

Agribusiness

Center for Integrative Studies Individual Major Proposal

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Introduction

Agribusiness Major is an academic crossroad of the study of economics, biology, environmental studies, and the cultural influences that affect agriculture and business. Agriculture deals with a wide variety of topics from sustainability to natural science, market analysis to ethics. This major seeks to gain insight into this broad range of topics, although intently focusing on the close relationship between economic and biological factors within agricultural business. More concisely, *Agribusiness* Major is to study the economic factors involved in agriculture, all the while gaining relevant scientific, methodological, and analytical background to be applied in the field. Specifically, this major seeks to provide sufficient and broad preparation for entrance into the growing Hydroponic Farming. It is to feature an internship with Vines & Rushes Winery installing a semi-commercial sized hydroponic system, acquiring on the job experience before the completion of the major capstone project. Within agricultural industries, including the hydroponic industry, global cultural values influence how business is conducted and how economies function. Domestically, there is prominent and increasing Latino influence. The Spanish Major will be completed simultaneously in an effort to increase cultural awareness and gain critical language skills. The *Agribusiness* course load will be complemented by the “Management Studies Concentration,” incorporating a practical business focus to the major.

Big Questions

1. How do national and local regulations influence the agricultural economy?
 - How is the Midwest specifically impacted by agricultural/business regulations?
2. What scientific and environmental factors are most important in the future of agriculture?
 - What are the main contemporary issues within the domain of Agribusiness?
3. What issues will agriculture face in the coming years and how can we prepare for them?
 - In light of observable climate change, what specific action should regulators, producers, and distributors take to ethically foster a prosperous future?

Course Requirements

The Social Science Component

1. *Econ 263: Statistics for Econ*

- a. Reason: This course emphasizes skills necessary to understand and analyze economic data. Topics include descriptive statistics, probability and random variables, sampling theory, estimation and hypothesis testing, and practical and theoretical understanding of simple and multiple regression analysis. Applications to economic and business problems use real data, realistic applications, and econometric/statistical software. In conjunction with other economics courses, this course becomes essential towards conducting valuable research as well as effectively analyzing data in the workplace.
- b. In Progress: Fall 2019

2. *ECON 261: Macroeconomics*

- a. Reason: This course addresses the economic institutions and forces that determine levels of income, output, employment, and prices in our society. Questions related to employment prospects and standard of living provide an important focus. A comprehensive understanding of the market as a whole is essential to conducting business at any level. The student will gain an understanding of corporate and government actions at a large scale and thus how the economy can be manipulated.
- b. Completed: Spring 2019

3. *ECON 262: Microeconomics*

- a. Reason: Microeconomics is the study of the resource allocation decisions by households, producers, and government and the resource allocation process in various types of market structures. Students are trained in the use of economic models and optimizing techniques to address a variety of real-world problems, including case studies from business and public policy. In conducting business, it is equally important to understand markets in their local form and especially in the context of agriculture.
- b. Completed: Fall 2018

4. *ECON 382: International Econ*

- a. Reason: This course offers students an integrated approach of theory, policy, and enterprise to understand international trade and investment. The course focuses on the costs and benefits of global economic interdependence for students who plan to enter an international business career or to work for the government and international organizations in activities affected by international economic relations. As agriculture and commodity exchange is a broadly global industry, it is only sensible that a course pertaining to the international aspects of markets be included.
- b. Planned: Fall 2020

5. *MGMT 383: Management Policy and Strategy*

- a. Reason: This course addresses specific managerial planning and decision-making that will directly translate into relevant and applicable knowledge in the workplace. Furthermore, through the case analysis exercises that ask students to identify, analyze, and solve organizational issues, the student will complete the course with a reserve of problem-solving strategies. In agriculture, as any other business, many managerial challenges are to be solved. Engaging complex labor circumstances and a necessary shift towards sustainable practices of production and distribution, the student will acquire important preparation for their entrance into the field.
- b. Planned: Spring 2021

