**IIMT3636 Decision and Risk Analysis I**

**2022-2023, Semester 2, Subclass E and F**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **GENERAL INFORMATION** | | | | | |
| Instructor: Dr. OUYANG, Huiyin     * Email: [oyhy@hku.hk](mailto:oyhy@hku.hk) * Office: KKL1321 * Office phone: 3917 4221 * Consultation times: by appointment   Tutor:  Course website: Moodle | | | | | |
| **COURSE DESCRIPTION** | | | | | |
| **Business decision-making involves considerable complexity and uncertainty. This course introduces the basic concepts in quantitative business analysis to help students gain a clear understanding of the key elements in the decision-making process. This course covers the tools and the skills to analyze and solve problems by stressing approaches to 1) understand and question assumptions, 2) consider a richer set of solution alternatives, and 3) consider diverse measures of performance. The teaching methods will include lectures, skill-building exercises, qualitative class discussions, and a project with the support of several software packages in Microsoft Excel.** | | | | | |
| Pre-requisites: STAT1602 Business statistics or STAT1603 Introductory statistics or STAT2601 Probability & statistics I or ECON1280 Analysis of economic data or equivalent  Co-requisite(s): None  Mutually exclusive: None | | | | | |
| **COURSE OBJECTIVES** | | | | | |
| By introducing rigorous quantitative methods and theories, this course demonstrates ways to apply structured thinking on loosely defined business problems in reality. Upon successfully completing this course, you should be able to  1). employ basic statistical methods to decision making,  2). understand how to apply basic models and theories in business,  3). solve management problems effectively, and  4). use software tools to model decision problems. | | | | | |
| **FACULTY LEARNING GOALS (FLGs)** | | | | | |
| **FLG1**: Acquisition and internalization of knowledge of the programme discipline  **FLG2**: Application and integration of knowledge  **FLG3**: Inculcating professionalism  **FLG4**: Developing global outlook  **FLG5**: Mastering communication skills  **FLG6**: Cultivating leadership | | | | | |
| **COURSE LEARNING OUTCOMES (CLOs)** | | | | | |
| **Course Learning Outcomes** | | | | **Aligned Faculty Learning Goals (FLGs)** | |
| CLO1: Clearly identify and define a loosely structured business problem | | | | FLG1, 3 | |
| CLO2: Select and use effective techniques to address the major challenges presented | | | | FLG1, 2, 3 | |
| CLO3: Use computer software to verify, validate, and provide solutions to the decision process | | | | FLG2, 5 | |
| CLO4: Communicate and support your solution with qualitative explanations | | | | FLG4, 5, 6 | |
|  | | | |  | |
| **COURSE TEACHING AND LEARNING ACTIVITIES** | | | | | |
| **Course Teaching and Learning Activities** | | | **Expected Study Hours** | | **Study Load**  **(% of study)** |
| T&L1. Interactive lectures | | | 36 | | 30% |
| T&L2. Tutorials | | | 12 | | 10% |
| T&L3. Group project and assignments | | | 36 | | 30% |
| T&L4. Self-study | | | 36 | | 30% |
| Total | | | 120 | | 100% |
|  | | | | | |
| **Assessment Methods** | | **Brief Description (Optional)** | **Weight** | | **Aligned Course Learning Outcomes** |
| A1. Midterm exam | | No make-up | 30% | | CLO1, 2, 4 |
| A2. Final exam | |  | 40% | | CLO1, 2, 4 |
| A3. Assignments | |  | 10% | | CLO1, 2, 3, 4 |
| A4. Participation | |  | 10% | | CLO1, 2, 4 |
| A5. Group project | |  | 10% | | CLO1, 2, 3, 4 |
|  | | Total | 100% | |  |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Coursework / Examination Ratio:** |  | **30%** | **/** |  | **70%** |  | | | | | | |
| **Lecture:** Fundamental concepts will be presented in lecture, and calculation examples will be provided to strengthen the understanding. Interactions with the lecturer (for example, asking questions, answering questions, initiating discussions on relevant topics) are highly encouraged and will count towards the participation credit.  **Exercise:** To reinforce the class topics, in-class exercises will be provided. Students will be encouraged to present solutions to the class, and this will count towards the participation credit.  **Assignments and Tutorial Sessions:** Assignments will be assigned ***bi-weekly****,* and answers will be given at the tutorial sessions. Assignments should be submitted *in* ***soft copies to Moodle*** by due date specified on each assignment sheet. Late assignments will ***not*** be accepted, and all assignments count towards the total points. Grading of assignments is based on both accuracy and efforts. Tutorial participation will be assessed based on students’ performance and count towards the participation credit.  **Project:** One project will be assigned. The soft copies of report and associated spreadsheet are required to be *uploaded to Moodle* by the due date. Late submission will *not* be accepted. You will complete the project in self-selected groups of *four to six people*. If you need help finding a group, please see the tutor. | | | | | |
