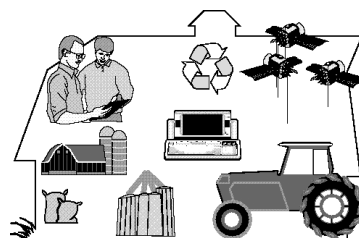


2013-2014

Agricultural Systems Management Student Handbook

Student Services Coordinator
Fax
joinabe@ecn.purdue.edu
www.purdue.edu/abe

765-494-1172
765-496-1115



Purdue University
Agricultural & Biological Engineering
ABE Building
Student Academic Center, Room 201
225 S. University Street
West Lafayette, IN 47907-2093

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If you do not find an answer in this document, contact Yvonne Hardebeck, 494-1172, hardebey@purdue.edu or Dan Taylor, 494-1181, taylordc@purdue.edu.

This handbook is a guide. Changes may have been made since this version was completed. Please see your advisor if you have questions. If you need to see an older version of the handbook, please contact Yvonne (room 201 or hardebey@purdue.edu).

Introduction

Welcome to Purdue University and the Department of Agricultural and Biological Engineering!

The Agricultural and Biological Engineering Department is dedicated to providing a stimulating, educational environment for *all* students. The faculty and staff in the Department are committed to assisting students toward enriching, rewarding, and professional experiences at Purdue.

This handbook has been prepared to help students understand the requirements for Agricultural Systems Management major, give guidance for selecting various elective courses in order to achieve success in their academic careers at Purdue University, and also provide useful information about the academic aspects of the department.

The Department of Agricultural and Biological Engineering (ABE) at Purdue University applies engineering and management principles to agriculture, food, and biological systems. A college education in one of the programs of the Agricultural and Biological Engineering Department will prepare students for many exciting career opportunities in the diverse areas of production of food and other biological materials, processing systems, and conservation management of land and water resources. A student can select from these programs: Agricultural Systems Management (ASM), Agricultural Engineering (AE) [specializing in either Machine Systems Engineering (MSE) or Environmental and Natural Resources Engineering (ENRE)], or Biological Engineering (BE). Both the AE and BE programs lead to a BS in Agricultural and Biological Engineering, while the ASM program leads to a BS in Agriculture. The Biological Engineering program offers dual degrees with either Pharmaceutical Sciences or Biochemistry. ABE also offers a BS/MS program. This handbook regards the ASM program. Information on the others is available at <https://engineering.purdue.edu/ABE>.

Employment opportunities for ASM students are excellent and will undoubtedly continue to increase as the world populations demand more abundant supplies of nutritious, high quality food and biologically based fuel, feed, and fiber products at affordable prices. Increased opportunities will also result from greater recognition of the needs for an abundant supply of clean water and preservation of natural resources. ASM students are uniquely qualified to cope with the various technical and management aspects of production and processing of food and other biological materials within the constraints of environmental protection and natural resources conservation.

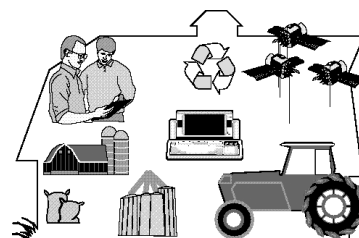
The mission of the ABE department is:

“To prepare students, citizens, and industry for the future through innovative education and extension/outreach programs and the discovery of knowledge.”

www.purdue.edu/abe

What is Agricultural Systems Management?

Agricultural Systems Management prepares individuals to organize and manage environmentally sound technology-based businesses. The emphasis is on planning and directing an industry or business project with responsibility for results. National and international job opportunities include:



- manufacturing and processing operations
- advice and trouble-shooting help on technical equipment (or projects)
- planning buildings and equipment to fit and work together, working with the handling and flow of materials such as grain, feeds, chemicals, vegetables, fruits, etc. and products made from them
- using technical training in selling or demonstrating products and equipment
- teaching people about product use and value
- managing and operating a farm or agri-business
- applying technology for precision agriculture

Agricultural Systems Management is based on an understanding of how equipment and buildings are used with plants and animals and their products. These processes require an understanding of biological sciences to produce and maintain top product quality.

