# AGEC 552 – Intro Math Programming
## Syllabus

Instructor:                   Roman Keeney (rkeeney@purdue.edu)[1]
Office:                      Krannert 576
Office Hrs:             By appointment

## Course overview and objectives:

Our topic is math programming. We will primarily focus on the subset of problems in that field that meet the definition of 'linear programming'. We will explore the mathematical economics involved in the structure of linear programming problems as well as the methods for generating solutions. This will require us to regularly consider the value of linear programming as an approximation protocol for analysis of 'real world problems'.

Linear programming is ubiquitous in both applied economic analysis and in real world applications for economic planning. As such, we will use our time in this course to survey the variety of classic LP problems that span the typology and work to understand the methodological commonalities. The successful student in AGEC 552 will gain facility with multiple types of LP problems in economics including their formulation, solution and analysis as well as communication of each of these aspects.

## Textbook:

Kaiser, H., and K. Messer. 2011. *Mathematical Programming for Agricultural, Environmental, and Resource Economics.* John Wiley and Sons, USA.

- We will not use the associated 'Risk Solver Platform' software add-ons that are described on the inside front cover of this book.

## Course Reading and Software:

Textbook readings will be assigned along with additional readings provided by instructor (distributed via Blackboard portal). Some of these may be handouts specific to examples for this class or web resources that provide software tutorials. We will begin the course looking at two software solutions for solving problems: MS Excel (spreadsheet with Solver add-in) and GAMS (general algebraic modeling system). Both are available to AgEcon students via departmental license.

Instructor solutions and demonstrations will primarily given using GAMS but students will be allowed to use any software package they prefer unless an assignment gives specific directions on implementation. Instructor assistance for software issues will be limited to GAMS (other than the few demonstrations and required spreadsheet implementations).

## Attendance:

You should be in class when it is held. You are responsible for all information covered in any class. This includes topical content as well as updates/changes to schedule, assignment instructions etc. In class communication is the primary and priority method of communication. This is the class attendance policy though there is no specific grading increment attached to your daily attendance.

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[1] My clerical assist is Ms. Tracy Buck. She is stationed in the main office of AgEcon. She does not keep current on day to day activities of this class and should only be contacted as a last resort (i.e. you want someone to accept a paper/assignment on my behalf but can't find me or you have a question about my availability and haven't been able to reach me.)

Participation:
Our class meets in a 75 minute block. Because that is too long a block to consistently fill with lecture, we will typically use some time for questions, review of current and completed assignments, or discussion topics presented by the instructor. Your participation is welcomed and expected. A respectful dialogue between course members on the best way to implement analysis of a policy problem using methods from our course is a great way to enhance learning and to gauge our progress on course learning objectives.

Major Course Deliverables:
Midterm examination – core concepts in LP **(*9th Week; Announcement during Week 7*)
**Final Project and Presentation (group; end of semester incl. Dead Week)*

Assignments:
Students will be given assignments at regular intervals in the course. The goal is to have five graded assignments each covering approximately 5 classes worth of material. You will typically have 1 week from assignment to due date. These assignments will be returned within 1 week of submission.

**Working in groups – Student assignments will be completed by groups of 2 or 3. Students will choose their partner(s) for the first assignment. After that submission, they may be assigned partners to work with to facilitate horizontal learning opportunities.*

Labs (online video materials):
We may use online (video recorded) labs as a way to deal with some of the more hands-on applications in the class that are best served by students learning in a setting where they can access a computer and control the rate of instruction.

Any labs assigned as online videos will count towards 'classroom instruction' time. I.e., if I post a required 30 minute video for you to watch we will accommodate that time with a change to our class meetings (i.e. cutting a class period down to 45 minutes).

These labs will typically be instruction that is aimed at helping you complete the next assignment. They will also include either a 'quiz' to be submitted online or handed in at the next class meeting after the lab period is assigned.

Note: there may be supplemental online videos that A) demonstrate work from a graded assignment, B) explain or expand on a concept or C) serve some other purpose. These will be considered study/reading material assignments when given and will not enter in the accounting for 'class time'.

Grading:
| | |
|---|---|
| Midterm examination: | **30%* |
| 2nd Major deliverable: | **20%* |
| Assignments (aggregate): | **30%* |
| Lab related work: | **20%* |

Letter grades will be given out using standard 10% intervals beginning with >= 90% earning an A. The instructor reserves the right to adjust downward from this benchmark if the letter grade distribution warrants such action.

Topic outline:
We will largely follow the material as outlined in Kaiser & Messer (2011).

*Other information*

The Purdue Provost's office sends guidelines to faculty regarding syllabi[2]. This section covers the recommended topics not covered in pages 1 or 2.

