IMPERIAL VALLEY COLLEGE

Basic Course Information

Semester:	**Spring 2025**	Instructor Name:	**Ricardo Pradis**
Course Title & #:	**MANUAL TRANS & POWER TRAINS AUT-180**	Email:	**Ricardo.pradis@imperial.edu**
CRN #:	**20465**	Webpage (optional):	
Classroom:	**1103**	Office #:	**1100 Building**
Class Dates:	**Feb. 10 – June 6**	Office Hours:	**12:30 – 1:00 pm T-Th**
Class Days:	**Tuesday and Thursday**	Office Phone #:	**760-355-6403**
Class Times:	**1:00 – 4:10**	Emergency Contact:	**760-355-6361 (secretary)**
Units:	**4.00**	Class Format/Modality:	**Face-to-Face**

Course Description

This course discusses modern manual transmissions, driveline and differential theory of methods of repair, service equipment operation and technique of problems diagnosis procedures for import and domestic vehicles. Upon successful completion of this course, students are prepared to take the Automotive Service Excellence test (ASE) certification examination in manual transmission.

Course Prerequisite(s) and/or Corequisite(s)

None

Student Learning Outcomes

1. Identify and interpret drive train concerns; determine necessary action.

2. Diagnose clutch noise, binding, slippage, pulsation, and chatter; determine necessary action.

3. Remove and reinstall transmission/transaxle.

4. Diagnose constant-velocity (CV) joint noise and vibration concerns; determine necessary action.

Course Objectives

1. Comply with all safety shop procedures associated with safety stands, air tools, hydraulic jacks and car lifts.
2. Identify the major components of the Automobile clutch assembly
3. Have a basic understanding of how drive-train system works
4. Learn different types of power-train units
5. Understand manual shift transaxle and overdrive
6. Understand gear ratios and planetary gear system
7. Understand the purpose of the front and rear drivelines
8. Study various import vehicles drive trains.

IMPERIAL VALLEY COLLEGE

Textbooks & Other Resources or Links

Textbook: G-W Modern Automotive Technology ISBN: 978-1-54564-688-4

Course Requirements and Instructional Methods

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.
Out-of-class:
Library computer software assignment. Read, review and answer the Level I, Level II, and Level III ASE Questions. After completion students will print out a report to find out the level where he/she needs support.
Reading and Writing:
Read, Review and answer Automotive Service Excellence (ASE) questions from ASE A3 class booklet, motor age. When finished, the instructor will review each statement with live transmission components. The assignment consists of: 1. Clutch diagnosis and repair-6 questions. 2. Transmission diagnosis and repair-7 questions. 3. Transaxle diagnosis and repair-7 questions. 4. Driveshaft/halfshaft and universal joint/constant velocity (CV) joint diagnosis and repair- 5 questions 5. Rear-Wheel drive axle diagnosis and repair-7 questions. 6. Four-wheel drive/all wheel drive component, Diagnosis and repair-8 questions.

Course Grading Based on Course Objectives

Grading Criteria:

1. 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
2. Very important:
    - **Mid-Term** will be given on April 2.
    - **Final-Exam** will be given on June 4.
    - 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 engaged 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 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
F	Minimal effort by the student. Unfocused, underdeveloped. Evidence is not used to support conclusion. Block overall understanding. Does not meet assignment requirements.	0-11

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Academic Honesty (Artificial Intelligence -AI)

IVC values critical thinking and communication skills and considers academic integrity essential to learning. Using AI tools as a replacement for your own thinking, writing, or quantitative reasoning goes against both our mission and academic honesty policy and will be considered academic dishonesty, or plagiarism unless you have been instructed to do so by your instructor. In case of any uncertainty regarding the ethical use of AI tools, students are encouraged to reach out to their instructors for clarification.

Accessibility Statement

Imperial Valley College is committed to providing an accessible learning experience for all students, regardless of course modality. Every effort has been made to ensure that this course complies with all state and federal accessibility regulations, including Section 508 of the Rehabilitation Act, the Americans with Disabilities Act (ADA), and Title 5 of the California Code of Regulations. However, if you encounter any content that is not accessible, please contact your instructor or the area dean for assistance. If you have specific accommodations through ***DSPS***, contact them for additional assistance.