Computer skills are taught and used throughout the curriculum. Computers are used to collect and analyze data, and then using that information, to control machines and processes. Other uses involve planning layouts of equipment and buildings, creating graphics for reports, etc. While traditional computer programming is not taught, ASM students graduate with more computer application experience than other students in Agriculture.

Agricultural Systems Management students also take a series of courses in communications, business management and biological sciences, in addition to their specialty courses based in the Agricultural and Biological Engineering Department. The program provides an in-depth technical knowledge for selecting and applying advanced technologies in the food system. Graduates are prepared to solve a wide variety of business and technical problems in a job field that continues to grow.

CAREER OPPORTUNITIES

- Product Education - Use and Value
- Technical Assistance and Troubleshooting
- Technical Product Development, Testing, Application and Sales
- Farm & Agribusiness Management
- Coordinating, Directing and Supervising Manufacturing and Processing Operations
- Building and Equipment Layout, Use (Materials Handling, Flow, Processing)

Educational Objectives and Program Outcomes

With input from various constituency groups and students, the Department of Agricultural and Biological Engineering has established education goals and objectives for its various programs.

Educational Goal

Provide students with learning opportunities that prepare them for future challenges in food, agricultural and biological engineering through the application and discovery of knowledge.

ASM Program Outcomes

Program outcomes are important capabilities and skills that students should possess as a graduate of one of the undergraduate programs in the department. Outcomes for Agricultural Systems Management (ASM), are listed below.

ASM students will have the ability to:

1. understand and apply the basic principles of mathematics, science, technology, management, and economics to agricultural systems.
2. identify agricultural systems problems, locate relevant information, develop and analyze possible alternatives, and formulate and implement solutions.
3. effectively use economic principles, scientific technologies, techniques, and skills necessary to manage agricultural systems.
4. recognize and define agricultural systems problems and the impact of their proposed technological solutions in an international and societal context.
5. understand and participate in performance evaluations, collect, analyze and interpret the data, and communicate the results.
6. demonstrate appropriate listening, speaking, writing, presentation, and interpersonal skills needed to interact and communicate effectively.
7. function with, and contribute effectively to, multi-disciplinary teams.
8. understand professional and ethical responsibilities and put them into practice.

Student Academic Center

In response to the department's strategic goal to: *"Provide students with effective educational opportunities to learn and grow as individuals, contribute to society, and attain maximum potential through life-long learning,"* the Student Academic Center was established. The Center is located in room 201 of the ABE building. Some of the services provided by the Center are:

- Assist students with course selection and registration information
- Maintain an up-to-date copy of each student's academic record
- Collect and disseminate information relative to all undergraduate activities such as registration procedures, changes in regulations, and new course offerings
- Serve as a distribution center for information related to internships, employment, and scholarships
- Arrange for interviews with potential employers
- Direct students to the correct resource on specific problems that cannot be resolved at the Center.
- Coordinate a senior resume CD*
- Announce College and University level career fairs*

Advising

In addition to the advising services offered by the Center, each student in the Department meet with faculty advisors who have expertise in the student's area of interest. The advisor will counsel on the academic requirements of the major and serve as a resource to answer other academic concerns, and will assist the students to develop their career goals and objectives. The advisor will become a friend, listener, and source of information concerning non-academic matters if the need arises.

Student Responsibilities

Specific interests or concerns regarding the Agricultural and Biological Engineering Department should be discussed with your advisor and/or the Student Services Coordinator. ***Students have the responsibility of initiating and maintaining contact with their advisor for guidance.*** It is important to remember that it is the student who is ultimately responsible for making sure course requirements are complete. The student record sheet (page 12) in this handbook should be kept up-to-date and checked periodically against the one in the advisor's file kept in the Center.

Employment Support

Qualified students often find jobs prior to graduation. Notices of available positions received in the department are posted on the job placement bulletin board located in the hallway of the second floor between rooms 213 and 214. These notices include full- and part-time positions, summer and internship opportunities. Interview schedules are arranged by the Placement Coordinator. Many students find full-time employment with organizations that have employed them during previous summers/internships.

**For more career advice, see the Center for Career Opportunities (www.cco.purdue.edu)*

University Regulations

Purdue has policies regarding discrimination, scholastic deficiency (probation or being dropped), harassment, honor code, fees, grade appeals, hazing, insurance, computer copyrights, and many other student concerns. Please take time to look over the University Regulations Handbook (www.purdue.edu/univregs/index.html).

