AGR 5277C/4932: Tropical Cropping Systems
Credit: 3 Credit Hours
Days & Times: Tuesday Period 7 (1:55-2:45) and Thursday Periods 6-7 (12:50-2:45)
Location: 3096 McCarty Hall B

Instructors: Rose Koenig PhD and Greg MacDonald, PhD
Agronomy Department
3119 McCarty Hall B
352-273-3422
rlkoenig@ufl.edu

Agronomy Department
2059 McCarty Hall D
352-294-1594
pineacre@ufl.edu

Course Website: None. Sakai is used http://lss.at.ufl.edu

Consultation Policy
Our office hours are by appointment. You will need to contact both of us and we will find a time when we all can meet. This will ensure that students get consistent and non-conflicting information when there are multiple instructors for a course. Please contact us using our UF e-mails shown above.

Course Catalog Description
Tropical crop ecology, characteristics, improvement and production practices of tropical field crop species grown in sole and multiple cropping systems.

Course Purpose
The purpose of this course is to prepare students with specific competencies needed for a fundamental understanding of tropical cropping systems. The course is designed to provide the student with basic knowledge of the tropical environment, ecology, cropping system limitations, and management practices. Students will learn about social and food security issues in tropical regions. Upon completion of this course, the student will be able to analyze tropical cropping systems and design agricultural development projects that address crop production across a broad range of tropical areas.

Course Format
The course includes assigned readings, discussion, class activities, guest speakers, written assignments, and individual oral presentations.

General Objectives
By the end of this course the student should be able to:

1) Describe the major climatic features of the tropics and how they impact crop production.
2) Analyze cropping systems in the tropics and relate current practices to abiotic, biotic and social constraints experienced by farmers.
3) Identify the major tropical food crops and know basic biological and production information about them including their role in the human diet.
4) Identify and describe the major obstacles to increased food production in developing countries.
5) Design a holistic approach to crop production using evidence of successful agricultural development projects.
6) Examine the role of technology in tropical cropping systems and evaluate these advances as potential technological solutions to current crop production problems.

Approach and Expectations: This course is designed to provide students with an understanding of tropical cropping systems. This course will examine the tropics using a multi-disciplinary approach and

will cover a broad range of topics in the areas of agronomy, ecology, and the social sciences. The class lectures, discussions and activities will help the student to develop and demonstrate analytical and critical thinking skills. In class, you will be applying the knowledge that you have gained through your required reading to problem solving activities and group discussion. We have developed the weekly lessons with the assumption that you have kept up with the reading assignments and you will come to class prepared. The combination of assigned readings, lectures, class room activities, class discussions and class written and oral projects should enable you to develop a more comprehensive understanding of the subject matter.

Course Materials

We will provide you with assigned readings from various sources including websites, journal articles, reports of international organizations such as the FAO, and textbooks. Each class lesson will be organized on the e-learning Sakai site using a folder that will contain all of the information needed to prepare for the class lesson.

General Course Expectations

- Students arrive to class on time
- Students convey superior work ethic and perform to high standards
- Students share their questions and ideas in and out of class
- Students keep an open mind
- Students respect one another
- Students turn off all electronic devices
- Computers are only allowed for note taking and abuse of this policy will result in a paper note taking only for the particular student

Attendance Policy: You are expected to attend every class and be on time. We understand the constraints that students may have if they need to get across campus between class periods. Therefore, we will give students a 5 minute grace period to arrive to class before considering a student absent. Late arrivals are disturbing to fellow students and will not be allowed after the grace period unless you have contacted us prior to class explaining why you are arriving late. A portion of your class grade will be based on your participation in class. Excused absences are allowed following UF attendance policy. You will need to bring in written documentation so that we can verify your absence. If you have an excused absence you will not lose points towards your final grade. Course quizzes, exams, discussions, activities and projects will be based on readings, class lectures and in class activities. If you miss a class it is YOUR RESPONSIBILITY to talk with another student to discuss what was covered in class. You will be responsible for all assignments given during an absence. Late assignments will be accepted but points are deducted (see below under make up policy).