**Academic Integrity.** http://www.purdue.edu/odos/osrr/academic-integrity/index.html

- **Syllabus statement.** As we continue to promote academic integrity, consider adding this sentence to your syllabus. "Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern."

- **Purdue Honors Pledge.** Everyone is asked to prominently include the student-initiated Purdue Honors Pledge on their syllabus, as well as exams and key assignments. The statement as written by our own students is "As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue." You may use this link to a web page for Purdue's Honor Pledge in your syllabi.

- **Commercial Websites.** Our instructors treat various materials that appear on commercial web pages very differently, causing confusion among students. Examples include web pages like Course Hero, Chegg, or Quizlet. It is not uncommon to find answer keys to old exams or homework. In the worst case, students can find online services to complete the work for them.
    - In general, notes are "considered to be 'derivative works' of the instructor's presentations and materials, and they are thus subject to the instructor's copyright in such presentations and materials." As such, they cannot be sold or bartered without your express written permission. See the policy with regard to commercial note taking in classes that you may wish to include in your syllabus (see part J of the Purdue student misc. conduct regulations).
    - Thus, be clear in your syllabus as to whether your materials may posted or considered to be derivative works.

>> We will follow Purdue official policy on academic integrity. Students caught violating Purdue policies will be referred to appropriate departments/offices. Additional notes on the importance and expectation on Academic Integrity from the Provost can be found in the appendix of this document.

>> Students should take the 'honors pledge' to be implicitly attached to this syllabus and all assignments and exams given in the course. Your submission of your assignment is an assertion that you are making the Purdue Honors Pledge when you submit work under your name unless you expressly state that is not the case. A refusal to submit under the auspices of the Purdue Honor Pledge should be prominently stated in writing in an area close to your name.

>> Notes are considered derivative works of the instruction in this course and subject to copyright of the instructor (or cited sources). You may share or post your notes from this course under an acknowledged copyright statement provided you can demonstrate that there is no commercial gain to yourself or any other entity in the sharing of such materials.

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[2] Specifically, this section addresses items covered in the email from OfficeoftheProvost@purdue.edu dated 7 Aug 2018.

**Diversity & Inclusion**

- Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Purdue's nondiscrimination policy can be found at: http://www.purdue.edu/purdue/ea_eou_statement.html.

**Emergency Procedures**

- A two-page supplement at the end of this letter provides resources to communicate or engage with your students in case of unexpected emergencies that affect the West Lafayette campus. Emergency notification is vital! Please consider allowing one or more of the following options to ensure you are quickly notified of an emergency.
    - Keep your cell phone on to receive a Purdue ALERT text message.
    - Log into a Purdue computer connected to the network…will receive any Desktop Popup Alerts.
    - If you have a "no cell phone" in class policy allow one or two students who have signed up for Purdue ALERT to keep their phones on to receive any alerts.

>> We will follow Purdue guidance on diversity and inclusion at all times. If at any time a student in AGEC 552 feels these guidelines are not being represented in a forthright manner they should contact the instructor to discuss any issue. This includes bringing problems that arise outside of the AGEC 552 purview but are part of Purdue enrollment/employment. Note that confidentiality is a priority but information (including names) may be required to be shared under mandated reporting guidelines.

>> The Emergency Preparedness lecture (2 pages referenced in the email) are included in the appendix to this document. Students are welcome to keep their cellphones out and set to notify them of any emergency during class. This would include any reasonable checking/monitoring for personal situations that may be necessary provided the student takes care to not disrupt class.

**Mental Health Syllabus Statement**

- On the recommendation of the University Senate, we are also asked to share the following on your syllabus about resources for mental health.
    - **CAPS Information**: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and http://www.purdue.edu/caps/ during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

**Students with Disabilities**

- **The Disability Resource Center (DRC)** is a resource for students and instructors. Students may present a "Letter of Accommodation" to you at any point in the semester. Should you have questions about accommodations, please contact the DRC at: 494-1247 or

[drc@purdue.edu](mailto:drc@purdue.edu).  In many cases the DRC can partner with you to develop inclusive teaching strategies that benefit all students in your class.

- *Accessibility and Accommodations Syllabus Statement:  The DRC recommends the following statement be included in your syllabus.  "Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: **drc@purdue.edu** or by phone: 765-494-1247."  [http://www.purdue.edu/drc/faculty/syllabus.html](http://www.purdue.edu/drc/faculty/syllabus.html)*

>> Students are encouraged to monitor their well-being at all times, including their mental well-being.