The Natural Science Component

6. *BIO 150: Biodiversity Foundations*

- a. Reason: This course guides students as they develop the context, skills, and modern framework on which to continue their study of biology. Students explore the history, evolution, and diversity of life in the context of genetics and comparative genomics. The laboratory emphasizes question-asking, problem-solving, and exploring biodiversity, and students have multiple opportunities to practice and communicate their science. As a precursor to other relevant courses in biology pertaining to agriculture, this course will also provide foundational knowledge to understand the scientific complexities involved in the industry.
- b. In progress: Fall 2019

7. *BIO 231: Microbiology*

- a. Reason: Microbiology examines the morphology, composition, metabolism, and genetics of microorganisms with emphasis on bacteria and viruses. Students examine the dynamic impact of microbes on humans, the immune response, and the role of microbes in the environment. This discipline finds its way into many areas of agriculture, from soil composition to fermentation, and will assist the student in understanding the complexities of specific industry practices.
- b. Planned: Fall 2020

The Sustainability Component

8. *ENVST 232: Environmental Policy and Regulation*

- a. Reason: This course analyzes environmental regulation in the United States with respect to its historical evolution, its ability to achieve environmental targets, its efficiency or cost-effectiveness, its distributional impact on jobs, people, and industries across the country, and its international ramifications. Environmental regulation directly affects and influences the agricultural industry; thus, an understanding of the interplay between regulators, industry leaders, and environmental initiatives will assist the student in best regarding these issues.
- b. Planned: Fall 2020

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9. *PHIL 257: Environmental Ethics*

- a. Reason: Societies are guided by many values, including economic goals, freedom, and fairness. Although, especially in regards to food production, considerations of the philosophical and ethical issues are crucial. Characteristic topics include the character and control of pollution, the conflict between preservationism and conservationism, corporate and governmental responsibility for the eco-crisis, and more.
- b. Planned: Spring 2021

The Agriculture Component

10. GA-22: *El vino en españa: historia, cultura y economía (Universidad de Sevilla)*
Wine in Spain: History, Culture, and its Economics

- a. Reason: The objective of this course is for the students to know the most important cultural and economic elements of Spain, the wine, its history, the types of wine and their forms of production, the primary viticultural regions, its impact on the Spanish economy at the local and countrywide level, and the recent development of touristic activities that surround the industry. This course will provide specific and in-depth information to the student about one corner of the broad agricultural industry and will serve to provide context for many other areas of operation.
- b. Planned: Spring 2020

11. Department TBD 394: *Academic Internship*

- a. Reason: TBD This internship will seek to engage the business side of the hydroponic farming industry. During the months leading up to the 2021 Interim term, the student will maintain connections with CEA operators in proximity to the twin cities, notably both St. Olaf graduates. All the while utilizing operator connections to seek the arrangement of an internship about the January term.. This internship will deepen the students' understanding beyond management and economics coursework through direct application of learned principles. Additionally, this opportunity will seek to broaden the students work experience, diverging from the production experience that is summarized in the “Context for *Agribusiness*” section.
- b. Planned: Interim 2021

12. IS 392: *Individual Final Project*

- a. Reason: Two possible courses of study are listed in the “Capstone Research Project” section. Out of the tentative options, the student is most interested in completing the second and has confirmed access to multiple resources and databases in anticipation thereof.
- b. Planned: Spring 2021

Supplementary Course List

1. *ECON 121: Principles of Economics*

- a. Reason: This course takes an analytical approach to economic reasoning and contemporary issues. The course introduces microeconomic and macroeconomic theories with applications to relevant topics, such as employment, growth, environmental protection, affirmative action, exchange rate fluctuations, taxes, and welfare reform. Students explore economics as an intelligent approach to understanding our daily lives as citizens, workers, managers and consumers. All of these themes prove necessary in effective preparation for the additional Economics courses included in the major.
- b. Completed: Spring 2018

2. *PSCI 121: International Relations*

- a. Reason: War and peace, justice and power -- these are age-old topics of politics among nations. This course examines them by emphasizing certain problem areas in the world and evaluating the principal theories for understanding international politics. Another crucial aspect of any market and especially commodity markets, is a deep understanding of the interplay of nation states and how interaction, both politically and economically, directly influence each other.
- b. Completed: Fall 2017

