



SYLLABUS

Southern Polytechnic College of Engineering and Engineering Technology Department of Industrial and Systems Engineering

ISYE 4500: System Modeling & Simulation

Spring 2023

# Course Information

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Class meeting time: Tuesday 9:30-10:45 am

Modality and Location: Hybrid class, live seccions M-131

This course will meet on the dates indicated on the Course Schedule as posted on the course homepage.  For hybrid students, we will meet once a week physically in a classroom and the remainder of the week you are responsible for viewing video lectures and attempting suggested homework problems.

Syllabus is posted in D2L

# Instructors Information

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Name: Dr. Valentina Nino, Assistant Professor

Email: Prefer D2L e-mail, alternately lvallad1@kennesaw.edu
Office Location: M 115

Office phone: 470-578-7242

Office Hours: Tuesday 12:00 to 12:30 pm

Class meeting time and location: Tuesday 9:30 – 10:45 am M-131

**Preferred method of communication:** e-mail directly to my KSU account. If for some reason you do not hear from me within 24 hours, please verify the e-mail address and re-send the e-mail. (Note that if you REPLY to an email sent to your D2L account from your forwarded account, it will eventually bounce.)

**Communicating with you:** Important announcements will be made using the “Announcements” tool in D2L Brightspace. If the announcement is urgent (such as switching a class to online for the day with short notice), I will also e-mail students at their KSU e-mail address. **It is essential that you check your Kennesaw and D2L e-mails consistently.**

# Course Materials

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**Recommended Textbook (but not required):**



*Simulation with Arena (6e)*, by W. David Kelton, Randall P. Sadowski, Nancy B. Zupick, McGraw-Hill (2014). ISBN: 978-0-07-340131-7. Note: Arena software v16.0 is required for this course and can be used for free (see options below). Previous editions of the textbook may also be used.

Do not download the software directly from Arena. We will be using v16.0, not v16.1. Instead, download from this D2L site under module “Arena v16.0 download”. This can only be used on PCs, not for Macs. For Mac users, use Arena v16.0 on the KSU Virtual Desktop.

Direction to access the KSU Virtual Desktop are below:

1. Faculty\ Students can download VMware Horizon View client from  <http://virtualowl.kennesaw.edu/downloads.html>, for Mac or Windows.

2. Detailed instructions on how to use Virtual Owl can be found here  <http://virtualowl.kennesaw.edu/help.html>.

3.Once the VMware Horizon View client is downloaded & installed on the workstation, students can use their NetID username & password to login and select "IET-Resources" desktop from the list to access Virtual Desktop.

Arena is also available on the desktop computers in the M-131 and the Computer lab, M-130.

**Technology Skills Needed.**

All students are expected to be familiar with:

1. Connecting to the internet.

2. Logging in to the course website (i.e. D2L Brightspace).

3. Using internet browsers (e.g., Internet Explorer, Firefox, Chrome, etc.).

4. Downloading and opening PDF, Word, and Excel documents.

5. Elementary use of Excel including Cell Referencing and using Math Functions, no VBA required.

6. For online students, invest in a headset with a microphone and speakers.

# Course Description

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Students use ARENA, a stochastic event-based, PC-based graphical simulation program to create virtual equivalents of real world processes. Students create and apply a series of simulation models to statistically analyze discrete and continuous systems in the areas of manufacturing, banking, retail, transportation, and others. Techniques such as sequencing, separation, batching, entity transfer, data collection, animation, process analysis, and process optimization are used to improve efficiency and effectiveness.

This course has a D2L course web site for use by registered students.  Any class handouts, slides, grades, announcements, and links will be available there, so please get in the habit of checking it often. To log in, go to: <https://kennesaw.view.usg.edu/>.  Your logon is the same as your KSU Net ID, and your net password.  There are help links on the website too.

**Course Prerequisites:** ISYE 2600 or IET 2227 or MATH 2332

# Learning Outcomes

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Students will be able to:

1. Apply probability and statistics concepts to perform input data analysis, random variable generation, and output data analysis in simulation models.
2. Illustrate complex, real-life industrial systems using computer simulation methods.
3. Construct simulation models using advanced simulation software.
4. Discuss simulation results through written reports and oral presentations.

# Evaluation and Grading Policies

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Your final grade in this course will be determined using the following weights for each component of this course:

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| --- | --- |
| Component | Weight |
| (10) HW Assignments  | 50% |
| Midterm Exam | 15% |
| Final Exam | 15% |
| Group Project | 20% |
|  | 100% |

**Grading Scale:** Final grades are based on the following scale:A=90-100%, B=80-89.5%, C=70-79.5%, D=60-69.5%, F=0-59.9%

**Grading Feedback:** I will strive to grade submissions in a timely manner. Everything will be graded within a week of due date, if not sooner. If you have any questions on our feedback/grading, please contact me.

