

IMPERIAL VALLEY COLLEGE

LEARNING FOR SUCCESS

AUTOMOTIVE

TECHNOLOGY

AUT-230

EMISSIONS & COMPUTER SYSTEMS

COURSE SYLLABUS

INSTRUCTOR:

RICARDO PRADIS

SUMMER TERM 2013

EMISSIONS & COMPUTER SYSTEMS

AUT-230

Ricardo Pradis- Instructor

E-mail: ricardo.pradis@imperial.edu

Phone: 760-355-6403

Course Description:

This is an advanced engine computer and drivability course. It emphasizes diagnostic procedure and techniques using all types of equipment and procedures. This class brings together all knowledge from AUT 160, and AUT170, and allows the students to diagnose all systems of the automobile. Upon successful completion of this course students are prepared to take the Automotive Service Excellence (ASE) certification examination in electronics, engine performance, and advance engine performance.

Class Schedule:

June 24 – August 1 (6 week session, 4 days a week)
Monday – Thursday 9:00 – 10:20 lec.
10:30 – 12:40 lab.

All students are to report to class on time defined as class schedule. Any students who arrive 15 minutes after class start time will be marked absent. You are required to report to the instructor if you will be late or must leave early or you will be mark absent for that day.

Course Objectives- Upon successful completion of this course, the student will:

- Name the noxious automotive emissions that created the need for car manufacturers to install emissions controls
- Give examples of emissions control failures and service required
- Explain the function and operation of various sensors and actuators
- Troubleshoot and service sensors, actuators and electronic control modules.
- List and explain the characteristics of various fuels
- Define the purpose of On-Board Diagnostic Second Generation (OBDII).
- Explain how the different types of ignition systems operate.
- List the various types of fuel injection systems.
- Troubleshoot the fuel injection system.
- Explain strategy-based diagnostics.

Automotive Technology Classroom & Shop Policy

Classroom:

No Eating during lectures (coffee or drinks allowed). Respect your fellow student's space and property. Be on time so as to not disturb others during lectures. If you miss a class you are responsible to make up all work. Bring required material to every class session. Computers are to be used only for school related projects or assignments. No cell phones will be used during class, this include "**Texting**" all phones must be set to silent/vibrate and if you must take a call please leave the classroom quietly. No stereo's or music allowed in the classroom or lab area. If you are having trouble with the course and/or personal problems communicate with the instructor as soon as possible so as to get the help needed. Students have the right to experience a positive learning environment; students who disrupt that environment can be asked to leave the class. Swearing, negative remarks and discriminatory statements will not be tolerated. If someone says anything to you that makes you feel uncomfortable or that you feel is inappropriate contact your instructor immediately.

Special Needs

If you have any form of disability, please inform the instructor so that you can get the assistance you may need. Please contact DSPS office as soon as possible: 355-6312, 2100 Bldg. I have made every effort to ensure that this course is accessible to all students, including students with disabilities. If you encounter any problem during this course, please contact me immediately.

Shop/ Lab Area

- Safety test must be passed to work in the shop and complete required lab exercise.
- Safety glasses are required to be worn at all times while in the shop area, safety glasses are the student responsibility.
- Clean up your area and any other loose debris or trash.
- Wear all required safety protection and comply with posted signs.
- No shorts or open toe foot wear, always be prepared to go into the lab area.
- Comply with tool check out policy and return tools clean.
- Do not perform any work on any vehicle outside the assigned task without permission from your instructor.
- Long hair must be kept in a ponytail or tucked away for safety

Faculty and Staff

All students are required to take direction from any faculty, any issues with direction should be brought up to your instructor, however all staff has the right to direct any student at any time. Please respect the staff's decisions.

Equipment and Supplies:

1. Textbook & Workbook: Modern Automotive Technology 7th Edition James E. Duffy
2. Pen and pencils.
3. Standard writing paper.
4. Personal Protective Equipment:
 - Safety glasses,
 - Work footwear,
 - Proper shirt and pants

Parking:

No student parking by the building, the only exception is on lab time if your vehicle is a project (instructor approved). Speed limit must be kept at or under 5MPH.

Parking permit is required at all times.

