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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: COSMT 50
Full Course Title: Introduction To Cosmetology
Short Title: Intro to Cosmt
TOP Code: 3007.00 - Cosmetology/Cosmetologist, General*
Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable
Units: 5.0
Total class hours: 272.0
Total contact hours in class: 200.0
Lecture hours: 36.0
Lab hours: 164.0
Hours outside of class: 72.0
Repeatable: No
Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Cosmetology
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Course Description

Students will learn the basic rules and regulations of the California Board of Barbering and Cosmetology. Students will be taught fundamentals of Cosmetology, esthetics and manicuring needed to pass both the written and practical exam for licensure.

Conditions of Enrollment

Advisories

- **Language - recommended eligibility for English 1A**
 - **Mathematics - recommended eligibility for Math 52**
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Content

Course Lecture Content

1. Cosmetology Act and Board Regulations
2. Health and Safety, Disinfection and Sanitation Control Procedures
3. History and Career Opportunities
4. Life Skills
5. Your Professional Image
6. Communicating for Success

7. Chemicals in Cosmetology
 - a. Application
 - b. Control
 - c. Safety

Course Lab/Activity Content

1. Health and safety sanitation control and disinfection procedures
 2. Chemical application and safety
 3. Standard haircutting techniques
 4. Tool safety
 5. Wet hairstyling
 6. Manicuring and pedicuring
 7. Artificial nail application
 8. Proper roller placements
-

Objectives

1. Relate and apply the requirements of the Cosmetology Act and Board regulations to the practice of cosmetology.
 2. Identify and apply approved procedures for sanitation, sterilization, and safety.
 3. Develop the necessary comprehensive technical skills required by the California Bureau of Barbering and Cosmetology for competency in providing salon services.
 4. Understand cosmetic chemistry including sterilization and mixing hair colors. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of the course, the student will identify California Board of Barbering and Cosmetology rules and regulations.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
2. Upon completion of the course, student will demonstrate correct application techniques used in hair chemical services.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
3. Upon completion of the course, student will demonstrate time management skills.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
4. Upon completion of the course, student will identify the different career paths available to licensed

cosmetologists.

- **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
5. Upon completion of the course, student will demonstrate accurate disinfection and sanitation techniques.
- **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
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Methods of Instruction

- Laboratory
 - Lecture/Discussion
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Assignments

Reading Assignments

Read Chapter 1 in Milady Cosmetology Text, have students answer Review questions and copy key terms, complete questions in theory workbook. Have students perform a state board approved blow dry style, shampoo set, Finger waving and pin curl techniques and scientific brushing.

Writing Assignments

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Portfolio
 - Quizzes
 - Research Project
 - Skills Demonstrations/Performance Exam
 - Other
- Mock Board testing
-

Course Materials

Textbooks:

1. Milady. *Standard Textbook of Cosmetology*, 2016 ed. Cengage Learning, 2016, ISBN: 978-1-285-76943-1
Equivalent text is acceptable
2. MILADY. *MILADY STANDARD PRACTICAL WORKBOOK*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76947-9
Equivalent text is acceptable
3. MILADY. *MILADY STANDARD COSMETOLOGY THEORY WORKBOOK*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76945-5
Equivalent text is acceptable
4. MILADY. *MILADY STANDARD COSMETOLOGY EXAM REVIEW*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76955-4
Equivalent text is acceptable

5. MILADY. *MILADY STANDARD ONLINE LICENSING PREP*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76979-0

Equivalent text is acceptable

Other:

1. Solid black pants, capri pants, or skirt. solid black or white shirt. Black closed toe shoe and solid black smock (one is provided) worn over the shirt. Cosmetology Kit.

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: COSMT 54
Full Course Title: Intermediate Cosmetology II
Short Title: Inter. Cosmo. II
TOP Code: 3007.00 - Cosmetology/Cosmetologist, General*
Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable
Units: 5.0
Total class hours: 272.0
Total contact hours in class: 200.0
Lecture hours: 36.0
Lab hours: 164.0
Hours outside of class: 72.0
Repeatable: No
Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Cosmetology
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Course Description

Introduction to human anatomy. Includes, but is not limited to, physiology and the body's organs and functioning systems.

Conditions of Enrollment

Satisfactory completion of: COSMT 53

Content

Course Lecture Content

1. The Study of Anatomy and Physiology
 - a. Anatomy, Physiology and You
 - b. Cells
 - c. Tissues
 - d. Organs and Body Systems
 - e. The Skeletal System
 - f. The Muscular System
 - g. The Nervous System
 - h. The Circulatory System
 - i. The Lymphatic/Immune System

- j. The Endocrine System
- k. The Digestive System
- l. The Excretory System
- m. The Respiratory System
- n. The integumentary System
- o. The Reproductive System

Course Lab/Activity Content

Demonstration of how anatomy knowledge ties into cosmetology services.

Objectives

1. Know all aspects of the human anatomy.
 2. Identify all parts of the skeletal and muscular systems of the body. ****Requires Critical Thinking****
 3. List and describe the functions of all the various parts of the Nervous System, Circulatory, Lymphatic/Immune, Endocrine, Digestive, Excretory, Respiratory, Integumentary and Reproductive systems. ****Requires Critical Thinking****
 4. List and describe the organs and body systems. ****Requires Critical Thinking****
 5. List and describe different types of cells and tissues in the human body. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course, the student will identify basic human anatomy as it pertains to Cosmetology.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
2. Upon completion of this course, the student will list the 10 body systems and organs.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
3. Upon completion of this course, the student will identify all parts of the skeletal system of the human body.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
4. Upon completion of this course, the student will describe the functions of the various nervous systems.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
5. Upon completion of this course, the student will identify the different types of tissues in the human body.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.

Methods of Instruction

- Laboratory
 - Lecture/Discussion
-

Assignments

Reading Assignments

read chapter 6, Anatomy and Physiology. must answer review questions and copy key terms, complete questions in theory workbook. Students must identify and label the various motor points and skeletal structure.

Writing Assignments

Other Assignments

Methods of Evaluation

- Essay/Paper
 - Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Portfolio
 - Problem Solving Exercises
 - Quizzes
 - Research Project
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. Milady. *Standard Textbook of Cosmetology*, 2016 ed. Cengage Learning, 2016, ISBN: 978-1-285-76943-1
Equivalent text is acceptable
 2. MILADY . *MILADY STANDARD COSMETOLOGY ONLINE LICENSING PREP*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76979-0
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 3. MILADY . *MILADY STANDARD COSMETOLOGY EXAM REVIEW*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76955-4
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 4. MILADY. *MILADY STANDARD COSMETOLOGY THEORY WORKBOOK*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76945-5
Equivalent text is acceptable
 5. MILADY. *MILADY STANDARD COSMETOLOGY PRACTICAL WORKBOOK*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76947-9
Equivalent text is acceptable
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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: COSMT 55
Full Course Title: Advanced Cosmetology I
Short Title: Adv. Cosmo. I
TOP Code: 3007.00 - Cosmetology/Cosmetologist, General*
Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable
Units: 5.0
Total class hours: 272.0
Total contact hours in class: 200.0
Lecture hours: 36.0
Lab hours: 164.0
Hours outside of class: 72.0
Repeatable: No
Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Cosmetology
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Course Description

Introduction to the basics of chemistry and electricity and how they are related to cosmetology.

Conditions of Enrollment

Satisfactory completion of: COSMT 54

Content

Course Lecture Content

1. Chemistry
 - a. Difference between organic and inorganic chemistry
 - b. States of matter
 - c. Oxidation and reduction (redox) reactions
 - d. Differences between pure substances and physical mixtures
 - e. Solutions, suspensions, and emulsions
 - f. Potential hydrogen and the pH scale.
2. Electricity
 - a. The nature of electricity and the two types of electrical current
 - b. Electrical measures
 - c. Principles of electrical equipment safety

- d. Electric modalities used in cosmetology
- e. Types of electrical equipment that cosmetologists use and the correct procedures for using them
- f. Electromagnetic spectrum, visible spectrum of light and invisible light
- g. Types of light therapy and their benefits

Course Lab/Activity Content

1. Proper use of facial lamps.
 2. Use of high frequency unit.
 3. Proper cleaning and maintenance of electrical equipment used in the field.
-

Objectives

1. Understand the role that chemistry takes in the cosmetology field.
 2. Understand all concepts of basic electricity, including safety measures, and electrotherapy.
 3. Define the nature of electricity and the two types of currents, electrical measurements, the main electric modalities used in the cosmetology field.
 4. Demonstrate the proper use of electrical implements.
-

Student Learning Outcomes

1. Upon completion of this course, the student will explain how the science of chemistry influences Cosmetology.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
2. Upon completion of this course, the student will list the different states of matter.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
3. Upon completion of this course, the student will describe Potential Hydrogen (pH) and how it affects the hair.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
4. Upon completion of this course, the student will identify the nature of electricity.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
5. Upon completion of this course, the student will be able to explain the electromagnetic spectrum.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.

- **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
6. Upon completion of this course, the student will demonstrate safety when using chemicals.
- **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
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Methods of Instruction

- Laboratory
 - Lecture/Discussion
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Assignments

Reading Assignments

read chapter 12, Chemistry in milady text book, must answer review questions and copy key terms, complete questions in theory workbook. student must demonstrate proper chemical mixing ratios. Demonstrate safety precautions for chemical services.

Writing Assignments

Other Assignments

Methods of Evaluation

- Essay/Paper
 - Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Portfolio
 - Problem Solving Exercises
 - Quizzes
 - Research Project
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. Milady. *Standard Textbook of Cosmetology*, 2016 ed. Cengage Learning, 2016, ISBN: 978-1-285-76943-1
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5. MILADY. *MILADY STANDARD COSMETOLOGY PRACTICAL WORKBOOK*, 2016 ed. CENGAGE, 2016, ISBN: 978-1-285-76947-9

Equivalent text is acceptable

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: ENGL 37
Full Course Title: Women's Voices
Short Title: Women's Voices
TOP Code: 1503.00 - Comparative Literature*
Effective Term: Spring 2016

Course Standards

Course Type: Credit - Degree Applicable
Units: 3.0
Total class hours: 162.0
Total contact hours in class: 54.0
Lecture hours: 54.0
Hours outside of class: 108.0
Repeatable: No
Grading Method: Letter Grade Only

Minimum Qualifications for Instructors

- English (Masters Required)
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Course Description

An exploration of the thematic and stylistic elements of literature by and about women. Texts will be selected from a variety of ethnic groups in the United States and/or the world with an emphasis on the ways women's lives have been shaped by societal expectations: gender roles, sexuality identity and expression, socio-economic status, and ethnic and/or religious identities. The course will also focus on the ways that historical and ancient cultures are a foundation for understanding contemporary women's literature.

Conditions of Enrollment

Advisories

- **Language - recommended eligibility for English 1A**
Students are strongly advised to complete English 1A prior to enrollment in this course. English 1A emphasizes the research and literacy skills needed to successfully complete this course.
-

Content

Course Lecture Content

A. Historical Overview

1. Pre-1700 & Poetry
2. 1700 to 1950 & the Novel

3. 1950 to the present & Film & Social Media.

B. Representative Works of Women's Literature

1. Asian/Asian-American
 - Writers such as: Amy Tan, Chitra Banerjee Divakaruni, Izumi Shikibu, Lal Ded, Li Qingzhao, Laila Lalami, Firoozeh Dumas, Maxine Hong Kingston
2. Afro/Afro-Caribbean/African American
 - Writers such as: Roxane Gay, Maya Angelou, Rita Dove, Audre Lorde, bell hooks, Zadie Smith, Chimamanda Ngozi Adichie, Zora Neale Hurston, Alice Walker, Toni Morrison
3. European/European American
 - Writers such as: Margaret Atwood, Adrienne Rich, Elizabeth Bishop, Virginia Woolf, Ann Sexton, Pam Houston, Sappho, Jane Austen, Alice Munro, Annie Proulx, Emily Dickinson, Sylvia Plath, Eavan Boland, Flannery O'Connor, Joyce Carol Oates, Alicia Ostriker, Jane Hirshfield
4. Chicana/Latina
 - Writers such as: Sandra Cisneros, Isabel Allende, Gloria Anzaldúa, Norma Alarcón, Cherríe Moraga, Ana Castillo, Julia Alvarez, Helene M. Viamontes
5. Native American/American Indian
 - Writers such as: Louise Erdrich, Joy Harjo, Leslie Marmon Silko, Janet Campbell Hale, Paula Gunn Allen, N. Scott Momaday, Wendy Rose

C. Critical Approaches

1. Feminist Theory & Gender Studies
 - Critics such as: Virginia Woolf, Hélène Cixous, Judith Butler, bell hooks, Sandra Gilbert, Susan Gubar, Adrienne Rich, Alicia Ostriker, Paula Gunn Allen, Roxane Gay, Jennifer Weiner, Elaine Showalter, Eavan Boland, Lillian Robinson, Nina Baym, Toril Moi, Barbara Smith, Audre Lorde, & Susan Bordo

D. Themes, Archetypes, & Motifs

1. social expectations
2. gender roles & sexuality
3. marriage, motherhood, & friendship
4. socio-economic status & work
5. religion & civil rights
6. ethnicity & race
7. media representations
8. individual expression

E. Literary Concepts

1. genre
2. language choice
3. voice & style
4. narrative structure
5. characterization
6. symbolism
7. setting
8. revisionist mythmaking

F. Subgenres in Women's Literature

1. creative nonfiction
 - for example: letters, essays, personal narrative, journals/blogs, memoir, & literary criticism
2. drama & film
 - for example: romantic comedies, family dramas, & soap operas
3. fiction
 - for example: chick lit, fantasy, & romance
4. poetry:
 - for example: the lyric, the love poem & confessional poetry

Objectives

1. Read and discuss literature concerning the social, cultural, ethnic, and economic conditions that affect women both historically and/or contemporaneously. ****Requires Critical Thinking****
2. Analyze and interpret the writings in light of their social milieu and/or social expectations including gender roles, sexuality identity and expression, socio-economic status, and ethnic and/or religious identities. ****Requires Critical Thinking****
3. Relate the literature read to feminist, queer, multi-cultural, Marxist, and/or post-colonial criticisms. ****Requires Critical Thinking****
4. Evaluate the genre, style, philosophy, and/or ideology of female-identifying authors, and evaluate the impact of social, ethnic, cultural, and/or religious norms on the female writer. ****Requires Critical Thinking****
5. Relate the literature of each era, ethnicity, and/or culture to contemporary life. ****Requires Critical Thinking****

Student Learning Outcomes

1. Upon completion of the course, students will analyze the effects of gender in a work of literature by applying relevant theory and/or criticism.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Global Awareness** Students will articulate similarities and differences among cultures, times, and environments, demonstrating an understanding of cultural pluralism and knowledge of global issues.
2. Upon completion of the course, students will gather, evaluate, and effectively integrate research materials into a written critical analysis of a literary work by a female-identifying author.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
3. Upon completion of the course, students will use literary works to articulate the social, cultural, ethnic, and/or economic conditions that affect women historically and/or contemporaneously.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Global Awareness** Students will articulate similarities and differences among cultures, times, and environments, demonstrating an understanding of cultural pluralism and knowledge of global issues.
 - **Personal and Social Responsibility** Students will interact with others by demonstrating respect for opinions, feelings, and values.