**Note:** There is no extra credit for this course.

**Assessment by Exams:** There will be two timed, 75-minute online exams (Midterm Exam and a Final Exam) covering the material you have learned. This is an **individual** effort with no help from anyone else. You may have access to all of your HW models, and the textbook to complete the exam. You are not permitted to IM each other or re-use any previous exam models for these exams. Academic integrity is expected. Online exams will open after the deadline has passed.

**Assessment by Homework.**

**HW Assignments (10):** You will work on all HW assignments in groups of 4-5 students. Submit only one assignment on behalf of each group in the appropriate Dropbox folder. Work together to come up with a foolproof plan to submit all HW assignments on time (i.e., designate one person to submit all assignments). Include all group member names on the assignment submission to ensure they receive credit for the assignment. HW submissions with group member names missing will be interpreted as they did not contribute to the assignment and, therefore, will not receive credit. It is the group’s responsibility to include names on the assignment *before* the assignment is submitted in Dropbox. Adding names to the assignment after the deadline is too late and will not be considered. **No missed or late assignments will be accepted. No exceptions.** There are 10 HW assignments.

*Helpful hint:* Bring a flash drive with you to save your model and other output files. Sometimes, trying to save your work to your network drive fails.

**Note:** **I will not review or troubleshoot your model before you submit it (however, I have been known to anyway)**. Don’t give up if you get stuck on something. Take a break and then resume your efforts as a team. Refer to the textbook, recorded lecture, ppt slides, and your group members as key resources for each assignment.

**Assessment by Group Project:** There will be a Group Project due at the end of this course. You will work with your group partners to complete the term project. You will be required to find a **real work situation** in which to model and present your findings via a narrated PowerPoint slide presentation and your .doe Arena model at the end of the semester. The PowerPoint presentation can be narrated by one up to all students in the group. **Please submit your group topics in the appropriate Dropbox folder in the D2L Assignments tab by the beginning of class. This is a graded assignment worth 10 points towards your Group Project grade. No exceptions!**  Many teams use their own workplace to simulate a process for this assignment. Be sure you obtain internal permission before proceeding with your project. Some proposed simulation solutions have actually been accepted and implemented by the companies under study. **Do not procrastinate with deciding on a group project. If the topic submission is late, you lose 10 points from your overall score!**

A failure to work as a cohesive group will result in the use of Peer Evaluations for those groups, whereby you will rate each other’s contributions for each assignment. Ratings from other group members may impact your assignment grade.

# Course Policies

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**Missed/Late Assigment Polocy:** No late assignments will be accepted. All missed/late assignments will receive the grade of zero. **Strictly enforced. This policy is very clear.** Consideration will be given when conflicts arise with official University functions (e.g., travel for athletes, debate team, etc.). You must notify the instructor of such conflicts in advance.

**Attendance Policy**

1. All students are expected to attend all class sessions beginning with the first class session and continuing all the way through Final Exam Week. A sign-in attendance sheet will be given each week. No signature => not in attendance that week.
2. Students who miss class for any reason are not exempt from the material covered during the class the student misses.
3. The instructor is not responsible for assisting students catch up on class material when the student is absent from class.
4. Your attendance will not directly impact your grade in this course unless you are absent for an Exam or if you fail to complete an Assignment on time.
5. It should be noted that students who attend class on a regular basis normally perform better on the Assignments and on Exams.
6. However, simply being present in class does not guarantee that the student will receive a high grade or a passing grade in this course.

**Calculators/Software:** You are welcome to use ARENA already installed on the computers in the M-130 and M-131 labs or you may bring your personal laptop with ARENA loaded. If you are taking this course online, you will need to download the free “student” edition of Arena from the D2L course homepage for a downloadable copy. For other work, you may need access to a calculator or, perhaps, Excel (also available on the lab computers).

**Hybrid Course Responsibilities**: Hybrid sessions are designed to be 50% classroom attendance and 50% on-line attendance. This type of class requires the student to complete the readings and other assignments between any live lectures. It will be the student’s responsibility to schedule these assessments at their own convenience and complete them by their due dates. It is imperative that you keep up with class work throughout the term.

# Institutional Policies

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* [Federal, BOR, & KSU Course Syllabus Policies](https://cia.kennesaw.edu/instructional-resources/syllabus-policy.php)
* [Student Resources](https://cia.kennesaw.edu/instructional-resources/syllabus-resources.php)
* [Academic Integrity Statement](http://scai.kennesaw.edu/codes.php)

# KSU Student Resources

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This link contains information on help and resources available to students: [KSU Student Resources for Course Syllabus](https://cia.kennesaw.edu/instructional-resources/syllabus-resources.php)