TEL AVIV UNIVERSITY אוניברסיטת תל אביב

Full Syllabus

Course Title

Model-Based Systems Engineering and Simulation

Lecturer

Dr. Yaniv Mordecai

Semester

Spring 2022

Course requirements

Introduction to Systems Engineering; Systems Design

Final grade components

Current State Model (OPM)	30%
Solution Architecture Model (SysML)	30%
Research Review	30%
Active Participation and Homework Submission	10%

Course schedule

DATE	NUMBER	TOPIC	FORMAT	SUBMISSIONS
20-02-22	1	Introduction	Fully Synchronous	
27-02-22	2	Graph Theory	Async Prerecorded + Synchronous	
06-03-22	3	Notation	Async Prerecorded + Synchronous	
13-03-22	4	Modeling	Async Prerecorded + Synchronous	
20-03-22	5	OPM Operational Modeling	Async Prerecorded + Synchronous	
27-03-22	6	OPM Architectural Decomposition	Async Prerecorded + Synchronous	
03-04-22	7	OPM Computational Modeling	Async Prerecorded + Synchronous	
10-04-22		Passover		
17-04-22		Passover		
24-04-22	8	SysML Behavior	Async Prerecorded + Synchronous	OPM Model Submission
01-05-22	9	SysML Structure	Async Prerecorded + Synchronous	
08-05-22	10	SysML Interface Modeling	Async Prerecorded + Synchronous	
15-05-22	11	Simulink	Async Prerecorded + Synchronous	
22-05-22	12	Simulink / System Composer	Async Prerecorded + Synchronous	
29-05-22	13	summary	Fully Synchronous	Project Presentations Inc. SysML+OPM
05-06-22		Shavuot		
12-06-22				
19-06-22				
26-06-22				
03-07-22				Research Paper

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.
8. Weilins et al. Model-Based System Architecture, 2016

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.