Methods of Instruction

- Lecture/Discussion
-

Distance Education

Delivery Methods

- Online
-

Assignments

Reading Assignments

Read Lilit Marcus' essay, "Why I Only Read Books by Women Writers in 2013." Summarize her ideas and consider whether you find her argument persuasive.

Writing Assignments

Write in an analytical essay (750+ words), in which you respond to one of the three prompts below relating to Chitra Divakaruni's novel, *The Palace of Illusions*.

Rather than answering the individual questions within the topic prompt, use them as a starting point for your thought process. Make sure that your essay centers on a clear interpretative or argumentative thesis, and that you support that thesis through analysis of specific examples from the text.

Your essay will be evaluated on the basis of your ability to present a compelling thesis and support that thesis with convincing evidence, as well as your ability to effectively incorporate and cite examples from the works discussed, and avoid glaring or consistent mechanical and sentence level errors.

1) *Destiny vs. Agency*

Considering the multiple prophecies and the cultural expectations dictating her life, how much agency does Panchaali truly have? Use specific examples (scenes, key plot points, the role of particular characters) from the book to support your interpretation. Can she change what has been foretold? If so, what makes you believe that "cheating destiny" is possible—you may want to consider this question in terms of both your own beliefs and within the framework of the "rules" of the novel and the era/culture. If Panchaali cannot change what is foretold, then what are we to learn from watching her try—this may be similar to what she is meant to learn as well. You may also wish to use the author's background and other works, the context of cultural perspectives and beliefs, or compare/contrast the novel with traditional versions of the *Mahabharata* to support your thesis.

2) *Hero? Or no?*

Is Panchaali the hero of this story? Is she intended to be? In what ways is she playing the "hero's" role? In what ways is she playing one or more of the archetypal "female" roles? You may want to compare Panchaali to other heroic figures and/or to other female figures in myths (Helen of Troy in *The Iliad* comes to mind, as does Medea from *The Quest for the Golden Fleece*). You may use cultural definitions of a hero, literary definitions (ie: Campbell's "Monomyth") or your own personal definition of a hero as the basis for your analysis. At least as a starting point, it might help to note where the story parallels, and where it deviates, from Campbell's outline and consider why this might be so. You might also wish to compare Divakaruni's retelling to the older versions of the epic.

3) *Vantage Point*

Divakaruni chooses to retell *The Mahabharata* from the first person point of view of the woman at the center of it all: Panchaali. Why does Divakaruni choose Panchaali (rather than one of the great warriors) as the narrator? Why does Divakaruni use first person? In what ways does this more intimate perspective also feel more biased? In what ways is this style of telling more contemporary? How do these shifts in perspective affect the story? Do they change the theme or the intended lesson? How might the shift be reflective of the differences in the intended audiences for the original version of the epic and this contemporary version? What might this shift indicate about contemporary society? In what ways does the story still work as an epic, offering insight into a particular culture and/or characters worth emulating?

In a synthesis essay (1500+ words), respond to the following prompt:

Address the benefits and/or drawbacks to teaching categories or genres of literature based on the authors' background. What is gained or lost in a course exclusively focused women's writing (or Latino Literature, or multicultural film)? Do such courses reinforce the "otherness" and minority status of these works/authors/topics, or do they allow for a richer, more in depth discussion? Use both the primary texts and the critical essays we have read this semester, along with additional relevant texts and resources, to support your argument.

Other Assignments

GROUP PRESENTATION ASSIGNMENT:

In your assigned group (3 to 4 students), select one of the poems from *Orpheus & Company* listed below. Your group will be responsible for leading the class discussion (20-30 mins) of this poem: in effect, your group will be teaching this poem to your classmates.

To do this, you will need to familiarize yourself with the myth referred to in the poem and with the various poetic techniques presented in our class notes. You will then need to arrive at your own explication/interpretations of the poem, and of the ways in which the poem comments on and/or revises the myth.

Be sure to make your presentation interactive and engaging for your classmates.

Poems

"Circe/Mud Poems" - Margaret Atwood

"Persephone Leaving" - Mary Jo Bang

"Post-War Persephone" - Lisa Bernstein

"Mother Love" - Rita Dove

"Persephone Tells" - Dashka Slater

"Waiting for Icarus" - Muriel Rukeyser

"Daphne with Her Thighs in Bark" - Eavan Boland

"Debarked" - Phyllis Stowell

"Maze and Monster" - Ellen Roberts Young

"Why Penelope was Happy" - Cynthia MacDonald

"The Triumph of Achilles" - Louis Gluck

"The Spirit of Ruin" - Nadya Aisenberg

"Orpheus and Eurydice" - Jorie Graham

Methods of Evaluation

- **Essay/Paper**
- **Exams**
- **Homework**
- **Oral Tests/Class Performance**
- **Participation**
- **Portfolio**
- **Quizzes**
- **Research Project**

- **Other**
Emails, discussion forums, blog posts, online collaboration/group projects, etc.
-

Course Materials

Textbooks:

1. Gilbert, Sandra and Gubar, Susan, eds.. *The Norton Anthology of Literature by Women: The Traditions in English (Vol. 1 and 2)*, 3rd ed. W.W. Norton and Company, 2007, ISBN: 978-0-393-93015-3
Equivalent text is acceptable
 2. Chitra Banerjee Divakaruni. *The Palace of Illusions*, Anchor, 2009, ISBN: 978-1400096206
Equivalent text is acceptable
 3. Deborah di Nicola. *Orpheus and Company: Contemporary Poems on Greek Mythology*, UPNE, 1999, ISBN: 978-0874519181
Equivalent text is acceptable
 4. Virginia Woolf. *A Room of Ones Own*, Martino Fine Books, 2012, ISBN: 978-1614272779
Equivalent text is acceptable
 5. Jane Hirshfield. *Women in Praise of the Sacred: 43 Centuries of Spiritual Poetry by Women*, Harper Perennial, 1995, ISBN: 978-0060925765
Equivalent text is acceptable
 6. Kate Bernheimer. *Mirror, Mirror on the Wall: Women Writers Explore Their Favorite Fairy Tales*, Anchor, 1998, ISBN: 978-0385486811
Equivalent text is acceptable
 7. Margaret Atwood. *The Handmaid's Tale*, Anchor, 1987, ISBN: 978-0385490818
Equivalent text is acceptable
 8. Elaine Showalter. *The Vintage Book of American Women Writers*, Vintage, 2011, ISBN: 978-1400034451
Equivalent text is acceptable
 9. Mary Eagleton. *Feminist Literary Theory: A Reader*, Wiley-Blackwell, 2011, ISBN: 978-1405183130
Equivalent text is acceptable
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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: ENGL 38

Full Course Title: Classic and Contemporary Youth Literature

Short Title: Youth Literature

TOP Code: 1504.00 - Classics and Languages, Literatures and Linguistics, General

Effective Term: Fall 2014

Course Standards

Course Type: Credit - Degree Applicable

Units: 3.0

Total class hours: 162.0

Total contact hours in class: 54.0

Lecture hours: 54.0

Hours outside of class: 108.0

Repeatable: No

Grading Method: Letter Grade Only

Minimum Qualifications for Instructors

- English (Masters Required)
-

Course Description

Examines representative works of children's and young adult literature, with emphasis on developing students' close reading and analytical writing skills while promoting an appreciation for the aesthetic qualities of literature directed at young people. Emphasizes contemporary texts, classic works, and the socio-historical contexts of children's and YA literature. Explores common literary elements and subgenres, such as fantasy and the quest, the school story, fable and folk tale, cautionary tales, and coming-of-age stories. Emphasizes literature from diverse authors and communities.

Conditions of Enrollment

Advisories

- Language - recommended eligibility for English 1A
-

Content

Course Lecture Content

1. Literary terminology
2. Important genres, authors, and themes (classical to contemporary)
3. Contexts (historical, psychological, political, social, aesthetic, philosophical)
4. Multicultural issues, authors, and audiences
5. Critical reading strategies

6. Writing strategies
 7. Sociological aspects
-

Objectives

1. Identify and discuss key authors and works in the area of youth literature, including European American, Asian American, African American, and U.S. Latino/a authors, as well as global authors who write in English, or literature in translation. ****Requires Critical Thinking****
 2. Demonstrate familiarity with major archetypes and motifs of youth literature. ****Requires Critical Thinking****
 3. Apply literary concepts such as narrative structure, characterization, theme, diction, and symbolism to primary texts written for young readers. ****Requires Critical Thinking****
 4. Critically evaluate and compare works of fiction based on their literary qualities and offer critical responses to the writings of others. ****Requires Critical Thinking****
 5. Demonstrate an understanding of and an appreciation for youth literature in its many forms and styles. ****Requires Critical Thinking****
 6. Analyze and interpret themes found in the literature and intellectual movements of children's literature.
 7. Demonstrate understanding of appropriate academic discourse and the conventions of critical literary analysis.
 8. Relate the literary works to their historical, philosophical, social, political, and aesthetic contexts. ****Requires Critical Thinking****
 9. Demonstrate comprehension of the above through class discussion and formal and informal writing.
 10. Demonstrate awareness of culturally diverse audiences.
-

Student Learning Outcomes

1. Upon completion of this course, students will use the conventions of literary analysis to critically analyze a work of literature.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 2. Upon completion of this course, students will generate an interpretive argument that effectively integrates secondary sources.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 3. Upon completion of this course, students will demonstrate understanding of the subgenres, themes, and literary elements common to literature for children and young adults.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
-

Methods of Instruction

- Lecture/Discussion

Distance Education

Delivery Methods

- Online
 - Hybrid
 - Some lecture hours will be online
-

Assignments

Reading Assignments

Writing Assignments

a. Write an essay describing and analyzing the confluence of realism and fantasy in Roald Dahl's *Charlie and the Chocolate Factory* and/ or Madeleine L'Engle's *A Wrinkle in Time*. (1,000 words)

Other Assignments

b. Group project: Analyze the thematic commonalities and differences between S.E. Hinton's *The Outsiders* and Walter Dean Myers' *Monster*. Find a way to visually and/or dramatically represent this and create two discussion questions for the class. (30 minutes)

c. Using the film *Spirited Away* or *Princess Mononoke* by Hayao Miyazaki as a counterpoint, discuss "the journey" as it appears in classic young adult works such as Lewis Carroll's *Alice's Adventures in Wonderland* or Norton Juster's *The Phantom Tollbooth*, as well as contemporary works. (1,500 words)

d. Final project: Research and present a critical analysis of two works of children's or young adult literature from the American Library Association booklist that connect to the experiences of Latinos in the U.S. In your presentation, make comparisons to Julia Alvarez's *Before We Were Free* (class text) but also refer to at least two critical sources, and incorporate at least one interview. Especially consider the use of Spanish and/or Spanglish, and whether or not the texts regress into stereotypes. (2,000 words)

Methods of Evaluation

- Essay/Paper
 - Exams
 - Homework
 - Oral Tests/Class Performance
 - Participation
 - Portfolio
 - Quizzes
 - Research Project
 - Other
 - Projects Multimodal presentations
-

Course Materials

Textbooks:

1. L'Engle, Madeleine. *A Wrinkle in Time*, Square Fish Press, 2007, ISBN: B004RGSDCA
Equivalent text is acceptable
2. Carroll, Lewis. *Alice's Adventures in Wonderland*, Dover Publications, 1993, ISBN: 978-0486275437
Equivalent text is acceptable
3. Paterson, Katherine. *Bridge to Terabithia*, HarperFestival, 2006, ISBN: 978-0061227288
Equivalent text is acceptable
4. Dahl, Roald. *Charlie and the Chocolate Factory*, Penguin Classics, 2011, ISBN: 978-0143106333
Equivalent text is acceptable
5. Rushdie, Salman. *Haroun and the Sea of Stories*, Penguin Books, 1991, ISBN: 978-0140157376

- Equivalent text is acceptable**
6. Konisburg, E.L.. *The View from Saturday*, Atheneum, 1996, ISBN: 978-0689817212
Equivalent text is acceptable
7. De La Pena, Matt. *Mexican Whiteboy*, Ember, 2010, ISBN: 978-0440239383
Equivalent text is acceptable
8. Myers, Walter Dean. *Monster*, Amistad, 2001, ISBN: 978-0064407311
Equivalent text is acceptable
9. Alvarez, Julia. *Before We Were Free*, Laurel Leaf, 2004, ISBN: 978-0440237846
Equivalent text is acceptable
10. Hinton, S.E.. *The Outsiders*, Speak, 2006, ISBN: 978-0142407332
Equivalent text is acceptable
11. Satrapi, Marjane. *The Complete Persepolis*, Pantheon, 2007, ISBN: 978-0375714832
Equivalent text is acceptable
12. Rodriguez, Luis. *Always Running*, Curbstone, 1993, ISBN: 978-1880684061
Equivalent text is acceptable
13. Alexie, Sherman. *The Absolutely True Diary of a Part-Time Indian*, Little, Brown, 2007, ISBN: 978-0316013680
Equivalent text is acceptable
14. Yang, Gene Luen. *American Born Chinese*, Square Fish, 2008, ISBN: 978-0312384487
Equivalent text is acceptable
15. Alegria, Malin. *Estrella's Quinceanera*, Simon & Schuster, 2007, ISBN: 978-0689878107
Equivalent text is acceptable
16. Anderson, M.T.. *Feed*, Candlewick, 2012, ISBN: 978-0763662622
Equivalent text is acceptable
17. Alvarez, Julia. *In the Time of the Butterflies*, Algonquin, 2010, ISBN: 978-1565129764
Equivalent text is acceptable
18. Zarr, Sara. *Story of a Girl*, Little, Brown, 2008, ISBN: 978-0316014540
Equivalent text is acceptable
19. Hunt, Peter. *Understanding Children's Literature*, 2001 ed. Routledge, 2005, ISBN: 978-0415375467
Equivalent text is acceptable
20. Zipes, et al.. *The Norton Anthology of Children's Literature*, 1st ed. Norton, 2005, ISBN: 978-0393975383
Equivalent text is acceptable
21. Haddon, Mark. *The Curious Incident of the Dog in the Night-time*, Vintage, 2004, ISBN: 978-1400032716
Equivalent text is acceptable
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: ENGL 42
Full Course Title: Introduction to Shakespeare
Short Title: Shakespeare
TOP Code: 1501.00 - English Language and Literature, General
Effective Term: Fall 2015

Course Standards

Course Type: Credit - Degree Applicable
Units: 3.0
Total class hours: 162.0
Total contact hours in class: 54.0
Lecture hours: 54.0
Hours outside of class: 108.0
Repeatable: No
Grading Method: Letter Grade Only

Minimum Qualifications for Instructors

- English (Masters Required)
-

Course Description

Introduction to the major works of William Shakespeare with special attention given to the tragedies, comedies, and histories.