Agricultural Systems Management Plan of Study

Agricultural Systems Management

<https://ag.purdue.edu/oap/Pages/major.aspx>

Credits	Course number	Course Title	Prerequisites	Credits	Course number	Course Title	Prerequisites
Fall 1st Year				Spring 1st Year			
0.5	AGR 10100	Introduction to the College of Agriculture and Purdue University		3	ASM 10500	Agricultural Systems Computations and Communications	ASM 10400
0.5	AGR 11100	Introduction to ABE Programs		3	CHM 11200	General Chemistry	CHM 11100
3	ASM 10400	Introduction to Agricultural Systems Management		4	ENGL 10600	First-Year Composition	
3	CHM 11100	General Chemistry Fundamentals of Speech Communication		3	PHYS 21400	The Nature of Physics	
3	COM 11400	Introduction to Calculus	ALEKS 50+	3	-----	Economics Selective	
3	MA 22000	UCC Humanities Selective					
3	-----						
16				16			
Fall 2nd Year				Spring 2nd Year			
3	ASM 21100	Technical Graphic Communication	ASM 10500	3	AGEC 35200	Quantitative Techniques for Firm Decision Making	STAT 30100
1	ASM 22100	Career Opportunities Seminar	ASM 10400	3	AGRY 25500	Soil Science	CHM 11200
3	ASM 22200	Crop Production Equipment	ASM 10500	3	-----	ASM Selective	
3	STAT 30100	Elementary Statistical Methods		3	-----	Biological Science Selective	
4	-----	Biological Science Selective		4	-----	UCC Science, Technology, & Society Selective	
14				16			
Fall 3rd Year				Spring 3rd Year			
3	AGEC 33100	Principles of Selling in Agricultural Business		3	AGEC 31000 or AGECE 33000	Farm Organization or Management Methods for Agricultural Business	
3	-----	Accounting Selective		3	ASM 33300	Facilities Planning and Management	ASM 10500
3	-----	ASM Selective		1	ASM 35000	Safety in Agriculture	
3	-----	Written or Oral Communication Selective		3	-----	Agricultural Selective	
3	-----	Marketing Selective		3	-----	Humanities or Social Science Selective	
3	-----			3	-----	Humanities or Social Science Selective	
15				16			
Fall 4th Year				Spring 4th Year			
3	AGEC 45500 or MGMT 45500	Agricultural Law or Legal Background for Business 1		3	ASM 49500	Agricultural Systems Management	ASM 49400
1	ASM 42100	Senior Seminar	ASM, 75+ hrs	3	-----	ASM 40000+ Selective	
1	ASM 49400	Project Planning and Management	ASM 22100	3	-----	Agricultural Selective	
3	-----	ASM Selective		3	-----	Humanities or Social Science Selective (30000+ level)	
3	-----	Agricultural Selective		1	-----	Elective	
3	-----	Agricultural Selective					
14				13			

120 semester credits required for Bachelor of Science degree.
2.0 GPA required for Bachelor of Science degree.

Official and complete prerequisite lists are in the course catalog; the incomplete listing presented here regards this program and course sequencing.