>> Students managing a disability that requires an academic accommodation should provide the required notices to the instructor. The DRC is your primary contact and will inform you of your obligation to seek accommodations for AGEC 552 that you deem necessary.

**Preparing for Fall Semester 2018**

1. Key dates

   - Classes begin on August 20, 2018.
   - Monday, September 3 is Labor Day.
   - ICP Reporting is due September 14.
   - October 8-9 Fall Break.
   - November 21-24 Thanksgiving Vacation.
   - The last day of class is December 8, 2018.
   - Grades are due by 5:00 pm Tuesday, December 18.
   - Commencement is December 16.

2. Blackboard Learn and the Faculty Tab at MyPurdue contain important information. For your course roster and grade roster use Blackboard Learn and the "preferred name" list. This will ensure you have the list with the names that students prefer you use to address them. Under the Faculty Tab at My Purdue you can find meeting times, and rooms. You will have to log in using your career account and password, and be FERPA certified.

3. ITAP teaching & learning technologies provide a wide range of support. This includes help on setting up Blackboard Learn, requesting email lists for your courses, and many other programs, such as Signals, BoilerCast, iClicker, and much more. Besides workshops and training sessions, email tlt-consulting@purdue.edu for individual consultations.

4. Again, review the attendance and grief absence policy the regulation, and consider its application in your class. The University recognizes that the learning mission can be enhanced significantly by extracurricular experiences. Students participating in University-sponsored activities should be permitted to make up classwork missed as a result of this participation. Ultimately students are responsible for all required coursework and bear full responsibility for any academic consequences that may result due to absence.

5. Instructions for the Initial Course Participation (ICP) Reporting will be sent to you no later than the first day of the term from your departmental schedule deputy. . ICP is due Sept 14 for 16 week/full term classes and by the end of the first week for 8 week courses. If you use Blackboard Learn for at least one assignment or test due before your ICP reporting date, and the student completes it, ICP will automatically be reported for you. If you have questions about this deadline, you may email the Office of the Registrar at registrar@purdue.edu or visit ICP Reporting for a list of Q&A's.

6. Does your course involve an industry sponsored class project? If yes, new procedures have been developed for handling the agreements, payments and intellectual property rights. Please review the specifics at the following web site: http://www.purdue.edu/legalcounsel/resources/Projects.html

7. For additional questions or assistance with a specific industry-sponsored student class project, please email Legal Counsel at legalcounsel@purdue.edu . You can also contact Ken Sandel (765) 494-1063 or sandel@purdue.edu .

# Guidelines for Academic Integrity

In a society that increasingly questions the value of higher education upholding academic integrity takes on added significance. The time and effort necessary to champion high expectations of academic integrity are well understood, and the University is in full support of faculty and instructors who uphold these standards. Please consider these five steps for your class.

1. Define academic dishonesty for your class in your syllabus. A faculty guide is located at https://www.purdue.edu/odos/osrr/resources/documents/responding_to_academic_dishonesty.html . I encourage you to emphasize this part of your syllabus on the first day of class. You also may wish to revisit your expectations at key junctures of the semester (e.g., before an exam or term project).

2. Provide greater clarity to students about what is acceptable and unacceptable. Some classes routinely use team assignments and encourage collaboration for projects, labs, or homework. Yet at other times of the term, students are expected to work independently. Be very clear about your expectations for each assignment.

3. Students should to be told prior to – and as part of – the instructions on each test what is acceptable in terms of notes, phones, calculators, etc. From class to class our practices vary widely so, here again, it's important to be very clear in your expectations.

4. Fourth, define what penalties that be enforced a student is caught. One example might be:

   > Incidents of academic misconduct in this course will be addressed by the course instructor and referred to the Office of Student Rights and Responsibilities (OSRR) for review at the university level. Any violation of course policies as it relates to academic integrity will result minimally in a failing or zero grade for that particular assignment, and at the instructor's discretion may result in a failing grade for the course. In addition, all incidents of academic misconduct will be forwarded to OSRR, where university penalties, including removal from the university, may be considered.

5. At a minimum, if you penalize a student's grade by deducting points, report the instance of scholastic dishonesty to the Office of Student Rights and Responsibilities (OSSR). One reason it is important to report all incidents to ensure consistent treatment both at the course level and across the institution. Staff members from OSRR are available to consult on an individual basis. Their office is in B50 of Schleman Hall, and their phone is 494-1250.

