

Basic Course Information

Semester:	Spring 2019	Instructor Name:	Raul F Delatorre
Course Title & #:	Generation Mechanic VIII APGN 108	Email:	raul.delatorre@imperial.edu
CRN #:	21434	Webpage (optional):	
Classroom:	Drop 4	Office #:	IID's Niland Power Plant
Class Dates:	Feb 11 - June 7, 2019	Office Hours:	6:00 AM - 3:00 PM
Class Days:	Wednesday	Office Phone #:	760-339-3338
Class Times:	4:00 PM - 8:30 PM	Emergency Contact:	760-427-6452
Units:	4		

Course Description

Introduction to torque transmission mechanisms. Identification of common gear box types, case, gears, bearing, seals and lubrication applications. Emphasis on torque transmission mechanisms service, evaluation, repairs based on applicable American Gear Manufacturing, Bearing Institute, International Standards Organization and American Petroleum Institute standards.

Student Learning Outcomes

1. Student will be able to successfully explain gear ratio and torque transmission.
2. Student will identify and troubleshoot the different types of gearboxes and their application.
3. Calculate and set backlash.
4. Identify types of gears and interpret blue pattern on gears.
5. Correlate vibration signature related to gear interaction.
6. Properly select industrial gear lubrication products.

Course Objectives

Student will be able to Develop the ability to identify gear types and their application.
 Student will be able to identify types of industrial seals related to gear box application.
 Student will be able to define gear lubrication applications.
 Student will be able to evaluate gear condition, service and repair gear trains.

Textbooks & Other Resources or Links

Power Plant Equipment Operation and maintenance Guide
 McGraw-Hill Professional Dec 16, 2011

AGMA (American Gear Manufacturing Association) website.
ISO (International Standards Organization) website.
API (American Petroleum Institute) website.

Course Requirements and Instructional Methods

Student class participation is essential, topics presented rely substantially in empirical practical applications based on standardized engineering concepts.

At every session instructor and student must compile a list of ten questions or activities related to session instruction, 30% of compilation, at instructor’s discretion will conform mid-term and final examinations.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

Class participation (compilation of questions per class)	10% of grade
Class assignments, papers.	10% of grade
Using model and conventional methods for setting gear backlash, and demonstrate proficiency in selecting applicable gear lubricants.	20% of grade
Mid-term examination.	20% of grade
Final examination.	40% of grade
Final grade.	100%

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student’s status will be the same as that of any other student who desires to add a class. It is the student’s responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as ‘excused’ absences.

Classroom Etiquette

- **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.

Online Netiquette

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!)].

Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the important of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

- **Plagiarism** is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to "cite a source" correctly, you must ask for help.
- **Cheating** is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the [General Catalog](#) for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test

information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Additional Student Services

Imperial Valley College offers various services in support of student success. The following are some of the services available for students. Please speak to your instructor about additional services which may be available.

- [Blackboard Support Site](#). The Blackboard Support Site provides a variety of support channels available to students 24 hours per day.
- [Learning Services](#). There are several learning labs on campus to assist students through the use of computers and tutors. Please consult your [Campus Map](#) for the [Math Lab](#); [Reading, Writing & Language Labs](#); and the [Study Skills Center](#).
- [Library Services](#). There is more to our library than just books. You have access to tutors in the [Study Skills Center](#), study rooms for small groups, and online access to a wealth of resources.

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the [Disabled Student Programs and Services](#) (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313. Please contact them if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee.

- [Student Health Center](#). A Student Health Nurse is available on campus. In addition, Pioneers Memorial Healthcare District provide basic health services for students, such as first aid and care for minor illnesses. Contact the IVC [Student Health Center](#) at 760-355-6128 in Room 1536 for more information.
- [Mental Health Counseling Services](#). Short-term individual, couples, family, and group therapy are provided to currently enrolled students. Contact the IVC [Mental Health Counseling Services](#) at 760-355-6196 in Room 2109 for more information.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC [General Catalog](#).

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC [Library Department](#) provides numerous [Information Literacy Tutorials](#) to assist students in this endeavor.

Anticipated Class Schedule/Calendar

Date	Activity, Assignment, and/or Topic	Pages/ Due Dates/Tests
Wednesday February 13	Introduction, APGN 105 through 108 brief review, APG 108 in perspective.	APGN 105 to 108 Course descriptions review.
Wednesday February 20	APG 108 in perspective, continued, Generation Mechanic position progression. Homework assignment “Gear, Sprocket and Pulley systems research”	Homework due February 27.
Wednesday February 27	Torque transmission mechanisms generalities, physics and geometry, basic math review.	Lecture.
Wednesday March 6	Pulley/belt torque transmission.	Lecture.
Wednesday March 13	Chain/Sprocket torque transmission.	Lecture
Wednesday March 20	Gear transmission mechanisms.	Lecture
Wednesday March 27	Gear types and application.	Lecture
Wednesday April 3	Mid-term exam	
Wednesday April 10	Torque transmission mechanisms Shaft Precision Alignment, precision tools use, setting gear backlash.	Lecture/hands on data collection on hydro horizontal unit.
Wednesday April 17	Gear box inspection best practices, compare to Drop 5 Unit 2 speed increaser condition.	Lecture/assignment, due 4/24/19
Wednesday April 24	Recess.	
Wednesday May 1	Fundamentals of gear driven machinery vibration analysis review.	Lecture
Wednesday May 8	Thermography and ultrasound as industrial maintenance tools.	Lecture
Wednesday May 16	Lubricants and oil tribology related to gear driven units, viscosity cross reference chart review. Assignment: To procure Drop 5 Unit 2 speed increaser available technical information.	Lecture/assignment.
Wednesday May 22	Case study: Drop 5 Unit 2 speed increaser maintenance requirements and technical specifications review.	Drop 5 Unit 2 speed increaser technical manuals review.
Wednesday May 29	Generation equipment industrial maintenance Best Practices review.	Refurbishment technical specifications review and work progress.

Wednesday June 5	Final exam.	
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*****Tentative, subject to change without prior notice*****