Conditions of Enrollment

Advisories

- Language - recommended eligibility for English 1A
-

Content

Course Lecture Content

1. History of Elizabethan Theatre and drama
 2. Language and stage conventions of Elizabethan Theatre
 3. Six to eight plays, including representative plays from the tragedies, comedies, and histories
-

Objectives

1. Read Shakespeare's works with comprehension ****Requires Critical Thinking****
2. Recognize the universality of the problems and conflicts presented in his plays and ****Requires Critical Thinking****
3. Become aware of the similarity of basic human motives in the 16th century and contemporary society ****Requires Critical Thinking****
4. Follow development of characters within a play ****Requires Critical Thinking****
5. Identify and interpret figurative language, noting how such adds to plays dramatically and aesthetically ****Requires Critical Thinking****
6. Write a well-organized, coherent essay on some specific topic connected with a play or plays being studied, using material within a play to justify particular point of view ****Requires Critical Thinking****
7. Engage in critical analysis of Shakespeare's plays, examining and interpreting the plots, literary themes and figures, character development, human motives, and the cultural and historical contexts in which each text is written; organizing such analysis in coherent essays that interpret, evaluate, and explain various aspects of Shakespeare's plays ****Requires Critical Thinking****

Student Learning Outcomes

1. Upon completion of the course, students will identify historical and cultural influences in the work of William Shakespeare.
 - **Global Awareness** Students will articulate similarities and differences among cultures, times, and environments, demonstrating an understanding of cultural pluralism and knowledge of global issues.
2. Upon completion of the course, students will demonstrate a critical reading of several literary works.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
3. Upon completion of the course, students will gather, evaluate, and effectively integrate research materials into a written critical analysis of a literary work.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.

Methods of Instruction

- **Lecture/Discussion**
- **Other**
viewing film excerpts of plays

Distance Education

Delivery Methods

- Online
 - Broadcast Education
-

Assignments

Reading Assignments

Hamlet, Act 1

42 | 42

Hamlet declares,

But come,
Here, as before, never, so help you mercy,
How strange or odd soe'er I bear myself,
As I perchance hereafter shall think meet
To put an antic disposition on,
That you, at such times seeing me, never shall—
With arms encumbered thus, or this headshake,
Or by pronouncing of some doubtful phrase,
As “Well, well, we know,” or “We could an if we would,”
Or “If we list to speak,” or “There be an if they might,”
Or such ambiguous giving out—to note
That you know aught of me. This not to do,
So grace and mercy at your most need help you,
Swear. (1.5.169-183)

Modern Wording:

But now listen to me. No matter how strangely I act (since I may find it appropriate to act a little crazy in the near future), you must never, ever let on—with a gesture of your hands or a certain expression on your face—that you know anything about what happened to me here tonight. You must never say anything like, “Ah, yes, just as we suspected,” or “We could tell you a thing or two about him,” or anything like that. Swear you won’t.

Why would Hamlet “put an antic disposition on,” feigning madness? What purpose would it serve?

Writing Assignments

Directions:

In an essay of four to five pages (not including the Works Cited page), respond to ONE of the prompts below:

1. Demonstrate how at least one character from each of the plays, *Hamlet* and *Macbeth*, can be read in more than one way. For example, you might illustrate how Ophelia can be read as both mad and sane and how Lady Macbeth can be read as both forceful and fragile. Or you might demonstrate how Hamlet can be read as both ambitious and apathetic and how Macbeth can be read as both controlling and controlled. Illustrate where contradictions in lines and plot allow for inconsistent or multiple character portrayals.
2. Compare the roles of Queen Gertrude and Lady Macbeth in Shakespeare’s *Hamlet* and *Macbeth*. Analyze their influence and power—or their lack thereof—over their men and their kingdoms. Are either or both them powerful women?

Are either or both of them treacherous women? Do either or both of them manipulate or scheme? What is their influence in their respective spheres?

3. Examine the psychological make-up of Prince Hamlet and King Macbeth. What are the motivations of both these men and what makes them both tragic characters? You may wish to compare or contrast their ambition. Or you may wish to compare or contrast their *madness* or *angst*.

Secondary Sources:

Regardless of the prompt you select, you must draw from *at least* TWO secondary sources, both of which must be from the Yuba College Library, either in print or from online databases. Including the two plays you examine, you must cite *at least* FOUR sources total. You must follow MLA format (8th edition) and include a Works Cited page, which will be page five or six of your essay.

Essay Format:

Essays must be typed and double-spaced with one-inch margins on all sides. Please do NOT justify the right margin. Please do NOT include a cover page, but place your name, the course title, and the date at the top of the first page. All essays must have titles and numbered pages. Use nothing larger than a 12-pt. font size in Times New Roman or a similar font. MLA Style 8th Edition is required. You must include a Works Cited Page.

Methods of Evaluation

- Essay/Paper
 - Exams
 - Homework
 - Oral Tests/Class Performance
 - Portfolio
 - Quizzes
 - Research Project
 - Other
journal entries
-

Course Materials

Textbooks:

1. Shakespeare, William. *The Oxford Shakespeare: The Complete Works*, 2nd ed. Oxford University Press, 2005, ISBN: 9780199267170
Equivalent text is acceptable
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 21

Full Course Title: Introduction to Automobiles

Short Title: Intro to Auto

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 3.0

Total class hours: 162.0

Total contact hours in class: 90.0

Lecture hours: 36.0

Lab hours: 54.0

Hours outside of class: 72.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of automobiles. Emphasis is placed on fundamental operating principles, nomenclature, structural analysis, major design theories, systems function, systems service, minor repair procedures, major repair complexities, current laws and regulations, political action, and personal economics/decision making.

Content

Course Lecture Content

1. Operating Principles
 - a. Work, energy, power
 - b. Common components
 - c. Nomenclature and function
 - d. Engine design and classification
 - e. Drive trains, transmission of power
 - f. Historical developments
 - g. Current technology
2. Operating Systems, Function, and Service
 - a. Cooling
 - b. Lubrication
 - c. Fuel
 - d. Ignition

- e. Starting
- f. Charging
- g. Drive trains
- h. Brakes
- i. Pollution controls
- j. Steering and suspension
- k. Tires
- 3. Minor Repairs
 - a. Determination of major repairs complexities
 - b. Overhaul
 - c. Rebuilding/Replacing
 - d. Used parts
- 4. Laws Affecting Automobiles and Consumers
 - a. Bureau of Automotive Repair
 - b. N.A.I.S.E.
 - c. Clean Air Act
 - d. Pollution controls/certification
 - e. Hazardous waste
- 5. Automotive Economics
 - a. New cars/used cars
 - b. Buying/selling
 - c. Insurance
 - d. Collision damage
 - e. Job opportunities

Course Lab/Activity Content

Students will demonstrate knowledge of lecture material through their hands-on lab assignments on the following:

- 1. Operating Principles
 - a. Work, energy, power
 - b. Common components
 - c. Nomenclature and function
 - d. Engine design and classification
 - e. Drive trains, transmission of power
 - f. Historical developments
 - g. Current technology
- 2. Operating Systems, Function, and Service
 - a. Cooling
 - b. Lubrication
 - c. Fuel
 - d. Ignition
 - e. Starting
 - f. Charging
 - g. Drive trains
 - h. Brakes
 - i. Pollution controls
 - j. Steering and suspension
 - k. Tires
- 3. Minor Repairs
 - a. Major repairs complexities
 - b. Overhaul
 - c. Rebuilding/Replacing
 - d. Used parts
- 4. Laws Affecting Automobiles and Consumers:
 - a. Bureau of Automotive Repair
 - b. N.A.I.S.E.

- c. Clean Air Act
 - d. Pollution controls/certification
 - e. Hazardous waste
5. Automotive Economics:
- a. New cars/used cars
 - b. Buying/selling
 - c. Insurance
 - d. Collision damage
 - e. Job opportunities
-

Objectives

1. Identify and classify automotive engines, drive trains, and body designs. ****Requires Critical Thinking****
 2. Identify the major components of an automobile and give a theoretical explanation of the function and a practical description of the working characteristics. ****Requires Critical Thinking****
 3. Discuss the evolutionary development of today's automobile. ****Requires Critical Thinking****
 4. Describe the function and perform service procedures common to the major operating systems of the automobile. ****Requires Critical Thinking****
 5. Complete minor "do-it-yourself" repairs to automotive industry standards. ****Requires Critical Thinking****
 6. Analyze major repair complexities using automotive service manuals. ****Requires Critical Thinking****
 7. Discuss laws affecting the automobile and the consumer by reporting on those aspects encountered in daily living. ****Requires Critical Thinking****
 8. Apply decision-making principles to hypothetical automotive economic situations. ****Requires Critical Thinking****
 9. Describe the application of various physical laws relative to automotive operation. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will describe the function and perform service procedures common to the major operating systems of the automobile.
 - **Computation** Students will use appropriate mathematical concepts and methods to understand, analyze, and communicate issues in quantitative terms.
 2. Upon completion of this course students will identify and classify automotive engines, drivetrains, and body designs.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 3. Upon completion of this course students will complete minor "do-it-yourself" repairs to automotive industry standards.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- Laboratory
- Lecture/Discussion

Assignments

Reading Assignments

Student will read the assigned chapter 1 and be prepared to answer questions with class.

Writing Assignments

Student will summarize the assigned chapter 1 Introductions of powertrains in outline format.

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. James D. Halderman/ Darrell Deeter. *Introduction to Automotive Service NATEF Correlated Task Sheets*, 1st ed. Pearson Publishing, 2013, ISBN: 9780132549912
2. James D. Halderman/ Darrell Deeter. *Introduction to Automotive Service*, 1st ed. Pearson Publishing, 2013, ISBN: 9780132540087

Other:

1. Syllabus
 2. 3-ring binder with dividers
 3. Shop coat/ footwear
 4. Safety glasses
 5. Instructor may require a supplemental resource packet
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 22
Full Course Title: Hydraulics (Fluid Power)
Short Title: Hydraulic Power
TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*
Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable
Units: 3.0
Total class hours: 162.0
Total contact hours in class: 90.0
Lecture hours: 36.0
Lab hours: 54.0
Hours outside of class: 72.0
Repeatable: No
Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Industrial Technology **Or**
 - Automotive Technology
-

Course Description

This course covers a comprehensive study of hydraulics (fluid power). Emphasis is placed on basic principles of hydraulics, pumps, fluids, linear and rotary actuators, reading automotive hydraulic schematics, robotics, and agricultural industry. Students are strongly encouraged to have an understanding of pre-algebra, college-level reading, and computer literacy skills.

Content

Course Lecture Content

1. Introduction to Hydraulics
 - a. Early hydraulics
 - b. Pascal's law
 - c. Pressure vs. force
 - d. Conservation of energy
 - e. Hydraulic Power transmission
 - f. Advantages of hydraulics
 - g. Hydraulic oil
 - h. Pressure in a column of fluid
 - i. Atmospheric pressure charges the pump
 - j. Positive displacement pumps create flow
 - k. How pressure is created
 - l. Parallel flow paths

- m. Series flow paths
- n. Pressure drop through an orifice
- o. Pressure indicates work load
- p. Force is proportional to pressure and area
- q. Computing piston area
- r. Speed of an actuator
- s. Velocity in pipes
- t. Determining Pipe size requirements
- u. Size ratings of lines
- v. Work and power
- w. Horsepower in a hydraulic system
- x. Horsepower and torque
- y. Designing a simple Hydraulic system
- 2. Principles of Hydraulics
 - a. Principles of pressure
 - b. Principles of flow
 - c. Hydraulic system graphical symbols
- 3. Hydraulic Fluids
 - a. Purpose of fluid
 - b. Fluid properties
 - c. Fire resistants
 - d. Fluid types
- 4. Reservoirs
 - a. Functions of a reservoirs
 - b. Reservoir components
 - c. Standard reservoir designs
 - d. Reservoir sizing
 - e. Heat exchangers
- 5. Pumps
 - a. Displacement
 - b. Delivery in GPM
 - c. Volumetric efficiency
 - d. Pump ratings
 - e. Types of pumps
 - f. Gear pumps
 - g. Vane pumps
 - h. Piston pumps
- 6. Hydraulic Fluid Conductors and Seals
 - a. Fluid conductors
 - b. Material considerations
 - c. Installation recommendations
 - d. Seals and leakage
 - e. Seal materials
 - f. Preventing leakage
- 7. Hydraulic Actuators
 - a. Hydraulic cylinders
 - b. Hydraulic motors
- 8. Directional Valves
 - a. Check valves
 - b. Two-way, three-way and four-way valves
 - c. Spool position
 - d. Direct acting valves
 - e. Two stage valves
 - f. Mounting styles
 - g. Deceleration valves
 - h. Prefill valves
 - i. Shuttle valves
- 9. Pressure Controls
 - a. Relief valves
 - b. Unloading relief valve
 - c. Pressure reducing valves

- d. Direct acting, spool type pressure control valves
- 10. Flow Controls
 - a. Flow control methods
 - b. Temperature compensation
 - c. Proportional flow control valves
 - d. Deceleration valves
- 11. Cartridge and Stack Valves
 - a. Cartridge valve concept
 - b. Screw-in cartridge valve
 - c. Functional Characteristics
 - d. Valvistor screw in cartridge valve
 - e. Slip-in cartridge valve
 - f. Valvistor slip-in cartridge valve
 - g. Stack valves
 - h. Symbols and circuits
- 12. Proportional Valves
 - a. Proportional solenoid valves
 - b. Associated electronic devices and controls
 - c. Basic Hydraulic principles of proportional valves
 - d. Proportional pressure control valves
 - e. Proportional flow control valves
 - f. Proportional directional control valves
 - g. Application guidelines
 - h. Load compensations
- 13. Servo Valves
 - a. Mechanical servo valve
 - b. Electro-hydraulic servo valves
 - c. Flapper nozzle type servo valve
 - d. Jet pipe servo valves
 - e. High performance valve capacities
 - f. Servo valve performance
- 14. Accessories
 - a. Accumulators
 - b. Applications
 - c. Intensifiers
 - d. Pressure switches
 - e. Instruments
 - f. Sound damping devices
- 15. Systems
 - a. Industrial hydraulic circuits
 - b. System design

Course Lab/Activity Content

Students will demonstrate knowledge of lecture material through their hands-on lab assignments on the following:

- 1. Introduction to Hydraulics
 - a. Early hydraulics
 - b. Pascal's law
 - c. Pressure vs. force
 - d. Conservation of energy
 - e. Hydraulic power transmission
 - f. Advantages of hydraulics
 - g. Hydraulic oil
 - h. Pressure in a column of fluid
 - i. Atmospheric pressure charges the pump
 - j. Positive displacement pumps create flow
 - k. How pressure is created
 - l. Parallel flow paths

