education.msu.edu/academics/undergraduate/apply-teacher-prep.asp.

Scholarship opportunities for AFNR Education students

Scholarship monies are important opportunities for students on track to become Agriculture, Food, and Natural Resources Education teachers. Currently, the following scholarship opportunities exist for potential and current AFNR Education students.

FFA Related Scholarships

http://www.michiganffa.com/association/applications/m_scholarships.html

Internship Year Scholarship

Arthur Berkey Agriculture, Food, and Natural Resources Professional Development Scholarship (See Dr. Michael Everett for more details)

Undergraduate Degree Requirements

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 Agriculture, Food, and Natural Resources Education.

The University's Tier II writing requirement for the Agriculture, Food, and Natural Resources Education major is met by completing CSUS301. Those courses are referenced below.

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

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

The complete major can be found on the Registrar's Website at:

https://reg.msu.edu/AcademicPrograms/ProgramDetail.aspx?Program=5379

Agriculture, Food, and Natural Resources Education Major

All of the following courses [56 credits]

____	ANS 110	Introductory Animal Agriculture (4)
____	BS 161	Cell and Molecular Biology (3)
____	BS 162	Organismal and Population Biology (3)
____	BS 172	Organismal Biology Laboratory (2)
____	CSS 101	Introduction to Crop Science (3)
____	CSS 210	Fundamentals of Soil Science (3)
____	CEM 141	General Chemistry (4)
____	CSUS 200	Introduction to Sustainability (3)
____	CSUS 222A	Seminar in Instructional Theory I (1)
____	CSUS 222B	Seminar in Instructional Theory II (1)
____	CSUS 222C	Seminar in Instructional Theory III (1)
____	CSUS 223A	Seminar in Leadership Theory I (1)
____	CSUS 223B	Seminar in Leadership Theory II (1)
____	CSUS 223C	Seminar in Leadership Theory III (1)
____	CSUS 300	Theoretical Foundations of Sustainability (3)
____	CSUS 301	Community Engagement for Sustainability (3)
____	CSUS 343	Community Food & Agriculture Systems (3)
____	FOR 202	Introduction to Forestry (3)
____	HRT 203	Principles of Horticulture (3)
____	IBIO 355	Ecology (3)
____	IBIO 355L	Ecology Laboratory (1)
____	TE 150	Reflections on Learning (3)
____	TE 250	Hum Diversity, Power, and Opportunity in Social Inst. (3)

One of the following [3 credits]

____	ABM 100	Decision-making in the Agri-Food System (3)
____	ABM 130	Farm Management I (3)

One of the following [3 credits]

____	CSUS 464	Environmental and Natural Resource Policy in Michigan (3)
____	CSUS 465	Environmental and Natural Resource Law (3)

All of the following[1] [Teacher Education Certification, 15 credits]

____	TE 302	Learners and Learning in Context – Secondary (4)
____	TE 407	Tchg Sub Matter Div Learners – Secondary (5)
____	TE 408	Crafting Teaching Practice – Secondary (W) (5)
____	TE 409	Crafting Teaching Practice-Secondary Minor (1)

All of the following[2] [Non-Teacher Education Certification, 15 credits]

____	CSUS 493	Internship (3)
____	ANY XXX	Elective credits (9)
____	CSUS 430	Non-Profit Org. Mgt. for Community Sustainability (3) **OR**
____	CSUS 433	Grantwriting and Fund Development (3)

[1]Students that are admitted to the College of Education (COE) will take TE302, TE407, TE408, and TE409. [2]Those students that are not admitted to the COE will take the Non-Teacher Education Certification course credits (15 credits).

Teaching Minors

The College of Education and Michigan State University does NOT require a teaching minor. However, students may consider a teaching minor as the relevance to classroom teaching and science is important. If students select a teaching minor, they must maintain a GPA of a 2.5 as well as pass the MTTC test in the selected teaching minor. If students select a teaching minor, they are encouraged to consider a science-based theme (biology, chemistry, physics, earth science). However, this is not required.

https://reg.msu.edu/academicprograms/Programs.aspx?PType=TE

Below is a list of current Secondary Teaching minors at MSU

Biological Science*	Chemistry	Earth Science
English	Mathematics	Physics

*Students in AFNRE typically minor in Biological Science due to secondary programs offering AFNRE courses for science credit.

