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| **1. Course title/number, number of credit hours** |
| Machine Design 2/EML 4262 | 3 credit hours |
| **2. Course prerequisites, corequisites, and where the course fits in the program of study** |
| Prerequisites: EGN 1111C Engineering Graphics EGN 3321 – Dynamics EGN 3331 – Strength of Materials |
| **3. Course logistics** |
| *Term*: Spring 2014This is a classroom lecture course *Class location and time*GS 107, 12:00-12:50, M W FThis course has 35% design content. |
| **4. Instructor contact information** |
| *Instructor’s name**Office address**Office Hours* *Contact telephone number**Email address* | Guoqiang CaiRoom 108, Building 36 (EW)9:00-12:00, T R297-3428caig@fau.edu |
| **5. TA contact information** |
| *TA’s name**Office address**Office Hours* *Contact telephone number**Email address* |  N/A |
| **6. Course description** |
| The study of kinematics, dynamics, and design of machinery and related mechanical components. Topics include analysis and synthesis of linkages, cams, gears, and gear trains.  |
| **7. Course objectives/student learning outcomes/program outcomes** |
| *Course objectives* | To introduce fundamental principles of interaction between motion and force in machinery design, and to develop practical design methodology with emphasis on applications (sizing and selection) and synthesis of linkages, cams, gears, gear trains, and related components.  |
| *Student learning outcomes**& relationship to ABET a-k objectives* | 1. The student will understand the concepts of path, motion, and function generations, and analyze the degrees of freedom of machinery. (a,e,k)
2. The student will be able to perform basic 4-bar and 6-bar mechanism synthesis. (a,c,e,k)
3. The student will be able to perform kinematic analysis, basic dynamic force analysis, assessing the mechanical advantage, and balancing for simple mechanisms or machinery. (a,c,e,k)
4. The student will be able to analyze and synthesize gears and gear trains for specific speed reduction ratio. (a,c,e,k)
5. The student will be able to understand the basic principles of cams and their design. (a,c,e,k)

6. The student will be able to communicate effectively through written and oral skills. (g) |
| **8. Course evaluation method** |
| Exams - 65 %Design Projects - 35 % | *Note*: The minimum grade required to pass the course is C. |
| **9. Course grading scale** |
| Grading Scale: A: 90-100, A-: 87-90, B+: 84-87, B: 81-84, B-: 78-81, C+: 75-78, C: 72-75, C-: 69-72, D+: 66-69, D: 63-66, D-: 60-63, F: 0-60. |
| **10. Policy on makeup tests, late work, and incompletes** |
| *Makeup tests* are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exam should be administered and proctored by department personnel unless there are other pre-approved arrangements*Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given. |
| **11. Special course requirements** |
| 1. All students are required to attend the class, and sign in for each class. Each student is allowed to have three absences, and one point toward the final score (1%) will be deducted for each additional absence.2. A written proof is required for a special situation for an absence, and it must be presented to the instructor before or within one week of the event.3. It is required to use SolidWorks for the project. 4. Students must report the discrepancies between the scores posted in the Blackboard and appearing on the quiz and exam papers within two weeks after they are posted in the Blackboard. Afterwards, the scores will not be changed.  |
| **12. Classroom etiquette policy** |
| University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions. |
| **13. Disability policy statement** |
| In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all OSD procedures. |
| **14. Honor code policy** |
| Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at [www.fau.edu/regulations/chapter4/4.001\_Code\_of\_Academic\_Integrity.pdf](http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf) |
| **15. Required texts/reading** |
| Norton, R. L., Design of Machinery, 5th Edition, McGraw-Hill, 2012. |
| **16. Supplementary/recommended readings** |
| N/A |
| **17. Course topical outline, including dates for exams/quizzes, papers, completion of reading** |
|   Weeks 1, 2 (01/06 - 01/17) Chapter 1 Introduction  Chapter 2 Kinematics Fundamentals  Weeks 3 – 5 (01/20 - 02/07) Chapter 3 Graphical Linkage Synthesis 02/14 **Exam 1** Weeks 6 – 8 (02/10 - 02/28) Chapter 4 Position Analysis Chapter 6 Velocity AnalysisWeek 9 (03/03 – 03/07) **Spring Break** 03/12 **Exam 2**Weeks 10 - 12 (03/10- 03/28) Chapter 7 Acceleration Analysis Chapter 10 Dynamics Fundamentals Chapter 11 Dynamic Force AnalysisChapter 12 Balancing  04/04 **Exam 3** Weeks 13 - 16 (03/31 - 04/23) Chapter 8 Cam Design Chapter 9 Gear Trains 04/25 **Exam 4****\* All exams are open-book/notes, and equally weighted.** |