3. *BIO 105: Biology Concepts (UW-Oshkosh)*

- a. Reason: This course is an introduction to the biological sciences and addresses phenomena common to a diversity of life forms; each biological organization, cell biology, genetics, and evolutionary concepts are all introduced. Through this course, a basic understanding of biology is established to foster the best learning in future biology courses.
- b. Completed: High School

4. *PHYS 107: General Physics (UW-Oshkosh)*

- a. Reason: The aim of this course is to teach the basic physical laws of Nature and to develop the student's understanding of the physical phenomena from everyday life. This provides an important body of knowledge in the field of Physics and develops one's ability of observation and comprehension of physical phenomena. In other words, this course assists in fostering more breadth in scientific understanding, which will assist, in some fashion, in all future scientific inquiry.

- b. Completed: High School
5. *MATH 120: Calculus*
- a. Reason: Comprehensive math skills are crucial in applying both economic and scientific methodology to real world problems relating to agriculture and the analysis thereof. Calculus, specifically, provides students with tools to more effectively use and efficiently analyze basic models in both disciplines as well. This class serves to secure these skills and prepare the student for further success in additional economics and biology courses.
 - b. Completed: Spring 2018

Complementary Management Studies Concentration

The Management Studies Concentration consists of five courses including *Principles of Economics*, *Principles of Accounting, Management*, one elective, and a complementary course from the students major. The elective will be *MGMT 383: Management Policy and Strategy*. This course, as included above, is also a component of the individual major course load. In addition to the five courses, one internship or significant work experience and one experiential learning activity are required. As covered in section “Context for *Agribusiness*,” significant work experience at a winery will satisfy the first requirement and *MGMT 394: Academic Internship*, which is also included in the course load above, will satisfy the second requirement. Finally, a capstone project will be completed during the student’s senior year. This concentration is tightly woven into *Agribusiness* Major and strengthens the business component of the major immensely. This concentration is to be seen as an extension of *Agribusiness* major.

Complementary Spanish Major

The Spanish Major engages students in a wide coursework pertaining to the cultural diversity and complex history of the Spanish-speaking world. This experience broadens the students cultural scope and will foster a more inclusive and considerate model of problem solving as the student proceeds into the workplace. Additionally, language skills will give foundational support for more effective communication. Out of the 8 required courses, a few are of particular benefit in conjunction with the *Agribusiness* course load.

1. *SPAN 231: Intercultural Connections in Global World: U.S. & Spanish-Speaking World*
2. *SPAN 276: Spanish as a First and Second Language*
3. *SPAN 272: Heritage Latin America*

Rationale for the Major

Agriculture is a human necessity that drives society, is foundational to culture, and is essential to a thriving global economy.

The business of agriculture necessitates both economic understanding and practices as well as biological knowledge and application; an intersection of these two disciplines provides a more focused manner of utilizing St. Olaf course offerings towards the goal of agricultural work in a more specific manner than either of the Economics or Biology Majors can do individually. Additionally, an understanding of the cultural values that influence agricultural business globally and domestically is crucial in the study.

Beyond the general benefit of breadth in knowledge, the specific combination of classes pertaining to domestic and global markets, biology relevant to agriculture, specific environmental regulation, ethical business practices, and cultural influences allows for a more concise and focused study of the agricultural industry. As it is positioned in a heavily agriculturally influenced community, St. Olaf provides ample offerings for hands-on experience and connections to local industry.

This major will seek to apply courses from a diverse range of disciplines, including economics, biology, environmental studies, math, philosophy, and management studies, with considerations to specific Latino cultural influence, all with an underlying theme of application to agriculture. This interdisciplinary list represents many different areas of study and each course contributes to the core goal and “big questions” proposed for the major.

The last phrase within the college’s mission statement clearly aligns with the goal of *Agribusiness* Major, “...explore meaningful vocation in an inclusive, globally engaged community....” This major seeks to shed light on the prominent and crucial industry of agriculture, the practice of food production, which, regardless of region and development, is a meaningful and crucial pursuit. With the diverse perspectives engaged in St. Olaf courses and the wide range of courses this major seeks to include alongside the Spanish Major and Management Studies Concentration, a grand range of knowledge and perspective will be reaped from this major and demonstrate a poignant and broad liberal arts perspective in its completion.

