

The University of Iowa
The College of Liberal Arts and Sciences
Department of Statistics and Actuarial Science
ACTS:3080 Mathematics of Finance I - Fall 2020
11:30 am-12:20 pm Monday, Wednesday, & Friday
On-line Instruction, via Zoom

▷ **General Information**

- *Instructor:* Michelle Larson, 221 SH, 335-0814, michelle-larson@uiowa.edu
Drop-In Hours: Wednesdays 2:30pm - 3:30pm and by appointment
(also available 9:30am-10:30am and 3:30pm - 5:00pm Mondays)
- *DEO:* Kung-Sik Chan, 241 SH, 335-0712, kung-sik-chan@uiowa.edu
- *Course Description:* This course is intended for students who are studying for the SOA Exam FM (Financial Mathematics) June 2020 or later. The course will cover SOA learning objectives A-F. Objectives G and H (0%-20% of FM Exam) are provided by SOA Study Notes and will be covered as time permits. The description of SOA Exam FM is at
<https://www.soa.org/education/exam-req/edu-exam-fm-detail.aspx>.

Prerequisites: Grade of B- or higher in STAT:3100 or graduate standing

- *Calculator (REQUIRED):* Students will need a CAS/SOA approved calculator. The TI BA II Plus calculator is highly recommended since it has the ability to solve for interest rates. Students are strongly encouraged to bring their calculator to every class and to use their calculator for all work done for this class. Only CAS/SOA approved calculators will be allowed during exams.
- *Study Manuals (highly recommended to purchase one):* ACTEX FM/2 Study Manual by Hassett et al.; ASM FM/2 Study Manual by Gorvett and Cherry; **Students may also use study manuals that are on reserve at the Main Library**
- *Reference (not required):* Ruckman, C., Francis, J. *Financial Mathematics: A Practical Guide for Actuaries and Other Business Professionals* (2nd Ed.), 2005, BPP Professional Education, ISBN: 0-9753136-4-9
- *Reference (not required):* Kellison, S. G. *The Theory of Interest* (Third Edition), 2009, McGraw-Hill.
- *ICON/Web:* This course will use ICON powered by Canvas (<http://icon.uiowa.edu>) for announcements, notes, homework assignments, extra practice problems, etc.

▷ **Course Topics**

- We will cover the following topics in roughly this order:
 - * Interest rates and factors
 - * Level annuities
 - * Varying annuities
 - * Non-annual interest rates and annuities
 - * Project appraisal and loans
 - * Financial instruments (Stocks and Bonds)
 - * The term structure of interest rates
 - * Duration, convexity and immunization
- Students are encouraged to use technology to perform calculations, however, explicit work (formulas, computations, etc.) is required to be shown.

▷ **Grading**

- *Quizzes:* (10% total) Quizzes will be given roughly every two weeks and announced in the previous class; the lowest quiz will be dropped.

- *Exams*: There will be 2 midterm exams (25% each) and a final exam (30%). Midterms will be given in the evenings. Exam dates:
 - * Midterm Exam 1: Tuesday, October 6, 2020 6:30 - 8:30 pm
 - * Midterm Exam 2: Thursday, November 5, 2020 6:30 - 8:30 pm
 - * Final Exam: TBA

Students are expected to be present for the exams at the *scheduled time*. If you have a legitimate, unavoidable conflict, it is your responsibility to make the appropriate arrangements at least 24 hours in advance. If you miss an exam due to a sudden absence, email the instructor immediately. Note that during exams, students will be asked to place belongings, including electronic devices other than CAS/SOA approved calculators, at the front of the room.

- *Homework*: (10% total) Homework will be due each Friday at 11:30am. Students must submit a single, pdf file of reasonable size to ICON. Because the grader *may not* have enough time to grade each problem, a subset of the assigned problems will be graded. *Homework turned in late or illegible will be given a score of zero*. The lowest homework score will be dropped. Students are encouraged to work together on homework but work submitted must be your own. Solutions must appear in the order assigned. Be sure your name and the assignment number appear at the top of the first page.
- Your attendance, participation, preparedness, work ethic, etc. may affect your grade.
- Students may find that problems from the study manuals, textbooks, and the past SOA exams are useful in preparing for quizzes and exams in this course.
- This course uses the $+/-$ grading system (i.e. grades such as A-, B+, and B will be assigned).
- Grade cutoffs will be no higher than the usual 90 (A-), 80 (B-), 70 (C-), 60 (D-) breakdown.
- Bonus points may be given at any time and may be applied to any part of your grade.

▷ *Extra Help*

- Students are encouraged to seek help from their professor, peers, and/or advisor.
- ALL student, including those doing well in the class, are encouraged to attend office hours and other help sessions regularly.