Projects:

All projects are to be taken with the student's unless otherwise approve by the instructor. All approve projects must be removed from campus prior to finals.

Shop Maintenance:

All work will cease 20 minutes prior to end of class.

All work areas must be cleaned.

Tools must be cleaned and returned to the tool room.

Any broken or missing tools must be reported immediately. Tools are student's responsibility.

Grading Criteria:

1. Attendance: First day of class, regular attendance, and withdrawal after exceeding the number of class hours per week.
2. Tardiness: Three times equals one absent.
3. Student Conduct: Upon entry into IVC constitutes the student's acceptance of the standards of student conduct and the regulations publish by the college.
4. Each student is responsible for making up schoolwork missed because of absences.
5. Grading system:
 - A=90%-100% of points= Excellent
 - B=80%-89% of points= Good
 - C*=70%-79% of points= Satisfactory
 - D= 60%-69% of points= Pass, less than satisfactory
 - F= Less than 60% of points= Failing

6. Very important:

- Mid-Term (60 points) will be given on July 11. It will be a multiple choice test **Bring your Scantron, and pencil.**
- Final-Exam (60 points) will be given on August 1. It will be a multiple choice test **Bring your Scantron and pencil.**
- There are no make-up exams unless you have a very good reason and make arrangements with the instructor before the exam.
- **Final grades can be raised or lowered based on your preparation and participation in class. It benefits you to be engage and participative.**

Grades:

	Points
Book worksheets, quizzes.	140
Lab activity, hands-on worksheets.	240
Mid-term	60
Final-exam	60
Total points	500

Course Grade:

The course grade is based on total points accumulated during the semester. There is a total of 500 points available. Grades are determined by dividing the total points you earn by the total points available to get your percentage. (Total points may vary if I change the assignments in a particular week).

Grading of Hands-on (Lab) Assignments:

The most common problem students experience is not being detailed enough in their answers and not spending the right amount of time in the repair procedures. Always be as specific as you can and use examples from your readings. Make sure to answer all parts of the questions. Points will be deducted for inadequate responses. Feedback will be given after each assignment and, hopefully, you will improve as you proceed with the course. The following grading rubric is used when grading assignments.

	Grading Rubric for Hands-on Assignment	Points
A	Focused and clearly organized. Contains critical thinking and content analysis. Convincing evidence is provided to support conclusions. Ideas are clearly communicated. Clearly meets or exceeds assignments requirements.	18-20
B	Generally focused and contain some development of ideas, may be simplistic or repetitive. Evidence is provided which supports conclusions. Meet assignments requirements.	16-17
C	May be somewhat unfocused, underdeveloped, or rumbling. But does have some coherence. Some evidence is provided which support conclusions. Meets minimum assignment requirements.	14-15
D	Unfocused, underdeveloped. Minimal evidence is used to support conclusion. Does not respond appropriately to the assignment.	12-13
C	Minimal effort by the student. Unfocused, underdeveloped. Evidence is not used to support conclusion. Block overall understanding. Does not meet assignment requirements.	0-11

Method of Instruction:

Methods of instructions may include, but are not limited to, the following: lectures, textbook worksheets, hands-on worksheets, internet readings, large and small group discussions, audiovisual aids, and demonstrations.

Institutional Student Learning Outcomes (ISLO)

Student learning outcomes are written statements that represent faculty and departmental learning goals for students. After successful completion of the program or degree at Imperial Valley College, students are expected to have measurable improvement in the following areas:

- ISLO 1: Communication Skills
- ISLO 2: Critical Thinking Skills
- ISLO 3: Personal Responsibility
- ISLO 4: Information Literacy
- ISLO 5: Global Awareness

AUT-230 Emissions & Computer Systems will provide students with learning opportunities to improve in five of the Institutional Learning Outcomes: Communication Skills (SLO1), Critical Thinking (SLO2), Personal Responsibility (SLO3), Information Literacy (SLO4), and Global Awareness (SLO5).

Safety Requirements:

For every task perform in the Emission & Computer System course the following safety requirements must be strictly enforce:

Comply with personal and environmental safety practices associated **with clothing; eye protection;** hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

Course Instructional Schedule and Learning Activities:

Week 1: Class orientation, safety procedures, demonstrations, shop activities and safety test.

