

# Syllabus for IE 690 Models and Methods for Decision Making

## Spring 2017

### Course Information

Term: Spring 2017

MWF 9:30 – 10:20

GRIS 126

We will use Blackboard

### Instructor Information

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Office Hours: Fridays 10:30 – 11:20 and by appointment  
(check calendar at web site to suggest appointment times)

### Course Description

This is a new research course, and I am not settled on exactly what will be covered. The framework that I am using for models and methods to be covered is Ronald A. Howard's three-legged stool for decision quality.

**Figure 1. Howard's Three-Legged Stool for Decision Quality**

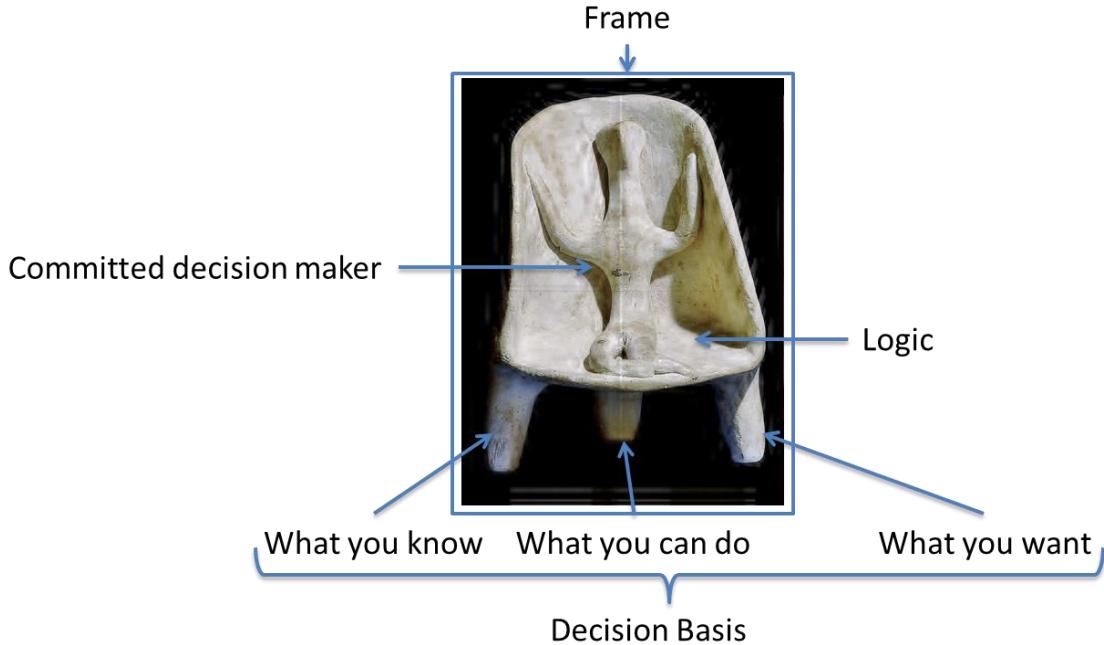


Image of terracotta female figure seated on a three-legged throne. Mycenaean, about 1300 BC.  
© Trustees of the British Museum.

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The “What you know” portion will draw the research of my doctoral advisor and his students on influence diagrams and Bayes nets. I will be surveying the interests the students in the class, which may steer choices on additional material.

### **Prerequisites**

Students are assumed to have completed some college-level mathematics such as calculus, probability, and linear algebra. They will be reading research articles that assume knowledge of these topics.

### **Course Goals**

The purpose of the course is to:

1. understand and apply Checkland’s FMA model of research,
2. reach a common understanding of the principals of decision analysis, and
3. provide depth in the theoretical frameworks, methodologies, and applications of various models and methods for decision making

### **Course Requirements**

*Reflection Papers.* There may be occasional reflection papers that will be graded and will serve to familiarize students with the expectations of the instructor for the content and style of the term project paper.

*Exercises.* There may be occasional exercises that will be graded and will serve to familiarize students with the detailed implementation of the modes and methods presented in the lectures.

*Term Project.* The project topic should be an extension of the lecture material and will be approved and guided individually. The project can be theoretical, applied, or software-oriented, or even a review of some of the emerging literature. Ideally, this project is one that could grow into research suitable for inclusion in a master’s or doctoral thesis. The term project will be documented in a **project paper** and presented as an **oral report** delivered to the class; a copy of the paper and the presentation will be submitted on Blackboard for grading.

