Course Overview

Decision Theory and Analysis is a course designed for students to build an understanding of how to improve decision-making and to increase the analytic effectiveness of individuals, groups and organizations. Behavioral decision theory provides the theoretical core for the course. Decision theory draws on insights from a diverse set of disciplines, including cognitive and social psychology as well as economics, statistics and philosophy. Analytics is an enabler to decision support and decision-making. To promote student effectiveness in communicating the results of their analysis, SRA 231 features the instruction and practice of analytic writing. The curriculum establishes the behavioral and cognitive connectedness of the analytic process to decision making through the examination of the hindrances to critical thinking. By demonstrating the behavioral similarities that govern decision-making and analysis, the course highlights the potential effects of analytic judgments on the decision-maker and to decision outcomes.

Goals

The broad objective of the course is to support overall curricular objectives of the Security and Risk Analysis degree program. By so doing the course helps to prepare future leaders to address the many security and risk challenges that face our nation and the world. The course also supports the core values of the College of IST: respect for technology, cultures, and the law. This course helps the student become familiar with the vocabulary, written form and skills of the field.

The individual goals of SRA 231 are summarized by the six learning objectives around which the course was designed. They include:

- **Decision Theory (15%)**: Students will be able to define, recognize and put into practice the fundamentals of decision theory in every day life as well as in the study and application of security and risk decisions.
- **Analytic Writing (15%)**: Students will demonstrate successful application of the principles of sound analytic writing by effectively communicating the results of their analysis in appropriate written form.
- **The Decision Environment (10%)**: Students will be able to derive, analyze and apply the elements that define the decision environment at the individual, group and
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organizational level, including the characteristics, and strategies of decision-making at each level.

- The Nexus of Decision Theory and Analysis (Decision Support) (15%): Students will be able to apply the principles of critical thinking, recognize the effects of cognition, bias and emotion on decision-making and understand the role of analytic judgment on the decision support process.
- Decision Support Methods & Applications (25%): Students will be able to make use of the decision support processes; products and tools introduced during the course and apply their use to problems and activities.
- Bridging Theory & Practice (20%): Students will apply their knowledge, skills and abilities to realistic practical-application decision exercises and analytic problems (individual and team) to communicate the tenets of Decision Theory and Analysis.

Prerequisites

- SRA 211 and STAT 200

Course Design

This course will incorporate collaborative and action-learning experiences wherever appropriate. Emphasis will be placed on the development of critical thinking and critical writing as expressed in numerous analytic assignments. Rubrics will be provided for the more extensive individual and group assignments.

SRA 231 was designed as a Problem-Based Learning (PBL) course and as an analytic writing course. The course downplays the role of exams; however, experience has proven that this approach is not foolproof. Some students need encouragement to read and to read, do homework and participate in course discussions. A short exam accompanies each Unit as a progress check on student comprehension. A Midterm exam is not currently planned for the course.

Evaluation

As a PBL participant, you will be assessed on your comprehension of decision theory and analysis knowledge and in your ability to translate the course material into cogent analytic judgments. To achieve this goal, various practical application assignments have been created all specifically tailored to the task:

- Decision Problems (DP): are short analytic assignments that stress the practical aspects of a specific decision/analytic concept or technique. These problems are designed to reinforce various lesson-learning objectives. There are some fifteen (15) DP assignments across the semester.
- Decision Analysis Assignments (DA): There are four (4) DAs assigned across the semester. The DAs are short-length analytic writing assignments focused on some aspect of the course lesson plan and designed to put into practice the principles of sound analytic writing. Decision Analysis Assignments (DAs) reinforce the principles of analytic writing: concision, cohesion and the use of active voice. DA-4 is focused on identifying the hindrances to critical thinking.
- Analyst Journal: The Analyst Journal is a tool used during the Course Final Analytic Exercise. It is used to capture team and individual analytic judgments, taskers and
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questions. The analyst journal is an informal analytic diary of sorts where team members collaborate, trade hypotheses and capture their analytic progress throughout the end-of-course simulation. There is no specific template for the journal; however, Google Docs has been used in the past with good results. Collaboration is the essential goal of the Analyst Journal.