The Automobile chapter 1 – answer questions workbook chapter 1.

Introduction to emissions chapter 43 – answer review questions page: 829.

Lab activity: VIN Code, Engine Specifications, Vacuum Testing, Compression Testing, Five-Gas Analysis.

Week 2: Computer Systems Chapter 17 & 19

Answer review questions chapter 17 pg. 259. Answer questions workbook chapter 19.

Quiz on chapter 17 & 19

Lab activity: Retrieve and record stored OBDI diagnostic trouble codes; clear codes.

Retrieve and record stored OBDII diagnostic trouble codes; clear codes

Inspect and test computerized engine control systems sensors, power train control module (PCM), actuators, and circuits; perform necessary action.

Week 3: Fuel Systems Chapter 20, 21, 22, & 23.

Answer review questions pgs. 313-314 368-369. Answer workbook chapter 23

MID-TERM

Lab activity: Vehicle fuel specifications, fuel pump pressure test, fuel injector test, port injection system diagnosis, inspect and test fuel pressure regulation systems and components.

Inspect, test, and clean fuel injectors Inspect throttle body, air induction and filtration system, intake manifold and gaskets.

Week 4: Ignition Systems chapter 34 & 35

Answer review questions pgs.592-593. Answer workbook chapter 35.

Quiz on chapter 34 & 35

Lab activity: Ignition system diagnosis and repair.

Inspect and test ignition primary system, inspect and test ignition secondary system, inspect and test distributor ignition system, inspect and test waste spark system, inspect and test coil-on-plug system.

Week 5: Emission control systems chapter 44- Performance & Driveability chapter 45

Answer review questions pgs. 854-855. Answer workbook chapter 45

Lab activity: prepare 4 or 5 gas analyzer; inspect and prepare vehicle for test and obtain exhaust readings; interpret readings, and determined necessary action. Inspect and test PCV system, Evaporative control system, EGR valve, Catalytic converter, Scan tool data list, Component Parameters, and check OBDII monitors.

WEEK 6: Advance diagnostics chapter 46

Answer review questions pgs. 897-898

Lab activity: OBD II system monitoring, drive cycles.

Preparation for final exam.

FINAL EXAM

Instructor Office Hours:

By Appointment:	Contact me at 355-6403 or ricardo.pradis@imperial.edu
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In Case of Emergency: If you have a life-threatening illness or injury that requires an ambulance, call 911 immediately Emergency costs are not covered by Student Health Services.

The Student Health Fee allows the students to receive health services on campus and at various health centers in the community. For more information refer to the IVC web page.

Professionalism

Developing this Vital Characteristic

You know that it's essential to be professional if you want to be a success. But what does "being professional" actually mean?

For some, being professional might mean dressing smartly at work, or doing a good job. For others, being professional means having advanced degrees or other certifications, framed and hung on the office wall.

Professionalism encompasses all of these definitions. But, it also covers much more. So, what is professionalism, and why does it matter? And how can you be completely professional in your day-to-day role?

Let's explore all of these questions, so that you can present a really professional image in the workplace.

Defining Professionalism

The Merriam-Webster dictionary defines professionalism as "the conduct, aims, or qualities that characterize or mark a profession or a professional person"; and it defines a profession as "a calling requiring specialized knowledge and often long and intensive academic preparation."

These definitions imply that professionalism encompasses a number of different attributes, and, together, these attributes identify and define a professional.

So, what are these attributes?

Specialized Knowledge

First and foremost, professionals are known for their specialized knowledge. They've made a deep personal commitment to develop and improve their skills, and, where appropriate, they have the degrees and certifications that serve as the foundation of this knowledge.

Not all business areas have a stable core of knowledge (and the academic qualifications that go with this); not all areas demand extensive knowledge to practice successfully; and not all professionals have top degrees in their field.

What matters, though, is that these professionals have worked in a serious, thoughtful and sustained way to master the specialized knowledge needed to succeed in their fields; and that they keep this knowledge up-to-date, so that they can continue to deliver the best work possible.