*Tests and Final Examinations.* There are no tests and no examinations.

Assignments are to be completed as individuals and must be submitted via the class Blackboard site on the day that they are due.

### **Required Reading**

There are no required textbooks. The set of course readings is listed in a separate file posted on Blackboard, which will be updated as the semester progresses. The readings can be accessed either as files posted on the Blackboard site or via the link provided in the reading list. You may have to log into the Purdue library site first to gain access to the links provided in the reading list. From off-campus, the library site is accessible if you use the Purdue VPN service to connect. The reading list is loosely structured according to the table of contents of the textbook by Howard and Abbas:

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Howard, Ronald A., and Ali E. Abbas. 2016. *Foundations of Decision Analysis*. Boston: Pearson.

### **Class Schedule**

This reading list dictates the order that the material will be covered.

Each student will be allotted one 50-minute session at the end of the semester to present their oral report. We will hold a lottery to draw for the order in which students select the class session that they will be presenting.

### **Policies**

#### *General Course Policies*

Students who must arrive late or leave early may do so without disrupting the ability of the other students to see and hear the lecture. All cell phones and computers must be silenced during class.

#### *Grading*

The grade will be based on the reflection papers and the term project, with the term project weighted more heavily.

Students may assist each other, but must submit their own work. The course is graded using an absolute scale and not on a curve; therefore, assisting each other can improve each other's level of learning and grades. It will not result in lowering the grade for those students who ultimately submit their own work. There are multiple ways to detect that a student has copied a file from another student and submitted it as their own work, so don't even try it.

#### *Missed or Late Work*

In extreme circumstances, the instructor might accept late work with an appropriate penalty to the score. These circumstances most likely would be those that lead to a student failing to receive a grade of Incomplete in the class. For late homework to be considered for grading, the student must provide the instructor a written request with justification as to why the circumstance is extreme.

### **Use of Copyrighted Materials**

*Among the materials that may be protected by copyright law are the lectures, notes, and other material presented in class or as part of the course. Always assume the materials presented by an instructor are protected by copyright unless the instructor has stated otherwise. Students enrolled in, and authorized visitors to, Purdue University courses are permitted to take notes, which they may use for individual/group study or for other non-commercial purposes reasonably arising from enrollment in the course or the University generally.*

*Notes taken in class are, however, generally 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. No individual is permitted to sell or otherwise barter notes, either to other students or to any commercial concern, for a course.*

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### **Academic Dishonesty**

*Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest."* [University Senate Document 72-18, December 15, 1972]

*Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breeches 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.*

### **Attendance**

*Students are expected to be present for every meeting of the classes in which they are enrolled. Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible...For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, or by contacting the main office that offers the course. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor's department because of circumstances beyond the student's control, and in cases of bereavement, the student or the student's representative should contact the Office of the Dean of Students.*

### **Grief Absence Policy for Students**

*Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student's family.*

### **Violent Behavior Policy**

*Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.*

### **Students with Disabilities**

*Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through*

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*the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.*

*If you have a disability that requires special academic accommodation, please make an appointment to speak with the instructor within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (<http://www.purdue.edu/drc>) of an impairment/condition that may require accommodations and/or classroom modifications.*

### **Emergencies**

*In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.*

### **Nondiscrimination**

*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 University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in [Executive Memorandum No. D-1](#), which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit [www.purdue.edu/report-hate](http://www.purdue.edu/report-hate) to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.*

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**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 immediately evacuate the building.
  - 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 immediately seek shelter (Shelter in Place) in a safe location within the closest building.
  - “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, a civil disturbance 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/efps/emergency\\_preparedness/warning-system.html](http://www.purdue.edu/efps/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:
  - evacuation routes, exit points, and emergency assembly area
  - when and how to evacuate the building.
  - shelter in place procedures and locations
  - additional building specific procedures and requirements.

**EMERGENCY PREPAREDNESS AWARENESS VIDEOS**

- "Shots Fired on Campus: When Lightning Strikes," is a 20-minute active shooter awareness video that illustrates what to look for and how to prepare and react to this type of incident. See:  
<http://www.purdue.edu/securePurdue/news/2010/emergency-preparedness-shots-fired-on-campus-video.cfm>  
(Link is also located on the EP website)

**MORE INFORMATION**

Reference the Emergency Preparedness web site for additional information:  
[https://www.purdue.edu/efps/emergency\\_preparedness/](https://www.purdue.edu/efps/emergency_preparedness/)