The "A" in SRA 231

SRA 231 was expressly designed to promote the “analytic” aspects of decision theory by introducing students to analytic methods and analytic writing. Assignments have been designed to reinforce the knowledge, skills and abilities (KSA) that frame the course by emphasizing the use of structured analytic methods and the communication of analytic judgments in written and oral form.

The course utilizes a developmental approach to achieve this goal and teaches analytic writing as the prescribed writing style. Analytic writing differs from strict academic writing in approach, form and function. Where academic writing tends to be deductive (theory to conclusion) and “read-long.” Analytic writing is inherently inductive (observation to theory), stressing the concise narrative. The analytic aspects of the course will evolve across the course with early short-duration assignments stressing decision theoretic terms and concepts. Later assignments are more complex, requiring a more in-depth examination and communication of analytic processes.

Feedback on Written Work: Students receive feedback throughout the course and on each facet of their writing. Each practice assignment is reviewed in class where trends are discussed. Students are encouraged to read aloud their work to prompt discussion. Each writing assignment is reinforced with a fully executed instructor solution. After the in-class review & trends discussion, students are encouraged to compare their work with the instructor’s and seek additional feedback as necessary. Early in the semester, instructor feedback emphasizes course content over written form. As the semester progresses and the assignment become more specific, emphasis gradually shifts toward the more stringent elements of analytic writing and in the presentation and defense of analytic judgments.

Evaluation of Written Work: For assignments that fall early in the semester, assessment focuses on the comprehension of course content over the strict rules of writing. For these early assignments, students are also judged on their ability to follow assignment guidance, however, at this stage, I am more interested in “what you say then how you say it.” As the course progresses, greater emphasis will be placed on the application of the principles of sound analytic writing (cohesion and concision). By semester’s end students will be judged on their ability to integrate decision theoretic concepts with the analysis process as expressed in analytic form and style. Emphasis at this stage is balanced between what is said (analytic judgments/findings) and how it is presented (tight analytic prose).

Communications

ALL-COURSE ANNOUNCEMENTS will be made via the Canvas Announcements. Personal communications (particularly regarding grades or attendance) should be communicated via Canvas email. Other course-related email, including messages to the instructor and fellow students should be sent within Canvas, using the Inbox. Every attempt will be
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made for the instructor (or Learning Assistant) to respond to email questions within 24 hours.

Assignments & Grading

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<thead>
<tr>
<th>Course Grading Breakdown</th>
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<tbody>
<tr>
<td><strong>Grading Category</strong></td>
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<tr>
<td>Decision Problems (DP) (15)</td>
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<tr>
<td>Decision Analysis Assignments (DA) (4)</td>
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<tr>
<td>Attendance</td>
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<tr>
<td>Final Exercise</td>
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<td>TOTAL</td>
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Course Grading Scale

The following are minimum cutoffs for each grade:

- 93.00% = A
- 90.00% = A-
- 87.00% = B+
- 83.00% = B
- 80.00% = B-
- 77.00% = C+
- 70.00% = C
- 60.00% = D

Course Policies and Expectations

Attendance & Participation

**Attendance and Participation** is required for this course. Role will be taken each day using name cards. Students are responsible for picking up their name card and initialing it each class day. Name cards that are not picked up will result in those students being noted as absent. There are legitimate reasons why students miss class (illness, religious observance, sport team commitments, emergency situations, and others). Rather than the Instructor or Learning Assistants attempting to keep up with the myriad students and their reasons for missing class, I would much prefer that each student manage his or her own attendance. To that end you can bank up to two absences no questions asked before points are lost. Any student that misses more than two classes (unexcused) in a given Unit will lose all attendance points for that Unit. Missing more than five classes (unexcused) across the semester loses all attendance points for the course. Finally, any student missing 8 classes (unexcused) across the semester will not receive a passing grade.
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Participation is a harder metric to assess. But by the time we get to the End-of-Course Exercise, your teammates and I will have a good sense of your individual participation. Exercise Peer Evaluations play a major role in this assessment. If you should find yourself falling behind for any reason, please make an appointment to see me before you drop the course. Life happens, so we must be able to adjust fire – if you are willing to work – I am willing to work with you!

Submitted Work

In order to get **FULL** credit for any assignment it **MUST** be completed by the due date designated for that assignment. The due date for each assignment is published in the Course Calendar in Canvas. Deviations from the published due date will be discussed in class.

