

# DE ANZA COLLEGE AUTOMOTIVE TECHNOLOGY AUTO 67A

Auto 67A

Hybrid Electric Vehicles

4.5 UNITS



## General Information:

Instructor: John Walton  
Office Number: (408) 864-8508  
Email: [waltonjohn@fhda.edu](mailto:waltonjohn@fhda.edu)  
Web site: <http://faculty.deanza.fhda.edu/waltonjohn>  
Dates: Monday and Wednesday  
Summer Quarter, 2015  
Hours: 6:00 P.M. to 10:10 P.M.  
Office hours: 5:00 P.M. to 6:00 P.M. Monday and Wednesday  
Office location: #E14d in E1 Automotive technology building

## Advisories:

English Writing 211 and Reading 211 (or Language Arts 211), or English as a Second Language 272 and 273; Mathematics 212 or equivalent; Automotive Technology 60A, 60B and 60G.

**Automotive Technology Website at:** [autotech.deanza.fhda.edu](http://autotech.deanza.fhda.edu)

## Course Description:

- Understanding the functions of automotive hybrid propulsion systems.
- Operating characteristics of hybrid drive systems.
- Integration of high voltage power supplies and energy storage systems.
- Operating fundamentals of DC to DC converters.
- Relationship of internal combustion engines and motor generators.
- Function and design of regenerative braking systems.
- Operation of hybrid transmission systems and power splitting devices.
- Application of the high expansion ratio cycle.
- Understanding safety aspects of service hybrid electric vehicles.
- Utilization of special diagnostic equipment for hybrid electrical systems and related subsystems.
- Appropriate repair protocol for hybrid electrical systems.
- Maintenance and servicing of hybrid vehicles.

## Student Learning Outcome: Student will:

- Identify the function of an automotive hybrid propulsion system.
- Apply the recommended safety practices as outlined in the shop manual and ERG (emergency response guide).
- Follow recommended maintenance practices as applicable to a hybrid electric vehicle
- Outline the service aspects of hybrid electric vehicles
- Classify the different types of hybrid propulsion systems
- Define the various components of a hybrid electric vehicle
- Demonstrate the basic operation of regenerative braking.

## Text and References:

67A Hybrid Syllabus  
Printed Course Syllabus (available from campus bookstore) or free download from course studio  
All Data, Toyota TIS system.

## Required Equipment: Grading System:

Safety glasses  
*Graded weekly quizzes, worksheets, participation, & comprehensive final*  
(Final Exam Scheduled for last night of class Aug 6th)  
Highest class score = 100%.

A+	97 - 100%
A	94 - 96%
A-	92 - 93%
B+	87 - 91%
B	83 - 86%
B-	80 - 82%
C+	75 - 79%
C	67 - 74%
D+	60 - 66%
D	55 - 59%
D-	50 - 55%
F	0 - 49%

<b>Missing Assignments:</b>	The student will complete any missing assignments within 7 days. <b>Late assignments are subject to 1 grade penalty.</b> 2 points will be deducted from <b>ALL</b> late assignments.
<b>Attendance:</b>	Students will be <u>dropped</u> for exceeding 2 absences.
<b>Adds:</b>	<b>You must add before the current college deadline, late adds are not allowed.</b>
<b>Drops:</b>	<b>If you stop attending the class you will receive an F unless you drop before the current college drop date.</b> <b><i>Adding or dropping a class is your responsibility.</i></b>
<b>Text:</b>	67A Hybrid Syllabus (Available in campus bookstore) or free download from course studio

- This course provides you with an overview of general hybrid vehicle safety precautions, general operation, and general service.
- This **course does not certify you** to work on hybrid vehicle high-voltage systems. You must attend factory certification courses to become a certified hybrid electric vehicle technician.
- The hybrid system includes high-voltage circuits that can carry up to 650 volts. Incorrect handling of high-voltage circuits can cause severe burns, or electric shock that may result in death or serious injury.
- Never touch, disassemble, remove, or replace high-voltage parts, cables, or connectors. High-voltage components are colored orange or have high-voltage warning labels.
- Do not access the service plug. Failure to comply with these warnings can result in severe burns or electric shock that may result in death or serious injury.
- Always refer to the vehicle Repair Manual for exact procedures and specifications.
- Safety glasses and shoes are required for all shop activities and demonstrations.

## **Attendance Policy**

Your attendance is an essential part of this course. By enrolling in this class, you are committing to attend promptly. Make-up exams and worksheets will only be available for one week following an absence. If you are going to miss a class or know that you will be late, you must notify me as soon as possible. It is your responsibility to get yourself caught up.

## **Disruptive Behavior**

**A.** DeAnaza College will enforce all policies and procedures set forth in the *Standards of Student Conduct* (see web site, schedule or catalog). Any student disrupting a class may be asked to leave that class. Disruption includes cell phone usage, text messaging and talking to other students during lecture. After administrative review, student may not be allowed to return to class.

<http://www.deanza.edu/specialed/dish/appendix/conducts.html>

**B.** No cell phone interruptions – turn cell phones off or to vibrate mode during class.

**C.** No eating, drinking sodas, or chewing tobacco in this classroom.

## **Disability Support Programs & Services (DSP&S)**

If you need any classroom accommodations or services due to a disability, please see me after class. A verification of your disability must be on file with the college. For information on learning disabilities, call or visit the Educational Diagnostic Center, Learning Center West 110, 408-864-8839. For information on others disabilities, call or visit Disability Support Services, Seminar 2A, 408-864-8753.

## **Register on line or get grades on line at: [www.deanza.edu/](http://www.deanza.edu/)**

If you need any classroom accommodations or services due to a disability, please see me after class. A verification of your disability must be on file with the college. <http://www.deanza.edu/specialed/dss/>

For information on learning disabilities, call or visit the Educational Diagnostic Center, Learning Center West 110, 408-864-8839. For information on others disabilities, call or visit Disability Support Services, Seminar 2A, 408-864-8753.

## **Safety Policy**

*Safety glasses AND shoes are to be worn at all times during any lab work or demonstration.*

- **Financial Aid:** Lisa Mandy: Director (408) 864- 8403 [mandylisa@fhda.edu](mailto:mandylisa@fhda.edu)
- **Certificates and degrees:** <http://www.deanza.edu/counseling/pdf/degrees/auto-technician.pdf>
- **Scholarship Information available in financial aid or at**  
<http://www.deanza.edu/financialaid/scholarship.html>

Course CRN	11492
Credit Hours	4.5
Last Day for Adds	June 30, 2015
Census Date	July 01, 2015
Last Day for Refund	June 30, 2015
Last Day for Drops w/o W	June 30, 2015
Last Day for Drops	July 28, 2015

**Advanced Automotive Technology  
Certificate of Achievement-Advanced**

This certificate program prepares students for an entry-level position in the automotive repair industry in advanced automotive electrical/environmental concepts.

*Student Learning Outcomes - upon completion students will be able to:*

- demonstrate understanding of general advanced automotive electrical/environmental concepts as they relate to automotive service, diagnosis, and repair.

1. Meet the requirements for this certificate level.
2. Complete the following.

**AUTO 60 Automotive Electrical Systems 9**

**AUTO 60K Advanced Body Electrical 4.5**

**AUTO 67A Hybrid Electric Vehicles 4.5**

**AUTO 64G Introduction to Automotive and Light Truck**

**Diesel Systems 4.5**

**AUTO 66 Automotive Air Conditioning 4.5**

**Total Units Required . . . . . 27**