| **STANDARDS FOR ASSESSMENT** | | | | | |
| **Course Grade Descriptors** | | | | | |
| A+, A, A- | * Demonstrate a strong understanding of all relevant knowledge * Handling questions professionally * High participation in discussions * Present arguments that have an element of originality * Achieve a standard of excellent performance in the exams with very accurate computation and very good analytical and problem-solving skills * Excellent project output | | | | |
| B+, B, B- | * Demonstrate a good understanding of all relevant knowledge * Handling questions in a logical way * Good participation in discussions * Present arguments that go beyond the lecture and textbook * Achieve a standard of good performance in the exams with accurate computation and good analytical and problem-solving skills * Good project output | | | | |
| C+, C, C- | * Demonstrate a basic understanding of the concepts involved * Fairly address questions as set * Some participation in discussions * Present arguments in a well-structure manner * Meet a standard of acceptable performance in the exams with reasonably accurate computation and acceptable analytical and problem-solving skills * Acceptable project output | | | | |
| D+, D | * Demonstrate a minimum understanding of the concepts involved * Barely address questions as set * Minimal or no participation in discussions * Present arguments in a marginally acceptable manner * Meet a standard of marginally acceptable performance in the exams with some errors in computation and barely adequate analytical and problem-solving skills * Marginally acceptable project output | | | | |
| F | * Demonstrate a poor understanding of the concepts involved * Unable or unwilling to handle questions * Minimal or no participation in discussions * Present arguments poorly * Fail to meet a standard of passing the exams with major errors in computation and inadequate analytical and problem-solving skills * Poor project output | | | | |
|  | | | | | |
| **Assessment Rubrics for Each Assessment** | | | | | |
| **Assessment Rubrics for assignments, group project and exams**   |  |  | | --- | --- | | A+, A, A- | * Demonstrate a strong understanding of all relevant knowledge * Present arguments that have an element of originality * Achieve a standard of excellent performance in the assessments with very accurate computation and very good analytical and problem-solving skills * Excellent project output | | B+, B, B- | * Demonstrate a good understanding of all relevant knowledge * Present arguments that go beyond the lecture and textbook * Achieve a standard of good performance in the assessments with accurate computation and good analytical and problem-solving skills * Good project output | | C+, C, C- | * Demonstrate a basic understanding of the concepts involved * Present arguments in a well-structure manner * Meet a standard of acceptable performance in the assessments with reasonably accurate computation and acceptable analytical and problem-solving skills * Acceptable project output | | D+, D | * Demonstrate a minimum understanding of the concepts involved * Present arguments in a marginally acceptable manner * Meet a standard of marginally acceptable performance in the assessments with some errors in computation and barely adequate analytical and problem-solving skills * Marginally acceptable project output | | F | * Demonstrate a poor understanding of the concepts involved * Present arguments poorly * Fail to meet a standard of passing the assessments with major errors in computation and inadequate analytical and problem-solving skills * Poor project output that shows minimum efforts. |   **Assessment Rubrics for in-class and tutorial participation**   |  |  | | --- | --- | | A+, A, A- | * High participation in discussions * Always attend the tutorials and in-class discussions * Demonstrate a strong understanding of all relevant knowledge * Handling questions professionally * Present arguments that have an element of originality * Respect others and follow the class rules (no chatting and do not use cell phone) | | B+, B, B- | * Good participation in discussions * Often attend tutorials and in-class discussions * Demonstrate a good understanding of all relevant knowledge * Handling questions in a logical way * Present arguments that go beyond the lecture and textbook * Respect others and follow the class rules (no chatting and do not use cell phone) | | C+, C, C- | * Some participation in discussions * Sometimes attend tutorials and in-class discussions * Demonstrate a basic understanding of