

**AnSci 4010**  
**Pasture Based Dairy Production**  
**An Interdisciplinary Approach**  
**Spring 2020**

**COURSE DESCRIPTION:**

This is an online 4000-level (MU students) or advanced non-traditional student course teaching the principles of pasture-based dairy production. Animal management, grass management, facilities, economics and business planning are among the topics that will be covered in the online course. Online modules must be completed sequentially over the period from January 21, 2020 – March 29, 2020.

Weekly interactive online discussion sessions will be required and students should have completed the preceding course module material in order to participate in the interactive sessions.

Class is suggested for Animal or Plant Science students with an interest in dairy, management intensive grazing and forage production.

**Suggested Prerequisite courses (MU students):**

Animal Science 2165 – Ruminant Production

Animal Science 4976 - Dairy Production

**Requirements: Junior or Senior Level**  
**undergraduate minimum**

**INSTRUCTORS:**

Topic	Instructor	phone	email
Introduction	Dr. Stacey Hamilton	(417) 838-3548	<a href="mailto:hamiltonsa@missouri.edu">hamiltonsa@missouri.edu</a>
	Dr. Tom McFadden	(573) 882-8336	<a href="mailto:mcfaddent@missouri.edu">mcfaddent@missouri.edu</a>
Genetics	Ted Probert	(417) 741-6134	<a href="mailto:probertt@missouri.edu">probertt@missouri.edu</a>
Mastitis/Health/Repro	Dr. Scott Poock	(573) 882-6359	<a href="mailto:poocks@missouri.edu">poocks@missouri.edu</a>
	Dr. John Middleton	(573) 882-6857	<a href="mailto:middletonjr@missouri.edu">middletonjr@missouri.edu</a>
Nutrition	Dr. Stacey Hamilton	(417) 838-3548	<a href="mailto:hamiltonsa@missouri.edu">hamiltonsa@missouri.edu</a>
Soils	Dr. John Lory	(573) 884-7815	<a href="mailto:loryj@missouri.edu">loryj@missouri.edu</a>
Forages	Dr. Stacey Hamilton	(417) 838-3548	<a href="mailto:hamiltonsa@missouri.edu">hamiltonsa@missouri.edu</a>
	Dr. Rob Kallenbach	(573) 884-2213	<a href="mailto:kallenbachr@missouri.edu">kallenbachr@missouri.edu</a>
Infrastructure	Dr. Joe Zulovich	(573) 882-0868	<a href="mailto:zulovichj@missouri.edu">zulovichj@missouri.edu</a>
Business	Joe Horner	(573) 882-9339	<a href="mailto:hornerj@missouri.edu">hornerj@missouri.edu</a>
	Ryan Milhollin	(573) 882-0668	<a href="mailto:milhollinr@missouri.edu">milhollinr@missouri.edu</a>

## COURSE OBJECTIVES:

Upon completion of this course, students will:

- Understand the development and financing of a working pasture based dairy system
- Be competent in genetic selection of a pasture based dairy herd
- Knowledgeable in the reproductive and nutritional management of a pasture based dairy herd
- Able to understand the management of a grass-based forage system
- Understand the facility needs and paddock design for a pasture based dairy system
- Be able to develop a business plan for a pasture-based dairy

## COURSE MATERIALS:

No textbook is needed: however, a fast and reliable internet access and a headset (including microphone) is required. All course materials will be delivered via Canvas.

## GRADING PROCEDURES:

The following grading scale will be used in this course:

A+:	95 – 100 points
A:	92 – 94 points
A-:	90 – 91 points
B+:	85 – 89 points
B:	82 – 84 points
B-:	80 – 81 points
C+:	75 – 79 points
C:	72 – 74 points
C-:	70 – 71 points
D+:	65 – 69 points
D:	62 – 64 points
D-:	60 – 61 points
F:	Below 60 points

Assignment of grades is NOT based on a normal (bell) curve.