We are here to support you and ensure that you have equal access to all course materials.

Course Policies

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the General Catalog.
- Children in the classroom: Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

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 (students not wearing safety glasses will be ask to leave the class for that day no exceptions).
- Clean up your area and any other lose 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 directions 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.

Safety Requirements:
For every task performed in this course the following safety requirements must be strictly enforced: 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.

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.
A parking permit is required at all times.

Projects:
All projects are to be taken with the students unless otherwise approve by the instructor.
All projects approved must be removed from campus prior to finals.
All projects must have a written work order (R/O).

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.

Other Course Information

Work-based Learning

Career possibilities in the automotive industry:

Work-based learning (WBL) allows student to apply classroom content in professional settings while gaining real-work experiences. These opportunities will provide you with a deeper, more engaging and relevant learning environment. Some examples of WBL assignments are job shadowing, informational interviews, and guest speakers. In this course, you will be working on workplace simulations and will be using Ford Service Training online program. It is intended to provide students with simple knowledge (basic) to complex skills (advance) training.

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Contact:

Office Phone: (760) 355-5721

Email: careerservicescenter@imperial.edu

Hours of Operation:

Monday - Friday; 8:00 a.m. to 5:00 p.m

Financial Aid

Your Grades Matter! In order to continue to receive financial aid, you must meet the Satisfactory Academic Progress (SAP) requirement. Makings SAP means that you are maintaining a 2.0 GPA, you have successfully completed 67% of your coursework, and you will graduate on time. If you do not maintain SAP, you may lose your financial aid. If you have questions, please contact financial aid at finaid@imperial.edu.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit http://www.imperial.edu/studentresources or click the heart icon in Canvas.

Anticipated Class Schedule/Calendar

[Provide a tentative overview of the readings, assignments, tests, and/or other activities for the duration of the course. A table format as in the example below may be used for this purpose.]

Date or Week	Activity, Assignment, and/or Topic	Pages/ Due Dates/Tests
Week 1 Feb. 10-13	Syllabus & Introduction, Ford service training. Chapter 5 Auto Shop Safety	 Pages 55-56
Week 2 Feb. 18-20	Chapter 1 The Automobile Lab: Inspect power train main components	 Pages 3-19
Week 3 Feb 24-28	Chapter 78 Service information and work orders Lab: Use service information (pro-on-demand), filled a R/O	 Pages 78-86
Week 4 March 3-7	Chapter 61 Clutch Technology Lab: Identify clutch components	 Pages 927-939
Week 5 March 10-14	Chapter 62 Clutch diagnosis, service and repair Lab: Remove and replace a clutch	 Pages 940-955
Week 6-7 March 17-21 24-28	Chapter 63 Manual transmission technology Lab: Disassemble a manual transmission	 Pages 956-974
Week 8-9 March 31- April 4 April 7-11	Chapter 64 Manual transmission diagnosis, and repair Lab: Inspect and assemble a manual transmission	 Pages 975-983
Week 10- April 14- 18	MID-TERM	 EXAM
Week 11 April 28- May 2	Chapter 68 Drive shaft and transfer case service	 Pages 1031-1039

Updated 11/2024

Date or Week	Activity, Assignment, and/or Topic	Pages/ Due Dates/Tests
	Lab: Drive Shaft Inspection and Maintenance, Transfer Case Service	
Week 12 May 5-9	Chapter 69 Differential and drive rear axle technology. Lab: Disassemble and identify differential components	Pages 1040-1055
Week 13 May 12-16	Chapter 70 Differential & Rear Drive Axle Service & Repair Lab: Rear Axle Service, measurements, adjustments, and Reassembly.	Pages 1056-1071
Week 14 May 19-23	Chapter 71 Transaxle & Front Drive Axle Technology Lab: Identify front drive axle components	Pages 1072-1088
Week 15 May 27-30	Chapter 72 Transaxle & Front Drive Axle Repair Lab: Front Drive Axle Removal, Service, and Installation.	Pages 1089-1102
Week 16 June 2-6	FINAL-EXAM	EXAM

*****Subject to change without prior notice*****