Discrete Mathematics

Course Administrative Details

Course Title	Discrete Mathematics		
Instructor(s)	Adil Khan	**Instructor's e-mail**	a.khan@innopolis.ru
Course #	101	**Course Type**	Core
Faculty	Computer Science and Engineering	**Major**	Computer science
Academic year	2016-2017	**Semester Offered**	Fall
No. of Credits	6 ECTS	**Total workload on average**	12 hrs. per week inc. 8 hrs. of self-study
Lecture Hours	2 per week	**Lab Hours**	2 per week
Language	English	**Frequency**	Weekly
Target Audience	Bachelors	**Anticipated Enrollment**	130 students
Studying year	1		
Grading Mode	A, B, C, D	**Keywords**	Sets, Relations, Functions, Logic, Proof Techniques, Counting, Graph Theory, Probability

Course outline

This course presents material in Discrete Mathematics, which provides a foundation for computer science that many other areas of computer science require. The material covered in this course is pervasive in the areas of data structures and algorithms but appears elsewhere in computer science as well. Topics covered in this course include set theory, logic, graph theory, probability theory, and some important selected topics.

Course Delivery

The course will be given weekly from August to November 2016. Every week, there will be a 2-hour lecture followed by a 2-hour tutorial session. Tutorial exercises will be set periodically. There are four 1-hour tests. There is a final examination. Depending on the availability of the resources, the tests and the final exam may be conducted online.

Prerequisite courses

None!

Required background knowledge

There are no formal prerequisites for this course. However, a strong familiarity with high school mathematics is assumed.

Course structure

[OHT – One Hour Test (Possibly Online)]

Week# / Date	Topic	Assignments
Week 1	Introduction to DM. Set theory	
Week 2	Numbers: Integers, Rational Numbers, Irrational Numbers, Real Numbers, Order of Operations	
Week 3	Logic of Compound Statements	
Week 4	Predicate Logic	OHT-1
Week 5	Methods of Proofs	
Week 6	Sequences and Induction	
Week 7	Variants of Induction, The Well-Ordering Principle	

Week 8	Number Theory & Functions	OHT-2
Week 9	Relations	
Week 10	Counting	
Week 11	Probability	
Week 12	Advanced Counting Techniques	OHT-3
Week 13	Graph Theory 1	
Week 14	Graph Theory 2	
Week 15	Selected Topics	OHT-4

Textbook(s)
Susanna S. Epp, Discrete Mathematics with Applications, 4th Edition.

Reference Materials
Kenneth H. Rosen, Discrete Mathematics and Its Applications, 4th Edition

Computer Resources
Students should have laptops.

Laboratory Exercises
Tutorial exercises will be set on weekly basis

Laboratory Resources
No laboratory resources are required for this course.

Grading criteria
1-Hour Tests (60%), Final Exam (40%)

Late Submission Policy
As such, there is no late submission policy for this course, as there are no assignments or graded homework. However, to keep track of how much have students learn in any week, weekly online quizzes (tentative) will be conducted, which should be completed in a timely fashion.

Cooperation Policy and Quotations
We encourage vigorous discussion and cooperation in this class. You should feel free to discuss any aspects of the class with any classmates. However, we insist that all quizzes and OHTs should be done by you alone. We may use a comparison software to compare solutions. Violations of this policy will be investigated, and will result in zero scores on OHTs brought under suspicion.

Additional information
TA(s) will be given a certain bonus GRADE points, which they will distribute among the students depending on the students' behavior in the tutorial sessions, and the seriousness that the students will show towards the weekly quizzes.