COURSE REFERENCE NUMBER: 23744 MWF 2:00pm–3:40pm from 06/10/2022 to 08/02/2022, online, via Zoom, as integrated in the Blackboard Learn system.

CREDIT HOURS: 3 hours.

COURSE DESCRIPTION: Introduction to Symbolic Computation via the computer algebra system SageMath. The mathematical algorithms in symbolic computation are explained with examples and applications to topics in undergraduate mathematics.

COURSE GOALS and LEARNING OBJECTIVES: The main goal of the course is to learn to apply SageMath to solve mathematical problems. The specific learning objectives are
(1) understand concepts of symbolic computation,
(2) gain *hands on* experience with computer algebra,
(3) learn mathematics through computations (computational thinking).
Extensive computer use is required. This is a *computational* course, not a programming class.

PREREQUISITES: MATH 210 (calculus III) and MCS 260 (introduction to computer science) or CS 107 (introduction to computing and programming); or CS 109 (programming for engineers with MatLab); or CS 111 (program design I); or consent of the instructor.

CURRICULUM: MCS 320 is the first course on the computational track, followed by MCS 471 (Numerical Analysis) and MCS 472 (Introduction to Industrial Math & Computation).

INSTRUCTOR and OFFICE HOURS: Jan Verschelde, Office: 1210 SEO, Phone: 312 996 4609.
Email: `janv@uic.edu`. URL: `http://www.math.uic.edu/~jan`.
Office hours are from 4PM to 5PM on Monday, Wednesday, and Friday, or by appointment; online, via zoom at `https://uic.zoom.us/my/profjanofficehour`.

TA GRADER: Ling Yu. Email `lyu37@uic.edu`. Office hour: on Tuesdays at 1pm via zoom at `https://uic.zoom.us/j/89441130822?pwd=kalq3NriqpW4JJCyQ9Y5Hl2bHTxI9b.1`

NO TEXT BOOK: There is no textbook for this course. Notes will be made available electronically via the course web site. A good reference is '*Sage for Undergraduates*' by Gregory V. Bard, AMS 2015 (ISBN 978-1-4704-1111-4); and available at `www.gregory-bard.com/Sage.html`.

SageMath AND THE JUPYTER NOTEBOOK: The free open-source mathematics software system `SageMath` is available online via `https://cocalc.com`. To install, visit `https://www.sagemath.org`. Answers to all homework, quizzes, projects, and exams must be submitted via gradescope in a Jupyter notebook with a SageMath kernel.

MCS 320 SITE: See `http://www.math.uic.edu/~jan/mcs320` for syllabus, notebooks, project descriptions, links to resources, etc... Backup site: `https://janv.people.uic.edu/mcs320`.

HOMEWORK: Exercises are assigned with each lecture. Although only a selection of the homework can be collected to make up for quizzes, it is strongly recommended to try all assignments.

QUIZZES: There will be a quiz on each Wednesday of weeks 1, 3, 5, 6, and on the Friday of weeks 2 and 4. Every quiz is worth 20 points. There will be no makeup quizzes. If you miss a quiz or if your performance is bad, you can turn in the assigned homework to regain some of the points lost.

PROJECTS: Three projects will be assigned during the semester, worth jointly a total of 200 points.

EXAMS: During the semester, there will be two exams worth 100 points each. There will be no makeup exams given. The final exam counts for 200 points. If an exam is missed, then greater weight will be placed on the final exam, especially on the material covered on the missing exam.

GRADING SCALE: 90 – 100% = A, 80 – 89% = B, 70 – 79% = C, 60 – 69% = D, 0 – 59% = F.
Your course grade is based on a total of 700 points: 100 from the quizzes, 200 from the projects, 200 from the exams during the semester, and 200 from the final exam.

ACADEMIC HONESTY: No student shall claim or submit the work of another as ones own. Allowing someone to copy from you is also punishable. By default, unless stated otherwise, all your work in this class will be individual. If permitted to work in teams, then you must contribute your fair share.

Verbatim copying the output of generative AI tools is plagiarism.

POLICY FOR MISSED OR LATE WORK: Deadlines may be postponed. If you know you will be late, then it is better to apply for an extension of the deadline, instead of not submitting anything. For missed assignments, greater weight may be placed on the final project and/or final exam.

STUDENTS WITH DISABILITIES: UIC is committed to full inclusion and participation of people with disabilities in all aspects of university life. Students who face or anticipate disability-related barriers while at UIC should connect with the Disability Resource Center (DRC) at drc.uic.edu, drc@uic.edu, or at (312) 413-2183 to create a plan for reasonable accommodations. In order to receive accommodations, students must disclose disability to the DRC, complete an interactive registration process with the DRC, and provide their course instructor with a Letter of Accommodation (LOA). Course instructors in receipt of an LOA will work with the student and the DRC to implement approved accommodations.

CLASS ATTENDANCE: Students are expected to attend all class meetings. Any changes in this syllabus or in the scheduling of exams and other assignments will be announced during class meetings. We will also address the topics you need to implement the projects.

CLASSROOM CONDUCT POLICY: Respect others in the class. Students who engage in any behavior that results in the disruption of a class may be directed to leave the class room for the remainder of the class period.

SOME IMPORTANT DATES:

Friday 14 June : Last day to register, last day to withdraw without W grade.
Wednesday 19 June : Juneteenth holiday. No classes.
Thursday 4 July : Independence Day holiday. No classes.
Friday 12 July : Last day for optional late drop.
Friday 2 August : final exam.

LAST REVISED: Wednesday 5 June 2024.