Agricultural Systems Management

https://ag.purdue.edu/oap/Pages/major.aspx 120 credits required for graduation

Credits	Course number	Course Title
Departmental/Program Major Courses (119 credits)		
Required Major Courses (22 credits)		
3	ASM 10400	Introduction to Agricultural Systems Management
3	ASM 10500	Agricultural Systems Computations and Communications
3	ASM 21100	Technical Graphic Communication
1	ASM 22100	Career Opportunities Seminar
3	ASM 22200	Crop Production Equipment
3	ASM 33300	Facilities Planning and Management
1	ASM 35000	Safety in Agriculture
1	ASM 42100	Senior Seminar
1	ASM 49400	Project Planning and Management
3	ASM 49500	Agricultural Systems Management
<u>Major Selectives (12 credits) (See Advising Resources)</u>		
3	-----	ASM Selective
3	-----	ASM Selective
3	-----	ASM Selective
3	-----	ASM 40000+ Selective
<u>Other Departmental /Program Course Requirements (85 credits) (See Advising Resources)</u>		
0.5	AGR 10100	Introduction to the College of Agriculture and Purdue University
0.5	AGR 11100	Introduction to ABE Programs
4	-----	Biological Science Selective
4	-----	Biological Science Selective
3	CHM 11100	General Chemistry (satisfies Science #1 for core)
3	CHM 11200	General Chemistry (satisfies Science #2 for core)
3	MA 22000	Introduction to Calculus (satisfies Quantitative Reasoning for core)
3	STAT 30100	Elementary Statistical Methods
3	AGEC 35200	Quantitative Decision Making
3	AGRY 25500	Soil Science
3	PHYS 21400	The Nature of Physics
		First-Year Composition (satisfies Written Communication for core) (satisfies Information
4	ENGL 10600	Literacy for core)
3	COM 11400	Fundamentals of Speech Communication (satisfies Oral Communication for core)
3	-----	Written or Oral Communication Selective
3	-----	Economics Selective (satisfies Human Culture Behavioral/Social Science for core)
3	-----	UCC Humanities Selective (satisfies Human Cultures Humanities for core)
3	-----	UCC STS Selective (satisfies Science, Technology & Society Selective for core)
3	-----	Humanities or Social Science Selective
3	-----	Humanities or Social Science Selective
3	-----	Humanities or Social Science Selective (300+ level)
	AGEC 31000 or	
3	AGEC 33000	Farm Organization or Management Methods for Agricultural Business
3	AGEC 33100	Principles of Selling in Agricultural Business
	AGEC 45500 or	
3	MGMT 45500	Agricultural Law or Legal Background for Business, I
3	-----	Accounting Selective
3	-----	Agricultural Selective
3	-----	Agricultural Selective
3	-----	Agricultural Selective
3	-----	Agricultural Selective
3	-----	Marketing Selective
Electives (1 credits)		
1	-----	Elective

University Core Requirements:

Human Cultures Humanities:	_____	Science, Technology, and Society:	_____
Human Cultures Behavioral/Social Science:	_____	Written Communication:	_____
Information Literacy:	_____	Oral Communication:	_____
Science #1:	_____	Quantitative Reasoning:	_____
Science #2:	_____		

120 semester credits required for Bachelor of Science degree.
2.0 GPa required for Bachelor of Science degree.

Agricultural Systems Management Course Descriptions

Required Courses (Catalog Descriptions)

AGEC 31000 Farm Organization. Credit Hours: 3.00. Economic factors controlling success in farming; types of farming; business records and analysis; adjustment in organization to meet changing economic conditions; organization and management of successful farms. Typically offered Fall Spring. **OR AGECE 33000**

AGECE 33000 Management Methods for Agricultural Business. Credit Hours: 3.00. Management of nonfarm, agriculturally related businesses. Topics include tools for management decision making, legal forms of business organization, basics of accounting, and important financial management techniques. Case studies and computer simulation game. Typically offered Fall Spring. **OR AGECE 31000**

AGECE 33100 Principles of Selling in Agricultural Business. Credit Hours: 3.00. The principles of salesmanship and their application to the agricultural business. Topics include attitudes and value systems, basic behavioral patterns, the purchase decision process, relationship of sales to marketing, selling strategies, preparing for sales calls, making sales presentations, handling objections, and closing sales. Emphasis is placed on application of principles to real-world situations and on building selling skills through class projects. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Typically offered Fall Spring. Restrictions: May not be enrolled as the following Classifications: Freshman: 0 - 14 hours.

AGECE 35200 Quantitative Techniques For Firm Decision Making. Credit Hours: 3.00. Introduction to mathematical programming and computing as an aid to agricultural decision making by firms, linear programming, game theory and strategy, simulation, the waiting-line problem, the equipment replacement decision, and multiproduct scheduling methods. Typically offered Fall Spring. Prerequisites: (Undergraduate level [STAT 22500](#) Minimum Grade of D- or Undergraduate level [STAT 31100](#) Minimum Grade of D- or Undergraduate level [STAT 51600](#) Minimum Grade of D- or Undergraduate level [STAT 41600](#) Minimum Grade of D-) or (Undergraduate level [STAT 30100](#) Minimum Grade of D- or Undergraduate level [STAT 51100](#) Minimum Grade of D- or Undergraduate level [ECON E2700](#) Minimum Grade of D- or Undergraduate level [ECON 26000](#) Minimum Grade of D- or Undergraduate level [STAT 35000](#) Minimum Grade of D- or Undergraduate level [STAT 50300](#) Minimum Grade of D- or Undergraduate level [STAT 50100](#) Minimum Grade of D-) or (Undergraduate level [STAT 50100](#) Minimum Grade of D- or Undergraduate level [STAT 35000](#) Minimum Grade of D- or Undergraduate level [STAT 51100](#) Minimum Grade of D- or Undergraduate level [STAT 50300](#) Minimum Grade of D-)