Context for *Agribusiness*

I have been long engaged in the natural world and have grown up around agricultural communities for the majority of my life. In Boy Scouts, I learned an early reverence and respect for the land and participated in conservation initiatives frequently throughout my eventual path to an Eagle Scout. In high school, I was deeply interested in biology, participating in independent research multiple times, as well as field research with porcupines for three consecutive years. Additionally, I helped construct and ran a small scale aquaponic farm at my school through my graduation. In the company of a classmate and friend, I assisted in writing a comprehensive business plan for a commercial aquaponic farm and restaurant that brought us to compete at the national level of FBLA. Along a similar timeline, I began to work at a local strawberry farm and winery when I was twelve years old. This early exposure to agricultural practices, but also the business that surrounds them, fostered a profound respect for and understanding of this industry. I took on many roles, primarily during the summer, ranging from pruning, planting, harvesting, and processing, to fermentations, lab work, inventory management, and customer relations. All of which, further deepening the roots of agriculture within me.

As I plan an *Agribusiness* Major now, I reflect on the work experience I have had positively, although I recognize that my vocation is not to make alcohol, though charming and fulfilling--I seek to contribute to the growing industry of hydroponic agriculture as we barrel into harsher climates globally, potentially debilitating traditional practices. The capacity to grow less pest ridden, faster-growing. That is to say that much of what I have completed has stemmed from volition and has required much personal accountability to see it through completion. As I look forward, I understand the route of an individual major to continue a legacy of curiosity and enthusiasm that will prepare me for continuously growing challenges and responsibilities.. My previous experience in multiple large-scale personal projects, such as an Eagle Scout project, two cases of independent research, the personal development and management of a functional food production system, and the successful completion and presentation of a comprehensive agriculturally related business plan all give me good faith in my ability to succeed in my future endeavours of this independent major and the accompanying capstone project.

Capstone Research Project

1. An economic, technological, and applied analysis of the emerging and growing hydroponic agricultural market, taking into account disruption of markets using traditional methods and economic feasibility of hydroponics.

A.. This project will be include two overarching steps:

- The implementation of a semi-commercial-sized hydroponic system at Vines & Rushes Winery in Ripon, WI
- Competing in the Ole Cup with an original business idea in the hydroponics industry.

This project will serve the student in many ways, highlighting economic research, technical understanding of hydroponic systems, and thorough considerations into the business aspects.

The Web Portfolio

The web portfolio will include this proposal as well as a selection of work produced throughout the outlined course load, an annotated bibliography of resources used in the completion of *Agribusiness* Major, a series of links connecting coursework to goals of the major and proposal in an integrative fashion, and finally, all materials produced throughout the senior project. This portfolio will sum all of the planning, work, and products of this major, providing a comprehensive overview of *Agribusiness* Major in its completion. Additionally, the portfolio will seek to bridge the gap to communities outside of St. Olaf, sharing the insight and productivity that is gained over the course of this major.

Consultations

Meeting with Ann Schaenzer, Research & Instruction/Data Services Librarian:

The meeting consisted of a brief summary of what *Agribusiness* major seeks to study and of the specific research projects included in the proposal. With this in mind, Ann shared a list of resources that the St. Olaf library offers. Firstly, she referred to the “Subject Guides” located on the Catalyst homepage, noting that these will each include specific database suggestions for their respective disciplines. Secondly, she offered the service “Browzine” as a quick manner of referencing the contents of a database, without needing to gain access to specific articles. She continued to list relevant databases and journals including SciTech Premium and the Journal of Wine Economics, both of which will be used in the process of capstone research and other projects moving forward. Finally, she suggested the use of both “The Minnesota Small Business

Assistants Office” and comparable resources for other states as well as the Federal Department of Agriculture online resources. Nearing the end of the meeting she discussed the possibilities for utilization of any of the three librarians for additional help in the future as each have their own specialties.

