



Note to Instructor: Replace the placeholder text beneath the headings with the appropriate information for your course. Please note that all sections, with the exception of "Other Course Information," are required elements.

Basic Course Information

Semester:	Fall 2021	Instructor Name:	Carlos Araiza
Course Title & #:	High Performance Engine Blueprint AUT 122	Email:	carlos.araiza@imperial.edu
CRN #:	10921	Webpage (optional):	www.imperial.edu
Classroom:	1201	Office #:	3120
Class Dates:	Aug 16 to Dec 11	Office Hours:	
Class Days:	Tuesday & Thursday	Office Phone #:	760-355-
Class Times:	T 8:00am-10:05am Th 8:00am-2:30pm	Emergency Contact:	760-355-6217
Units:	4	Class Format:	Hybrid Online Lecture Face to Face Lab

Course Description

The student learns advanced set-up and operation procedures of machine shop equipment for engine blueprinting. The student will learn procedures used to complete the machining of the engine block and component parts. The differences between standard and high performance applications will be highlighted. (Nontransferable, nondegree)

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

N/A

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. Describe safety practices to be followed when performing engine service. (ILO 1, ILO2, ILO3)
2. Explain how to measure cylinder and piston wear. (ILO 1, ILO2, ILO3)
3. Identify and interpret engine top end, and engine blueprint system concern; determine necessary action. (ILO 1, ILO2, ILO3)
4. Create an engine layout to determine engine components needed to repair with modern engine equipment. (ILO2)

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Comply with all safety shop procedures associated with handling of hazardous materials and shop equipment.
2. Demonstrate the ability and procedures how to use precision tools, equipment, and basic measurements.
3. Identify the types of engine blocks and be able to make the best selection for blueprinting specifications.
4. Identify different types of crankshafts and be able to make the best selection for high performance using blueprinting specifications.
5. Demonstrate knowledge, selection and ability to modify high performance pistons.
6. Demonstrate the ability for selecting and modifying connecting rods for a high performance engines.
7. Balance the internal/external parts of high performance engines.
8. Modify and install stock/wet sump lubrication systems.
9. Modify engine cooling system for high performance engines.

1. Comply with all safety shop procedures associated with handling

Textbooks & Other Resources or Links

The Step by Step guide to Engine Blueprinting ISBN: 1-884089-26-7

Performance Automotive Engine Math ISBN: 978-1-9347709-47-4

Course Requirements and Instructional Methods

Class Activity

Essay

Mid-Term/Final Exam(s)

Objective

Problem Solving Exercise

Quizzes

Skill Demonstration

Written Assignments

Course Grading Based on Course Objectives

Grading Information and Assignments Grade will be based on a total of 100 point for lab assignment, quizzes, midterm and final tests

1 Safety Exam=	3 Points
7 Quizzes with a total of 5 points each =	35points
7 Homework Assignments with a total of 2 points each =	14points
Final Test there are 4 processes worth 6 points each with a total of =	24 points

Total Points Possible = 100

25% Completed Assignments

25% Quizzes

25% Mid- Term

25% Final Exam

A= 90%-100% Excellent

B= 80%-89% Good

C= 70%-79% Satisfactory

D= 60%- 69% Pass, less than satisfactory

F= 59%& Below Failing

Course Policies

Make sure to:

1. **Bring your textbook every section of lecture**
2. **Bring a notebook and pencils**
3. **Be on time for class**
4. **Participate during lecture/lab activities**
5. **No late assignments**

Basic Rules and shop safety:

1. **No music allowed in the auto shop**
 2. **No parking in front of the gate**
 3. **No work should be done without instructor's permission**
 4. **No parking inside the shop during lecture time.**
 5. **No long brakes (should be 10 minutes per class hour)**
 6. **Each student should clean the work area**
 7. **The students can't leave early without instructor's permission**
 8. **No cell phones during class session**
 9. **No helpers or visitors during lab activities**
 10. **Safety glasses are required along with safety work clothing, no sandals, loose clothing, or jewelry allowed.**
- **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](#).**

Other Course Information

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	Auto Shop Safety /Tools Course Introduction	
Week 2	Engine Displacement	
Week 3	Compression Ratio	
Week 4	Piston Speed	
Week 5	Brake Horsepower and Torque	
Week 6	Induction Math	
Week 7	Midterm Exam	
Week 8	Cylinder Head Math	
Week 9	Exhaust System Math	
Week 10	Fuel System Math	
Week 11	Atmospheric and Combustion Math	
Week 12	Camshaft Math	
Week 13	Engine Simulation and Modeling Software	
Week 14	Engine Balancing	
Week 15	Engine Assembly Tips	
Week 16	Final Exams	Final Exam

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