Integrated Science (DI) Endorsement

The Integrated Science (DI) endorsement is not a stand-alone teaching major or teaching minor. These courses must be completed in combination with an approved teaching major or minor in Biology, Chemistry, Earth Science, Physics or Physical Science. In combination with these majors, the Integrated Science Endorsement may be substituted for a teaching minor. Also, a certified teacher or teacher candidate with an approved teaching major outside the sciences but with an approved science *minor* may earn an additional endorsement in Integrated Science. See an advisor in the College of Education, 134 Erickson Hall, for more information. Students must earn an overall GPA of 2.5 for the science courses in the list of courses required in **Appendix A** (including any approved course substitutions) as well as in the science teaching major or science teaching minor courses on which the endorsement is based and must pass the MTTC subject area test in Integrated Science – Secondary.

NOTE - PHY 183 and 184, 8 credits, with no additional Physics labs, can substitute for the 200-level physics and lab.

Interim Occupational Certificate (IOC)

Requirements for an Interim Occupational Certificate in Agriculture, Food, and Natural Resources Education include:

1) An earned Bachelor's Degree;
2) Has a major or minor in the field of specialization in which the occupational certificate is being requested;
3) Has a minimum of two years (4,000 hours) of experience in the occupational area concerned or has completed a planned program of directed supervised occupational experience approved by the State Superintendent. The occupational experience shall be characterized as relevant (AFNR) and recent (6 years);
4) Has passed both the MTTC Professional Readiness Examination (PRE-Test) and appropriate subject area exam or exams available at the time of application;
5) Has successfully completed a minimum of 6 semester credit hours of professional or occupational education credit (TE407/408); and
6) The Interim Occupational Certificate is valid for teaching in those courses in which instruction is limited to the occupation specified on the certificate in approved occupational programs.

Each Interim Occupational Certification experience must be verified with three forms of documentation. These methods may include: W-9 Tax Documents, Letters from Supervisors, Pay Stubs, Pictures, Etc. Note that this is not an exhaustive list. Questions about the IOC or documentation process should be directed to Mr. Mark Forbush (forbushm@msu.edu, 989-277-9249). **See below for a document to help you keep track of your IOC hours.**

IOC Example Documentation

There are many ways to provide the three forms of documentation that are required for the 4,000 hours needed for IOC certification. Below is a list of potential ways to document your recent and relevant work experiences:

W-2 Form	Job/Position Description	Picture(s)
Letter of Commendation	Animal Bill of Sale	Journal
Letter of Recommendation	Grain Harvest Bill of Sale	Pay Stubs
Time Sheets	Internship Assignments	Transcripts (Internship only)
Internship Projects and Papers		
Letters verifying work experience from employers		
Statements from clients or suppliers (self-employment)		

Acquisition of IOC Hours[1]

Candidates may use up to 3,000 hours earned from a combination of the following seven alternatives to meet the required 4,000 hours of relevant experience.

- ***Supervised Experiences*** (For-Credit Internships) – (up to 2,000 hours)
  a. Must be completed through a planned program of directed and supervised experience by a postsecondary institution approved by MDE.
  b. Carry course credit indicated on the candidate's official transcript.
  c. Be a planned and comprehensive experience in the candidate's CTE specialty.

- ***Completion of the MSU CTE Teacher Certification Program*** – (up to 2,000 hours)
  a. Student shall complete all academic requirements to complete the degree to receive these hours.

- ***Student Teaching*** – (up to 1,000 hours)
  a. Student teaching placement must be in the specific CTE area for which the endorsement is being sought and within the state-approved CTE program.
  b. Must be supervised by the recommending CTE educator preparation program and documented on the candidate's official transcript.

- ***Occupational Assessment*** – (up to 2,000 hours)
  a. The assessment must be specific to the CTE field and performance must be documented.
  b. The results must be retained by:
     i. The candidate
     ii. The postsecondary institution recommending CTE certification
     iii. The school district applying for the Authorization
  c. A candidate who uses the CTE competency assessment for experience may NOT also use the test for establishing university academic credit.

- ***Business or Industrial Training Program*** – (up to 2,000 hours)
  a. Evidence must indicate that the candidate participated in or instructed a business or industry training program directly related to the specific CTE program in which the ACA or certification is being sought.

