

Course Title	MECH 5337 Aerospace Dynamics and Controls Spring/2016								
INSTRUCTOR:	Angel Flores-Abad Office: Engineering Building, Room E331, afloresabad@utep.edu								
OFFICE HOURS:	11:00 AM to 12:00 pm MTWRs								
Lecture:	Quinn Hall 202								
LAB:	E-102B Intelligent systems laboratory								
COURSE DESCRIPTION:	This course provides fundamentals on spacecraft dynamics and control considering the effects of orbital mechanics. Particular focus is placed on rigid body kinematics and dynamics, attitude control, orbital determination, orbital maneuvers, restricted three body problems and formation flying.								
PREREQUISITES:	Desired knowledge on dynamics and controls.								
Software	<ul style="list-style-type: none"> • Matlab 2012: available at ETC • FreeFlyer: available at Csetr (M305) 								
TEXTBOOKS:	<p>[1] <i>Space Vehicle Dynamics and Control, AIAA Education 2nd Edition, by Bong Wie.</i></p> <p>[2] <i>Space Vehicle Guidance, Control, and Astrodynamics by Bong Wie.</i></p> <p>[3] <i>Analytical Mechanics of Space Systems, by H. Schaub and J. Junkins.</i></p> <p>[4] <i>Orbital Mechanics for Engineering Students, 2nd Edition by Howard Curtis.</i></p>								
Journal and Conferences	<p>Journals</p> <p>AIAA Journal of Guidance, Control and Dynamics IEEE Transactions on Aerospace and Electronic Systems IEEE Transactions on Automatic Control AIAA Journal of Spacecraft and Rockets Acta Astronautica Journal of the Astronautical Sciences</p> <p>Conferences</p> <p>AIAA Guidance, Navigation, and Control Conference AIAA/AAS Astrodynamics Specialist Conference IEEE Aerospace Conference</p>								
GRADING:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Class assignments (Paper-based and software-based assignments)</td> <td style="text-align: right;">40%</td> </tr> <tr> <td>Test 1 (Midterm) - March 2</td> <td style="text-align: right;">25%</td> </tr> <tr> <td>Teat 2 (Midterm) - April 27</td> <td style="text-align: right;">25%</td> </tr> <tr> <td>Final Project:</td> <td style="text-align: right;">10%</td> </tr> </table> <p>ESCALE</p> <p>A ≥ 90 B ≥ 80 but <90 C ≥ 70 but <80 D ≥ 60 but <70 F <60</p>	Class assignments (Paper-based and software-based assignments)	40%	Test 1 (Midterm) - March 2	25%	Teat 2 (Midterm) - April 27	25%	Final Project:	10%
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TOPICS COVERED:	<ul style="list-style-type: none"> • Dynamics systems modelling • Rotational kinematics • Dynamics systems control • Orbital dynamics • Orbital maneuvers and control • Rigid-body dynamics • Rotational Maneuvers and attitude control 	
MATERIAL FOR CLASS	<ul style="list-style-type: none"> • Calculators: Simple scientific calculators are allowed. For example: TI-30X, HP33S and HP35S. Programmable calculators or those with advanced functions (\int , dx, vectors and matrices) are not allowed. Those are the same calculators that are currently being allowed in the Fundamental of Engineering (FE) and Professional Engineering (PE) exams (http://ncees.org/exams/calculator-policy/) • Laptop. 	
AUTHOR/DATE:	Angel Flores-Abad	1/20/2016