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Physical Office Hours: Frasier: 10:00-noon Tuesday, 9:00-11:00 am Wednesday, or by appointment
Heeke: 1:00-3:00 pm Monday or by appointment.

Textbooks: Farm Management
Ronald Kay, William Edwards, and Patrica Duffy
McGraw Hill, 8th Edition, 2016. (previous editions acceptable)

Applied Mathematical Programming Using Algebraic Systems
Bruce A. McCarl and Thomas H. Spreen
<http://agecon2.tamu.edu/people/faculty/mccarl-bruce/books.htm> (also on Canvas)

Selected readings posted on Canvas (<http://canvas.colostate.edu>)

Description: Economic principles of agricultural production decisions with linear programming (LP) analysis of production choices and business planning with emphasis on applications in farm and ranch production and beyond the farm gate.

Prerequisites: AREC 305 Agricultural Business and Resource Enterprise Analysis

Objective: This course will provide you with the analytic tools and practice to systematically evaluate management decisions that are pervasive in agriculture (inside and beyond the farm gate). Some of the approaches investigated may not be directly applicable to your future career, but they will all enhance your ability to wrestle with the complexity so pervasive in agricultural decisions and business in general.

Learning Outcomes: **Professional Development:** via the application of the course Final Project students will be afforded the opportunity to build awareness of real-world management issues and to network with industry professionals in building and parameterizing their optimization models.

Technical Competence: throughout the term students will build mastery of the linear programming framework and appropriate underlying methods for parameterizing and analyzing these models.

Problem-solving Skills: through weekly laboratory engagements and the Final Project students will identify problems, formulate appropriate models, and determine the solution(s) most consistent with a stated objective.

Communication Skills: in laboratory exercises students will provide written summaries and analysis of their models and subsequent results. The Final Project will build written and oral presentation skills of independent work.

Leadership Skills: in both lecture and laboratory sessions students will be encouraged to work collaboratively providing the opportunity to sharpen team-building skills and initiative.

Grading Policy: Course grades will be based on examinations, quizzes, and problem sets. Two one-hour exams will be given. The components will be weighted as follows:

Lab Problems	260	points	(13 @ 20 pts. each)
Quizzes	100	points	(Best 3 of 4 @ 33 pts. each)
Mid-term Exams	300	points	(Exam I - 100, Exam II - 200)
Final Project Prelims	40	points	(2 @ 20 pts. Each)
Final Project	<u>100</u>	points	
Total	<u>800</u>	points	

Exam dates will be confirmed at least two weeks prior to being held. Some quizzes will be announced while others may not be. Failure to attend exams or quizzes without prior permission of an instructor will result in a score of zero. Problem sets will be considered late beyond the beginning of the class period prescribed due and will not be graded if received after the solutions are posted.

Absences will be excused ONLY when (1) you initiate an oral conversation regarding an up-coming absence, (2) you send me an email stating the particulars of your absence, summarizing our prior oral agreement, and (3) you receive my email confirmation that the absence is excused. Exceptions only at my discretion.

Final grades will be assigned based on total point accumulations as follows: A = 90-100%; B = 80-89%; C = 70-79%; D= 60-69%; F = <60%. Requirements for each grade category may be adjusted downward but will not be raised. Pluses and minuses will be awarded at the instructors' discretion. **IMPORTANT: To pass the course a student must receive a passing grade on the final project. A failing grade on the final project will result in a failing grade for the course irrespective of total points earned elsewhere in the course.**

Academic Integrity: We take academic integrity seriously. Most simply, academic integrity means that no one will present another's work as their own. The CSU writing center defines plagiarism this way:

Plagiarism is the unauthorized or unacknowledged use of another person's academic or scholarly work. Done on purpose, it is cheating. Done accidentally, it is no less serious. Regardless of how it occurs, plagiarism is a theft of intellectual property and a violation of an ironclad rule demanding "credit be given where credit is due." Source: (Writing Guides: Understanding Plagiarism.

<https://writing.colostate.edu/guides/page.cfm?pageid=311&guideid=17> Accessed, January 15, 2019)

If you plagiarize in your work you will lose credit for the plagiarized work, fail the assignment, or fail the course. Plagiarism can result in expulsion from the university. Each instance of plagiarism, classroom cheating, and academic dishonesty in general will be addressed according to CSU published policies. (See: <http://catalog.colostate.edu/general-catalog/policies/students-responsibilities/>)

Of course, academic integrity means more than just avoiding plagiarism. It also involves doing your own reading and studying. This includes regular class attendance, careful consideration of all class materials, and engagement with the class and your fellow students. Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, we will ask to you sign the CSU Honor Pledge as part of completing all of our major assignments. You will be prompted to write and sign the following statement on all of your graded assignments, quizzes, and exams:

"I have not given, received, or used any unauthorized assistance."

Visit <http://tilt.colostate.edu/integrity/resourcesFaculty/pledge/> to read more about CSU's Honor Pledge as well as finding links to other resources that address academic integrity.