▷ *Notes*

- Students are highly encouraged to form study groups. Study groups will aid in comprehension of the material and will be beneficial as you continue in the major.
- Do not miss class. You need to attend every day to succeed in this class.
- Please refrain from eating, using your phone, wearing earbuds, and using other electronic devices during class.
- During class time, all communication, including private conversations, is to be conducted in English only.
- Success in this class requires a large time commitment. A *minimum* of 15 to 20 hours per week is expected. Review/study numerous times throughout the week.
- If you are absent from discussion or lecture (without giving prior notice), we cannot provide hand-outs/notes.

▷ *Academic Misconduct*

- During **quizzes** and **exams**, you may not talk, whisper, pass notes, view other students' work, allow a fellow student to view your own work (cover your paper!), use class notes, share calculators, etc. All such actions are considered academic misconduct and will be reported to the UI.
- You may, however, work with a fellow student on your **homework** provided you *both do all of the problems in their entirety* (at which point you can compare methods, approaches, and answers). *Simply copying a another student's homework will be considered academic misconduct.*

▷ *The College of Liberal Arts, Teaching Policies & Resources*

<https://clas.uiowa.edu/faculty/teaching-policies-resources-syllabus-insert>

- *Absences and Attendance:* Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing their course absence policies, which will vary by instructor. All absence policies, however, must uphold the UI policy related to students illness, mandatory religious obligations, including Holy Day obligations, military service obligations, unavoidable circumstances, or University authorized activities. Students may use the CLAS absence form to aid communication with the instructor who will decide if the absence is excused or unexcused. The form is on ICON in the top banner under “Student Tools.” More information is at <https://clas.uiowa.edu/students/handbook/attendance-absences>.
- *Academic Integrity:* All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College’s *Code of Academic Honesty*. Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through UI email. Visit this page for information: <https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code>.
- *Accommodations for Disabilities:* UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student is then responsible for discussing specific accommodations with the instructor. More information is at <http://sds.studentlife.uiowa.edu/>.
- *Administrative Home of the Course:* The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and related policies. Other colleges may have different policies. CLAS policies maybe found here: <http://clas.uiowa.edu/students/handbook>.
- *Class Behavioral Expectations:* Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the *Code of Student Life*. This includes the policies and procedures that all students have agreed to regarding the Steps Forward for Fall 2020 in response to the COVID-19 pandemic. Particularly, all students are required to wear a face covering when in a UI building, including a classroom. In addition, the density of seats in classrooms has been reduced; in some instances, this will allow 6 feet or more between students while other cases, it may be less. Regardless, wearing a face covering and maintaining as much distance as possible are vital to slowing the spread of COVID-19. In the event that a student disrupts the classroom environment through their failure to comply with the reasonable directive of an instructor or the University, the instructor has the authority to ask that the student immediately leave the space for the remainder of the class period. Additionally, the instructor is asked to report the incident to the Office of Student Accountability for the possibility of additional follow-up. Students who need a temporary alternative learning arrangement related to COVID-19 expectations should contact Student Disability Services Arrangements (+1 319 335-1462; <https://sds.studentlife.uiowa.edu/fall-2020/covid-19-temporary-learning-arrangements/>).
- *Class Recordings: Privacy and Sharing:* Some sessions of a course could be recorded or live-streamed. Such a recording or streaming will only be available to students registered for the course. These recordings are the intellectual property of the faculty, and they may not be shared or reproduced without the explicit **written** consent of the faculty member. Students may not share these sessions with those not in the class; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and, in some cases, a violation of the Federal Education Rights and Privacy Act (FERPA).
- *Communication and the Required Use of UI Email:* Students are responsible for official correspondences sent to their UI email address (uiowa.edu) and must use this address for all communication within UI (Operations Manual, III.15.2, <http://opsmanual.uiowa.edu/human-resources/professional-ethics-and-academic-responsibility#15.2>).
- *Complaints:* Students with a complaint about an academic issue should first visit with the instructor or course supervisor and then with the Chair of the department or program offering the course; students may next bring the issue to the College of Liberal Arts and Sciences. For more information, see <https://clas.uiowa.edu/students/handbook/student-rights-responsibilities>.

- *Final Examination Policies:* The final exam schedule is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this information. No exams of any kind are allowed the week before finals with very few exceptions made (for labs, ESL, and some world language courses, and off-cycle courses): <https://registrar.uiowa.edu/final-examination-scheduling-policies>.
- *Nondiscrimination in the Classroom:* UI is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious and other identities. Toward this goal, students are invited in MyUI to optionally share the name and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (<https://diversity.uiowa.edu/eod>; +1 319 335-0705 or diversity@uiowa.edu)
- *Sexual Harassment:* Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, please see <http://osmrc.uiowa.edu/>.