De Anza College  
AUTOMOTIVE TECHNOLOGY 53A  
Auto mechanisms 3 Units  
Green Sheet

Winter 2015  
**Section #**  30344  06:00pm-08:50pm TTh  
Instructor:  Michael McCart  
Office Phone #:  408-864-8376 (during office hours)  
E-mail  mccartmichael@deanza.edu (best way to communicate)  
Class meetings:  Jan. 5 – Mar. 27  
Classroom:  G8  
Office hours  Instructor’s office hours will be 5-6 PM, M, T, W, TH in office E14A/G8.  
Automotive website  http://www.deanza.edu/autotech/

Advisory: English Writing 211 and Reading 211 (or Language Arts 211), or English as a Second Language 272 and 273; Mathematics 212 or equivalent.

Six hours lecture-laboratory (equivalent to seventy-two hours per quarter).

**Student Learning Outcomes**

Demonstrate the ability to diagram and construct compound mechanical and pneumatic machines, calculating the mechanical advantage for the individual components as well as the complete system.

**Final Exam**  
*Tuesday, March 24, 06:00pm-08:45pm*

**Disruptive Behavior**

A. De Anza College will enforce all policies and procedures set forth in the *Standards of Student Conduct* (see catalog). Any student disrupting a class may be asked to leave that class. After administrative review, the instructor may drop the student from the class.

B. **Repeated cell phone interruptions will not be tolerated. Turn cell phones off during class and keep them in your backpacks.**

C. There will be no eating, drinks, or chewing tobacco or gum in this classroom.

D. Smoking in designated areas only.

**Attendance**  
*Students will be dropped* after two or more absences.

**IMPORTANT NOTICE**

NONE OF THE EXAMINATIONS OR THE LABORATORY EVALUATIONS MAY BE MADE UP UNLESS PRIOR AUTHORIZATION IS ARRANGED WITH THE INSTRUCTOR. OTHER LATEWORK WILL BE LOWERED ONE WHOLE GRADE
Auto 53A
This course covers the application of physical principles to the operation of mechanical, hydraulic, and hydromechanical systems, using an applied physics technique.

Required equipment
A. Mechanical Power and Fluid Power workbooks
B. Scientific calculator (not your cell phone)
C. Notebook and pencil

Expanded Description: Content and Form
A. Explain motion and equilibrium.
   1. Inertia
   2. Friction.
B. Classify lever systems and applications.
   1. First, second and third class levers.
   2. Calculations of gains vs. losses.
   3. Identification and uses.
C. Describe the function of an incline plane.
   1. Calculations of gains vs. losses.
   2. Applications.
   3. Use of the screw-thread.
D. Explain the various uses of pulley systems.
   1. Use as a first, second, or third class lever.
   2. Calculations of gains vs. losses.
   3. Applications.
E. Explain the power distribution through compound gear sets.
   1. Gear trains and types.
   2. Transfer of power.
   3. Compounding.
   4. Planetary gear applications.
   5. Calculations of gains vs. losses.
   6. Applications.
F. Describe the differences in hydraulic and pneumatic systems.
   1. Pascal's Law.
   2. Fluid pressures.
   3. Pressure measuring systems and meters.
   4. Static fluid systems.
   5. Dynamic fluid systems.
   6. Calculations of gains vs. losses.
   7. Applications.
G. Classify the individual components in compound and complex machines.
   1. Identification procedures.
   2. Calculations of gains vs. losses.
H. Distinguish the differences in mechanics of heat transfer and the states of matter.
   2. Evaporation, condensation.

Methods of Evaluating Objectives
A. Unannounced problem-solving quizzes.
B. Two objective midcourse examinations.
C. A comprehensive and objective final examination.
D. Class participation per department policy.

Auto 53A

Tentative assignments

Week one
  Day one: Introduction, Inventory experimenters
  Day two: Inertia, Equilibrium M-1 and M-2

Week two
  Day one: First class lever M-3
  Day two: Second class lever M-4

Week three
  Day one: Third class lever M-5
  Day two: Inclined plane M-6

Week four
  Day one: Pulleys M-7 and M-8
  Day two: Gears M-9

Week five
  Day one: Transmission of power M-10 and M-11
  Day two: Wheel and axle M-12

Week six
  Day one
  Day two: Mechanical Test Mechanical workbook due

Week seven
  Day one: Introduction to fluid power
  Day two: Pressure and vacuum F-1 and F-2

Week eight
  Day one: Cylinder compressors F-5 and F-6
  Day two: Fluid control Valves F-3 and F-4

Week nine
  Day one: Differential forces and air motors F-7 and F-8
  Day two: Directional control F-9 and F-10

Week ten
  Day one: Speed control F-11 and F-12
  Day two: Fluid Test Fluid workbooks due

Week eleven
  Day one: Compound machines, heat transfer
  Day two: Review and make up

Week twelve: Final exam

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Classroom worksheets</td>
<td>8 at 5 points 40</td>
</tr>
<tr>
<td>Quizzes</td>
<td>4 at 31 points 124</td>
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<tr>
<td>Workbooks</td>
<td>2 at 43 points 86</td>
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<tr>
<td>Mechanical test</td>
<td>75</td>
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<tr>
<td>Fluid test</td>
<td>75</td>
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<tr>
<td>Final</td>
<td>200</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>600</strong></td>
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**Grade definitions are as follows:**

<table>
<thead>
<tr>
<th>Points</th>
<th>Letter grade</th>
<th>Percentage</th>
<th>Grade points</th>
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<tbody>
<tr>
<td>576-600</td>
<td>A+ Excellent</td>
<td>96-100%</td>
<td>4.0</td>
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<tr>
<td>540-575</td>
<td>A Excellent</td>
<td>90-95.9%</td>
<td>4.0</td>
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<tr>
<td>520-539</td>
<td>A- Excellent</td>
<td>86.6-89.9%</td>
<td>3.7</td>
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<tr>
<td>500-519</td>
<td>B+ Good</td>
<td>83.3-86.5%</td>
<td>3.3</td>
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<tr>
<td>480-499</td>
<td>B Good</td>
<td>80-83.2%</td>
<td>3.0</td>
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<tr>
<td>460-479</td>
<td>B- Good</td>
<td>76.6-79.9%</td>
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<tr>
<td>440-459</td>
<td>C+ Satisfactory</td>
<td>73.3-76.5%</td>
<td>2.3</td>
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<tr>
<td>420-439</td>
<td>C Satisfactory</td>
<td>70-73.2%</td>
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<tr>
<td>390-419</td>
<td>D+ Passing, less than satisfactory</td>
<td>65-69.9%</td>
<td>1.3</td>
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<tr>
<td>360-389</td>
<td>D Passing, less than satisfactory</td>
<td>60-64.9%</td>
<td>1.0</td>
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<td>340-359</td>
<td>D- Passing, less than satisfactory</td>
<td>56.6-59.9</td>
<td>0.7</td>
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<tr>
<td>Below 339</td>
<td>F Failing</td>
<td>Below 56.6</td>
<td>0.0</td>
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*This schedule is subject to change without notice* It is intended to be a general guide during the quarter. The schedule and procedures for this course are subject to change at the discretion of the instructor.