- m. Series flow paths
- n. Pressure drop through an orifice
- o. Pressure indicates work load
- p. Force is proportional to pressure and area
- q. Computing piston area
- r. Speed of an actuator
- s. Velocity in pipes
- t. Determining pipe size requirements
- u. Size ratings of lines
- v. Work and power
- w. Horsepower in a hydraulic system
- x. Horsepower and torque
- y. Designing a simple hydraulic system
- z. Conclusion
- 2. Principles of Hydraulics
 - a. Principles of pressure
 - b. Principles of flow
 - c. Hydraulic system graphical symbols
 - d. Conclusion
- 3. Hydraulic Fluids
 - a. Purpose of fluid
 - b. Fluid properties
 - c. Fire resistants
 - d. Fluid types
- 4. Reservoirs
 - a. Functions of a reservoirs
 - b. Reservoir components
 - c. Standard reservoir designs
 - d. Reservoir sizing
 - e. Heat exchangers
- 5. Pumps
 - a. Displacement
 - b. Delivery in GPM
 - c. Volumetric efficiency
 - d. Pump ratings
 - e. Types of pumps
 - f. Gear pumps
 - g. Vane pumps
 - h. Piston pumps
- 6. Hydraulic Fluid Conductors and Seals
 - a. Fluid conductors
 - b. Material considerations
 - c. Installation recommendations
 - d. Seals and leakage
 - e. Seal materials
 - f. Preventing leakage
- 7. Hydraulic Actuators
 - a. Hydraulic cylinders
 - b. Hydraulic motors
- 8. Directional Valves
 - a. Check valves
 - b. Two-way, three-way and four-way valves
 - c. Spool position
 - d. Direct acting valves
 - e. Two stage valves
 - f. Mounting styles
 - g. Deceleration valves
 - h. Prefill valves
 - i. Shuttle valves
- 9. Pressure Controls
 - a. Relief valves

- b. Unloading relief valve
 - c. Pressure reducing valves
 - d. Direct acting, spool type pressure control valves
 - 10. Flow Controls
 - a. Flow control methods
 - b. Temperature compensation
 - c. Proportional flow control valves
 - d. Deceleration valves
 - 11. Cartridge and Stack Valves
 - a. Cartridge valve concept
 - b. Screw-in cartridge valve
 - c. Functional characteristics
 - d. Valvistor screw in cartridge valve
 - e. Slip-in cartridge valve
 - f. Valvistor slip-in cartridge valve
 - g. Stack valves
 - h. Symbols and circuits
 - 12. Proportional Valves
 - a. Proportional solenoid valves
 - b. Associated electronic devices and controls
 - c. Basic hydraulic principles of proportional valves
 - d. Proportional pressure control valves
 - e. Proportional flow control valves
 - f. Proportional directional control valves
 - g. Application guidelines
 - h. Load compensations
 - 13. Servo Valves
 - a. Mechanical servo valve
 - b. Electro-hydraulic servo valves
 - c. Flapper nozzle type servo valve
 - d. Jet pipe servo valves
 - e. High performance valve capacities
 - f. Servo valve performance
 - 14. Accessories
 - a. Accumulators
 - b. Applications
 - c. Intensifiers
 - d. Pressure switches
 - e. Instruments
 - f. Sound damping devices
 - 15. Systems
 - a. Industrial hydraulic circuits
 - b. System design
-

Objectives

1. Calculate force when given the area and pressure. ****Requires Critical Thinking****
2. Assemble simple hydraulic systems, including all major components. ****Requires Critical Thinking****
3. Design a reservoir when given the specific needs for proper fluid conditioning. ****Requires Critical Thinking****
4. Determine the proper size lines for a system to minimize pressure drop and turbulence. ****Requires Critical Thinking****
5. Identify all major pumps used in industry. ****Requires Critical Thinking****
6. Identify and use hydraulic equipment and components. ****Requires Critical Thinking****

7. Identify the function of a valve as it is used in a system. ****Requires Critical Thinking****
 8. Determine the speed or r.p.m. of an actuator with a given flow rate. ****Requires Critical Thinking****
 9. Analyze a system using a step-by-step procedure to pinpoint faults. ****Requires Critical Thinking****
 10. Analyze the reasons for common pump failures. ****Requires Critical Thinking****
 11. Operate with an attitude of safety with regard to the design, operation, and maintenance of fluid power systems. ****Requires Critical Thinking****
 12. Discuss applications of fluid power.
 13. Understand the basic physical laws and principles that govern the behavior of fluid power systems. ****Requires Critical Thinking****
 14. Understand the types of fluids and components utilized in modern industrial fluid power systems. ****Requires Critical Thinking****
 15. Develop a measurable degree of competence in the design, construction and operation of fluid power circuits. ****Requires Critical Thinking****
 16. Understand and use basic mathematics and theories associated with fluid power. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will identify the parts of a hydraulic system.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course students will demonstrate the ability to read basic hydraulic schematics by building simple hydraulic circuit.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course students will show understanding of basic hydraulic principles through measured flow experiments.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- Laboratory
 - Lecture/Discussion
-

Assignments

Reading Assignments

Student will read the assigned chapter 1 and be prepared to answer questions with class.

Writing Assignments

Student will summarize the assigned chapter 1 Introductions of powertrains in outline format.

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. Vickers . *Industrial Hydraulic Manual*, 5th ed. Eaton Hydraulics Training Services, 2008, ISBN: 0-9634162-0-0

Other:

1. safety glasses
 2. instructor may require a supplemental resource packet
 3. shop coat/ footwear
 4. syllabus
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 50B

Full Course Title: Advanced Engine Performance and Diagnosis

Short Title: Adv Eng Perf/Diag

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 2.0

Total class hours: 108.0

Total contact hours in class: 54.0

Lecture hours: 27.0

Lab hours: 27.0

Hours outside of class: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of advanced engine performance diagnosis. Emphasis is placed on automotive and diesel diagnostic methods and repair, fuels, electrical, and emissions control. Labs include diagnostic skills in drivability, onboard diagnostics I & II, including scan tools, meter usage, lab scopes, computerized analyzers and dynamometer five-gas emission diagnostic equipment and other related equipment as it pertains to gas or diesel electronic engine management systems. Bureau of Automotive Repair (BAR) L1 certification is offered upon successful completion of final test. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. Orientation
2. Safety
3. Engine Performance and Diagnostic Review Fundamentals
 - a. Equipment
 - b. Computers
 - c. Fuel Control Systems
4. Onboard Diagnostics I & II
5. Diagnostic Equipment Usage
 - a. DVOM
 - b. Scan tools

- c. Lab scopes
- d. Handheld computer analyzers
- e. Four and five gas emission analyzers
- f. Dynanometers
- g. Other misc. tools and equipment
- 6. Advanced Service and Repair Procedures
- 7. Fuel Control Systems Emission Control
- 8. Onboard Drivability Strategies

Course Lab/Activity Content

- 1. Orientation
- 2. Safety
- 3. Engine Performance and Diagnostic Review Fundamentals
 - a. Equipment
 - b. Computers
 - c. Fuel Control Systems
- 4. Onboard Diagnostics I & II
- 5. Diagnostic Equipment Usage
 - a. DVOM
 - b. Scan tools
 - c. Lab scopes
 - d. Handheld computer analyzers
 - e. Four and five gas emission analyzers
 - f. Dynanometers
 - g. Other misc. tools and equipment
- 6. Advanced Service and Repair Procedures
- 7. Fuel Control Systems Emission Control
- 8. Onboard Drivability Strategies

Objectives

- 1. Demonstrate the proper usage of digital volt-amp-ohm meter. ****Requires Critical Thinking****
- 2. Demonstrate the proper usage of scan tools. ****Requires Critical Thinking****
- 3. Demonstrate the proper usage of a lab scope. ****Requires Critical Thinking****
- 4. Demonstrate the proper usage of handheld computer analyzer. ****Requires Critical Thinking****
- 5. Demonstrate the proper usage of a four and five gas emission analyzer. ****Requires Critical Thinking****
- 6. Describe how automotive computers receive input and process information, and then send commands to actuators. ****Requires Critical Thinking****
- 7. Perform adjustments, service and repair procedures on vehicle equipped with OBD I & II computer management systems to manufacturer's specifications. ****Requires Critical Thinking****
- 8. Describe the fundamentals of basic diagnostic equipment, computer operation, and fuel control with domestic & imported vehicles. ****Requires Critical Thinking****

Student Learning Outcomes

- 1. Upon completion of this course, students will demonstrate the proper usage of a digital volt-amp-ohm meter, scan tool, lab scope and handheld computer analyzer.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.

- **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 - 2. Upon completion of this course, students will perform adjustments and service and repair procedures on vehicles equipped with OBD I & II computer management systems to manufacturer's specifications.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 - 3. Upon completion of this course, students will demonstrate proficiency in applicable computer usage in regard to repair orders, labor times and customer relations.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Other**
Interactive PC/Satellite, assignments
-

Assignments

Reading Assignments
Writing Assignments

Methods of Evaluation

- **Exams**
 - **Homework**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Textbooks:

1. James D. Halderman. *Advanced Engine Performance Diagnosis NATEF Correlated Task Sheets*, 6th ed. Pearson Publishing, 2016, ISBN: 9780133515206
2. James D. Halderman. *Advanced Engine Performance Diagnosis*, 6th ed. Pearson Publishing, 2016, ISBN: 9780133515268

Other:

1. 3-ring binder with dividers
 2. safety glasses
 3. shop coat/ footwear
 4. syllabus
-

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 51.20

Full Course Title: Automotive Technical Skills

Short Title: Auto Tech Skills

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 3.0

Total class hours: 162.0

Total contact hours in class: 90.0

Lecture hours: 36.0

Lab hours: 54.0

Hours outside of class: 72.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
-

Course Description

This course covers basic automotive technical skills used by all automotive service and repair technicians. Emphasis is placed on tool selection, use and maintenance of tools, practical measuring skills, bolt and nut thread repair techniques, electrical circuit meter usage and problem solving techniques.

Content

Course Lecture Content

1. Hand tool types, selection and use techniques.
2. Power tool types, selection and use techniques.
3. Measuring skills
 - a. rules
 - b. nominal sizes
 - c. decimal specifications
 - d. caliper use
 - e. micrometer use
 - f. gauges
4. Bolt and thread identification
5. Thread repair systems.
6. Compounds and sealants.
7. Electrical meter usage and wiring diagrams.
8. Job resume and interview skills

Course Lab/Activity Content

1. Hand tool types, selection and use techniques.
 2. Power tool types, selection and use techniques.
 3. Measuring skills
 - a. rules
 - b. nominal sizes
 - c. decimal specifications
 - d. caliper use
 - e. micrometer use
 - f. gauges
 4. Bolt and thread identification
 5. Thread repair systems.
 6. Compounds and sealants.
 7. Electrical meter usage and wiring diagrams.
 8. Job resume and interview skills
-

Objectives

1. Write and correctly spell tool names.
 2. Demonstrate knowledge of tool use and abuse.
 3. Demonstrate critical thinking when selecting tools.
 4. Interpret inch and metric rule measurements.
 5. Measure outside diameters, inside diameters, depth, and length of common mechanical automotive parts.
 6. Demonstrate accurate use of three or more thread repair systems.
 7. Apply compounds and sealants to specific fastener applications.
 8. Measure volts, amperes and ohms in a typical automotive circuit.
 9. Find an "open", "short", "grounded" or "high resistance" failure in typical automotive electrical circuits.
 10. Learn to read and interpret automotive wiring diagrams.
 11. Evaluate and determine correct tools for electrical circuit wiring diagrams based on industry standards.
****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will demonstrate knowledge of tool use and abuse.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Personal and Social Responsibility** Students will interact with others by demonstrating respect for opinions, feelings, and values.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
2. Upon completion of this course students will demonstrate critical thinking when selecting tools and using automotive tools.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems

- and issues in making decisions.
- **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
3. Upon completion of this course students will measure outside diameters, inside diameters, depth, and length of common mechanical automotive parts.
- **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- Laboratory
 - Lecture/Discussion
-

Assignments

Reading Assignments

Writing Assignments

Methods of Evaluation

- Assignments
 - Attendance
 - Homework
 - Laboratory Assignments
 - Objective Tests
-

Course Materials

Textbooks:

1. James D. Halderman/ Darrell Deeter. *Introduction To Automotive Service*, 1st ed. Pearson Publishing, 2013, ISBN: 9780133005332
2. James D. Halderman/ Darrell Deeter. *NATEF-Related-Task-Sheets-for-Introduction-to-Automotive-Service*, 1st ed. Pearson Publishing, 2013, ISBN: 9780132549912

Other:

1. syllabus
 2. 3-ring binder with dividers
 3. shop coat/ footwear
 4. safety glasses
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.30
Full Course Title: Manual Drivetrains/Gas and Diesel Vehicles
Short Title: Manual Drivetrains
TOP Code: 0947.00 - Diesel Mechanics Technology/Technician*
Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable
Units: 3.0
Total class hours: 162.0
Total contact hours in class: 90.0
Lecture hours: 36.0
Lab hours: 54.0
Hours outside of class: 72.0
Repeatable: No
Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of automotive manual drivetrains. Emphasis is placed on standard transmissions and transaxles, clutches, drive shafts, drive axle assemblies, transfer cases, gears, bearings, lubrication theory, normal maintenance adjustments and service operations, problem diagnosis and overhaul procedures for gasoline and diesel vehicles. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. Power transmission/ transaxles
 - a. gear theory: ratios
 - b. bearings
 - c. lubrication: seals and gaskets
2. Transmissions
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis
3. Clutches
 - a. operation
 - b. service

- c. repairs
 - d. diagnosis
- 4. Drivelines and universal joints
 - a. RWD: operation, repair
 - b. FWD/CV joints: operation, repair
- 5. Rear axles
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis
- 6. Transaxles
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis
- 7. Four-wheel drive
 - a. part-time: transfer cases, front drive axles
 - b. full-time: all-wheel drive; inter-axle differentials
- 8. Gas/Diesel drivetrains
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis

Course Lab/Activity Content

Students will demonstrate knowledge of lecture material through their hands-on lab assignments on the following:

- 1. Power transmission
 - a. gear theory: ratios
 - b. bearings
 - c. lubrication: seals and gaskets
- 2. Transmissions
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis
- 3. Clutches
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis
- 4. Drivelines and universal joints
 - a. RWD: operation, repair
 - b. FWD/CV joints: operation, repair
- 5. Rear axles
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis
- 6. Transaxles
 - a. operation
 - b. service
 - c. repairs
 - d. diagnosis
- 7. Four wheel drive
 - a. part-time: transfer cases, front drive axles
 - b. full-time: allwheel drive; interaxle differentials
- 8. Gas/Diesel drive trains

- a. operation
 - b. service
 - c. repairs
 - d. diagnosis
-

Objectives

1. Identify the major parts of the automotive drive train and explain the function of these parts. ****Requires Critical Thinking****
 2. Describe how a standard transmission operates, and demonstrate the ability to figure gear ratios. ****Requires Critical Thinking****
 3. Make service checks and adjustments to keep a drive train operating. ****Requires Critical Thinking****
 4. Rebuild a standard transmission. ****Requires Critical Thinking****
 5. Remove and replace clutch components in an approved manner. ****Requires Critical Thinking****
 6. Rebuild universal joints and CV joints. ****Requires Critical Thinking****
 7. Rebuild a rear axle and make all necessary internal adjustments. ****Requires Critical Thinking****
 8. Rebuild a transaxle. ****Requires Critical Thinking****
 9. Describe the operation of a 4-wheel drive system. ****Requires Critical Thinking****
 10. Perform service procedure on gas and diesel driveline components. ****Requires Critical Thinking****
 11. Diagnose problems and evaluate data ****Requires Critical Thinking****
 12. Measure and evaluate parts for wear. ****Requires Critical Thinking****
 13. Evaluate data and determine correct repair procedure ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course, students will identify the major parts of the automotive drive train and explain the function of these parts.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
2. Upon completion of this course, students will describe how a standard transmission operates, and demonstrate the ability to figure gear ratios.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
3. Upon completion of this course, students will rebuild a standard transmission.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the

implications and applications of basic scientific principles.