Violations: There is no chance for accidental violation of academic integrity in this course. The activities here are designed for a single core purpose—to support your learning and growth of understanding of the material presented. As you will learn, I encourage collaboration in your laboratory exercises. You should feel free to discuss and ask questions of your classmates in these exercises. What is NOT acceptable is copying other's work, whether that be simply typing what they've typed on the screen or obtaining electronic copies of full or partial work that they've completed (from this semester or previous terms). In no case will copied work be acceptable. For each instance where work is determined to have been copied, those involved (meaning the copier and anyone facilitating the copying) will receive a score of zero for the exercise AND the reduction of a **minimum of a full letter grade for the course**. For severe violations, failure of the course and expulsion from the University are possible consequences.

Need Help? CSU is a community that cares for you. If you are struggling with drugs or alcohol and/or experiencing depression, anxiety, overwhelming stress or thoughts of hurting yourself or others please know there is help available. Counseling Services has trained professionals who can help. Contact 970-491-6053 or go to <http://health.colostate.edu>. If you are concerned about a friend or peer, Tell Someone by calling 970-491-1350 to discuss your concerns with a professional who can discreetly connect the distressed individual with the proper resources (<http://supportandsafety.colostate.edu/tellsomeone>).

Principles of Community

The Principles of Community support the Colorado State University mission and vision of access, research, teaching, service and engagement. A collaborative and vibrant community is a foundation for learning, critical inquiry, and discovery. Therefore, each member of the CSU community has a responsibility to uphold these principles when engaging with one another and acting on behalf of the University

Inclusion: We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents, and contributions.

Integrity: We are accountable for our actions and will act ethically and honestly in all our interactions.

Respect: We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

Service: We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.

Social Justice: We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

Undergraduate Program Outcomes

Agricultural and Resource Economics

Colorado State University

Mission

Undergraduate programs in Agricultural and Resource Economics provide a high quality educational experience that prepares students for a diverse set of career possibilities and the foundation for life-long learning. Our programs blend applications of economic and business management tools with technical training in agricultural, environmental, and natural resource sciences. Graduates are prepared to work independently and in diverse teams solving problems faced in agricultural and natural resource management and the larger societal community. Our faculty members engage students in formal coursework designed to develop analytic and professional skills. Our faculty members also mentor students in experiential learning, particularly through extracurricular activities, that reinforce problem solving skills and foster personal responsibility.

Outcomes

Successful graduates from undergraduate programs in Agricultural and Resource Economics will exhibit the following characteristics:

Professional Development: Graduates will embody a general awareness of issues in agricultural and natural resource management and their implications in a larger societal context. Students will begin to develop a network of personal and professional connections which will foster an understanding of the culture surrounding professional expectations and conduct.

Technical Competence: Graduates will demonstrate technical competency including the ability to appropriately use economic theory in formulating analytical problems, identifying and gathering appropriate data, and employing appropriate economic methods to analyze those problems, utilizing appropriate available computer technology.

Problem-solving Skills: Graduates will demonstrate the ability to solve real-world problems beyond the context of the classroom. Students will be able to identify a problem and its scope, evaluate resources available to address the problem, formulate alternative solutions, and select the solution(s) most consistent with a stated objective.

Communication Skills: Graduates will demonstrate proficiency in oral and written communication in terms of substance, organization, mechanics, documentation, and synthesis. Proficient students will have the ability to clearly communicate findings, critically and analytically, at a professional level within their chosen career.

Leadership: Graduates will have developed leadership qualities that they will use in their professional, personal and community interactions leveraging the other competencies acquired in the program. These leadership qualities include vision, initiative, personal responsibility, team building, and motivating collective action.

Course Outline

<u>Week</u>	<u>Topic</u>
1-3	I. <i>Introduction & Review of Microeconomic Production Theory</i> Production Theory (Kay, Ch 7-9) Enterprise Budgets (Kay, Ch 10)
4	II. <i>Mathematical Programming</i> Linear Programming (McCarl & Spreen)
5-8	III. <i>LP Modeling of Farm Production</i> The Basic Farm Plan (Kay, Ch 11) Linking Intermediate Activities Introducing the BUY and SELL activity Heterogeneous Resources
	Exam I, Friday, March 15, 11:00a-12:50p (note <u>EXTENDED</u> time) (Note: Last day to withdraw from the course: Monday, March 25)
9-13	III. <i>Applications</i> Transportation Models Blending Problems (Least Cost Ration Formulation) Equilibrium Asset Replacement Models Multiperiod Models Incorporating Risk
	Exam II, Monday, April 29, 11:00a-12:50p
14-15	IV. <i>Presentation of Student Projects</i> (see <i>Project</i> assignment for specifics)
16	Final Exam Period: (conclude presentations)

Thursday, May 16, 7:30-9:30 am

I have an "open door" policy for visitors in my office. You are always welcome to drop by if you have an issue that you wish to discuss with me. However, please realize that I have many other responsibilities beyond teaching this class, so I may be forced to schedule to meet with you later. I schedule office hours each week that are set aside for meeting with students from this class. If at all possible, I prefer that you use this time to meet with me. I will make every attempt to be in the office during these hours and will announce the days that I will not be available during this time.

I welcome you to this course and look forward to sharing the next 16 weeks with you. I hope for you a fruitful and prosperous semester. Good luck to you!

Wmf