- ***Postsecondary Instructor*** – (up to 2,000 hours)
  a. Postsecondary instruction of a CTE program must be in the specific CTE area for which the Authorization or CTE endorsement is sought.

- ***Paraprofessional*** – (up to 1,500 hours)
  a. Paraprofessional hours earned within an approved CTE program may be accepted towards the 4,000 required hours.

Forms of documentation including: W-2's, tax returns, job/position descriptions, letters verifying work experience from employers, and statements from clients or suppliers (self-employment)

[1] CTE: Recent and Relevant Experience Requirements, Michigan Department of Education, May 2018

A 4-Year Plan

As a student, it is critical that you develop a 4-Year Plan of your academic studies at Michigan State University. While developing a 4-year Plan it is very important that you consider: University, College of Agriculture and Natural Resources, AFNR Major, and Minor requirements to obtain your degree. Additionally, students should consider prerequisites that are required prior to taking the next course in the sequence.

Below is one example of a sample of a 4-Year Plan. In this example, the Major is AFNR Education and the Minor is Biology or Biological Science.

Questions and concerns should be addressed to the AFNR Education Academic Advisor (Dr. Michael W. Everett, everettm@msu.edu, 517-432-0292).

A 4-Year Plan For AFNRE Major/Biological Science Minor - Teaching

Fall Freshman
CSUS 200 (3)#*
CSUS 222A (1)*
MTH 116 (5)*
TE 150 (3)*
WRA 101 (4)*

16 Credits

Spring Freshman
ANS 110 (4)*#
CEM 141 (4)**
CSUS 223A (1)*
IAH 20X (4)*
TE 250 (3)*

16 Credits

Fall Sophomore
BS 161 (3)**
BS 171 (2)*
CSS 101 (3)*#
CSUS 222B (1)*
HRT 203 (3)*#
ISS 2XX (4)*

16 Credits

Spring Sophomore
ABM 130 (3)*#
BS 162 (3)**
BS 172 (2)**
CSUS 223B (1)*
EC201 (3)*
CSUS 301 (3)#*

15 Credits

Fall Junior
CEM 143 (4)%
CSUS 222C (1)*
CSUS 300 (3)#*
IAH 2XX (4)*
TE 302 (4)*

16 Credits

Spring Junior
CSS 210 (3) *#
CSUS 223C (1)*
Elective (3)
FOR 202 (3)*#
ISS 3XX (4)*

14 Credits

Fall Senior
CSUS 343 (3)*#
HRT 361(3) **
IBIO 355 (3)**
IBIO 355L (1)**
TE 407 (5)*

15 Credits

Spring Senior
CSS 350 (3) *#
CSUS 464 (3)*#
MMG 301 (3)* or BMB 200 (4)*
TE 408 (5)*
TE 409 (1)*

15-16 Credits

*University Requirements
#Community Sustainability Core
*Biology Minor
#Technical Agriculture
*College Requirements
*AFNRE Degree Requirements
*Teacher Education
%Prerequisite for MMG 301 and BMB 200

*HRT361 is being substituted for PSL250 (4) or PBL301 (3) (for AFNRE students only)
#CSS350 is being substituted for IBIO341 (4) (for AFNRE students only)

Students may also consider an Integrated Science (DI) Certification. An Integrated Science Certification must be taken in conjunction with a teaching science minor (e.g., biology, chemistry, physics or earth science) – See Appendix A

A 4-Year Plan For AFNRE Major – Non-Teaching

Fall Freshman
CSUS 200 (3)#*
CSUS 222A (1)*
MTH 116 (5)*
TE 150 (3)*
WRA 101 (4)*

16 Credits

Spring Freshman
ANS 110 (4)*#
CEM 141 (4)**
CSUS 223A (1)*
IAH 20X (4)*
TE 250 (3)*

16 Credits

Fall Sophomore
BS 161 (3)*
CSS 101 (3)*#
CSUS 222B (1)*
HRT 203 (3)*#
ISS 2XX (4)*
Electives (2)

16 Credits

Spring Sophomore
ABM 130 (3)*#
BS 162 (3)*
BS 172 (2)*
CSUS 223B (1)*
EC201 (3)*
CSUS 301 (3)#*

