

Syllabus

Math 40024 / 50024

Computational Statistics

Kent State University

Fall 2022

Section Information

- Sections: MATH - 40024 - 001 and MATH - 50024 - 001
- Classroom: Mathematical Sciences Building (MSB) 108
- Class time: Tuesdays and Thursdays, 2:15 to 3:30 pm

Students in both sections will attend the same lectures, at the same time and place. Homework assignments and exams might have some extra and/or different items for students in the 50024 (Graduate level) section than students in the 40024 (Undergraduate level) section.

Instructor Information

- Instructor: Omar DE LA CRUZ CABRERA, Ph.D.
- Office: MSB 344 (Math building)
 - I will be on campus only part of the time this semester. I *encourage* you to contact me by:
 - email: odelacru@kent.edu
 - Canvas
 - Other electronic means: Zoom, Skype, etc.
- Office Hours:
 - On campus: Tuesdays 11:00 am to 2:00 pm, and Thursdays 12:00 noon to 2:00 pm.
 - If necessary, by appointment at other times.

Textbook

No textbook is required. Reading materials and/or lecture notes will be provided throughout the course.

Computing

- We will be using the statistical computing software [R](#), and its wrapping environment [RStudio](#).
- Access to R and RStudio will be provided through a [web interface](#).
- Students are encouraged to install and use R and RStudio for practice in their personal computers.
- **Canvas:** Course materials will be posted to the course's Canvas site (for which all registered students are automatically added). Important messages and announcements will be posted there as well, so it is mandatory to check the site regularly.

Required Work and Grading

- Homework: 50%
- Midterm Exam: 15%
- Project: 15%
- Comprehensive Final Exam: 20%

Grade Scale

Grades will be assigned according to this table:

Total Points	Grade	Total Points	Grade
92% - 100%	A	74% - 77%	C+
89% - 91%	A-	70% - 73%	C
85% - 88%	B+	67% - 69%	C-
81% - 84%	B+	63% - 66%	D+
78% - 80%	B-	60% - 62%	D
		0%-59%	F

Topics (tentative)

- Review
 - Statistics: Descriptive, Inferential, Exploratory
 - Computation: Models of Computation, Programming Paradigms
- Statistical Computing
 - Computing environments and languages for Statistics
 - Reproducible Computational Research
 - Collaboration and version control
 - Data manipulation
 - Using Databases
 - Data Visualization
 - Parallel Computing
- Computational Statistics
 - Simulation and random number generation
 - Computationally intensive methods
 - Optimization-based Methods
 - Matrix decompositions and dimensionality reduction

Registration

University policy requires all students to be officially registered in each class they are attending. Students who are not officially registered for a course by published deadlines should not be attending classes and will not receive credit or a grade for the course. Each student must confirm enrollment by checking his/her class schedule (using Student Tools in FlashLine) prior to the deadline indicated. Registration errors must be corrected prior to the deadline.

Official Registration Deadline

Every class has its own schedule of deadlines and considerations. To view the add/drop schedule and other important dates for this class, go to *Student -> Resources -> Courses and Registration* in FlashLine. Choose

View or Print Course Schedule and Purchase Textbooks. To see the deadlines for this course, click on the CRN. The add/drop schedule and important dates may also be found on the *Drop or Add a Course* link. Click on the green clock next to the course under Registration Deadlines.

Prerequisites

- For 40015: Minimum grade of C in both MATH 20011 and MATH 21001
- For 50015: Graduate Standing in Mathematics
- Or instructor permission

Academic dishonesty, cheating, and plagiarism

University policy 3-01.8 deals with the problem of academic dishonesty, cheating, and plagiarism. **None of these will be tolerated in this class.** The sanctions provided in this policy **will** be used to deal with any violations. If you have any questions, please read the policy at <http://www.kent.edu/policyreg/administrative-policy-regarding-student-cheating-and-plagiarism> and/or ask the instructor.

It is OK with me for students to collaborate on homework and share ideas on how to solve problems. But **every student must write their own solutions independently**, in their own words.

Collaboration is **not allowed** in exams.

Respect for Diversity:

Kent State University is committed to the creation and maintenance of equitable and inclusive learning spaces. This course is a learning environment where all will be treated with respect and dignity, and where all individuals will have an equitable opportunity to succeed. The diversity that each student brings to this course is viewed as a strength and a benefit. Dimensions of diversity and their intersections include but are not limited to: race, ethnicity, national origin, primary language, age, gender identity and expression, sexual orientation, religious affiliation, mental and physical abilities, socio-economic status, family/caregiver status, and veteran status.

It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

Copyright Statement

The materials presented in this course are subject to copyright.

The copyright for materials created by me belong to me; other materials presented in class might be subject to copyright by other authors. These materials are all intended only for use in this course and your own educational use; *you may not distribute it or reproduce it without my express written consent.* In particular, *you are not allowed to supply any of these materials to commercial sites like, e.g., CourseHero or Chegg, or to social media sites.* Materials include (for example, but not exclusively): lecture notes, slides, homework sets, exams, quizzes, solution sets, class video and audio recordings.

Students with disabilities

University policy 3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through *Student Accessibility Services* (contact 330-672- 3391 or visit www.kent.edu/sas for more information on registration procedures).