Communication: With the exception of setting up appointments to meet with us, all other communication should be done using the mail function in Sakai. We will use the announcement and mail functions of Sakai to communicate messages to students when necessary. This allows a record to be kept of all messages to students. Students should use the mail function in Sakai to communicate with us. However, if we have not answered a message that you sent via the mail function in Sakai within 24 hours, you should contact the both of us using our UF e-mails (rlkoenig@ufl.edu and pineacre@ufl.edu).

Assessments and Grading:

How your grade is calculated:

Assignment	Percentage of Grade
Crop Quizzes non-cumulative	**15% (6 given, lowest one dropped)**
Discussion Session	**15%**
Country Assignment Paper and Presentation	**30%**
2 Exams	**30% (15% each)**
Class Participation	**10%**

Class Participation:
All of you come with prior knowledge and experience that can enrich this course. There will be opportunities throughout the course to discuss concepts, ask questions and provide insights on the topics that we cover. By keeping up with the reading and thinking about the course content you should be able to actively engage in the course content. You will be assessed no fewer than five times during the semester. During random class periods we will assess class participation. Review the class participation rubric to fully understand how we assess student participation.

Crop Quizzes: During the first half of the course we will be covering some of the major food crops grown in the tropics as well as basic information on cropping systems, crop biology and soils. The week after particular lessons we will administer a short quiz that will cover information presented during the class lecture, activities and the required reading. Each quiz will be administered in the last 15 minutes of the class on Tuesday. See the syllabus for the specific dates and lessons covered.

Country Assignment Paper and Presentation:. This assignment consists of three written parts and an oral presentation. The first part of the assignment includes a holistic description of the country (climate, soils, governance, culture, religion, gender roles, economy, natural resources, infrastructure and major cropping systems). The second part of the assignment will include a thorough analysis of the major cropping systems, focusing on the question of "why does a particular cropping system exist in a country?" You will analyze the biotic and abiotic factors within the country and relate them to the major cropping systems found in the country. Also, you will analyze the social/economic/political factors that influence the major cropping systems found in the country. For the third part of the assignment you will select a development project that has recently been completed in the country. You will evaluate the project objectives, implementation and outcomes. Based on your research you will design a second phase of the project improving on the original project by targeting something new, trying a different approach or fixing problems that were previously identified.

Discussion Session: You and at least one partner will conduct a discussion session on a required reading(s) associated with a specific topic related to the course. You will be required to provide your fellow classmates and the instructors an annotated bibliography consisting of the required reading and at least two other papers that summarizes the topic.

Quizzes: There will be six short quizzes administered throughout the course. The syllabus provides the dates for the quizzes and what they will cover. Prepare for these quizzes by keeping

up with the class assigned reading, reviewing the slide presentations posted on the Sakai site and reviewing your class notes. We will drop the lowest quiz grade when we calculate your grade.

Exams: Two exams will be given over the semester. Exam dates are indicated in the Course Topical Outline section of this syllabus. Exams enable us to make sure you understand the learning objectives associated with each lesson. Many of the exam questions will come from in class readings, lecture notes, and discussions. If you are absent when an exam is given you will receive a 0 on the exam and you will not be allowed to make up the exam. If you have an excused absence when an exam is given, we will arrange for either a make-up exam or your entire exam grade will be based on a single exam. The first exam is a written exam covering the material associated with first half of the class. The second exam will be an oral exam scheduled outside of the class period. Guidance on the types of questions that you should expect will be given to you during the class.

Course Grading Scale:
For University of Florida grading policy see:
http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html
The following grading scale will be used in this class.

A=100-90%
B+=89.9-87%
B=86.9-80%
C+=79.9-77 %
C=76.9-70%
D+=69.9-67%
D=66.9-60%
E<60%

Make-Up Policy: Late assignments are accepted however we will deduct 10 points for each day past the original due date (i.e. 2 days = 20 points) from the earned grade. Assignments handed on the same day the assignment is due but after deadline will be penalized 5 points.

