Syllabus for the course 046271 –
Object Oriented Programming and Design
Winter 2020/1

General

The course deals with modern methodologies for constructing software systems. The first part of the course is devoted to issues that arise in building individual program modules and to advanced Object Oriented Programming concepts. The second part of the course is concerned with the design and implementation of medium and large programs using software engineering design methodologies. In this part, the concepts of design patterns and software design principles are introduced. The Java programming language and the UML language are used to exemplify and practice all the above.

Prerequisites for the Course

Course 044101 - Introduction to Software Systems
Course 044268 - Introduction to Data Structures & Algorithms
or the overlapping courses from the department of Computer Science.

Syllabus

#	Lectures	Recitations	Assignments
1. (22/10)	• Introduction to the course • Introduction to software engineering	• Introduction to Java	
2. (29/10)	• Java semantics	• Introduction to Java • Basic principles of good coding	
3. (5/11)	• Specification • ADT	• Specification	Homework assignment #0
4. (12/11)	• Representation invariant and abstraction function • Subtyping	• Encapsulation • Classes and objects • Representation invariant and abstraction function	

5. (19/11)	• Equality	• Inheritance vs. composition	Homework assignment #1
6. (26/11)	• Generics • Error handling	• Abstract classes vs. interfaces • Polymorphism	
7. (3/12)	• Testing • Debugging	• Object class • Generics	
8. (10/12)	• Software development process	• Generics • Exceptions	Homework assignment #2
9. (24/12)	• Software development process	• Testing	
10. (31/12)	• Object oriented design heuristics	• GRASP patterns • SOLID patterns	Homework assignment #3
11. (7/1)	• Design patterns	• Software design with UML	
12. (14/1)	• Design patterns	• Design patterns	Homework assignment #4
13. (21/1)	• System architecture	• Design patterns	

Exam A – Sunday, 7/2
Exam B – Sunday, 7/3

Your course grade will be computed as follows:

$$hwGrade = (hw0 + 6*hw1 + 6*hw2 + 6*hw3 + 6*hw4) / 25$$
$$if\ (examGrade \leq 65)$$
$$finalGrade = examGrade$$
$$else$$
$$finalGrade = 0.75*examGrade + 0.25*hwGrade$$

או במילים פשוטות: תרגילי הבית מהווים 25% מהציון הסופי (עם משקל פחות לתרגיל בית מספר 0). אבל, אם ציון המבחן הוא 65 או פחות, רק ציון המבחן נחשב.

בנוסף, במהלך ההרצאות יהיו חידוני Kahoot ושלושת הסטודנטים עם המקומות הראשונים בחידונים יקבלו בונוס בציון הסופי.

הגשת תרגילי הבית היא חובה. **ללא הגשת תרגילי בית 4-1 לא ניתן לקבל ציון בקורס!** כמו כן, לא ניתן להעביר ציונים משנים קודמות.