## ATTENDANCE POLICY:

Students are expected to keep up with listening to the **Tegrity** lectures, **Canvas** assignments and tests. If you have an emergency, **please contact the instructor or Dr. Hamilton for the module that you will be unable to complete on time**. It is your responsibility to work out the new due date with that instructor. Please be able to document your excuse with a doctor's note, obituary notice or other pertinent documents. Only serious illness or death of yourself or an immediate family member is an excused absence. All other reasons have to be pre-approved by the instructor responsible for a specific module.

## COURSE SPACE AND TIME EXPECTATIONS:

The content covered each week is equivalent to that you would receive in an on campus course in a four hour course since this is an 8 week course. Although this is a two hour credit course, you will double your time equivalent to a 4 hour course. You should anticipate spending a similar amount of time on this course as you would in a regular semester attending class and doing homework. So please schedule about 6-10 hours per week (lectures, review, and assignments) to work on the course.

## COURSE OUTLINE:

All lectures and assignments should be available to allow the student to work ahead and plan their schedule with other courses. If a section is not available contact Dr. Hamilton. In general assignments will be due at 11:59 pm Thursday night and exams 11:59 pm Monday night. Everything will be through Canvas or Zoom for discussions. **\*Assignments turned in late are subject to a 50% deduction per day from the assigned grade.**

## SYNCHRONOUS GROUP DISCUSSION:

Group discussions to review lectures and ask questions concerning the module topics will occur at the end of each week on Thursday at 7 PM. You are responsible for attending each discussion session during the course. The group discussion is part of your class participation in the course and provides an active source of learning the materials and providing you a platform to ask questions concerning materials presented on the on-line lectures. Group discussions will occur through the use of Zoom in Canvas.

## ASSIGNMENTS AND EVALUATION PROCEDURES:

Found in Assignment Tab on left Assignment/Exam	Due Dates	Points	Instructor(s)
Genetics assignment	Thursday, January 30, 2020	20	probertt@missouri.edu
Discussion	Thursday, January 30, 2020	5	probertt@missouri.edu
Genetics Exam	Monday, February 03, 2020	75	
Mastitis assignment	Thursday, February 06, 2020	20	
Health assignment	Thursday, February 06, 2020	25	middletonjr@missouri.edu
Reproduction assignment	Thursday, February 06, 2020	25	
Discussion	Thursday, February 06, 2020	5	<a href="mailto:poocks@missouri.edu">poocks@missouri.edu</a>
Mastitis Exam	Monday, February 10, 2020	10	<a href="mailto:poocks@missouri.edu">poocks@missouri.edu</a>
Repro and Health Exam	Monday, February 10, 2020	90	
Nutrition quiz/assignment	Thursday, February 13, 2020	50	hamiltonsa@missouri.edu
Discussion	Thursday, February 13, 2020	5	hamiltonsa@missouri.edu
Nutrition Exam	Monday, February 17, 2020	100	hamiltonsa@missouri.edu
Soil Fertility/Nutrient mgmt assignment	Thursday, February 20, 2020	25	loryj@missouri.edu
Discussion	Thursday, February 20, 2020	5	loryj@missouri.edu
soil Fertility/Nutrient mgmt Exam	Monday, February 24, 2020	75	loryj@missouri.edu
Intro to Forages assignment	Thursday, February 27, 2020	25	kallenbachr@missouri.edu
3 M's assignment	Thursday, February 27, 2020	25	kallenbachr@missouri.edu
Discussion	Thursday, February 27, 2020	5	hamiltonsa@missouri.edu
Forages exam	Monday, March 02, 2020	75	
3 M's Exam	Monday, March 02, 2020	75	hamiltonsa@missouri.edu
Dairy Parlor assignment	Thursday, March 05, 2020	25	zulovichj@missouri.edu
Site Selection/Farmstead planning assignment	Thursday, March 05, 2020	25	
Discussion	Thursday, March 05, 2020	5	zulovichj@missouri.edu
Infrastructure Exam	Monday, March 09, 2020	100	zulovichj@missouri.edu
Business-dairy financial quiz	Thursday, March 12, 2020	10	hornerj@missouri.edu
Business-managing income/operating costs	Thursday, March 12, 2020	10	<a href="mailto:milholli@missouri.edu">milholli@missouri.edu</a>
Business-Keys to profitable dairy quiz	Thursday, March 12, 2020	10	<a href="mailto:hornerj@missouri.edu">hornerj@missouri.edu</a>
Business Exam 1	Monday, March 16, 2020	75	<a href="mailto:milholli@missouri.edu">milholli@missouri.edu</a>
Discussion	Thursday, March 12, 2020	5	<a href="mailto:hornerj@missouri.edu">hornerj@missouri.edu</a>
Business-Organizational choices	Thursday, March 19, 2020	10	<a href="mailto:hornerj@missouri.edu">hornerj@missouri.edu</a>
Business-Risk Identification/mitigation strategies quiz	Thursday, March 19, 2020	10	<a href="mailto:milholli@missouri.edu">milholli@missouri.edu</a>
Business-generational transfer quiz	Thursday, March 19, 2020	10	<a href="mailto:hornerj@missouri.edu">hornerj@missouri.edu</a>
Business-overcoming barriers quiz	Thursday, March 19, 2020	10	<a href="mailto:milholli@missouri.edu">milholli@missouri.edu</a>
Business Exam 2	Monday, March 23, 2020	75	<a href="mailto:hornerj@missouri.edu">hornerj@missouri.edu</a>
		1120	