AGECE 45500 Agricultural Law. Credit Hours: 3.00. Selected general legal topics (courts, contracts, torts, property and commercial law) with emphasis on farming problems (e.g., landowner-tenant, grain contracts, fences, and animal liability) and cases. Typically offered Fall. **OR MGMT 45500** Restrictions: Must have at least 45 credit hours.

AGR 10100 Introduction to the College of Agriculture and Purdue University. Credit Hours: 0.50. Students are introduced to the College of Agriculture and Purdue University. Specific areas discussed include the diversity of career opportunities within agriculture, the relationships between different areas of agriculture, ethics, the impact of undergraduate coursework, including the core curriculum, on scholarship and career preparation, and the challenges facing the food, agricultural, and natural resource system. The use of guest lecturers provides a networking opportunity for students. Enrollment in this course is restricted to beginning freshmen students. Course meets weeks 1-8. Typically offered Fall. Restrictions: Must not have more than 29 credit hours.

AGR 11100 Introduction to Agricultural and Biological Engineering Academic Programs. Credit Hours: 0.50. An introduction to the academic programs offered in the Department of Agricultural and Biological Engineering which include Agricultural Systems Management, Agricultural and Natural Resources Engineering, and Biological and Food Process Engineering. Topics include, but are not limited to undergraduate plans of study, courses, experiential programs, internships, student organizations, career opportunities, academic policies, scholarships, and student services. Course meets during weeks 1-8. Typically offered Fall. Corequisites: [AGR 10100](#)

AGRY 25500 Soil Science. Credit Hours: 3.00. Differences in soils; soils genesis; physical, chemical, and biological properties of soils; relation of soils to problems of land use and pollution; soil management relative to tillage, erosion, drainage, moisture supply, temperature, aeration, fertility, and plant nutrition. Introduction to fertilizer chemistry and use. Not available to students who have taken AGRY 27000. Typically offered Fall Spring. Prerequisites: Undergraduate level [CHM 11200](#) Minimum Grade of D- or Undergraduate level [CHM 11600](#) Minimum Grade of D- or Undergraduate level [CHM 12600](#) Minimum Grade of D- or Undergraduate level [CHM 12400](#) Minimum Grade of D- or Undergraduate level [CHM 11000](#) Minimum Grade of D- or Undergraduate level [CHM 13600](#) Minimum Grade of D- or (Undergraduate level [CHEM C1020](#) Minimum Grade of D- and Undergraduate level [CHEM C1220](#) Minimum Grade of D-) or (Undergraduate level [CHEM C1060](#) Minimum Grade of D- and Undergraduate level [CHEM C1260](#)

Minimum Grade of D-).

ASM 10400 Introduction to Agricultural Systems. Credit Hours: 3.00. Basic principles of selection and operation of agricultural production equipment, including farm tractors and machines and crop-processing equipment. Planning considerations for crop storage and animal production systems and devices for water conservation and erosion control. Typically offered Fall Spring.

ASM 10500 Agricultural Systems Computations And Communication. Credit Hours: 3.00. Use of computers to solve problems related to agricultural technology and businesses. Spreadsheets, word processors, and presentation software will be the focus. Emphasis will be on logical problem solving and data presentation using advanced features of office software. A 10000-level number is being used because it is intended as a first-year course. Typically offered Spring. Prerequisites: Undergraduate level [ASM 10400](#) Minimum Grade of D- [may be taken concurrently].

ASM 21100 Technical Graphics Communications. Credit Hours: 3.00. Introduction to graphic communication methods using traditional techniques and emphasizing modern computer-based techniques. Topics covered include: free-hand sketching, lettering, and dimensioning; selection of data presentation methods; and plan interpretation and cost calculations. A majority of assignments will include use of commercially available computer-aided drawing packages. Typically offered Fall Spring. Prerequisites: Undergraduate level [ASM 23100](#) Minimum Grade of D- or Undergraduate level [ASM 49100](#) Minimum Grade of D- or Undergraduate level [ASM 10500](#) Minimum Grade of D-.

