

NRM 210 Principles of Sustainable Agriculture

3 credits

Instructors – MP Shipka, MG Karlsson, M Zhang

Offered spring semester - T TH 8:00-9:30 AM

Text – Toward Sustainable Agricultural Systems in the 21st Century (2010)

Committee on Twenty-First Century Systems Agriculture; National Research Council

978-0-309-14896-2

Course Description: Development of a basic understanding of sustainable agriculture concepts including exposure to economic, social, and environments principles and ideas of sustainable agricultural practices. Agroecology is introduced as a backdrop for the development of sustainable techniques for soil, plant, and animal agriculture. Throughout the semester, sustainable agriculture concepts and principles will be related to current issues such as population growth, resource use and availability, and changing social structures and preferences. Prerequisites: NRM 101.

Course Objectives: The student will develop a basic understanding of sustainable agriculture concepts and will be exposed to principles and ideas of sustainable agricultural practices. Agroecology is introduced as a backdrop for the development of sustainable techniques for soil, plant, and animal agriculture. Throughout the semester, sustainable agriculture concepts and principles will be related to current issues such as population growth, resource use and availability, and changing social structures and preferences.

Student Learning Outcomes: The student will demonstrate by the end of the semester a basic understanding of the concepts and principles of sustainable agricultural management in soil, plant, and animal contexts. Student Learning Outcomes include:

- 1) Ability to critically apply knowledge and integrate the science of sustainable agriculture with economic, social and environmental sustainability for agricultural practices in modern culture and societies.
- 2) The development of a basic understanding of sustainability science in global and U.S. agriculture and an appreciation for the biological, physical and social sciences that make up sustainable agriculture.

Course Outline

Week 1 1/17 1/19	Chapter 1 in TSAS* (pgs. 15 to 41) What is Sustainable Agriculture <ul style="list-style-type: none"> • Overview • Concepts and Themes • Three legs of sustainable agriculture • Economic, social, and political context 	Shipka
Week 2 1/24 1/26	Chapter 2 in TSAS* (pgs. 43 to 82) Farming and Natural Resources <ul style="list-style-type: none"> • Is Organic Agriculture the same as Sustainable Agriculture? • Agroecology 	Shipka
Week 3 1/31 2/2	Chapter 3 in TSAS* (pgs. 83 to 96) Sustainable soils management <ul style="list-style-type: none"> • Conservation tilling • Cover cropping Assignment I (covers material in weeks 1, 2 & 3) Lundberg Family Farms – Due 2/9 by 9:30 AM	Zhang
Week 4 2/7 2/9	Chapter 3 in TSAS* (pgs. 122 to 131) Sustainable soils management <ul style="list-style-type: none"> • Mass balance • Soil tests • Compost 	Zhang
Week 5 2/14 2/16	Chapter 3 in TSAS* (pgs. 110 to 122) Sustainable field crop production concepts – Agronomy <ul style="list-style-type: none"> • Irrigation • Water quality management Assignment II (covers material in weeks 4 & 5) Peregrin Farm - Due 2/23 by 9:30 AM	Zhang
Week 6 2/21 2/23	Chapter 3 in TSAS* (pgs. 97 to 109) Sustainable field crop production concepts – Agronomy <ul style="list-style-type: none"> • Crop rotations • Intercropping • Cultivar mixtures 	Zhang
Week 7 2/28 3/2	Reading assignment - Sustainable Soil Management System Guide – On Blackboard one week prior to class period Sustainable soils management – systems management <ul style="list-style-type: none"> • Principles and Characteristics of Sustainable Soil • Management Steps to Improve Soil Quality • Examples of Sustainable Soil Builders Assignment III (covers material in weeks 6 & 7) Bragger Farm - Due 3/9 by 9:30 AM	Zhang