15 Credits

Fall Junior
CSUS 222C (1)*
CSUS 300 (3)#*
IAH 2XX (4)*
Electives (8)

16 Credits

Spring Junior
CSS 210 (3) *#
CSUS 223C (1)*
Electives (3)
FOR 202 (3)*#
ISS 3XX (4)*

14 Credits

Fall Senior
CSUS 343 (3)*#
CSUS 430 or 433 (3) *#
IBIO 355 (3)*
IBIO 355L (1)*
Electives (5)

15 Credits

Spring Senior
CSUS 464 (3)*#
Electives (6)
CSUS493 (3) – **Summer**

12 Credits

*University Requirements
#Community Sustainability Core
*Teacher Education

*College Requirements
*AFNRE Degree Requirements
#Technical Agriculture

A 4-Year Plan For (_____)

Fall Freshman	Spring Freshman	Summer Freshman
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____ Credits	_____ Credits	_____ Credits
Fall Sophomore	**Spring Sophomore**	**Summer Sophomore**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____ Credits	_____ Credits	_____ Credits
Fall Junior	**Spring Junior**	**Summer Junior**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____ Credits	_____ Credits	_____ Credits
Fall Senior	**Spring Senior**	**Summer Senior**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____ Credits	_____ Credits	_____ Credits

_____TOTAL CREDITS

Interim Occupational Certificate Hours and Documentation

Interim Occupational Certificate (IOC) hours must be **RECENT** (within last 10 years prior to applying for your teaching certificate in May of your internship year (_____). Additionally, hours must be **RELEVANT** or within the field of Agriculture and Natural Resources. Consult with Mr. Mark Forbush (forbushm@msu.edu, 989-277-9249) to determine relevance of IOC hours.

Interim Occupational Position/Job Description	Number of Hours	Documentation Type #1	Documentation Type #2	Documentation Type #3

Internships

Internships are an integral component of an AFNR Education students' program. Recent and relevant work experience (4,000 hours) is required for individuals to achieve their Interim Occupational Certificate (IOC, See page 7).

Students are encouraged to participate in an internship each summer while a student at Michigan State University. Additionally, AFNR students may also consider MSU Study Abroad experiences in the areas of agriculture, food, and natural resources broadly defined.

Students who participate in an internship for academic credit in conjunction with the Department of Community Sustainability are eligible to double their IOC hours up to 1,000 total hours for their experience. Students that are interested in an internship for credit should contact the program coordinator, Dr. Michael Everett (everettm@msu.edu, 517-432-0292**).**

Students are also encouraged to participate in internships that build on their technical content knowledge in the areas of (Animal, Plant, Ag Business, or Natural Resources. Internships may include, however are not limited to examples such as:

Monsanto	Dekalb Seed	Pioneer Seed	Grain Elevators
Michigan Parks	Dow AgroSciences	John Deere	Case IH
The Andersons	Beck Seeds	MSU Extension	Crop Production Services
MDNR	MDEQ	MDARD	County Parks
State Parks	Federal Parks	Helena	Michigan Corn

Note that this is not an exhaustive list, but only a few of the many examples. Please consult with AFNR faculty to determine an appropriate internship that meets the needs of the IOC.

Michigan State University's College of Agriculture and Natural Resources provides valuable information about internship opportunities through job fair opportunities (see the CANR website). http://www.canr.msu.edu/careers.

If you plan on attending these fairs to find internship opportunities a strong resume and professional appearance is strongly recommended.

Calendar of Important Events

High School Junior Year
- Apply for the Challenge 24 Program (January)
- Take SAT
- Attend Challenge 24 Program (If selected, July)
- Collect IOC hours and documentation (all year)

High School Senior Year
- Apply to Michigan State University (August prior to senior year)
- Apply for the Michigan FFA AFNRE CDE Contest (September-October)
- Apply for Financial Aid (January)
- Freshman Orientation also known as AOP (June-August)
- Collect IOC hours and documentation (all year)

MSU Freshman Year
- Select a Teaching Minor (If appropriate)
- Retake SAT (June-August) – If necessary (See * below)
- Collect IOC hours and documentation (all year)

MSU Sophomore Year
- Apply for admission to the College of Education (November)
- Collect IOC hours and documentation (all year)