		Discussion Group Thursday nights: 7 PM
Found in the Tegrity Classes Tab on left		Assignments due before Discussion Group
Lecture	Length Video	Date Videos watched by
Introduction	0:25:23	Thursday, January 23, 2020
Pasture-Based Dairy Genetics 1 - The Ideal Grazing...	0:19:58	Thursday, January 30, 2020
Pasture-Based Dairy Genetics 2 - Genetic Sources f...	0:10:31	Thursday, January 30, 2020
Pasture-Based Dairy Genetics 3 - Selection Consid...	0:31:47	Thursday, January 30, 2020
Pasture-Based Dairy Genetics 4 - New Zealand Sire ...	0:20:15	Thursday, January 30, 2020
Pasture-Based Dairy Genetics 5 - Crossbreeding	0:10:39	Thursday, January 30, 2020
Pasture-Based Dairy Genetics 6 - Crossbreeding Pro...	0:12:05	Thursday, January 30, 2020
Pasture-Based Dairy Genetics 7 - Genomics	0:19:10	Thursday, January 30, 2020
Mastitis and Milk Quality Vol. 1	0:25:47	Thursday, February 06, 2020
Mastitis and Milk Quality Vol. 2	0:17:18	Thursday, February 06, 2020
Mastitis and Milk Quality Vol. 3	0:23:24	Thursday, February 06, 2020
Estrus Synchronization-5 Poock	0:13:06	Thursday, February 06, 2020
Gold Standards-6 Poock	0:15:29	Thursday, February 06, 2020
Weaning-7 Poock	0:08:47	Thursday, February 06, 2020
Calves on Milk-8 Poock	0:21	Thursday, February 06, 2020
Newborn calf-9 Poock	0:19:48	Thursday, February 06, 2020
Nutrition 1&2 The Basics and What is Important	0:28:53	Thursday, February 13, 2020
Nutrition 3&4 Energy, Protein and Fiber	0:29:33	Thursday, February 13, 2020
Nutrition 5 Dry Matter Intake	0:28:12	Thursday, February 13, 2020
Nutrition 6 The Total Ration	0:20:59	Thursday, February 13, 2020
Nutrition 7 Why Supplements	0:14:58	Thursday, February 13, 2020
Nutrition 8&9 Supplements Other Factors	0:27:54	Thursday, February 13, 2020
Nutrition 10 Feeding the Ration	0:18	Thursday, February 13, 2020
Pasture-Based Dairy Nutrition - Bloat	0:34:50	for fun and information
Pasture-Based Dairy Nutrition - Grass Tetany	0:26:22	for fun and information
2E Nutrient Management - Soil Sampling	0:23:19	Thursday, February 20, 2020
2F Nutrient Management - Role of Soil Testing	0:12:57	Thursday, February 20, 2020
2G Nutrient Management - Nutrient Balance	0:13:23	Thursday, February 20, 2020
2H Nutrient Management - Nutrient Balance 2	0:08:10	Thursday, February 20, 2020
2I Nutrient Management - Cows as Fertilizer Spreaders	0:24:37	Thursday, February 20, 2020
2J Nutrient Management - Legumes as an N Source	0:14:32	Thursday, February 20, 2020
2K Nutrient Management - Fertilizer Strategies	0:14:16	Thursday, February 20, 2020
2L Nutrient Management - Feed as Fertilizer	0:20:19	Thursday, February 20, 2020
2A - Forages for Pasture-based Dairy Systems in Mi...	0:22:51	Thursday, February 27, 2020
2A - Forages for Pasture-based Dairy Systems in Mi...	0:24:00	Thursday, February 27, 2020
Pasture 1 Hamilton	0:20:53	Thursday, February 27, 2020
Pasture 2 Hamilton	0:19:03	Thursday, February 27, 2020
Pasture 3 Hamilton	0:16:06	Thursday, February 27, 2020
Pasture 4 Hamilton	0:22:53	Thursday, February 27, 2020
Pasture 5 Hamilton	0:23:48	Thursday, February 27, 2020
Pasture 6 Hamilton	0:19:37	Thursday, February 27, 2020
Pasture 7 Hamilton	0:08:33	Thursday, February 27, 2020
Pasture 8 Hamilton	0:10:08	Thursday, February 27, 2020
Pasture 9 Hamilton	0:15:42	Thursday, February 27, 2020
3A - System Overview	0:23:51	Thursday, March 05, 2020
3B - Planning Milking Parlor 1	0:20:50	Thursday, March 05, 2020
3C - Planning Milking Parlor 2 and Equipment	0:19:36	Thursday, March 05, 2020
3D - Site Selection I	0:09:47	Thursday, March 05, 2020
3D - Site Selection II	0:17:34	Thursday, March 05, 2020
3E - Farmstead Planning I	0:15:37	Thursday, March 05, 2020
3E - Farmstead Planning II	0:09:32	Thursday, March 05, 2020
3E - Farmstead Planning III	0:13:24	Thursday, March 05, 2020
4A - Dairy Financial Management 1	0:17:31	Thursday, March 12, 2020
4B - Dairy Financial Management 2	0:12:01	Thursday, March 12, 2020
4C - Managing Operating Costs	0:25:07	Thursday, March 12, 2020
4D - Organizational Choices 1	0:13:40	Thursday, March 12, 2020
4E - Organizational Choices 2	0:11:06	Thursday, March 19, 2020
4F - Risk Identification and Mitigation Strategies	0:20:18	Thursday, March 19, 2020
4G - Generational Transfer of the Family Dairy	0:27:32	Thursday, March 19, 2020
4H - Overcoming Barriers to Entry	0:23:18	Thursday, March 19, 2020