- **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.

Methods of Instruction

- **Laboratory**
- **Lecture/Discussion**
- **Other**

Home assignments are web enhanced and may include handouts.

Assignments

Reading Assignments

Student will read the assigned chapter 1 and be prepared to answer questions with class.

Writing Assignments

Student will summarize the assigned chapter 1 Introductions of powertrains in outline format.

Other Assignments

View the video in Mindtap on types of gears and answer the questions. Complete the worksheet that accompanies the video.

Methods of Evaluation

- **Exams**
- **Homework**
- **Laboratory Assignments**
- **Oral Tests/Class Performance**
- **Participation**
- **Problem Solving Exercises**
- **Quizzes**
- **Skills Demonstrations/Performance Exam**

Course Materials

Textbooks:

1. Jack Erjavec and Mike Ronan. *Today's Technician: Manual Transmissions and Transaxles Classroom Manual*, 6th ed. Cengage Learning, 2016, ISBN: 9781305261785
2. Jack Erjavec and Mike Ronan. *Today's Technician: Manual Transmissions and Transaxles Shop Manual*, 6th ed. Cengage Learning, 2016, ISBN: 9781305261785

Other:

1. shop coat/ footwear
2. safety glasses
3. purchase of software subscription
4. 3-ring binder with dividers
5. syllabus
6. instructor may require a supplemental resource packet

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.36

Full Course Title: Heating and Air Conditioning Systems

Short Title: Air Cond. and Heat

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 3.0

Total class hours: 162.0

Total contact hours in class: 90.0

Lecture hours: 36.0

Lab hours: 54.0

Hours outside of class: 72.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of automotive heating, air conditioning and ventilation systems. Emphasis is placed on heating, cooling, and air conditioning systems, engine cooling system, adjustment procedures, problem diagnosis, system operation with normal service, repair procedures, and introduction to automatic temperature systems. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. Fundamentals of air conditioning
 - a. states of matter
 - b. heat movement
 - c. measuring heat
 - d. boiling points and pressure
 - e. refrigerants
2. A/C components
 - a. compressors
 - b. condenser
 - c. receiver-dryer/accumulator
 - d. TXV/orifice tube
 - e. evaporator

- f. underdash components
- 3. Service operations
 - a. discharging and recovering
 - b. purging
 - c. evacuating
 - d. changing
 - e. leak checking/detection
 - f. underdash components
- 4. Troubleshooting/diagnosis
 - a. visual inspection
 - b. gauge pressure
 - c. sight glass/component temperature
- 5. Cooling systems
 - a. operation
 - b. service and repair
 - c. problem diagnosis
- 6. Heating and ventilation
 - a. operation
 - b. service and repair
 - c. problem diagnosis
- 7. Automatic temperature control
 - a. operation
 - b. service and repair
 - c. problem diagnosis
- 8. Retrofitting to 134A

Course Lab/Activity Content

Students will demonstrate knowledge of lecture material through their hands-on lab assignments on the following:

- 1. Fundamentals of air condition
 - a. states of matter
 - b. heat movement
 - c. measuring heat
 - d. boiling points and pressure
 - e. refrigerants
- 2. A/C components
 - a. compressors
 - b. condenser
 - c. receiver-dryer/accumulator
 - d. TXV/orifice tube
 - e. evaporator
 - f. underdash components
- 3. Service operations
 - a. discharging and recovering
 - b. purging
 - c. evacuating
 - d. changing
 - e. leak checking/detection
 - f. underdash components
- 4. Troubleshooting/diagnosis
 - a. visual inspection
 - b. gauge pressure
 - c. sight glass/component temperature
- 5. Cooling systems
 - a. operation
 - b. service and repair

- c. problem diagnosis
 - 6. Heating and ventilation
 - a. operation
 - b. service and repair
 - c. problem diagnosis
 - 7. Automatic temperature control
 - a. operation
 - b. service and repair
 - c. problem diagnosis
 - 8. Retrofitting to 134A
-

Objectives

1. Explain the basic operation of an air conditioning system. ****Requires Critical Thinking****
 2. Identify the components of an A/C system. ****Requires Critical Thinking****
 3. Demonstrate the ability to remove and replace the components of an air conditioning system. ****Requires Critical Thinking****
 4. Perform the standard A/C service operations on both R12 and R134A systems. ****Requires Critical Thinking****
 5. Identify the cause of various problems in an A/C system. ****Requires Critical Thinking****
 6. Explain the operation of an automotive cooling system. ****Requires Critical Thinking****
 7. Identify the cooling system components. ****Requires Critical Thinking****
 8. Perform the standard cooling system service operations to include flushing and pressure testing. ****Requires Critical Thinking****
 9. Explain the operation of a heating and ventilating system. ****Requires Critical Thinking****
 10. Describe the standard heating/ventilating service operations. ****Requires Critical Thinking****
 11. Describe the operation of an automatic temperature control system. ****Requires Critical Thinking****
 12. Describe and demonstrate the troubleshooting techniques for an automatic temperature control system. ****Requires Critical Thinking****
 13. Diagnose and evaluate data. ****Requires Critical Thinking****
 14. Measure and evaluate parts for repair and retrofitting. ****Requires Critical Thinking****
 15. Evaluate data and determine correct repair procedure. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course, students will explain the basic operation of an air conditioning system, and a Heating and Ventilating System.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.

2. Upon completion of this course, students will identify the components of an A/C system and Heating and Ventilating System
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course, students will perform the standard A/C service operations on both R12 and R134A systems.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- Laboratory
 - Lecture/Discussion
-

Assignments

Reading Assignments

Student will read the assigned chapter 1 and be prepared to answer questions with class.

Writing Assignments

Student will summarize the assigned chapter 1 Introductions of powertrains in outline format.

Other Assignments

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. Mark Schnubel. *Automotive Heating and Air Conditioning Classroom Manual*, 5th ed. Cengage Learning, 2013, ISBN: 978-1-133-01743-1
2. Mark Schnubel. *Automotive Heating and Air Conditioning Shop Manual*, 5th ed. Cengage Learning, 2013, ISBN: 978-1-133-01744-8

Other:

1. syllabus
2. 3-ring binder with dividers
3. shop coat/ footwear
4. safety glasses
5. purchase of software subscription

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.40

Full Course Title: Brake Systems

Short Title: Brake Systems

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 4.0

Total class hours: 216.0

Total contact hours in class: 108.0

Lecture hours: 54.0

Lab hours: 54.0

Hours outside of class: 108.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Auto Mechanics
 - Automotive Technology
-

Course Description

This course covers a comprehensive study of automotive braking systems. Emphasis is placed on brake theory, hydraulic operation, hydraulic control valves, power brake units, electronic control systems and anti-lock brake systems (ABS), industry standards and practices for the inspection, diagnosis, service, and repair of automotive and light truck braking systems. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. Braking Devices/Principles
2. Application System
 - a. Hydraulics
 - i. Valve-controls
 - ii. Fluids
 - iii. Service procedures
 - b. Mechanical
 - i. Adjustments
 - c. Air
 - d. Electric
3. Drum Brakes
 - a. Lining types

- b. Service procedures
- 4. Disk Brakes
 - a. Front wheel
 - b. Four wheel
 - c. Service procedures
- 5. Power Boosters
 - a. Vacuum
 - b. Hydroboost
 - c. Testing and service
- 6. Anti-lock Brake System (ABS)
 - a. Operation
 - b. Testing/troubleshooting
 - c. Service
- 7. Brake Licensing
 - a. Bureau of Automotive Repair (BAR)
 - b. National Institute for Automotive Service Excellence (ASE)

Course Lab/Activity Content

Students will demonstrate knowledge of lecture material through their hands-on lab assignments on the following:

1. Braking Devices/Principles
2. Application System
 - a. Hydraulics
 - i. Valve-controls
 - ii. Fluids
 - iii. Service procedures
 - b. Mechanical
 - i. Adjustments
 - c. Air
 - d. Electric
3. Drum Brakes
 - a. Lining types
 - b. Service procedures
4. Disk Brakes
 - a. Front wheel
 - b. Four Wheel
 - c. Service procedures
5. Power Boosters
 - a. Vacuum
 - b. Hydro boost
 - c. Testing and service
6. Anti-lock Brake System (ABS)
 - a. Operation
 - b. Testing/troubleshooting
7. Brake Licensing
 - a. Bureau of Automotive Repair (BAR)
 - b. National Institute for Automotive Service Excellence (ASE)

Objectives

1. Identify the components of modern braking systems. ****Requires Critical Thinking****
2. Explain how a brake system operates. ****Requires Critical Thinking****
3. Describe the various hydraulic controls used in a brake system and explain how they operate. ****Requires Critical Thinking****

4. Perform the normal maintenance and adjustment operations needed to keep a system operating properly. ****Requires Critical Thinking****
 5. Remove and replace brake lining in an industry approved manner. ****Requires Critical Thinking****
 6. Rebuild the hydraulic system components in an industry approved manner. ****Requires Critical Thinking****
 7. Perform those tests and checks needed to determine the cause of problems in a brake system. ****Requires Critical Thinking****
 8. Demonstrate the correct operation of modern drum and disk machining equipment. ****Requires Critical Thinking****
 9. Explain the theory, design and application of an ABS system. ****Requires Critical Thinking****
 10. Retrieve trouble codes and demonstrate troubleshooting procedures. ****Requires Critical Thinking****
 11. Demonstrate the ability to successfully take the State Brake Exam. ****Requires Critical Thinking****
 12. Diagnose and evaluate test results; measure and evaluate parts for machining or replacement; evaluate data and determine correct repair procedure. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course, students will, Identify the components of modern braking systems.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course, students will remove and replace brake lining in an industry approved manner.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course, students will explain the theory, design and application of an ABS system.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 4. Upon completion of this course, students will diagnose and evaluate test results; measure and evaluate parts for machining or replacement; evaluate data and determine correct repair procedure.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
- **Lecture/Discussion**
- **Other**

Home assignments are web enhanced and may include handouts.

Assignments

Reading Assignments

Student will read the assigned chapter 1 and be prepared to answer questions with class.

Writing Assignments

Student will summarize the assigned chapter on combination and valve circuits in outline format.

Other Assignments

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. Ken Pickerill. *Today's Technician: Automotive Brake Systems, Classroom Manual*, 6th ed. Cengage Learning, 2015, ISBN: 9781285429717
2. Ken Pickerill. *Today's Technician: Automotive Brake Systems, Shop Manual*, 6th ed. Cengage Learning, 2015, ISBN: 9781285429731
3. California Bureau of Automotive Repair. *AT 40 Candidate Information Bulletin for class C*, 2008 ed. California Bureau of Automotive Repair, 2013, ISBN: -See attached file

Other:

1. syllabus
 2. 3-ring binder with dividers
 3. shop coat/ footwear
 4. safety glasses
 5. purchase of software subscription
 6. instructor may require a supplemental resource packet
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.41

Full Course Title: Alignment and Suspension

Short Title: Align Suspension

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 4.0

Total class hours: 216.0

Total contact hours in class: 108.0

Lecture hours: 54.0

Lab hours: 54.0

Hours outside of class: 108.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
-

Course Description

This course covers a comprehensive study of automotive alignment and suspension systems. Emphasis is placed on suspension and steering operating theory, 4-wheel alignment, front and rear-wheel alignment, tire repair and balancing, replacement of suspension and steering components, and rebuilding of steering gears and pumps. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. Tires and Wheels
 - a. Principles
 - b. Service
 - c. Balancing
 - d. Mounting and Repair
2. Spring and Shock Absorbers
 - a. Principles
 - b. Service
3. Front and Rear Suspensions
 - a. Principles
 - b. Service
 - i. Inspection
 - ii. Component replacement

4. Wheel Alignment
 - a. Principles
 - i. Angles of alignment
 - b. Measuring systems
 - c. Adjustment procedures
5. Steering Systems
 - a. Principles
 - i. Power steering systems
 - b. Service and repair
 - c. Manual steering/power steering
 - d. Rack and pinion/manual and power
6. Electronic Suspension Systems
 - a. Theory
 - b. Diagnosis
 - c. Repair

Course Lab/Activity Content

1. Tires and Wheels
 - a. Principles
 - b. Service
 - c. Balancing
 - d. Mounting and Repair
 2. Spring and Shock Absorbers
 - a. Principles
 - b. Service
 3. Front and Rear Suspensions
 - a. Principles
 - b. Service
 - i. Inspection
 - ii. Component replacement
 4. Wheel Alignment
 - a. Principles
 - i. Angles of alignment
 - b. Measuring systems
 - c. Adjustment procedures
 5. Steering Systems
 - a. Principles
 - i. Power steering systems
 - b. Service and repair
 - c. Manual steering/power steering
 - d. Rack and pinion/manual and power
 6. Electronic Suspension Systems
 - a. Theory
 - b. Diagnosis
 - c. Repair
-

Objectives

1. Identify the components of the suspension and steering systems. ****Requires Critical Thinking****
2. Explain how the suspension and steering systems operate. ****Requires Critical Thinking****

3. Select the correct replacement tire for a car. ****Requires Critical Thinking****
 4. Perform checks and service operations needed to cure a tire related vibration, including both balance and mounting. ****Requires Critical Thinking****
 5. Check the spring and shock absorbers of a car and demonstrate the proper repair. ****Requires Critical Thinking****
 6. Inspect the suspension and steering system for necessary repair. ****Requires Critical Thinking****
 7. Perform the standard suspension and steering system repair operations. ****Requires Critical Thinking****
 8. Measure and correct both front and rear alignment angles. ****Requires Critical Thinking****
 9. Adjust caster, camber, and toe on a front suspension using both electronic and manual equipment. ****Requires Critical Thinking****
 10. Demonstrate the ability to diagnose, adjust, and rebuild a manual, power, and rack and pinion steering gear. ****Requires Critical Thinking****
 11. Demonstrate the ability to diagnose and repair electronic suspensions. ****Requires Critical Thinking****
 12. Diagnose and evaluate test results from measuring to evaluate front end geometry. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will identify the components of the suspension and steering systems.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course students will adjust caster, camber, and toe on a front suspension using both electronic and manual equipment.
 - **Computation** Students will use appropriate mathematical concepts and methods to understand, analyze, and communicate issues in quantitative terms.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course students will demonstrate the ability to diagnose and repair electronic suspensions.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
- **Lecture/Discussion**
- **Other**

Assignments

Reading Assignments

Writing Assignments

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. Mark Schnubel. *Automotive Suspension and Steering Systems Classroom Manual and Shop Manual*, 6th ed. Cengage Learning, 2015, ISBN: 978-1285438108

Other:

1. syllabus
 2. 3-ring binder with dividers
 3. shop coat/ footwear
 4. safety glasses
-

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.44

Full Course Title: Electrical Systems

Short Title: Electrical Systems

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 6.1

Total class hours: 330.0

Total contact hours in class: 182.0

Lecture hours: 74.0

Lab hours: 108.0

Hours outside of class: 148.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of current automotive electrical systems. Emphasis is placed on theory, diagnosis, service and wire repair techniques, fundamentals of circuit construction, ignition systems, charging and starting systems, domestic and import computer management systems, wiring diagrams, multi-meters and scanners. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment in Auto 53.33 is recommended. It is also recommended that a student enroll in both Auto 53.33 and Auto 53.44 in order for ASE/BAR Automotive A6 and A8 Engine Performance certification. Students will need this certification for enrollment into Auto 53.55 (Advanced Tune-up course) and Auto 95 (CA Smog Licensing course) the following semester.

