Spring Semester 2017

IN THE NAME OF ONE WHO TAUGHT THE MIND TO THINK

School of Mechanical Engineering
Sharif University of Technology

COURSE TITLE: **ROBOTICS: Kinematics and Dynamics**

DAYS & TIME: Saturdays and Mondays: 7:30 to 8:45 AM

INSTRUCTUR: Ali Meghdari, Ph.D., Professor ; http://meghdari.sharif.edu
Email: meghdari@sharif.edu

OFFICE HOURS: Tuesdays: 2:00-3:00 PM., Tel: (021) 6616-5541

TEXT BOOK: Introduction to Robotics, By: J. J. Craig, Pearson Prentice Hall, 3rd Ed., 2005, and John Wiley & Sons, Translated to Farsi, By: A. Meghdari & F. Mirfakhraei, E. Shojaei, S. M. Akrami, SUT Press, 1388.

REFERENCES: Intelligent Robotics Systems, By: M. Shahinpoor, ERI Press, 1994.
Fundamentals of Robotics; By: R. J. Schilling, Prentice Hall, 1990.
Robot Manipulators, By: R.P. Paul, MIT Press, 1982.

TOPICS:

1. Introduction to Robotics Technology & Applications
2. Review of Current Robotics Research
3. Robots Geometrical Configurations & Designs
4. Design of Robotic Grippers/End-Effectors
5. Spatial Descriptions & Transformations
6. Robot Manipulator Kinematics
7. Robot Manipulator Inverse-Kinematics

Mid-Term Examination: **First Week of Ordibehesht, 1396**

8. Jacobians: Velocities & Static Forces
9. Robot Manipulator Dynamics: Newton-Euler's & Lagrangian Methods
10. Robot Trajectory Generation
11. Manipulator Mechanism Design
12. Robot Programming (Laboratory)

Final Examination: **Finals Week, 1396**

GRADING:

Homework & Quiz:	(10 % of the Final Grade)*
Lab/Seminar Projects:	(20 % of the Final Grade)
Mid-Term Exam:	(30 % of the Final Grade)
Final Exam:	(40 % of the Final Grade)

* Homework will be assigned and collected every other week, and they will not be graded! But short quizzes will be given every week during the semester.