Week 8 3/7 3/9	Chapter 6 in TSAS* (pgs. 271-304) Sustainable plant production concepts – Horticulture <ul style="list-style-type: none"> • Specialty crops production • Sustainable programs and certifications • Eco-labels and production systems 	Karlsson
Week 9	3/13 through 3/17 Spring Break	
Week 10 3/21 3/23	Chapter 7 in TSAS* (pgs. 362-365, 377-379) Sustainable plant production concepts – Horticulture <ul style="list-style-type: none"> • Field production • Season extension, high tunnels and other techniques • Greenhouse and controlled environment system Assignment IV (covers material in weeks 8 & 9) Full Belly Farm (p. 433-444) – Due 3/30 by 9:30 AM	Karlsson
Week 11 3/28 3/30	Chapter 6 in TSAS* (pgs. 304-307) Sustainable plant production concepts -Controlled environments <ul style="list-style-type: none"> • Greenhouse management and crop climate strategies • Plant response to light and temperature • Light sources and supplemental lighting 	Karlsson
Week 12 4/4 4/6	Chapter 3 in TSAS* (pgs. 135-150, 163) Sustainable plant production concepts -Controlled environments <ul style="list-style-type: none"> • Plant response to temperature • Adaptive and integrated pest management Assignment V (covers material in weeks 10 & 11) Stahlbush Island Farm (p. 453-462) – Due 4/13 by 9:30 AM	Karlsson
Week 13 4/11 4/13	Chapter 3 in TSAS* (pgs. 150-160, 163) Sustainable animal production concepts <ul style="list-style-type: none"> • Animal Nutrition • Grazing management 	Shipka
Week 14 4/18 4/20	Chapter 5 in TSAS* (pgs. 233-249) Sustainable animal production concepts – <ul style="list-style-type: none"> • Animal Welfare • Animal Behavior Assignment VI (covers material in weeks 12 & 13) Goldmine Farm – Due 4/27 by 9:30 AM	Shipka
Week 15 4/25 4/27	Chapter 5 in TSAS* (pgs. 233 to 249) Sustainable animal production concepts – <ul style="list-style-type: none"> • Integrated Livestock Management System • Systems management • Ecological & Sustainable Livestock Production Systems Assignment VII (covers material in weeks 13 & 14) Brookview Farm – Due 5/1 by 10 AM	Shipka

*Towards Sustainable Agriculture Systems in the 21st Century.

Best way to do well in this class:

- 1) Attend the lectures,
- 2) Take good notes,
- 3) Read the assigned readings before class,
- 4) Download the PPT before or right after class,
- 5) Go back through your notes and the PPT soon after class, and
- 6) Complete seven assignments on time.

Course Grading:

Students will have seven web-based assignments that will be available on UAF Blackboard. Each assignment will cover topics since the previous assignment as well as build on materials presented throughout. Each assignment is worth 100 points for a total of 700 points. The student will have one week to complete each assignment from the time it is available on UAF Blackboard. Ten points will be deducted for each day an assignment is turned in late.

<u>Assignment #</u>	<u>Week of assignment</u>	<u>Week due</u>	<u>Points</u>
I	End of Week 2	End of Week 3	100
II	End of Week 5	End of Week 6	100
III	End of Week 7	End of Week 8	100
IV	End of Week 9	End of Week 10	100
V	End of Week 11	End of Week 12	100
VI	End of Week 13	End of Week 14	100
VII	End of Week 15	Final Exam period	100
			Total: 700 points

Final course grades will be assigned on the following basis:

≥ 97%	= A+	≥ 679 points
92 - 96.9%	= A	644 to 678 points
90 - 91.9%	= A-	630 to 643 points
87 - 89.9%	= B+	609 to 629 points
82 - 86.9%	= B	574 to 608 points
80 - 81.9%	= B-	560 to 573 points
77 - 79.9%	= C+	539 to 559 points
72 - 76.9%	= C	504 to 538 points
70 - 71.1%	= C-	490 to 503 points
Etc.		

For important UAF grading policy information, see the 2016-17 UAF Catalog, page 73.

Disabilities Services: The Disability Services program, in 208 Whitaker, provides services to students with documented disabilities on the Fairbanks campus as well as the Bristol Bay, Chukchi, Interior Alaska, Kuskokwim, Northwest, and Community and Technical College campuses, Distance Education, and the College of Rural and Community Development. The goal of Disability Services is to ensure equal access to educational opportunities at UAF. Academic accommodations are free and available to any student who qualifies as an individual with a disability and is enrolled in at least 1 credit hour.

For more information contact the director of Disability Services at 907-474-5655 or 907-474-1827 (TTY), email uaf-disability-services@alaska.edu or at <http://www.uaf.edu/disability/>.