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| **Course Title** | Mechanisms of Machinery | **Course Number** | **MEng 3071** |
| **Degree Program** | Bachelor of Science in Mechanical Engineering  |  |  |
| **Lecturer** | Mr. Kassahun Mekonnen  | **ECTS** | **5** |
| **Professor in Charge** | Dr. Alem Bazezew (part timer) | **Credit Hours** | **3** |
| **Course Description and Course Objectives** |
| Course Objectives:   |
| The course enables students to understand:* The different types of linkage mechanisms used in mechanical design;
* The kinematic and kinetic analysis and design of machinery;
* Computer method for kinematic and kinetic analysis of mechanisms;
* Design and analysis of cams, universal joints, governors, gear trains, flywheels and gyroscopes; and
* Balancing of rotating and reciprocating machines.
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| Course Description: |
| Introduction; Transmission of motion; Linkages; Kinematics analysis of linkages; Introduction to computer methods for kinematic analysis of linkages; cam design; Joints; Governors; Gear Trains; Introduction to synthesis; Force analysis of machinery; Engine torque fluctuation; Balancing of rotating and reciprocating masses; Gyroscopes.  |
| **Prerequisites** | Engineering Mechanics II (Dynamics)  |
| **Literature** | 1. Norton, Robert L.,*”Design of Machinery”,* WCB/McGraw-Hill, 1999.
2. Meriam, J.L. and Kraige, L.G., *“Engineering Mechanics- Dynamics”*, John Wiley and Sons, 1992.
3. Shigley, J.E. and Uicker, J.J., *“Theory of Machines and Mechanisms”*, McGraw-Hill Book Company, Inc., 1995.
4. Khurmi, R.S and Gupta, J.K., *“Theory of Machines”*, Eurasia Publishing House ltd., 1983.
5. Arthur G. Erdman, George N. Sandor, Sridhar Kota, and Arthur G Erdman, *Mechanism Design: Analysis and Synthesis (4th Edition)*, May 15, 2001.
6. Erdman, Arthuer G. and Sandor, George N., “Mechanism Design: Analysis and Synthesis”, Prentice Hall International, Inc., 1997.
7. Alem Bazezew, *Mechanisms of Machinery,* Addis Ababa University Press, 2001
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| **Teaching Methods** | * Lectures supported by tutorials,
* Assignments, and
* Industrial visits.
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| **Assessment / Evaluation** | * Assignments 10%,
* Mid-semester Examination 20%,
* Laboratory exercises 20%, and
* Final Examination 50%.
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| **Attendance Requirement** | * Minimum of 75% attendance during lecture hours;
* 100% attendance during practical work sessions, except for some unprecedented mishaps; and
* Presence during industrial visit/visits.
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