Exams cannot be taken after the scheduled date without prior written consent from the professor. Only cases of serious illness, bereavement or activities that fall under the Twelve –Day Rule will be considered for make-up. You must provide official documentation for all cases.

Readings: All readings are posted under the lesson tab on the Sakai site. See syllabus for weekly listing. Reading should be completed BEFORE you attend the class for optimum learning.

Electronic Device policy: The use by students of cellular telephones, messaging devices and other electronic devices during lecture and labs is prohibited. In class, students are required to put phones and messaging on silent mode and turn off other devices. All electronic devices must be stowed in a backpack or equivalent during class.

University of Florida Student Honor Code (Rule 6C1-4.017): When you enroll at the University of Florida you pledge to hold yourself and your peers to the standards of high honor required by the student honor code. You are expected to uphold your pledge to honesty and integrity in class. Academic misconduct in any form will not be tolerated. University of Florida procedures will be followed to discipline offenders. There will be no warnings and sanctions will occur on the first offense. Visit: http://regulations.ufl.edu/chapter4/4017.pdf to read the Student Honor Code, learn about conduct that constitutes academic dishonesty, and sanctions. As a result of completing the registration form at the University of Florida, every student has signed the following statement:

"I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the university."

University of Florida Software Use Policy: All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,* **www.counseling.ufl.edu/cwc/**
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
  - Community Provider Database
- *Career Resource Center,* First Floor JWRU, 392-1601, **www.crc.ufl.edu/**

Students with Disabilities Act:
The Dean of Students Office coordinates the needed accommodations of students with disabilities. This includes the registration of disabilities, academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faulty-student disability related issues.

Dean of Students Office, 202 Peabody Hall, 392-7066, **www.dso.ufl.edu**.

The professor reserves the right to make changes in the assignments and syllabus as needed. Notification will be via E-Learning mail or course list-serve and class announcement

General Topical Outline of Tropical Crop Production

Date	Discussion Topic – shading denotes double period – 6 & 7	Lead Instructor	Tentative Assigned Readings* - to be read for that day of lecture; those in red are student led discussion papers and should be read by everyone These are also posted on the Sakai site
Aug 22	Introduction, Overview of Syllabus, Class format, Assignments, Etc. Defining the Tropics……..	Koenig & MacDonald Koenig	None
Aug 27	Lesson 1: The Tropical Environment, Geography, and Demographics	Koenig	Agriculture, Climate and Technology: Why Are the Tropics Falling Behind? - Gallup and Sachs Rainfall Patterns in the Tropics – year round rain, summer rain, dry tropics and subtropics - Schultz
Aug 29	Plant Science 101: Basic Plant Biology and Development	MacDonald	None – PowerPoint will be provided
Sept 3	Lesson 2: Tropical Soils- What is soil? *Quiz # 1 - Plant Biology and Development*	Koenig	Soils of the Tropics and the World Food Crisis – Sanchez and Buol
Sept 5	Overview of Tropical Soils – Dr. Walter Bowen, IFAS International Programs Office	Guest	Soil Fertility and Hunger in Africa - Sanchez
Sept 10	Lesson 3: Introduction to tropical crops	Koenig	Tropical Environments, Biodiversity, and the Origin of Crops – Gepts pp. 1-11
Sept 12	Tropical crops and tropical cropping systems Student led discussion #1	Koenig	Plantation agriculture in the Tropics- Hartemink Brown, D. 2006. Personal preferences and intensification of land use: their impact on southern Cameroonian slash-and-burn agroforestry systems.
Sept 17	Lesson 4: Crops of the Andean Highlands: Potato, Quinoa, Amaranth, Common Bean and	MacDonald	