Assessments of DA & DP Assignments

Because of the open nature of the problems sets and wide variability of the possible solutions, the Decision Problems and Decision Analysis Assignments are generally NOT strictly graded but general feedback will be provided. Work is assessed based on effort and meeting the spirit and intent of the assignment. Students are encouraged to compare their solutions with the Instructor solution, which is made available on the Thursday following the Sunday Due Date.

Late Work

Work will not be accepted after the Instructor Solution is opened, unless a **prior arrangement has been made**. While I do make provisions for “justified” late submissions, I ask that you keep these to a minimum. If you know you will miss a deliverable, please communicate your intentions to me and to your assigned Learning Assistant before the due date. In any case, ALL assignments for a given Unit **MUST** be completed and accounted for **within a week after that Unit ending**. Ensure you keep track of ALL assignments so that you don’t fall behind. If you miss a due date for any assignment you must make arrangements with your LA to make it up BEFORE the Unit submission end-date. With this many assignments it is the only way to maintain a fair and equitable system of assessment. Teaching and evaluating is the role of the instructor; learning and participation is the role of the student. You can track assignments via the Key Deliverables document found in the Course Support Folder.

Logging into Canvas

Students are expected to login regularly to check for course updates, announcements, emails, discussions, etc.

Team Collaboration

Students are expected to make every attempt to attend team meetings/analytic sessions. Team Analytic Problems conducted in Unit 2 will require some collaboration outside the classroom. During Unit-3, the Diabolical Deeds Exercise, outside collaboration is a must in order to successfully complete the problem.

Reading Assignments
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You can expect a short reading assignment to prepare for each class session. Complete all required reading to get ready for class discussions, assignments and exercises. You will be expected to keep up. There is a lot of material to cover and we will not have a lot of time to retrace old ground. Most reading assignments should take no more than 30-45 minutes to complete.

Course Submissions in CANVAS

All course assignments should be submitted directly to Canvas. Please DO NOT e-mail assignments directly to me or to the Learning Assistants, as this may cause your work to be misplaced. ALL grading is conducted directly through Canvas. With the large number of assignments, this is the only way to ensure you get credit for your work. Please ensure your name appears on the assignment and that it also appears as part of the file-name. For example, for DP-0: Student Bio Sketch, I would save the file as: Graham.J_DP0.doc.

If I don't have all of this information, I cannot know who is submitting the work. If you are submitting a team assignment, the names of all team members must be on the assignment, and the file name should conform to the guidance above. For example: "Team_FBI_WK1Rpt.doc."

Technical Requirements

Standard computer technical specifications are assumed for this course.

Resources

Find extensive information and links to many resources, including the Penn State library, web conferencing, course tools, writing help, and much more on the Resources page.

University Policies

Review current information regarding Penn State policies, including Academic Integrity, Disability Accommodations, Military Accommodations, and many others on the University Policies page.

Schedule

The following schedule outlines the topics covered in this course, along with the associated timeframes, readings, activities, and assignments.

Course Lectures

Unit-1 (Weeks: 1-5)

In this unit we explore the foundational aspects of decision theory and introduce the concept of analytic writing in various short duration decision analytic problems.

L-1: Course Overview

L-2: Intro to Decision Theory

L-3: Elements Analytic Writing
Unit-2 (Weeks 6-11)

In this unit we explore various tools, methods and techniques used in decision support & analysis. In this unit we will delve into the analysis process by honing our writing skills on more in-depth analytic problems.

L-11: Principles of Analysis
L-12: Analytic Products: Charts
L-13: Analyst NB Timeline
L-14: Analyst NB Association Chart
L-15: Conducting Analysis

Unit-3 (Weeks 12-15) THE CAPSTONE

Unit-3 is set aside for a large-scale team analytic exercise, Analytic Decision Game Number-2: *Diabolical Deeds in the District*. The exercise pits four (4) agency teams against a common problem. Each team represents a different agency and each takes a slightly different analytic pathway to complete their respective agency mission. All analytic products created in support of the Capstone are team based.

PEER Evaluation

At the conclusion of the Final Course Exercise, each student will conduct a Peer Evaluation on the performance of each team member.