Content

Course Lecture Content

1. Orientation
2. Safety
3. Electron Theory

4. DC Circuits
5. Wiring
6. Magnetism
7. Meters
8. Batteries
9. Battery Service
10. Ignition Primary Systems
 - a. Conventional/Electronics
11. Ignition Secondary Systems
12. Engine Timing
13. Computers
14. Sensors
15. Actuators
16. Computer Systems Service
 - a. Scanner
17. Lights
18. Alternators
 - a. Regulators
 - b. Systems
19. Starter Motors
20. Gauges
21. Accessory Circuits

Course Lab/Activity Content

1. Orientation
2. Safety
3. Electron Theory
4. DC Circuits
5. Wiring
6. Magnetism
7. Meters
8. Batteries
9. Battery Service
10. Ignition Primary Systems
 - a. Conventional/Electronics
11. Ignition Secondary Systems
12. Engine Timing
13. Computers
14. Sensors
15. Actuators
16. Computer Systems Service
 - a. Scanner
17. Lights
18. Alternators
 - a. Regulators
 - b. Systems
19. Starter Motors
20. Gauges
21. Accessory Circuits

Objectives

1. Describe and recognize electricity and how it behaves. ****Requires Critical Thinking****

2. Identify the principles of magnetism. ****Requires Critical Thinking****
 3. Demonstrate digital meter usage with volts, amps, ohms, and tach readings. ****Requires Critical Thinking****
 4. Discuss battery theory, testing and services. ****Requires Critical Thinking****
 5. Identify early to late model ignition systems and perform diagnosis and adjustments. ****Requires Critical Thinking****
 6. Differentiate between conventional and electronic engine timing controls. ****Requires Critical Thinking****
 7. Perform diagnosis, adjustments, and servicing of late model timing controls. ****Requires Critical Thinking****
 8. Recognize and locate automotive computers and explain how the various systems operate. ****Requires Critical Thinking****
 9. Identify, categorize and allocate the four basic types of sensors in late model vehicles. ****Requires Critical Thinking****
 10. Perform diagnostic tests on various computer systems. ****Requires Critical Thinking****
 11. Adjust headlamps within the framework of the State of California's specifications. ****Requires Critical Thinking****
 12. Test, diagnose, remove and replace charging system components. ****Requires Critical Thinking****
 13. Demonstrate proper gauge operation. ****Requires Critical Thinking****
 14. Demonstrate troubleshooting expertise on miscellaneous electrical components not part of a major system. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will describe electricity and how it behaves. Recognize series and parallel circuits. Identify the principles of magnetism.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 2. Upon completion of this course students will demonstrate analog and digital meter usage with volts, amps, ohms, and tach readings.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course students will categorize and allocate the four basic types of sensors in late model vehicles.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Lecture/Discussion**
 - **Other**
Skills practice
-

Assignments

Reading Assignments

Writing Assignments

Methods of Evaluation

- **Homework**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Textbooks:

1. James D. Halderman. *Automotive Electrical and Engine Performance NATEF Correlated Task Sheets*, 7th ed. Pearson Publishing, 2015, ISBN: 9780133866513
2. James D. Halkderman. *Automotive Electrical and Engine Performance*, 7th ed. Pearson Publishing, 2015, ISBN: 9780133866278

Other:

1. 3-ring binder with dividers
 2. safety glasses
 3. shop coat/ footwear
 4. syllabus
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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.45

Full Course Title: Engine Diagnosis and Rebuilding

Short Title: Eng Diag & Rebuild

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 4.0

Total class hours: 216.0

Total contact hours in class: 144.0

Lecture hours: 36.0

Lab hours: 108.0

Hours outside of class: 72.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of automotive engine diagnosis and rebuilding. Emphasis is placed on theory of operation, pre-teardown diagnosis, disassembly techniques, engine cleaning methods, measurement tools, component identification, lubrication systems, assembly break-in procedures, and introduces alternative fuel and hybrid engine drivetrains. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. Orientation
2. Safety
3. Power
4. Other power plants
5. Pre-tear down diagnosis
6. Engine cleaning methods
7. Measuring tools
8. Cylinder heads
9. Guides and seals
10. Valves
11. Valve seats
12. Spring assemblies

13. Rocker arms and pushrods
14. Cylinder blocks
15. Recondition cylinders
16. Pistons
17. Connecting rods
18. Crankshafts
19. Cams
20. Lifters
21. Cam drives
22. Rings
23. Bearings
24. Engine assembly methods
25. Lubricating systems
26. Lubricants, gaskets and seals
27. Break-in procedures

Course Lab/Activity Content

1. Orientation
2. Safety
3. Power
4. Other power plants
5. Pre-tear down diagnosis
6. Engine cleaning methods
7. Measuring tools
8. Cylinder heads
9. Guides and seals
10. Valves
11. Valve seats
12. Spring assemblies
13. Rocker arms and pushrods
14. Cylinder blocks
15. Recondition cylinders
16. Pistons
17. Connecting rods
18. Crankshafts
19. Cams
20. Lifters
21. Cam drives
22. Rings
23. Bearings
24. Engine assembly methods
25. Lubricating systems
26. Lubricants, gaskets and seals
27. Break-in procedures

Objectives

1. Compare conventional and alternative power plants for mass surface transportation. ****Requires Critical Thinking****
2. Evaluate engine mechanical condition by visual failure analysis process. ****Requires Critical Thinking****

3. Identify standard engine cleaning equipment & practices. ****Requires Critical Thinking****
 4. Perform classroom component measurement within one thousandths of an inch. ****Requires Critical Thinking****
 5. Identify proper machining procedures in rebuilding a cylinder head including guides, seals, spring assemblies, rocker arms and rods. ****Requires Critical Thinking****
 6. Identify proper alignment of pistons and rods. ****Requires Critical Thinking****
 7. Inspect, measure and determine failure analysis of valve train components on gas or diesel engines. ****Requires Critical Thinking****
 8. Explain how the typical engine lubrication system operates. ****Requires Critical Thinking****
 9. Identify engine assembly lubricants, gaskets and seals. ****Requires Critical Thinking****
 10. Explain proper break-in procedures on gas or diesel engines. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will be evaluate engine mechanical condition by visual failure analysis process.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course students will be perform classroom component measurement within one thousandth of an inch.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course students will be inspect, measure and determine failure analysis of valve train components on gas or diesel engines.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 4. Upon completion of this course students will be explain how a typical engine lubrication system operates and identify engine assembly lubricants, gaskets and seals.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Lecture/Discussion**
 - **Other**
Skills practice
-

Assignments

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. James D. Halderman. *Automotive Engines Theory and Servicing*, 9th ed. Pearson, 2017, ISBN: 9780134654003
2. James D. Halderman. *Automotive Engines Theory and Servicing NATEF Correlated Task Sheets*, 9th ed. Pearson, 2017, ISBN: 9780134654034

Other:

1. 3-ring binder with dividers
 2. safety glasses
 3. shop coat/ footwear
 4. syllabus
-

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.46

Full Course Title: Engine Machining and Reconditioning

Short Title: Eng Mach and Recon

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 3.0

Total class hours: 162.0

Total contact hours in class: 90.0

Lecture hours: 36.0

Lab hours: 54.0

Hours outside of class: 72.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Auto Mechanics
 - Automotive Technology
-

Course Description

This course covers an advanced comprehensive study of automotive engine machining and reconditioning techniques. Emphasis is placed on high performance production machining, machining of engine blocks, cylinder heads, valves and valve seats, connecting rods, cleaning and reassembling techniques, proper disassemble, and precision measurements. This course is intended for students who desire further study and skills working with automotive engine machining and assembly methods. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.45

Content

Course Lecture Content

1. Orientation
2. Safety
3. Engine Cleaning
4. Measuring
5. Cylinder Heads

6. Guides and Seals
7. Valves
8. Valve Seats
9. Spring Assemblies
10. Rocker Arm and Push Rods
11. Lifts
12. Cams
13. Cam Drives
14. Crankshafts
15. Block Machining
16. Pistons
17. Connecting Rods and Pins

Course Lab/Activity Content

1. Orientation
 2. Safety
 3. Engine Cleaning
 4. Measuring
 5. Cylinder Heads
 6. Guides and Seals
 7. Valves
 8. Valve Seats
 9. Spring Assemblies
 10. Rocker Arm and Push Rods
 11. Lifts
 12. Cams
 13. Cam Drives
 14. Crankshafts
 15. Block Machining
 16. Pistons
 17. Connecting Rods and Pins
-

Objectives

1. Identify methods used in cleaning different types of engine oil contaminants. ****Requires Critical Thinking****
2. Demonstrate proper engine measurement using industry standards devices. ****Requires Critical Thinking****
3. Inspect, resurface and recognize the correct processes for repairing cracks in cylinder heads. ****Requires Critical Thinking****
4. Perform proper machining setup to industry approved machining standards in restoring guides, seals, valves, and valve seats to correct specifications. ****Requires Critical Thinking****
5. Machine valve the spring seat for normal service. ****Requires Critical Thinking****
6. Demonstrate rocker arm, push rod, and lifter alignment procedures. ****Requires Critical Thinking****
7. Analyze camshaft lobe profiles and determine lift, duration, and lobe centerlines. ****Requires Critical Thinking****
8. Demonstrate degreasing a camshaft and cam drive mechanism. ****Requires Critical Thinking****

9. Machine an engine block for squareness. ****Requires Critical Thinking****
 10. Fit pistons to wrist pins. ****Requires Critical Thinking****
 11. Recondition a connecting rod with .0005 accuracy. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will demonstrate proper engine measurements using industry standard devices.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course students will perform proper machining setup and demonstrate industry approved machining methods in restoring guides, valves and valve seats to correct specifications.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course students will machine an engine block for squareness.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- Laboratory
 - Lecture/Discussion
 - Other
Skills practice
-

Assignments

Reading Assignments
Writing Assignments

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. James D. Halderman. *Automotive Engines Theory and Servicing* , 9th ed. Pearson Publishing, 2017, ISBN: 9780134654003
2. James D. Halderman. *Automotive Engines Theory and Servicing NATEF Correlated Task Sheets*, 9th ed. Pearson Publishing, 2017, ISBN: 9780134654034

Other:

1. 3-ring binder with dividers
2. safety glasses
3. shop coat/ footwear
4. syllabus

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.61A

Full Course Title: Engine Repair Experience

Short Title: Engine Repair Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive engine repair. Emphasis is placed on engine failure diagnosis, tear-down, machining and assembly. This course is intended primarily for students with prior practical experience in automotive engine repair. Students are strongly encouraged to have problem solving and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.45

Content

Course Lecture Content

Course Lab/Activity Content

1. Engine Diagnostics
 - a. Compression
 - b. Mechanical failure
 - c. Noise and vibration
2. Engine Tear-Down
 - a. Inspection

- b. Cleaning
 - 3. Engine Machining
 - a. Cylinder heads
 - b. Blocks
 - 4. Engine Assembly
 - a. Measurement
 - b. Tools
 - c. Break-in
-

Objectives

1. Demonstrate engine tear-down skills pertaining to inspection, cleaning, measurement and failure analysis.
****Requires Critical Thinking****
 2. Observe and demonstrate the proper safety procedures associated with automotive machining operations. ****Requires Critical Thinking****
 3. Use proper engine assembly methods set by AERA (Automotive Engine Rebuilders Association).
****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will diagnose engine failure with respect to compression loss, mechanical breakage, noise and vibration.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Lecture/Discussion**
 - **Other**
Reading assignments, skills practice assignments
-

Assignments

Methods of Evaluation

- **Laboratory Assignments**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. safety glasses

2. shop coat/ footwear
3. syllabus
4. 3-ring binder with dividers

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.61B

Full Course Title: Engine Machining and Reconditioning Experience

Short Title: Eng Mach/Recon Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive engine machining and reconditioning. Emphasis is placed on engine tear-down, in-depth engine machining procedures, assembly component fit and high performance engine considerations. This course is intended primarily for students with prior practical experience in automotive engine machining and reconditioning. Students are strongly encouraged to have problem solving and computer literacy skills.