6. *Finally, faculty and instructors have raised concerns about student academic integrity. At the same time, students have indicated that some instructors appear reluctant to uphold academic standards. I ask that you be clear in your syllabus on the steps you will take in your class to uphold academic integrity. In addition, students should be made aware that they can report issues of academic integrity that they observe, either through the Office of the Dean of Students (purdue.edu/odos), call 765-494-8778 or email integrity@purdue.edu .*

**EMERGENCY PREPAREDNESS LECTURE**

1. *Prior to the first day of class, obtain a copy of the building emergency plan for each building in which you will be teaching. Note the evacuation route and assembly area, as well as the shelter in place locations. BEPs are located on the Emergency Preparedness website* [http://www.purdue.edu/ehps/emergency_preparedness/](http://www.purdue.edu/ehps/emergency_preparedness/)

2. *On the first day of class, the following information is required to be presented to students:*

*As we begin this semester I want to take a few minutes and discuss emergency preparedness. Purdue University is a very safe campus and there is a low probability that a serious incident will occur here at Purdue. However, just as we receive a "safety briefing" each time we get on an aircraft, we want to emphasize our emergency procedures for evacuation and shelter in place incidents. Our preparedness will be critical IF an unexpected event occurs!*

Emergency preparedness is your personal responsibility. Purdue University is actively preparing for natural disasters or human-caused incidents with the ultimate goal of maintaining a safe and secure campus. Let's review the following procedures:

- For any emergency call 911.

- There are nearly 300 Emergency Telephone Systems throughout campus that connect directly to the Purdue Police Department (PUPD). If you feel threatened or need help, push the button and you will be connected to the PUPD.

- If we hear a fire alarm we will immediately evacuate the building and proceed to_____ (location).

   o **Do not use the elevator.**

   o Go over evacuation route…see specific Building Emergency Plan.

- If we are notified of a Shelter in Place requirement for a tornado <u>warning</u> we will shelter in the lowest level of this building away from windows and doors. Our preferred location is _____.

- If we are notified of a Shelter in Place requirement for a hazardous materials release we will shelter in our classroom shutting any open doors and windows.

- If we are notified of a Shelter in Place requirement for an active threat such as a shooting we will shelter in a room that is securable preferably without windows. Our preferred location is _____.

***(NOTE: Each building will have different evacuation & shelter locations. The specific Building Emergency Plan will provide specific locations and procedures)***

Attached to the syllabus is an "Emergency Preparedness for Classrooms" sheet that provides additional preparedness information. Please review the sheet and the Emergency Preparedness website for additional emergency preparedness information.

**EMERGENCY PREPAREDNESS SYLLABUS ATTACHMENT**

**EMERGENCY NOTIFICATION PROCEDURES are based on a simple concept – if you hear a fire alarm inside, proceed outside. If you hear a siren outside, proceed inside.**

- **Indoor Fire Alarms** mean to stop class or research and <u>immediately</u> **evacuate** the building.
o Proceed to your Emergency Assembly Area away from building doors. **Remain outside** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.
- **All Hazards Outdoor Emergency Warning Sirens** mean to <u>immediately</u> seek shelter (**Shelter in Place**) in a safe location within the closest building.
  - o "Shelter in place" means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado, an active threat including a shooting or release of hazardous materials in the outside air. Once safely inside, find out more details about the emergency\*. **Remain in place** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.

*\*In both cases, you should seek additional clarifying information by all means possible…Purdue Emergency Status page, text message, Twitter, Desktop Alert, Albertus Beacon, digital signs, email alert, TV, radio, etc.…review the Purdue Emergency Warning Notification System multi-communication layers at* [http://www.purdue.edu/ehps/emergency_preparedness/warning-system.html](http://www.purdue.edu/ehps/emergency_preparedness/warning-system.html)

**EMERGENCY RESPONSE PROCEDURES:**
- Review the **Emergency Procedures Guidelines**
  [https://www.purdue.edu/emergency_preparedness/flipchart/index.html](https://www.purdue.edu/emergency_preparedness/flipchart/index.html)
- Review the **Building Emergency Plan** (available on the Emergency Preparedness website or from the building deputy) for:
  - o evacuation routes, exit points, and emergency assembly area
  - o when and how to evacuate the building.
  - o shelter in place procedures and locations
  - o additional building specific procedures and requirements.

**EMERGENCY PREPAREDNESS AWARENESS VIDEOS**

- **"Run. Hide. Fight.®"** is a 6-minute active shooter awareness video that illustrates what to look for and how to prepare and react to this type of incident. See: [https://www.youtube.com/watch?v=5mzI_5aj4Vs](https://www.youtube.com/watch?v=5mzI_5aj4Vs) (Link is also located on the EP website)

**MORE INFORMATION**
Reference the Emergency Preparedness web site for additional information: [https://www.purdue.edu/ehps/emergency_preparedness/](https://www.purdue.edu/ehps/emergency_preparedness/)