the concepts involved * Fairly address questions as set * Present arguments in a well-structured manner * Respect others and follow the class rules (no chatting and do not use cell phone) | | D+, D | * Minimal or no participation in discussions * Rarely attend the tutorials and in-class discussions * Demonstrate a minimum understanding of the concepts involved * Barely address questions as set * Present arguments in a marginally acceptable manner * Respect others and follow the class rules (no chatting and do not use cell phone) | | F | * Minimal or no participation in discussions * Almost never attend the tutorials and in-class discussions * Demonstrate a poor understanding of the concepts involved * Unable or unwilling to handle questions * Present arguments poorly * Behave poorly in class (often chatting with others, using cell phones, or being late) | | | | | | |
| **COURSE CONTENT AND TENTATIVE TEACHING SCHEDULE** | | | | | |
| **Please see the tentative schedule attached at the end.** | | | | | |
| **REQUIRED/RECOMMENDED READINGS & ONLINE MATERIALS** (e.g. journals, textbooks, website addresses etc.) | | | | | |
| **Lecture slides will be uploaded on Moodle.**  **Optional but recommended textbook: Quantitative Analysis for Management, 13th Edition, Global Edition by B.E. Render, M.E. Hanna, and R.M. Stair. Prentice Hall, 2018.**  Please find the book purchase link below: <https://apbookshop.com/HKU/EN/Display/PrintedBook?ISBN=9781292217659> <https://apbookshop.com/HKU/EN/Display/PrintedBook?ISBN=9781292217680> | | | | | |
| **MEANS/PROCESSES FOR STUDENT FEEDBACK ON COURSE** | | | | | |
| conducting mid-term survey in additional to SETL around the end of the semester  Online response via Moodle site  Others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (please specify) | | | | | |
| **COURSE POLICY** (e.g. plagiarism, academic honesty, attendance, etc.) | | | | | |
| An orderly learning environment is extremely important for this course. Disruptive behaviors are inconsiderate to other students as well as to the instructor and are unacceptable. Talking during lectures, arriving to class late, and any other disruptions of mobile devices are not allowed; students who are responsible for any of these actions will be subject to academic penalty and will be asked to leave the classroom.  Any dishonesty—such as cheating, false representation, plagiarism, etc.—that comes to my attention will result in an F in the course.  Academic dishonesty includes cheating, plagiarism, unauthorized collaboration, falsifying academic records, and any act designed to avoid participating honestly in the learning process. Scholastic dishonesty also includes, but is not limited to, providing false or misleading information to receive a postponement or an extension on an exam or other assignment. The responsibilities of both students and faculty regarding scholastic dishonesty are described in detail in the Disciplinary Committee Regulations. By teaching this course, I have agreed to observe all of the faculty responsibilities described in that document. By enrolling in this class, you have agreed to observe all of the student responsibilities described in that document. If the application of that policy statement to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification.  Students are encouraged to give feedback on the course through mid-term survey in addition to SETL around the end of the semester and online interaction via Moodle site. | | | | | |
| **ADDITIONAL COURSE INFORMATION** (e.g. e-learning platforms & materials, penalty for late assignments, etc.) | | | | | |
| Please check the course website on Moodle on a regular basis.  Feedback (in-person or by email) is highly encouraged. | | | | | |

|  |  |
| --- | --- |
| **Tentative Course Schedule\*** | |
| **Week** | **Topic** |
| 1 | - Introduction  - Basic Probability & Statistics (Topic 1) |
| 2 | - Basic Probability & Statistics (Topic 1) |
| 3 | - Decision Theory (Topic 2) |
| 4 | - Linear Programming (Topic 3) |
| 5 | - Linear Programming (Topic 3) |
| 6 | * Linear Programming (Topic 3) * Mixed Integer Programming (Topic 3) * ***Midterm Exam*** * ***Project group member list due*** \* |
| 7 | - Reading/Field Trip Week |
| 8 | * Mixed Integer Programming (Topic 3) * ***Project material and group information release*** |
| 9 | * Mixed Integer Programming (Topic 3) * Simulation (Topic 4) |
| 10 | * Simulation (Topic 4) |
| 11 | * Simulation (Topic4) * Regression Models (Topic 5) |
| 12 | * Regression Models (Topic 5) |
| 13 | * Regression Models (Topic 5) * Review * ***Project report due*** \* |
| ***Exams*** | ***Midterm exam: Week 6 Saturday & venue pending***  ***Final exam: time & venue pending*** |
| \* Due dates and exam dates are subject to change. Please check Moodle for updated information. | |