Conditions of Enrollment

Satisfactory completion of: AUTO 52.46

Content

Course Lab/Activity Content

1. Engine Tear-Down
 - a. Inspection
 - b. Cleaning
 - c. Measurement
 - d. Failure analysis
2. Engine Machining
 - a. Methods
 - b. Operations

- c. Cylinder heads
 - d. Crankshafts
 - e. Blocks
 - f. Safety
 - 3. Engine Assembly & Component Fit
 - a. Production
 - b. High Performance
 - c. Motor Sports
-

Objectives

1. Demonstrate engine tear-down skills pertaining to inspection, cleaning, measurement and failure analysis.
****Requires Critical Thinking****
 2. Perform industry machining operations on cylinder heads, crankshafts, blocks, cylinders and connecting rods. ****Requires Critical Thinking****
 3. Observe and demonstrate proper safety procedures associated with automotive machining operations.
****Requires Critical Thinking****
 4. Use proper engine assembly methods set by AERA (Automotive Engine Rebuilders Association).
****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will be demonstrate engine tear-down skills pertaining to inspection, cleaning, measurement and failure analysis.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Other**
Reading assignments, skills practice assignments
-

Assignments

Methods of Evaluation

- **Laboratory Assignments**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. safety glasses
 2. shop coat/ footwear
 3. syllabus
 4. 3-ring binder with dividers
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.61C

Full Course Title: Electrical Systems Experience

Short Title: Electrical Sys Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive electrical systems. Emphasis is placed on extensive multimeter usage, scan tools, battery and starting test equipment to make diagnostic decisions, and refine skills in reading wiring diagrams. Intended primarily for students with prior practical experience in automotive electrical systems. Students are strongly encouraged to have problem solving and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.44

Content

Course Lecture Content

Course Lab/Activity Content

1. Meter Usage
 - a. Digital volt ohm and amps
 - b. KV meter
 - c. Dwell meter
 - d. Tach and timing light

2. Equipment Usage
 - a. Scan tools
 - b. Scope
 - c. VAT 45 analyzer
 - d. BAR 97 emissions tester
 - e. Starting and charging testers
 3. Computerized Diagnostic Analyzer
 - a. Comprehensive testing
-

Objectives

1. Identify and demonstrate usage of DVOM, KV, dwell, tach and timing meters. ****Requires Critical Thinking****
 2. Perform standard industry testing procedures in the use of automotive electrical system testing equipment on late-model automobiles. ****Requires Critical Thinking****
 3. Demonstrate proficiency and troubleshooting skills in operating automotive computerized diagnostic testing. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will demonstrate proficiency troubleshooting skills in operating automotive computerized diagnostic testing equipment.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Other**
Reading assignments, skills practice assignments
-

Assignments

Methods of Evaluation

- **Exams**
 - **Homework**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. safety glasses
 2. shop coat/ foot wear
 3. syllabus
 4. 3-ring binder with dividers
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.61D

Full Course Title: Engine Performance Experience

Short Title: Eng Performance Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive engine performance. Emphasis is placed on scan tools, lab scopes, wiring diagrams, online resources, off-the-car diagnosis, and efficient use of electronic service manuals. Intended primarily for students with prior practical experience in automotive engine performance. Students are strongly encouraged to have problem solving and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.44

Content

Course Lab/Activity Content

1. Automotive Computer Diagnostic Equipment
 - a. B.A.R. 97 emission tester
 - b. Scan Tools
 - c. Scope
 - d. On-line Information System
 - e. Lab Scopes
 - f. Off-the-car Diagnostics
2. Technician Part-Time Labor Efficiency

- a. Service Manuals
 - 3. Consumer Satisfaction and Business Relationships
-

Objectives

1. Demonstrate proficiency and productivity in the operation of advanced automotive computerized diagnostic equipment. ****Requires Critical Thinking****
 2. Perform automotive repair to the flat-rate time structure set forth by the service industry. ****Requires Critical Thinking****
 3. Communicate effectively with the consumer in dealing with complex diagnostic service and repair. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will demonstrate proficiency in troubleshooting using scan tools and lab scopes on and off the car to make diagnostic decisions .
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Other**
Reading assignments, skills practice assignments
-

Assignments

Methods of Evaluation

- **Exams**
 - **Homework**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. safety glasses
 2. shop coat/ footwear
 3. syllabus
 4. 3-ring binder with dividers
-

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.62A

Full Course Title: Automatic Transmission and Transaxle Experience

Short Title: Auto Trans/axle Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive automatic transmissions and transaxles. Emphasis is placed on diagnosis of mechanical and electrical systems, techniques for pre-assembly, disassembling, and on the road dyno testing of completed transmissions. Students are strongly encouraged to have problem solving and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 53.31

Content

Course Lab/Activity Content

Students will demonstrate knowledge of material through their hands-on lab assignments on the following:

1. Specialization in the further study of automotive transmissions, and transaxles.
 2. Live work and emphasis on flat rate time and accuracy.
 3. Training tailored to the individual needs of the student.
-

Objectives

1. Successfully fill out repair orders with all necessary data including time in and parts needed. ****Requires**

Critical Thinking**

2. Use of all tools necessary to work on automotive transmissions, and transaxles. ****Requires Critical Thinking****
 3. Diagnose and evaluate data; measure and evaluate parts for reuse or replacement; evaluate data and determine correct repair procedure. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will diagnose and evaluate data; measure and evaluate parts for reuse or replacement; evaluate data and determine correct repair procedure.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Other**
-

Assignments

Reading Assignments

Students will be ask to take home a wiring diagram and be prepared to explain its operation in class.

Writing Assignments

Students to review the repair orders that they have written and rewrite them to conform to industry standard of the 3 C's. That is the Complaint, Cause, and the Correction . They have to use short and concise sentences and be descriptive in describing the work performed.

Methods of Evaluation

- **Exams**
 - **Participation**
 - **Problem Solving Exercises**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. syllabus
 2. 3-ring binder with dividers
 3. shop coat/ footwear
 4. safety glasses
 5. instructor may require a supplemental resource packet
-

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.62B

Full Course Title: Manual Drivetrain and Axles Experience

Short Title: Man. Drive/Axle Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Auto Mechanics
 - Automotive Technology
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive manual drivetrains and axles. Emphasis is placed on removal and installation considerations, diagnosis of transmissions, clutches, transfer cases, differentials, and manual drivetrain and axles electrical system. Students are strongly encouraged to have problem solving and computer literacy skills. manual drivetrain electrical system

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.30

Content

Course Lab/Activity Content

Students will demonstrate knowledge of material through their hands-on lab assignments on the following:

1. Specialization in the further study of automotive transmissions, differentials, and transaxles.
 2. Live work and emphasis on flat rate time and accuracy.
 3. Training tailored to the individual needs of the student.
-

Objectives

1. Successfully fill out repair orders with all necessary data including time to do the repair and parts needed. ****Requires Critical Thinking****
 2. Use of all tools necessary to work on automotive transmissions, differentials, and transaxles. ****Requires Critical Thinking****
 3. Diagnose and evaluate data while measuring or evaluating parts for reuse or replacement to determine proper repair. ****Requires Critical Thinking****
 4. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will diagnose, inspect and measure manual transmissions/transaxles to determine proper repairs.
 - o **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - o **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Other**
Demonstrations
-

Assignments

Reading Assignments

Students will be ask to take home a wiring diagram and be prepared to explain its operation in class.

Writing Assignments

Students to review the repair orders that they have written and rewrite them to conform to industry standard of the 3 C's. That is the Complaint, Cause, and the Correction. They have to use short and concise sentences and be descriptive in describing the work performed.

Methods of Evaluation

- **Exams**
 - **Homework**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. safety glasses.
2. instructor may require a supplemental resource packet

3. syllabus
 4. shop coat/ footwear
 5. 3-ring binder with dividers
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.62C

Full Course Title: Alignment and Suspension Experience

Short Title: Align Suspen Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Auto Mechanics
 - Automotive Technology
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive alignment and suspension. Emphasis is placed on 4-wheel alignment, tire repair, balancing, replacement of suspension and steering components, electrical diagnosis as it relates to tire pressure monitoring system and ride control. Students are strongly encouraged to have problem solving skills and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.41

Content

Course Lab/Activity Content

Students will demonstrate knowledge of material through their hands-on lab assignments on the following:

1. Specialization in the further study of automotive steering and suspension systems.
 2. Live work and emphasis on flat rate time and accuracy.
 3. Training tailored to the individual needs of the student.
-

Objectives

1. Successfully fill out repair orders with all necessary data including time in and parts needed. ****Requires Critical Thinking****
 2. Use of all tools necessary to work on automotive suspension and steering systems. ****Requires Critical Thinking****
 3. Diagnose and evaluate test results from measuring and evaluating parts for wear to determine correct repair procedures. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will diagnose and evaluate data; measure and evaluate parts for reuse or replacement; evaluate data and determine correct repair procedure.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
-

Methods of Instruction

- **Laboratory**
 - **Other**
Demonstrations
-

Assignments

Reading Assignments

Students will be asked to take home a wiring diagram and be prepared to explain its operation in class.

Writing Assignments

Students will review the repair orders that they have written and rewrite them to conform to industry standard of the 3 C's. That is the Complaint, Cause, and the Correction. They have to use short and concise sentences and be descriptive in describing the work performed.

Methods of Evaluation

- **Exams**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. safety glasses.
 2. instructor may require a supplemental resource packet
 3. syllabus
 4. shop coat/ footwear
 5. 3-ring binder with dividers
-

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.62D

Full Course Title: Brakes Experience

Short Title: Brakes Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive brake systems. Emphasis is placed on diagnosing and repairing disc and drum brake systems, wheel and hub bearings, electrical diagnosis as it relates to anti-lock brake systems (ABS) and traction control. Students are strongly encouraged to have problem solving skills and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.40

Content

Course Lecture Content

Course Lab/Activity Content

Students will demonstrate knowledge of the material through their hands-on lab assignments on the following:

1. Specialization in the further study of automotive brake systems.
2. Live work and emphasis on flat rate time and accuracy.
3. Training tailored to the individual needs of the student.

Objectives

1. Successfully fill out repair orders with all necessary data including time in and parts needed. ****Requires Critical Thinking****
2. Use all tools necessary for work on automotive braking systems. ****Requires Critical Thinking****
3. Diagnose and evaluate test results from measuring and evaluating parts for wear to determine correct repair procedures. ****Requires Critical Thinking****

Student Learning Outcomes

1. Upon completion of this course students will diagnose, inspect and measure brake components to determine proper repairs.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.

Methods of Instruction

- **Laboratory**
- **Other**
Demonstration

Assignments

Reading Assignments

Students will be asked to take home a hydraulic diagram and be prepared to explain its operation in class.

Writing Assignments

Students will review the repair orders that they have written and rewrite them to conform to industry standard of the 3 C's. That is the Complaint, Cause, and the Correction. They have to use short and concise sentences and be descriptive in describing the work performed.

Methods of Evaluation

- **Exams**
- **Laboratory Assignments**
- **Oral Tests/Class Performance**
- **Participation**
- **Problem Solving Exercises**
- **Quizzes**
- **Skills Demonstrations/Performance Exam**

Course Materials

Other:

1. safety glasses.
2. instructor may require a supplemental resource packet
3. syllabus

4. 3-ring binder with dividers
 5. shop coat/ footwear
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.62E

Full Course Title: Heating and Air Conditioning Experience

Short Title: Heat/Air Cond Exp

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 1.0

Total class hours: 54.0

Total contact hours in class: 54.0

Lab hours: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers individualized advanced techniques with a strong emphasis on specialized training in automotive heating and air conditioning. Emphasis is placed on recovering and recharging of air conditioning system, heating system, semi/auto air controls, engine cooling system, and electrical diagnosis. Students are strongly encouraged to have problem solving skills and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment or satisfactory completion of: AUTO 52.36

Content

Course Lecture Content

Course Lab/Activity Content

Students will demonstrate knowledge of material through their hands-on lab assignments on the following:

1. Specialization in the further study of automotive heating and air conditioning systems.
 2. Live work and emphasis on flat rate time and accuracy.
 3. Training tailored to the individual needs of the student.
-

Objectives

1. Successfully fill out repair orders with all necessary data including time to do the repair and parts needed. ****Requires Critical Thinking****
 2. Use of all tools necessary to work on automotive heating and air conditioning systems. ****Requires Critical Thinking****
 3. Diagnose and evaluate test results from measuring and evaluating parts for wear to determine correct repair procedures. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will diagnose and inspect heating and air conditioning components to determine proper repairs.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Other**
Demonstrations
-

Assignments

Reading Assignments

Students will be asked to take home a AC refrigerant loop and be prepared to explain its operation in class.

Writing Assignments

Students will review the repair orders that they have written and rewrite them to conform to industry standard of the 3 C's: Complaint, Cause, and the Correction . Students must use short and concise sentences and be descriptive in describing the work performed.

Methods of Evaluation

- **Exams**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Other:

1. safety glasses.
2. instructor may require a supplemental resource packet
3. syllabus
4. shop coat/ footwear
5. 3-ring binder with dividers

Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 52.81

Full Course Title: Hybrid and Alternative Fuel Vehicles

Short Title: Hybrid/Alt Fuel

TOP Code: 0948.40 - Alternative Fuel Vehicle Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 2.0

Total class hours: 108.0

Total contact hours in class: 54.0

Lecture hours: 27.0

Lab hours: 27.0

Hours outside of class: 54.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of hybrid and alternative fuel vehicles. Emphasis is placed on safety when using high voltage, maintenance, drivability, inverter power transfer, battery technologies, hydrogen electric power, and fuel cell technology. Labs include performing scheduled hybrid maintenance services. Introduction to hybrid vehicle diagnosis and repair. Development of entry-level skills needed to work on hybrid vehicles. Students are strongly encouraged to have college level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. Orientation
2. Safety
3. History and Development of Hybrid Type Vehicles
4. Electron Theory
5. DC/AC Circuits
6. Meters
7. Wiring
8. HC Based Fuel
9. Internal Combustion Engine Theory
 - a. Mechanical
 - b. Ignition
 - c. Fuel

10. Vehicle Emission and Air Quality
11. Hybrid Vehicle Service and Repair Safety
12. Batteries: Conventional/Hybrid
13. Hybrid Electric Motor; Generators; Controls
14. Original Equipment Manufacturers: GM, Ford Toyota, Honda, Etc
15. Hybrid Transmissions
16. Hybrid Starting Systems
17. Regenerative Braking
18. Hybrid Heating and Air Conditioning
19. Electronic Diagnostic Test Equipment
20. Other Alternative Fuel Vehicles: EV, CNG, Solar, Fuel Cell, Bio Diesel

Course Lab/Activity Content

Students will demonstrate knowledge of lecture material through their hands-on lab assignments on the following:

1. Orientation
2. Safety
3. History and Development of Hybrid Type Vehicles
4. Electron Theory
5. DC/AC Circuits
6. Meters
7. Wiring
8. HC Based Fuel
9. Internal Combustion Engine Theory
 - a. Mechanical
 - b. Ignition
 - c. Fuel
10. Vehicle Emission and Air Quality
11. Hybrid Vehicle Service and Repair Safety
12. Batteries: Conventional/Hybrid
13. Hybrid Electric Motor; Generators; Controls
14. Original Equipment Manufacturers: GM, Ford Toyota, Honda, Etc
15. Hybrid Transmissions
16. Hybrid Starting Systems
17. Regenerative Braking
18. Hybrid Heating and Air Conditioning
19. Electronic Diagnostic Test Equipment
20. Other Alternative Fuel Vehicles: EV, CNG, Solar, Fuel Cell, Bio Diesel
21. Fuel

Objectives

1. Develop a knowledge of hybrid electrical motors and generator controls. ****Requires Critical Thinking****
2. Develop a knowledge of AC/DC electron theory. ****Requires Critical Thinking****
3. Identify various hybrid vehicle drive systems. ****Requires Critical Thinking****
4. Identify hybrid vehicle battery packs. ****Requires Critical Thinking****
5. Evaluate differences in various manufacturers hybrid systems. ****Requires Critical Thinking****
6. Demonstrate the usage of digital multi meters in AC and DC circuits and wiring. ****Requires Critical Thinking****
7. Evaluate internal combustion emissions. ****Requires Critical Thinking****

8. Demonstrate proper safety awareness in hybrid service. ****Requires Critical Thinking****
 9. Service a hybrid vehicle according to manufacturer's procedures. ****Requires Critical Thinking****
 10. Diagnose regenerative braking systems. ****Requires Critical Thinking****
 11. Demonstrate knowledge of hybrid starting systems. ****Requires Critical Thinking****
 12. Demonstrate knowledge in diagnosis of hybrid vehicle computer systems using a scan tool. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course, students will demonstrate knowledge of hybrid electrical motors and generator controls.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Information Competency** Students will conduct, present, and use research necessary to achieve educational, professional, and personal objectives.
 2. Upon completion of this course, students will demonstrate proper safety awareness in hybrid service.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- Laboratory
 - Lecture/Discussion
-

Assignments

Reading Assignments

Students will read the assigned Chapter 1 Introductions of Powertrains and be prepared to answer questions with class.

