

**IE 5311 – 001, 002, 003**  
**Decision Analysis**  
**Fall 2016**  
**MW 4:00 – 5:20 p.m.**  
**402 Woolf Hall**

**Instructor:** Dr. Bill Corley

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**Faculty Profile:** <https://www.uta.edu/profiles/herbert-corley>

**Office Hours:** MW 3 – 4 p.m.

**Description of Course Content:** A survey of topics covering various aspects of decision-making and modeling.

**Student Learning Outcomes:** This course is designed to develop modeling and decision-making skills in both industrial and research situations, as well as the ability to do an independent group project and write a report. These outcomes will be evaluated with the two in-class examinations and a group project.

**Prerequisite:** IE 5301, IE 5317 (or current enrollment or consent of instructor).

**Required Textbook:** No text but *Operations Research* by Taha, tenth edition, 2017, will be used for some of the initial lectures. *Value-Added Decision Making for Managers* by Chelst and Canbolat, will be useful for projects. *Introduction to Logic* by Suppes will be useful for the sentential logic part of the course.

**Attendance:** Except for quizzes, class attendance will not be checked after the first two weeks of class. However, attendance is strongly encouraged. You are responsible for all information given in class. It will not be repeated outside class.

**Homework:** Homework will assigned but not be graded. However, students are strongly encouraged to work the assigned practice problems. Failure to do so will likely lead to poor grades.

**Expectations for Out-of-Class Study:** Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 5 hours per week of their own time in course-related activities. Studying for exams will require further time.

**Class Courtesy:** To enhance learning, the instructor insists on a quiet classroom. Silence cell phones before class and refrain from talking during class. Students who come to class late should enter the classroom as discreetly as possible. The classroom may be locked 10 minutes after class begins, in which case a student will not be allowed to enter. In general, students who are disruptive in class will be asked to leave.

#### Online Education Policy:

- Information about distance learning may be found at <http://www.uta.edu/engineering/future-students/engineering-online/current-students.php>.
- Online students are required to communicate with the faculty before the second class period and let the instructor know that you are viewing the lectures.
- For any problems viewing ClassRev (Echo360) recordings, contact classroomsupport@uta.edu, not the instructor.
- Online students living in the DFW area will be required to take all exams in class during the designated exam period. They do not have the option of proctored exams.
- Online students living outside the DFW area must set up a proctor as noted at <http://www.uta.edu/engineering/future-students/engineering-online/proctor-information.php>. It is the responsibility of the student, not the instructor, to do this as soon as possible.

#### Description of Major Assignments and Examinations:

1. The guiding principle is that nothing done outside class will be graded. Collaboration on work done outside of class is rampant, here and in other universities, so I am making it more difficult. This is not my sole decision. It is departmental.
2. There will be two in-class quizzes on the dates as noted in the schedule above. They will be closed-book as noted below in Exam Protocol. The problems on each exam will be equally weighted even though some may be easier or harder than others. Exam grades are not curved.
3. There will be a group project. The goals of this assignment are to identify a practical decision-making problem worthy of a minor study, to learn the basics of writing a group project proposal, to perform the study, to learn the basics of writing a group project report, and to make group a 10 minute PowerPoint presentation to the class. The time limit will be strictly enforced, so that students will learn to get to basic ideas of the study and not to digress. Students must work in groups of three. Group assignments will be made by the instructor. Distance students on campus may work together. Distance student off campus will do their projects individually, but the proposal, report, and PowerPoint presentation must be turned in electronically to the instructor by the due dates. A class presentation is not required. This group project will be graded on the basis of 1/3 for the report's content, 1/3 for the report's organization and proper style and professionalism, and 1/3 on the presentation's organization and professionalism. **Reports will be rigorously checked for plagiarism.** See the schedule below for project completion dates.

**Make-up Exams:** Make-up exams will NOT be given unless an illness or emergency is thoroughly documented. Whenever, possible, you should contact the instructor before the exam in such cases. A missed final exam will result in an F in the course unless (i) the instructor is contacted and (ii) the illness or emergency is documented by Thursday of finals week. The final will not be given early for students wishing to leave for the semester. Please make travel plans accordingly.

**Exam Grading Complaints:** If you disagree with your grade on any test problem when the exam is returned, you must submit after that class a written statement on the back of the returned exam that clearly explains the reason you wish the problem to be regraded. Remember that only what you systematically wrote on the exam paper while taking it can be considered in grading a problem – not

what you meant or claim to know. Moreover, answers that are submitted without supporting written work will receive NO credit. If a test is submitted for regrading, the entire test will be regraded.

**Course Grade:**

- Grading: A = 90 - 100, B = 80 - 89, C = 70 - 79, D = 60 - 69, F = 0 - 59.
- The two quizzes and the project will be equally in calculating your grade.
- Grades are not curved.
- No extra work can be used to improve a grade.
- No final grades will be given out until UTA releases them. Please do not ask.