MSU Junior Year
- If a **Transfer student**, apply for College of Education and Complete Accelerated Grid (Nov)
- MTTC Subject Major Area Test (Agriscience and Natural Resources)
- MTTC Subject Minor Area Test (e.g. Biology, Chemistry, Math – If appropriate)
- Collect IOC hours and documentation (all year)

MSU Senior Year
- Complete all coursework as required by MSU
- Collect IOC hours and documentation (all year)
- Work with MSU Faculty and Michigan AFNR Teachers to develop an appropriate placement

MSU Intern Year
- Collect IOC hours and documentation (all year)
- Apply for your Provisional Teaching Certificate
- Apply for your Interim Occupational Certificate

*Please go to the following link for the SAT, ACT, and alternative test scores to the MTTC PRE.
https://education.msu.edu/academics/undergraduate/apply-teacher-prep.asp

I _____ have read and acknowledge the calendar requirements for the AFNRE SBAE Program in the AFNRE Handbook.
Date_____ Signature _____

AFNR Education Student Checklist

Have you…	YES or NO
Applied for the Challenge 24 Program (H.S. Soph or Jr Year)?	
Applied for the Michigan FFA CDE (H.S. Fresh – Senior Year)?	
Applied to Michigan State University?	
Applied for Financial Aid?	
Applied for AFNR Scholarships?	
Met with your AFNR Major adviser?	
Developed a 4-Year Plan?	
Taken and passed SAT Evidence-Based Reading/Writing – 480, and Mathematics – 530? Note that the College of Education may use this metric in the decision-making process for admission into the CoE.	
Applied to the College of Education?	
Selected a Teaching Minor?	
Met with your Teaching Minor adviser?	
Met with your adviser in the College of Education?	
Taken the MTTC (Subject Area MAJOR) Test?	
Taken the MTTC (Subject Area MINOR) Test?	
Determined your placement for your internship year?	
Collected all of your IOC documents for certification (4,000 hrs R/R)?	
Applied for your Provisional Teaching Certificate?	
Applied for your Interim Occupational Certificate?	

I _____ have read and acknowledge the programmatic requirements for the AFNRE SBAE Program in the AFNRE Handbook.
Date_____ Signature _____

Networking Guide

Networking is an important part of the AFNRE profession. Networking is defined as information gathering utilizing family, friends, teachers, community members, and AFNRE career professionals. When networking, seek to gather as much information about the AFNRE career field. Remember the more people network with, the more successful you will likely be in your professional careers.

Name	Position, Title, and Affiliation	Email Address	Mailing Address	Phone	Record of Contact (Date and Comment)

MSU AFNR Education Team Faculty Bios

Dr. Michael Everett (everettm@msu.edu, 517-432-0292)
Michael Everett is a Senior Academic Teaching Specialist and Adviser within the Department of Community Sustainability at Michigan State University. Michael has 10 years of teaching Agriculture, Food, and Natural Resources Education at the secondary level and holds a Michigan Professional Teaching Certificate in Agriculture and Natural Resources and Mathematics. Michael's teaching assignment includes courses in the environment, sustainability, organizational management, and teaching and learning. Michael's research interests include the use of socio-psychological methods to improve undergraduate education.

Educational Background
B.A., Mathematics, Olivet College
M.S., Crop and Soil Science, Michigan State University
Ph.D., Community, Agriculture, Recreation, and Resource Studies, Michigan State University

Mr. Mark Forbush (forbushm@msu.edu, 989-277-9249)
Mark Forbush is an Academic Specialist in the Department of Community Sustainability at Michigan State University. Mark has over 30 years of teaching Agriculture, Food, and Natural Resources Education and holds a Michigan Professional Teaching Certificate in Agriculture and Natural Resources and Science. Mark also serves as the Michigan State Advisor for Agriculture, Food, and Natural Resources Education as part of the Michigan Department of Education and Career and Technical Education and teaches courses preparing pre-service AFNRE teachers to become school-based AFNRE teachers.

Educational Background
B.S., Agricultural and Natural Resources Education
M.S., Agricultural and Natural Resources Education

Dr. Jennifer Hodbod (jhodbod@msu.edu, 517-355-0312)
Jennifer Hodbod is an Assistant Professor in the Department of Community Sustainability at Michigan State University. At Michigan State, Jennifer teaches courses in community food systems and community sustainability. Jennifer's research focuses on resilience of community food systems – environmentally and economically sustainable food systems that can equitably feed a growing global population.