Meeting with River Gerding and Carlos Fernandez Lopez:

Two other CIS majors joined me for a discussion to describe and critique each others majors. River gerding is planning a *Mathematical Economics* Major and Carlos is planning a *Global Development and Social Enterprises* Major. River offer many editorial critiques, helping me clean up formatting and rephrase sentences to communicate precisely what I mean to write. His advice was especially helpful when revising the “Introduction” and “Rationale” sections. His most critical advice advised me to articulate the relevance of included disciplines more concisely, strengthening the ties between coursework and importance thereof. Carlos offered similar editorial advice, specifically pointing out redundant vocabulary throughout the proposal, but also wisely added that I needed to clarify why this major is not the same as the individual study of biology and economics. With this in mind I revised my Introduction to include a stronger defense of the necessity for both disciplines within agricultural business. Both peers were helpful in making this proposal more presentable and likewise, more concise and meaningful.

Meeting with Seth Binder, Professor of Economics and Environmental Studies:

Professor Binder was keen to offer advice, pulling from both of his disciplines here at St. Olaf. I informed him of my desire to generally study both economics and biological science in order to orient an individual major towards work in the agricultural field and he said he felt as if it was missing something. He said that in order to encompass a more complete major surrounding agriculture, I should consider a few more things; firstly, adding an environmental policy course (which I have since included), secondly, to consider having discussions with other agriculturally involved faculty, such as Kathy Shea, professor and head of StoGro, Anthony Becker, head of the econ department and professor of agricultural econ courses, or Jerry Lee, professor and personal honey producer, and thirdly and finally, to think critically about options for potential independent studies craftily incorporating agriculture and economics as well as potential internships that could also fill those two needs. This meeting proved to be very informative and helped me proceed into the final steps of course planning and proposal writing. I have since had conversations with both Professors Jerry Lee and Anthony Becker and have acquired helpful information from both meetings. Afterwards, I gained the assistance of Professor Becker as my advisor for this independent major.

Course Grid

Major:	Agribusiness	Course Name	Course #	Completed?	Spanish #	Department	Course Name	Course #	Completed?
#	1 ECON	Microeconomics	262	Y	1	SPAN	X	250	Y
	2 ECON	Macroeconomics	261	Y	2	SPAN	X	275	Y
	3 ECON	International Econ	382	S1	3	SPAN	X	276	Y
	4 ECON	Statistics for Econ	263	IP	4	SPAN	X	314	IP
	5 ENVIRST	Environmental Policy	232	S1	5	SPAN	TBD	Seville	J2
	6 BIO	Intro Biology	150	IP	6	SPAN	TBD	Seville	J2
	7 MGMT	MGMT Policy and Strategy	383	S2	7	SPAN	X	300+	S1
	8 BIO	Microbiology	231	S1	8	SPAN	TBD	250+	S2
	9 PHIL	Ethics, Econ & Markets	258	S2	MGMT Studies				
	10 Seville SOC	WINE In Spain	GA-22	J2	#	Department	Course Name	Course #	Completed?
	11 MGMT	Academic Internship	394	SJ	1	ECON	Principles of Econ	121	Y
	12 CIS	Ind. Final Project	392	S2	2	SPAN	X	250	Y
	Supporting:				3	MGMT	Management	251	Y
	1 ECON	Principles of Econ	121	Y	4	MGMT	Principles of Acct.	225	Y
	2 POLISCI	International Relations	121	Y	5	MGMT	Policy and Strategy	383	SJ
	3 BIO	Biology Concepts	105	Y					
	4 PHYS	General Physics	107	Y					
	5 MATH	Calculus	120	Y					
Courses:	GES				Course Grid:				
	HWC/WRI	FREN 265		IP	Junior 1	Junior J/2	Senior 1	Senior J	Senior 2
	IST	BIO 150		IP	ECON 263	SPAN 250+	ECON 382	AI 300+	CIS FINAL
	HWC/ALS-A	Seville		J2	BIO 150	SPAN LIT	ENVR 232		PHIL 258
	WRI	Seville - Lit		J2	FREN 265	GA-22 Wine	BIO 231		MGMT 383
	WRI	International Econ		S1	SPAN 314	TBD	SPAN 300+		SPAN 250+
	EIN	PHIL 258		S2		TBD			
						TBD			
						TBD			