## Statement for Academic Dishonesty

Academic honesty is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructor.

### Students with Disabilities:

*If you anticipate barriers related to the format or requirements of this course, if you have emergency medical information to share with me, or if you need to make arrangements in case the building must be evacuated, please let me know as soon as possible.*

*If disability related accommodations are necessary (for example, a note taker, extended time on exams, captioning), please register with the Office of Disability Services (<http://disabilityservices.missouri.edu>), S5 Memorial Union, 882-4696, and then notify me of your eligibility for reasonable accommodations. For other MU resources for students with disabilities, click on "Disability Resources" on the MU homepage.*

### Intellectual Pluralism:

*The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the Departmental Chair or Divisional Director; the Director of the Office of Students Rights and Responsibilities <http://osrr.missouri.edu/> or the MU Equity Office ([equity@missouri.edu](mailto:equity@missouri.edu));*

*All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.*

### Executive Order #38, Academic Inquiry, Course Discussion and Privacy:

*University of Missouri System Executive Order No. 38 lays out principles regarding the sanctity of classroom discussions at the university. The policy is described fully in Section 200.015 of the*

*Collected Rules and Regulations. In this class, students may make audio or video recordings of course activity unless specifically prohibited by the faculty member. However, the redistribution of audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded. Students found to have violated this policy are subject to discipline in accordance with provisions of Section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matter.*