	Tomato *Quiz # 2 - Cropping Systems in the Tropics*		
Sept 19	Cropping Systems of the Andean Highlands Student led discussion #2	Koenig	Plant Domestication and the Shift to Agriculture in the Andes – Pearsall Ayarza, M., et. al. 2007. Advances in improving Agricultural Profitability and overcoming Land Degradation in Savanna and Hillside Agroecosystems of Tropical America.
Sept 24	Lesson 5: Crops Sub-Saharan Africa: Sorghum, Millet, Peanut, Cowpea *Quiz # 3 – Crops and Systems – Andean Highlands*	MacDonald	
Sept 26	Cropping Systems of Sub-Saharan Africa Student led discussion #3	Koenig	Kerr, R.B. et al. 2007. Participatory Research on Legume Diversification with Malawian Smallholder Farmers for Improved Human Nutrition and Soil Fertility

Date	**Discussion Topic – shading denotes double period – 6 & 7**	**Lead Instructor**	**Tentative Assigned Readings* - to be read for that day of lecture**
Oct 1	Student led discussion #3 *Quiz # 4 – Crops and Systems – Sub Saharan Africa*	Koenig	Yiridoe, E., and Anchirinah, V.M. 2005. Garden production systems and food security in Ghana: Characteristics of traditional knowledge and management systems
Oct 3	Social Implications in Rural Agricultural Development Dr. Mickie Swisher, Professor	Guest	
Oct 8	*Exam # 1*	Koenig & MacDonald	
Oct 10	Lesson 7: Tropical Entomology/Guatemala Case Study Dr. Hugh Smith- Assistant Professor	Guest	
Oct 15	Lesson 8: Aflatoxin and other postharvest concerns	MacDonald	
Oct 17	Lesson 9: Randy Ploetz – Tropical Crop Diseases	Guest	Ploetz. 2007. Diseases of Tropical Perennial Crops
Oct 22	Lesson 10: Weed Management in the Tropics	MacDonald	

Oct 24	Lesson 11: Tropical Forage Systems/Nicaragua Case Study Dr. Yoana Newman, Assistant Professor	Guest	
Oct 29	Lesson 12: Crops of Meso-America: Sugarcane, banana, cassava, maize	MacDonald	
Oct 31	Cropping Systems of Meso-America Student led Discussion # 4	Koenig	Montagnini, F. 2006 Homegardens of Mesoamerica: Biodiversity, Food Security and Nutrient Management.
Nov 5	Lesson 13: Crops of southeast Asia: Rice, Palm, Soybean, Sesame *Quiz # 5 – Crops and Systems – Meso-America*	Koenig & MacDonald	
Nov 7	Cropping Systems of Southeast Asia Student led discussion # 5	Koenig	Devendra, C. and Thomas, D. 2002. Small holder farming systems in Asia. Devendra and Thomas. 2002. Crop-animal interactions in mixed farming systems in Asia.
Nov 12	Lesson 14: Role of Plant Breeding in the Tropical Crop Improvement *Quiz # 5 – Crops and Systems – Southeast Asia*	Koenig	Sun.S. 2008. Transgenics for New Plant Products, Applications to Tropical Crops Byerlee, D. and Fischer, K. 2002. Accessing Modern Science: Policy and Institutional Options for Agricultural biotechnology in Developing Countries.

Date	**Discussion Topic – shading denotes double period – 6 & 7**	**Lead Instructor**	**Tentative Assigned Readings* - to be read for that day of lecture**
Nov 14	Lesson 15: Panel Discussion on the Role of Private and Public Institutions in Agricultural Development Walter Bowen, David Sammons, Sandra Russo	Guests	Van Keulen, H. 2008. Historical context of Agricultural Development. Morales, J.J. 2007. The Mission and Evolution of Internal Agricultural Research in Developing Countries
Nov 19	Class Presentations	Koenig & MacDonald	
Nov 21	Class Presentations	Koenig & MacDonald	
Nov 26	Class Presentations (if needed) Tying it all together – the future of agricultural development in the tropics	Koenig & MacDonald	

Dec 3	Exam # 2		