ASM 22100 Career Opportunities Seminar. Credit Hours: 1.00. An introductory course to acquaint students with career and employment opportunities in the field of agricultural systems management. Guest speakers are invited to share their experiences and philosophies with the students. Special emphasis is given to improving communication skills. Typically offered Fall. Prerequisites: Undergraduate level [ASM 10400](#) Minimum Grade of D- [may be taken concurrently].

ASM 22200 Crop Production Equipment. Credit Hours: 3.00. Principles of machine performance, capacity, machinery components, and operation. Study of tractors, trucks, utility vehicles, and combines. Equipment topics include chemical application, tillage tools, planters and seeders, hay and forage harvesters, electronic monitors and controllers. Computer-based analysis of equipment sizing and systems selection. Typically offered Fall. Prerequisites: Undergraduate level [ASM 10500](#) Minimum Grade of D- or Undergraduate level [ASM 23100](#) Minimum Grade of D- or Undergraduate level [ASM 49100](#) Minimum Grade of D- or (Undergraduate level [ASM 10400](#) Minimum Grade of D- and Undergraduate level [AGEC 20200](#) Minimum Grade of D-).

ASM 33300 Facilities Planning And Management. Credit Hours: 3.00. Principles of facility (system) planning and management involving buildings, equipment, and materials handling and flow. Student teams select a case firm (problem) with instructor approval. Principles learned week by week are applied to the development of an overall plan for the complex, over the course of the semester. Case examples can include firms handling supplies, seeds, grains, feeds, chemicals, wastes, and farm produce, as well as farming operations producing grain, forage, and/or livestock products. Students will learn to use AutoCAD to develop drawings, without prior computer drafting experience. Typically offered Spring. Prerequisites: Undergraduate level [ASM 10500](#) Minimum Grade of D- or Undergraduate level [ASM 23100](#) Minimum Grade of D- or Undergraduate level [ASM 49100](#) Minimum Grade of D- or (Undergraduate level [ASM 10400](#) Minimum Grade of D- and Undergraduate level [AGEC 20200](#) Minimum Grade of D-).

ASM 35000 Safety in Agriculture. Credit Hours: 1.00. An overview of the agricultural safety movement in the United States with consideration given to the specific human environmental and technological factors influencing farm-related accidents. Special emphasis is given to reduction of unnecessary risks in agricultural production. Course meets during weeks 1-8. Typically offered Spring.

ASM 42100 Senior Seminar. Credit Hours: 1.00. Professional attitudes and ethics, resume preparation and interview procedures, business correspondence, meetings, and career planning. Typically offered Fall. Restrictions: Must have at least 90 credit hours. Prerequisites: Undergraduate level [ASM 22100](#) Minimum Grade of D-.

ASM 49400 Project Planning And Management. Credit Hours: 3.00. Discussion of topics relevant to project planning and execution in industry, including technical communication, budgeting, team management, intellectual property, and timelines. Student teams will develop project proposal to address contemporary issues in agricultural systems management. Typically offered Fall. Restrictions: Must have at least 90 credit hours. Prerequisites: Undergraduate level [ASM 22100](#) Minimum Grade of D-.

ASM 49500 Agricultural Systems Management. Credit Hours: 3.00. Planning, organization, and analysis of individual or team projects related to contemporary issues in agricultural systems management. Typically offered Spring. Prerequisites: Undergraduate level [ASM 49400](#) Minimum Grade of D-.

CHM 11100 General Chemistry. Credit Hours: 3.00. Not available for credit toward graduation in the School of Science. Required of all freshmen in the School of Agriculture who are not in CHM 11500 and required of students in the School of Consumer and Family Sciences in retailing, textile, RHIT, and dietetics options who are not in CHM 11500. Required of students in physical therapy who are not in CHM 11500. Not available for credit toward graduation in the School of Science. Metric and S.I. Units; dimensional analysis; density; the atomic concept; elements, compounds, and mixtures; the mole concept; equations and stoichiometry; atomic structure, spectra; the periodic table; chemical bonding, gases; descriptive chemistry of the common elements. Prerequisite: two years of high school algebra. Typically offered Fall Spring.