Educational Background
M.S., Environmental Geoscience, University of Bristol
M.R., Environmental Social Sciences, University of East Anglia
Ph.D., Environmental Social Sciences, University of East Anglia

Dr. Buddy McKendree (rbm@msu.edu, 517-355-0102)
Buddy McKendree is an Assistant Professor in the Department of Community Sustainability at Michigan State University. Buddy graduated with a degree in Agricultural Education from the University of Florida before teaching middle school and high school agriculture in Florida and Indiana. At Michigan State, Buddy teaches courses in agriculture, food, and natural resources education, and his research focuses on metacognition and self-regulated learning.

Educational Background
B.A., Agricultural Education, University of Florida
M.S., Agricultural Education, Kansas State University
Ph.D., Curriculum and Instruction, Kansas State University

Dr. Aaron McKim (amckim@msu.edu, 517-432-0318)
Aaron McKim is an Assistant Professor in the Department of Community Sustainability at Michigan State University. Aaron's teaching certification is in Indiana, where he taught middle school and high school agriculture. At Michigan State, Aaron teaches courses in agriculture, food, and natural resources education, leadership, and community sustainability. Aaron's research focuses on how teachers combine agriculture, leadership, and science content within their classrooms.

Educational Background
B.S., Agricultural Education, Purdue University
M.S., Agricultural Education, Oregon State University
Ph.D., Science Education, Oregon State University

Dr. Matt Raven (mraven@msu.edu, 517-432-0293)
Matt R. Raven is a Professor in the Department of Community Sustainability at Michigan State University. Dr. Raven obtained his Ag Specialist and Life Science Single Subject teaching credentials from University of California at Davis. Prior to Michigan State University he served on the faculty at Montana State University and Mississippi State University. His research interests include instructional technologies and their educational efficacy, teaching and learning in higher education, and knowledge sharing and creation in social networks with emphasis on diffusion and adoption of innovations.

Educational Background
B.S., Plant Science, University of California at Davis
M.S., Agricultural Education, Kansas State University
Ph.D., Agricultural Education, The Ohio State University

Mr. Dave Wyrick (dwyrick@msu.edu, 517-432-0756)
Dave Wyrick is the Michigan FFA State Executive Secretary. David Wyrick was principal of Byron (Mich.) High School from 1998 to 2005, and an Agriscience teacher for 22 years from 1976 to 1998, all at Byron. His Agriscience and FFA programs were consistently among the best in the state, and his students won numerous regional, state and national awards in FFA-related competitions. Among other responsibilities as State FFA Executive Secretary, he works closely with the state FFA officer team, directs the planning of the annual FFA State Convention, and coordinates the many career development and skills contests that occur throughout the year. Michigan's 111 FFA chapters *have more than 7,000 members.*

Educational Background

B.S., Agricultural Education, Michigan State University
M.S., Agricultural Education, Michigan State University

Appendix A – Integrated Science (DI) Endorsement

Physical Science and Earth Science

CEM 141	General Chemistry		4
CEM 142	General and Inorganic Chemistry		3
CEM 161	Chemistry Laboratory I		1
CEM 143	Survey of Organic Chemistry		4
OR			
CEM 251	Organic Chemistry I	**AND**	3
CEM 252	Organic Chemistry II	**AND**	3
CEM 255	Organic Chemistry Lab		2
PHY 231	Introductory Physics I		3
PHY 232	Introductory Physics II		3
PHY 251	Introductory Physics Laboratory		1
PHY 252	Introductory Physics Laboratory II		1
GLG 201	The Dynamic Earth		4
GEO 203	Introduction to Meteorology		3
AST 207	The Science of Astronomy		3

Biological Sciences

BS 161	Cell and Molecular Biology		3
BS 171	Cell and Molecular Biology Laboratory		2
BS 162	Organismal and Population Biology		3
BS 172	Organismal and Population Biology Lab		2
PS 250	Introductory Physiology		4
OR			
IBIO 355	Ecology	**AND**	3
IBIO 355L	Ecology Laboratory		1

Integrative Science

ISE 401	Science Laboratories for Secondary Schools		4
ISE 420	Integrative Science Research		3
		TOTAL	**50-55 Credits**