**Schedule:**

- Monday, August 29 – overview, modeling, common errors of decision making
- Wednesday, August 31 – rationality, preference orders, decision criteria, utility theory, the nonstandard compromise criterion
- Monday, September 5 – no class for Labor Day
- Wednesday, September 7 – decision making under certainty examples, AHP and value trees
- Monday, September 12 – decision making under risk and decision trees, project groups will be assigned.
- Wednesday, September 14 – decision trees examples
- Monday, September 19 – multiple objective decision making, the notion of Pareto optimality
- Wednesday, September 21 – Pareto optimization scalarizations, goal programming, AHP as for multiple criteria
- Monday, September 26 – Pareto optimization scalarizations, goal programming, AHP as for multiple criteria
- Wednesday, September 28 – two person, zero-sum games
- Monday, October 3 – equilibria, games with selfishness, pure and mixed Nash equilibrium, computations
- Wednesday, October 5 – games with mutual support and cooperation: the Berge and dual equilibria, computations. Project proposal due in class.
- Monday, October 10 – games with coalitions, Shapley's theorem
- Wednesday, October, 12 – prescriptive games with arbitrators: scalar equilibria
- Monday, October 17 – prescriptive games with arbitrators: scalar equilibria
- Wednesday, October 19 – review for quiz 1
- Monday, October 24 – quiz 1
- Wednesday, October 26 – quiz 1 returned, sentential logic
- Monday, October 31 – sentential logic
- Wednesday, November 2 – no class
- Monday, November 7 – sentential logic

- Wednesday, November 9 – sentential logic
- Monday, November 14 – sentential logic
- Wednesday, November 16 – sentential logic, mention of Godel's and Turing's results, quantum logic
- Monday, November 21 – Fuzzy logic and control
- Wednesday, November 23– no class for Thanksgiving
- Monday, November 28 – Fuzzy logic and control
- Wednesday, November 30 – multiple criterion decision making: Value tree revisited, goal programming, two-criterion Pareto optimality using one at a time approach
- Monday, December 5 – scalarization of Pareto optimality, scalarization for polyhedral cones
- Wednesday, December 7 – all student reports due at beginning of period, all PowerPoint presentations
- Wednesday, December 14, 2:00-4:30 p.m. – quiz 2

**Review Classes:** In the above schedule, certain classes have been designated as review classes, but only as time permits. During these classes, the instructor or GTA will go over homework problems and old exam questions plus answer reasonable student questions on the test material.

**Changes to Syllabus:** The instructor reserves the right to make reasonable modifications to this syllabus as needed during the semester when circumstances arise. Students will be notified in advance of such changes both in class and by email. All students are responsible for such changes.

#### **Exam Protocol:**

1. Your cell phone and computer, plus all books and class notes, must be placed on the floor at the side of the room, front of the room, or back of the room. It is suggested that you not bring them.
2. You must sit in the seat on the seating chart shown on the door and at the front of the room. No exceptions.
3. Bring your UTA IDs to be checked.
4. Arrive early to put your books, etc., away and to find your assigned seat. Anyone arriving late will not receive extra time.
5. You will have at your desk only one 8 ½ by 11 sheet of paper on which you can put any notes that you want on both the front and back. You may also have a very basic nonprogrammable calculator. Cell phones cannot be used as calculators. The test is closed book so you may have no other materials at your desk.
6. Talking to anyone during the test or having a cell phone on your person during the test is defined to be cheating in this class.
7. The instructor will quickly go over the test at the beginning of the period. No questions will be answered for anyone about the test while you are taking it.
8. Absolutely no talking, looking on another student's exam, or passing anything between students is permitted during the test. Neither is having a cell phone or computer on your person. Such

actions will be construed as cheating. Students are not permitted to leave the room during the exam. Suspicious activity will be noted on the seating chart. The University of Texas System has approved videotaping a test. This will be done if possible.

9. Five points will be deducted for each minute that a student continues working on a test after the instructor calls for them to be turned in.
10. The exams will ONLY be given back and explained during the next period. They will not be given back at any other time. Exams will be taken up the day they are returned. See also Exam Grading Complaints above.

**Exam Grading Complaints:** If you disagree with your grade on any test problem when the exam is returned, you must submit after that class a written statement on the back of the returned exam that clearly explains the reason you wish the problem to be regraded. Remember that only what you systematically wrote on the exam paper while taking it can be considered in grading a problem – not what you meant or claim to know. Moreover, answers that are submitted without supporting written work will receive NO credit. If a test is submitted for regrading, the entire test will be regraded.

**Course Grade:**

- Grading: A = 90 - 100, B = 80 - 89, C = 70 - 79, D = 60 - 69, F = 0 - 59.
- The two examinations and the group project will be equally weighted as 1/3 of your grade.
- Grades are not curved.
- No extra work can be used to improve a grade.
- No quiz can be retaken to improve a grade.
- No negotiation for a grade will be tolerated.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to withdraw officially if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Disability Accommodations:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA), and Section 504 of the Rehabilitation Act. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities

(OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: The Office for Students with Disabilities, (OSD) [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability).

**Non-Discrimination Policy:** The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit [uta.edu/eos](http://uta.edu/eos).

**Title IX Policy:** The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or [jmhood@uta.edu](mailto:jmhood@uta.edu).*

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations

the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exits, which are located on the first floor down the stairs at the either end of the hallway. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

**Inclement Weather Policy:** If the University is closed, this class will not meet. Any scheduled assignments or examinations will be rescheduled to the next class period that the class meets. You can get information by dialing 972-601-2049 or checking the main website at [www.uta.edu](http://www.uta.edu).