Writing Assignments

Student will summarize the assigned Chapter 1 Introductions of Powertrains in outline format.

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Quizzes
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. James D. Halderman. *Hybrid and Alternative Fuel Vehicles*, 4th ed. Pearson Publishing, 2015, ISBN: 9780133512120
2. James D. Halderman. *Hybrid and Alternative Fuel Vehicles NATEF Correlated Task Sheets*, 4th ed. Pearson Publishing, 2015, ISBN: 9780133825725

Other:

1. syllabus
2. shop coat/ footwear
3. 3-ring binder with dividers
4. safety glasses
5. instructor may require a supplemental resource packet

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 53.31

Full Course Title: Automatic Transmission/ Gas and Diesel Vehicles

Short Title: Auto Trans Gas/Desl

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Spring 2018

Course Standards

Course Type: Credit - Degree Applicable

Units: 4.0

Total class hours: 216.0

Total contact hours in class: 108.0

Lecture hours: 54.0

Lab hours: 54.0

Hours outside of class: 108.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of automatic transmissions and transaxles. Emphasis is placed on operating principles, planetary gear sets, hydraulic operations, electronic controls, torque converters, normal maintenance adjustments and service operations, problem diagnosis, and overhaul procedures for automotive and truck applications. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Content

Course Lecture Content

1. General automatic transmission fundamentals
 - a. gear ratios
 - b. shift processes
2. Apply devices
 - a. clutches
 - b. bands
3. Power flows
 - a. Simpson gear train
 - b. Ravigneaux gear train
 - c. variations
 - d. transaxles
4. Hydraulic operation

- a. components
 - b. valve operation
 - c. variety of valves
 - d. electronic shift controls
- 5. Torque converters
 - a. fluid changes
 - b. linkage adjustment
 - c. band adjustments
- 6. Troubleshooting
 - a. test procedures
 - i. road tests
 - ii. stall tests
 - iii. hydraulic pressure checks
 - b. troubleshooting charts
- 7. Dyno testing procedures
- 8. Electronic transmissions
- 9. Scan tool testing

Course Lab/Activity Content

Students will demonstrate knowledge of lecture material through their hands-on lab assignments on the following:

- 1. General automatic transmission fundamentals
 - a. gear ratios
 - b. shift processes
- 2. Apply devices
 - a. clutches
 - b. bands
- 3. Power flows
 - a. Simpson gear train
 - b. Ravigneaux gear train
 - c. variations
 - d. transaxles
- 4. Hydraulic operation
 - a. components
 - b. valve operation
 - c. variety of valves
 - d. electronic shift controls
- 5. Torque converters
 - a. fluid changes
 - b. linkage adjustment
 - c. band adjustments
- 6. Troubleshooting
 - a. test procedures
 - i. road tests
 - ii. stall tests
 - iii. hydraulic pressure checks
 - b. troubleshooting charts
- 7. Dyno testing procedures
- 8. Electronic transmissions
- 9. Scan tool testing

Objectives

- 1. Identify the parts and operating circuits in an automatic transmission. ****Requires Critical Thinking****
- 2. Explain the power flow in an automatic transmission with 100% accuracy. ****Requires Critical Thinking****
- 3. Explain how the hydraulic circuits in an automatic transmission operate. ****Requires Critical Thinking****

4. Change the fluid and filter in an automatic transmission. ****Requires Critical Thinking****
 5. Make the common adjustments required for proper operation. ****Requires Critical Thinking****
 6. Perform the commonly used diagnostic checks and interpret the results to determine the cause of a malfunction. ****Requires Critical Thinking****
 7. Disassemble and inspect an automatic transmission and determine what parts are needed to repair it. ****Requires Critical Thinking****
 8. Disassemble/assemble an automatic transmission using the recommended procedure, making all the necessary clearance checks and tightening all of the fasteners to the correct torque. ****Requires Critical Thinking****
 9. Dyno test the transmission after assembly; make repairs as necessary to insure correct operation. ****Requires Critical Thinking****
 10. Perform service procedure on gas and diesel vehicles. ****Requires Critical Thinking****
 11. Diagnose and evaluate test results from measuring and evaluating parts for wear to determine correct repair procedures. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course students will identify the parts and operating circuits in an automatic transmission.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course students will explain the power flow in an automatic transmission with 100% accuracy.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course students will disassemble and assemble an automatic transmission using the recommended procedure and making all the necessary clearance checks and tightening all of the fasteners to the correct torque.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
- **Lecture/Discussion**
- **Other**

Home assignments are web enhanced and may include handouts.

Assignments

Reading Assignments

Student will read the assigned chapter 1 and be prepared to answer questions with class.

Writing Assignments

Student will summarize the assigned chapter 1 Introductions of powertrains in outline format.

Methods of Evaluation

- Exams
 - Homework
 - Laboratory Assignments
 - Oral Tests/Class Performance
 - Participation
 - Problem Solving Exercises
 - Skills Demonstrations/Performance Exam
-

Course Materials

Textbooks:

1. Erjavec/Pickerill. *Automatic Transmissions and Transaxles and Lab Book*, 6th ed. Cengage Learning, 2016, ISBN: 978-1-305-25937-9

Other:

1. syllabus
 2. 3-ring binder with dividers
 3. shop coat/ footwear
 4. safety glasses
 5. instructor may require a supplemental resource packet
 6. purchase of software subscription
-

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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 53.33

Full Course Title: Fuel Systems

Short Title: Fuel Systems

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 4.0

Total class hours: 216.0

Total contact hours in class: 144.0

Lecture hours: 36.0

Lab hours: 108.0

Hours outside of class: 72.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Auto Mechanics
-

Course Description

This course covers a comprehensive study of conventional and advanced automotive fuel systems. Emphasis is placed on electronic fuel injection, computerized fuel management systems, 5-gas analyzers and combustion theory. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Conditions of Enrollment

Concurrent enrollment in Auto 53.44 is recommended. It is also recommended that a student enroll in both Auto 53.33 and Auto 53.44 in order for ASE/BAR Automotive A6 and A8 Engine Performance certification. Students will need this certification for enrollment into Auto 53.55 (Advanced Tune-up course) and Auto 95 (CA Smog Licensing course) the following semester.

Content

Course Lecture Content

1. Orientation
2. Safety
3. Combustion
4. Infrared Tester
5. Carburetor Fundamentals

6. Carburetor Adjustments
7. Feed-back Carburetors
8. Fuel Pumps
9. Computers
10. Sensors
11. E.F.I - Fuel Delivery
12. E.F.I. - Air Delivery
13. E.F.I. - Sensors
14. E.F.I. - Service
15. Gas mileage
16. Intake Manifolds
17. Intake Heat and E.F.E.
18. Tanks, Gauges, and E.E.S.
19. Filters
20. Fuels
21. Exhaust Systems
22. Blowers
23. High Power Fuel Systems

Course Lab/Activity Content

1. Orientation
 2. Safety
 3. Combustion
 4. Infrared Tester
 5. Carburetor Fundamentals
 6. Carburetor Adjustments
 7. Feed-back Carburetors
 8. Fuel Pumps
 9. Computers
 10. Sensors
 11. E.F.I - Fuel Delivery
 12. E.F.I. - Air Delivery
 13. E.F.I. - Sensors
 14. E.F.I. - Service
 15. Gas mileage
 16. Intake Manifolds
 17. Intake Heat and E.F.E.
 18. Tanks, Gauges, and E.E.S.
 19. Filters
 20. Fuels
 21. Exhaust Systems
 22. Blowers
 23. High Power Fuel Systems
-

Objectives

1. Describe the principles of combustion and how it behaves using the infrared tester. ****Requires Critical Thinking****
2. Recognize the relationship of the seven carburetor circuits to driver and vehicle demands. ****Requires Critical Thinking****
3. Troubleshoot, adjust, and service various carburetor emission modifications. ****Requires Critical**

Thinking**

4. Discuss the theory of mechanical and electrical fuel pumps. ****Requires Critical Thinking****
5. Recognize and locate automotive computers and explain how the various systems are used. ****Requires Critical Thinking****
6. Demonstrate the electronic fuel injection performance testing. ****Requires Critical Thinking****
7. Explain E.F.I. fuel and air delivery systems. ****Requires Critical Thinking****
8. Categorize E.F.I. sensors ****Requires Critical Thinking****
9. Perform E.F.I. service and adjustments on throttle body and port fuel injection systems. ****Requires Critical Thinking****
10. Evaluate factors that contribute to fuel economy. ****Requires Critical Thinking****
11. Conduct an accurate gas mileage test. ****Requires Critical Thinking****
12. Interpret the theory of intake manifolds. ****Requires Critical Thinking****
13. Service heated air intakes and E.F.I. units ****Requires Critical Thinking****
14. Explain the theory of how gas is stored and delivered in the vehicle. ****Requires Critical Thinking****
15. Explain the theory of liquid and air filtration. ****Requires Critical Thinking****
16. Describe the advantages and disadvantages of common and alternative fuels. ****Requires Critical Thinking****
17. Explain the theory of exhaust flow and silencing. ****Requires Critical Thinking****
18. Distinguish the difference between exhaust and belt-driven supercharging. ****Requires Critical Thinking****

Student Learning Outcomes

1. Upon completion of this course students will recognize and locate automotive computers and explain how the various systems are used.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course students will demonstrate electronic fuel injection performance testing.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course students will explain EFI sensors.
 - **Communication** Students will effectively use language and non-verbal communication consistent with and appropriate for the audience and purpose.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Lecture/Discussion**
 - **Other**
Skills, demonstrations, lab assignments
-

Assignments

Reading Assignments
Writing Assignments
Other Assignments

Methods of Evaluation

- **Exams**
 - **Homework**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Textbooks:

1. James D. Halderman. *Automotive Fuel and Emissions Control Systems*, 4th ed. Pearson Publishing, 2015, ISBN: 978-0133799491

Manuals:

1. James D. Halderman. *Automotive Fuel & Emission Control Systems NATEF correlated task sheets*, 4th ed. Pearson Publishing, 2015, ISBN: 978-0133799811

Other:

1. 3-ring binder with dividers
 2. safety glasses
 3. shop coat/ footwear
 4. syllabus
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Yuba Community College District

Yuba College Course Outline

Course Information

Course Number: AUTO 53.55

Full Course Title: Advanced Tune-Up

Short Title: Advanced Tune-Up

TOP Code: 0948.00 - Automobile/Automotive Mechanics Technology/Technician*

Effective Term: Fall 2013

Course Standards

Course Type: Credit - Degree Applicable

Units: 5.0

Total class hours: 270.0

Total contact hours in class: 198.0

Lecture hours: 36.0

Lab hours: 162.0

Hours outside of class: 72.0

Repeatable: No

Grading Method: Letter Grade or Pass/No Pass

Minimum Qualifications for Instructors

- Automotive Technology
 - Auto Mechanics
-

Course Description

This course covers a comprehensive study of advanced automotive tune-up. Emphasis is placed on problems pertaining to fuel delivery, ignition, emission, computers and electronic engine controls, wiring systems, and mechanical engine diagnostics. Latest diagnostic strategies and extensive troubleshooting, use of diagnostic test equipment, lab oscilloscopes, scan-tools, and emission analyzers. Students are strongly encouraged to have college-level reading, basic mathematics, and computer literacy skills.

Conditions of Enrollment

Satisfactory completion of: AUTO 53.33; AUTO 52.44

Content

Course Lecture Content

1. Orientation
2. Safety
3. Combustion and smog
4. Five-gas infrared testing
5. Scopes and engine analyzers
6. Equipment usage and speed

7. Dynamometers
8. Major and minor tune-ups
9. Drivability symptoms/definitions
10. Certificate of compliance
11. Customer relations
12. Alternative fuel vehicles and hybrids
13. Emissions and its effect on performance

Course Lab/Activity Content

1. Orientation
 2. Safety
 3. Combustion and smog
 4. Five-gas infrared testing
 5. Scopes and engine analyzers
 6. Equipment usage and speed
 7. Dynamometers
 8. Major and minor tune-ups
 9. Drivability symptoms/definitions
 10. Certificate of compliance
 11. Customer relations
 12. Alternative fuel vehicles and hybrids
 13. Emissions and its effect on performance
-

Objectives

1. Contrast ideal combustion with actual combustion and analyze emissions. ****Requires Critical Thinking****
 2. Identify and service current crankcase ventilation systems. ****Requires Critical Thinking****
 3. Conduct an E.G.R functional test and service. ****Requires Critical Thinking****
 4. Identify oxidation and reduction converters. ****Requires Critical Thinking****
 5. Perform functional tests on evaporative emission controls. ****Requires Critical Thinking****
 6. Demonstrate equipment usage and speed utilizing scopes and engine analyzers. ****Requires Critical Thinking****
 7. Conduct a dynamometer test run. ****Requires Critical Thinking****
 8. Describe what is included in major and minor tune-ups. ****Requires Critical Thinking****
 9. Perform tune-ups involving customer driveability complaints. ****Requires Critical Thinking****
 10. Inspect a vehicle and complete a certificate of compliance. ****Requires Critical Thinking****
 11. Recognize the identity of a customer complaint and resolve the problem by mutual agreement of a repair. ****Requires Critical Thinking****
 12. Identify possible future alternative fuels and hybrid drive systems. ****Requires Critical Thinking****
 13. Categorize emissions and evaluate the effect on performance. ****Requires Critical Thinking****
 14. Reading assignments, lab assignments, identification of equipment, diagnostic assignments, quizzes. ****Requires Critical Thinking****
-

Student Learning Outcomes

1. Upon completion of this course, the student will be able to contrast ideal combustion with actual combustion and analyze emission results.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Scientific Awareness** Students will understand the purpose of scientific inquiry and the implications and applications of basic scientific principles.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 2. Upon completion of this course, the student will demonstrate equipment usage and speed and efficiency utilizing ignition scopes and engine analyzers.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 3. Upon completion of this course, the student will perform automotive tuneups in resolving customer drivability complaints
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
 4. The student will categorize vehicle emission control and follow state emission control testing procedures.
 - **Critical Thinking** Students will analyze data/information in addressing and evaluating problems and issues in making decisions.
 - **Technological Awareness** Students will be able to select and use appropriate technological tools for personal, academic, and career tasks.
-

Methods of Instruction

- **Laboratory**
 - **Lecture/Discussion**
 - **Other**
Skills practice
-

Assignments

Reading Assignments

Writing Assignments

Methods of Evaluation

- **Exams**
 - **Homework**
 - **Laboratory Assignments**
 - **Oral Tests/Class Performance**
 - **Participation**
 - **Problem Solving Exercises**
 - **Quizzes**
 - **Skills Demonstrations/Performance Exam**
-

Course Materials

Textbooks:

1. James D. Halderman. *Advanced Engine Performance Diagnosis NATEF Correlated Task Sheets*, 6th ed.

- Pearson Publishing, 2016, ISBN: 9780133515206
2. James D. Halderman. *Advanced Engine Performance Diagnosis*, 6th ed. Pearson Publishing, 2016, ISBN: 9780133515268

Other:

1. 3-ring binder with dividers
2. safety glasses
3. shop coat/ footwear
4. syllabus

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