CHM 11200 General Chemistry. Credit Hours: 3.00. Continuation of CHM 11100. Liquids and solids; solutions; chemical kinetics; equilibrium; acids and bases; oxidation and reduction; electrochemistry; descriptive chemistry of the metals and nonmetals; introduction to organic chemistry; nuclear chemistry. Not available for credit toward graduation in the School of Science. Typically offered Spring. Prerequisites: Undergraduate level [CHM 11100](#) Minimum Grade of D- or Undergraduate level [CHM 11500](#) Minimum Grade of D- or (Undergraduate level [CHEM C1010](#) Minimum Grade of D- and Undergraduate level [CHEM C1210](#) Minimum Grade of D-).

COM 11400 Fundamentals of Speech Communication. Credit Hours: 3.00. A study of communication theories as applied to speech; practical communicative experiences ranging from interpersonal communication and small group process through problem identification and solution in discussion to informative and persuasive speaking in standard speaker-audience situations. Typically offered Fall Spring Summer.

ENGL 10600 First-Year Composition. Credit Hours: 4.00. Extensive practice in writing clear and effective prose. Instruction in organization, audience, style, and research-based writing. Typically offered Fall Spring Summer.

MA 22000 Introduction to Calculus. Credit Hours: 3.00. A survey of differential and integral calculus. Applications to the agricultural, life, managerial, and social sciences. Not available for credit toward graduation in the School of Science. Typically offered Fall Spring.

MGMT 45500 Legal Background For Business I. Credit Hours: 3.00. The nature and place of law in our society, national and international, social and moral bases of law enactment, regulation of business, legal liability, and enforcement procedures. Special emphasis on torts, contracts, and agency. No credit to students in the School of Management. Typically offered Fall Spring Summer. **OR AGECE 45500**

PHYS 21400 The Nature Of Physics. Credit Hours: 3.00. Development of basic concepts and theories in physics; a terminal survey course designed for non-science majors. Typically offered Fall Spring.

STAT 30100 Elementary Statistical Methods. Credit Hours: 3.00. Introduction to statistical methods with applications to diverse fields. Emphasis on understanding and interpreting standard techniques. Data analysis for one and several variables, design of samples and experiments, basic probability, sampling distributions, confidence intervals and significance tests for means and proportions, correlation and regression. Software is used throughout. Credit cannot be given for more than one of STAT 30100, 30500, 35000, 43300 50100, 50300, and 51100. Prerequisite: college algebra. Typically offered Summer Fall Spring.

Selective lists for the ASM curriculum:

Accounting Selective

CREDIT	PREFIX	NUMBER	TITLE
3	AGEC	31100	Accounting for Farm Business Planning
3	MGMT	20000	Introductory Accounting
3	MGMT	20010	Introductory Accounting

Agriculture Selective (anything from the College of Agriculture)

CREDIT	PREFIX	NUMBER
1 to 4	ABE	10000-59999

1 to 4	AGEC	10000-59999
1 to 4	AGR	10000-59999
1 to 4	AGRY	10000-59999
1 to 4	ANSC	10000-59999
1 to 4	ASM	10000-59999
1 to 4	BCHM	10000-59999
1 to 4	BTNY	10000-59999
1 to 4	ENTM	10000-59999
1 to 4	FNR	10000-59999
1 to 4	FS	10000-59999
1 to 4	HORT	10000-59999
1 to 4	LA	10000-59999
1 to 4	NRES	10000-59999
1 to 4	YDAE	10000-59999

Agricultural Systems Management Selective (take 3 of these 4)

CREDIT	PREFIX	NUMBER	TITLE
3	ASM	24500	Materials Handling and Processing
3	ASM	33600	Environmental Systems Management
3	ASM	34500	Power Units and Power Trains
3	ASM	42000	Electric Power and Controls

Agricultural Systems Management 400+ Selective

CREDIT	PREFIX	NUMBER
3	ASM	40000-59999

Marketing Selective

CREDIT	PREFIX	NUMBER	TITLE
3	AGEC	22000	Economics of Agricultural Markets
3	AGEC	32100	Principles of Commodity Marketing
3	AGEC	32700	Principles of Food and Agribusiness Marketing