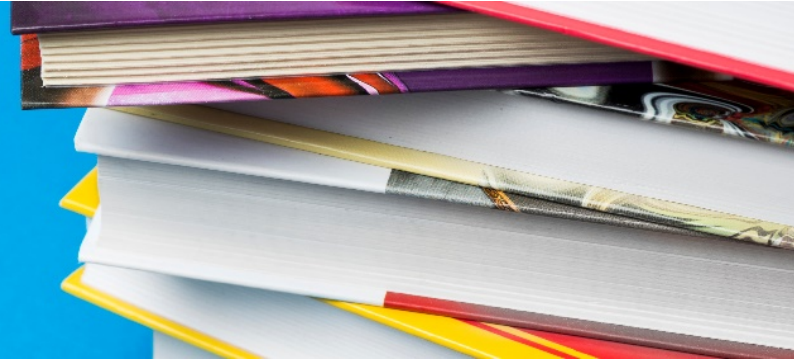




Full Syllabus



Course Title

Model-Based Systems Engineering and Simulation

Lecturer

Dr. Yaniv Mordecai

Semester

Spring 2021

Course requirements

Introduction to Systems Engineering; Systems Design

Final grade components

Team Project	40%
Research Review	30%
Exam	20%
Active Participation	10%

Course schedule

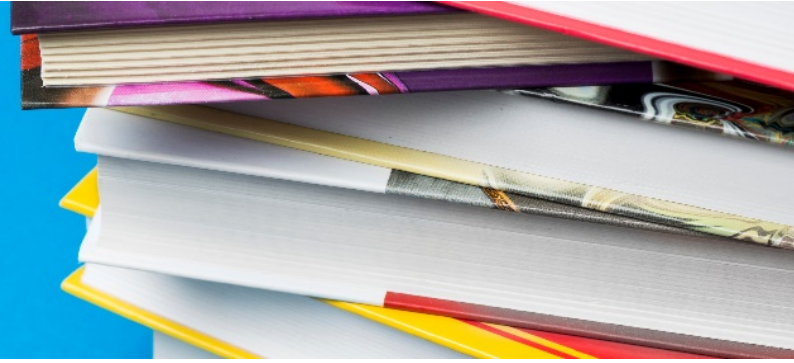
Class no. / Date	Subject and Requirements (assignments, reading materials, tasks, etc.)
1. March 4	1. Introduction
2. March 11	2. Foundations of Conceptual Modeling
3. March 18	3. Modeling Languages
4. March 25	4. Problem-Domain and Operational Concept Modeling
April 1	--- PASSOVER BREAK ---
5. April 8	5. Solution Architecture Modeling
April 15	--- INDEPENDENCE DAY ---
6. April 22	6. Extracting Value from Models
7. April 29	7. Introduction to Simulation
8. May 6	8. Simulation Session
9. May 13	9. Project modeling Session
10. May 20	10. Project Presentations
May 27	--- STUDENT DAY ---
11. June 3	11. MBSE in Practice: One/two guest lectures on real applications
12. June 10	12. MBSE Research: Student pairs present their research reviews
13. June 17	13. Conclusion

Required course reading

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Full Syllabus



Optional course reading

1. A. Wayne Wymore, *Model-Based Systems Engineering*. CRC Press, 2000
2. Dori, D. 2016. *Model-Based Systems Engineering with OPM and SysML*, Springer.
3. INCOSE, "*Systems engineering handbook: A guide for system life cycle processes and activities.*" International Council on Systems Engineering. Published John Wiley & Sons, Inc., San Diego, CA, USA, 2015
4. D. Embley and B. Thalheim, *Handbook of conceptual modeling: theory, practice, and research challenges*. Springer-Verlag Berlin Heidelberg, 2011
5. Gabriel A. Wainer and P. J. Mosterman, *Discrete-Event Modeling and Simulation - Theory and Applications*. CRC Press, Taylor & Francis Group, 2011
6. B. P. Zeigler, H. Praehofer, and T. G. Kim, *Theory of Modeling and Simulation*, 2nd Editio., vol. 100, no. 1. Academic Press, 2000
7. Crawley, E., Cameron, B., & Selva, D. (2015). *Systems Architecture: Strategy and Product Development for Complex Systems*. Prentice Hall.

Comments

Additional materials, schedules, and course outline clarifications will be provided during the first session. Topics may move from session to session based on progress made. Some portions of the course will be conducted as pre-recorded presentations that students will be able to listen to any time during the week preceding the lecture.