Competency

Professionals get the job done. They're reliable, and they keep their promises. If circumstances arise that prevent them from delivering on their promises, they manage expectations up front, and they do their best to make the situation right.

Professionals don't make excuses, but focus on finding solutions.

Honesty and Integrity

Professionals exhibit qualities such as honesty and integrity. They keep their word, and they can be trusted implicitly because of this. They never compromise their values, and will do the right thing, even when it means taking a harder road.

More than this, true professionals are humble – if a project or job falls outside their scope of expertise, they're not afraid to admit this. They immediately ask for help when they need it, and they're willing to learn from others.

Accountability

Professionals hold themselves accountable for their thoughts, words, and actions, especially when they've made a mistake. This personal accountability is closely tied to honesty and integrity, and it's a vital element in professionalism.

Self-Regulation

They also stay professional under pressure.

For instance, imagine a customer service employee who's faced with an irate customer. Instead of getting upset or angry in return, the employee exhibits true professionalism by maintaining a calm, business-like demeanor, and by doing everything that she can to make the situation right.

Genuine professionals show respect for the people around them, no matter what their role or situation. They exhibit a high degree of emotional intelligence (EI) by considering the emotions and needs of others, and they don't let a bad day impact how they interact with colleagues or clients.

Image

Professionals look the part – they don't show up to work sloppily dressed, with unkempt hair. They're polished, and they dress appropriately for the situation. Because of this, they exude an air of confidence, and they gain respect for this.

How to Exhibit Professionalism

As you can see from these characteristics, professionals are the kind of people that others respect and value. They are a genuine credit to their organizations!

This is why it's so important that we work to earn a professional reputation in the workplace. True professionals are the first to be considered for promotions, they are awarded valuable projects or clients, and they are routinely successful in their careers.

Now that you have a clear view of what constitutes professionalism, are you demonstrating these characteristics to the people around you? It's likely you're already showing some characteristics, but you may find yourself lacking in others: to build your own professionalism, focus on improving each of these characteristics. (Focus on one at a time, so you don't get overwhelmed.)

Additionally, here are some further strategies that will help you be more professional in the workplace:

Build Expertise

Don't let your knowledge and skills get outdated. Make a commitment to build expertise and stay up-to-date with your industry.

Develop Your Emotional Intelligence

Professionals can sense the emotional needs of others. They're able to give clients and coworkers what they need, because they know how to listen actively and observe what's happening.

So, if you want to improve your professionalism, focus on developing emotional intelligence.

Honor Your Commitments

Whenever you make a promise to your boss, colleagues, or clients, keep it. If it looks as if you won't be able to meet a deadline, let your boss, team or client know as soon as sensibly possible. However, do what you can to avoid ending up in this situation!

Don't make excuses – instead, focus on meeting expectations as best you can, and on making the situation right.

Be Polite

Be kind and polite and use good manners to everyone you come into contact with, no matter what their role is, and no matter how you're feeling. This might sound unimportant, but it makes a significant impact.

Have the Tools You Need

Do you show up to a client meeting lacking important samples? Or arrive at work, only to realize that you left a vital file at home? Or do you find yourself operating in situations where you don't have the skills needed to do a good job?

True professionals are always prepared. This requires advance planning, timeliness, and attention. Focus on improving your time management and planning skills, so that you're always in control.

Note:

Although professionalism means keeping commitments, doing high quality work, and having expert status, occasionally the pursuit of these attributes might tempt you not to volunteer for projects that fall outside your "comfort zone."

However, this doesn't necessarily mean that you shouldn't try! Analyze risks beforehand to minimize the consequences of getting things wrong, be honest about any skills gaps that you have, and work to fill them. Then do the best you possibly can!

Key Points

Professionalism is a trait that's highly valued in the workforce. It has many attributes, including:

1. Specialized knowledge.
2. Competency.
3. Honesty and integrity.
4. Respect.
5. Accountability.
6. Self-regulation.
7. Image.

To improve your own professionalism, focus on improving in each of these areas.

You can also exude professionalism by being kind and polite to everyone, presenting a professional image in your attitude and dress, and showing up for work or meetings fully prepared.

