SANTA ANA COLLEGE

CURRICULUM & INSTRUCTION COUNCIL

DATE: March 12, 2012

FROM: Bonita N. Jaros, Ph. D., Chair

TO: Curriculum & Instruction Council

RE: Minutes of Meeting of March 12, 2012
2:00 pm, SAC Foundation Board Room, S – 215

Present: P. Canzona, J. Coffman, M. Colunga, B. Courter, S. Fondren, D. Gilmour, G. Giroux, P. Hughes, B. Jaros, D. Kanzler, B. Kehlenbach, M. Porter, L. Rose, K. Ross, C. Takahashi, S. Turner, J. Vercelli, D. Vu.

Guests: J. Harris, B. Miller, B. Sos

1. MINUTES OF MEETING OF FEBRUARY 27, 2012 — APPROVED

2. TECHNICAL COMMITTEE REPORT (See Attachment) — APPROVED

3. CURRICULUM ITEMS (See Attachment) — APPROVED

4. GUIDELINES FOR IMPLEMENTING CATALOG POLICY — FIRST READING
Bonnie requested that council representatives discuss this item at their Division Curriculum meeting. This item will be an action on the next agenda.
Please Note: Our colleagues at SCC have requested time to review this document. As a result, this will be on the April 9, 2012 agenda for action.

5. TLC REPORT — INFORMATION
I. Bonnie extended special acknowledgment to Yolanda Garcia, Gina Giroux and all those who have contributed their labors of love to the Book-of-the-Year project. Please see the list for the activities planned for spring 2012. *Also please encourage colleagues to bring their students, especially to the Phillips Hall events. We want to fill it up!!!*

A. Friday, March 16th, ***Snow Falling on Cedars*** – closed caption and feature film followed by discussion, sponsored by Psychological Services from 12:00 p.m. – 3:00 p.m. in the Spot (free pizza and drinks).

B. Thursday, April 12, 10:00 a.m. – 11:30 a.m. in Phillips Hall "***Lives Before, During and After E.O. 9066: Oral Testimonies of Former Japanese American Internees.***

C. Thursday, April 19, 2:00 p.m. – 3:00 p.m. in D-101 (capacity 156), or D-101 (capacity 122), ***"Making a Difference: Japanese Americans and Justice"*** Guest speaker: Dr. Thomas Fujita-Rony, Associate Professor of Asian American Studies Program at CSUF.

D. Thursday, May 3 ***"A Visit with Jamie Ford, Author of SAC's 2011-2012 Book of the Year*** 11:00 a.m. – 12:30 p.m. in Phillips Hall. Lunch with the author to follow at the Hacienda. Please let Yolanda know if you plan to attend. The charge for lunch will be $18.

E. Artifacts will be placed in the Nealley Library, e.g., items made in the camps. Videos have been purchased. Several are closed captioned. The ones that are not may be for personal instructor use to glean information but may not be shown in class whether or not there is a declared deaf or hard of hearing person in the class.

II. Bonnie will provide an SLOs workshop at the next C&I Council meeting – second half of the meeting. The workshop will guide you how to get the SLOs on your syllabus from the Course Outline of Record. This workshop is provided to all who wish to attend. Please bring your course outline and syllabus to the workshop. Bonnie Jaros, Dennis Gilmour, and Gina Giroux will demonstrate their samples of course outlines and the syllabi.

III. The TLC has reviewed Appendix C and recommended some revisions. This will be presented on the next C&I Agenda.

6. ACCREDITATION UPDATE — INFORMATION
This Friday, March 16th Bonnie, Monica and Brian will attend the regional SLOs workshop, sponsored by the statewide Academic Senate, in San Diego.

7. REPORT MID-CYCLE PLANNING RETREAT — INFORMATION
On Friday, March 2nd, the Mid-Cycle Planning retreat was held with representatives from all constituency groups, including students. Task one consisted of review of the mission statement and district and college-level planning document alignment. Task two consisted of review and updating of the Strategic Plan. Each table was responsible for a different Vision Theme within the Strategic plan. The IE&A Committee is in the process of collating the table team recommendations; meetings will then be held one at a time with representatives from each table team. More information is forthcoming.

8. OTHER — INFORMATION
Sylvia Tuner informed the council that *Zoot Suit* by Luiz Valdez and directed by Chris Cannon opened last Thursday, March 8th at Phillips Hall. The final performance will be a Sunday matinee, March 18th.

The next meeting is Monday, March 26, 2012 at 2:00 p.m., SAC Foundation Board Room, S – 215.

COURSE DELETIONS

Items #1 through #7 were approved. Items #2 through #7 were approved for 2012-2013 Catalog effective for fall 2012.

Fine and Performing Arts

1. Music 160, Beginning Pop and Jazz Keyboard

Humanities

2. English As a Second Language N89, Two-Word Verbs and Idioms
3. English As a Second Language N92, Practical Use of Gerunds and Infinitives
4. English As a Second Language N93, Practical Use of Prepositions and Two-Word Verbs
5. English As a Second Language N94, Idioms of American English
6. English As a Second Language N95, Vocabulary Development Through Word Forms
7. English As a Second Language N97, Combining and Punctuating Sentences

REVISED COURSES

Items #8 through #11 were approved.

Fine and Performing Arts

8. Music 146, Digital Recording Studio Techniques I
   (Classification code changed from I to A; Repeatability changed from R1 to NR)
9. Music 147, Digital Recording Studio Techniques II
   (Classification code changed from I to A; Repeatability changed from R1 to NR)
10. TV/Video Communications 101, TV and Society: A Visual History
    (Classification code changed from I to A)
11. TV/Video Communications 105H, Honors Mass Media and Society
    (Classification code changed from I to A; SAM code changed from E to D)

REVISED COURSES – SECOND READING

Items #1 through #3 were approved.

Human Services and Technology

1. Criminal Justice Academies 088, Campus Law Enforcement Update (Repeatability changed from R3 to Legally Mandated Training)
2. Fire Officer Training 008A, S-339 Division/Group Supervisor All Risk (Repeatability changed from R3 to NR)
3. Manufacturing Technology 011, Basic Mechanical Blueprint Reading

TECHNICAL COMMITTEE REPORT MARCH 26, 2012

COURSE DELETION

Human Services and Technology

1. Criminal Justice Academies 100, Basic Police Academy

REVISED COURSES

Human Services and Technology

2. Automotive Technology 002, Essentials
   (SAM code changed from D to C)
3. Automotive Technology 024, Electrical Systems
   (Minor wording changed in the catalog description)
4. Automotive Technology 081, Fuel Injection Systems
   (SAM code changed from C to B; Repeatability changed from R3 to NR)
5. Automotive Technology 082, Automotive Computer Sensors
   (Repeatability changed from R3 to NR)
6. Automotive Technology 083, Automotive Lab Scopes
   (Repeatability changed from R3 to NR)
7. Automotive Technology 084, OBD – II
   (Repeatability changed from R3 to NR)
8. Automotive Technology 086, Advanced Clean Air Car Course
   (SAM code changed from C to B)
9. Automotive Technology 087, L – 1 Alternative Course: Advanced Engine Performance
   (SAM code changed from C to B)
10. Diesel 009, Chassis Overhaul
    (Minor wording changed in the catalog description)
11. Diesel 080, Transit Vehicle Air Brake Systems
    (Minor wording changed in the catalog description)
12. Diesel 095, Diesel Lab Experience
    (Minor wording changed in the catalog description; Repeatability changed from NR to VR)
13. Occupational Therapy Assistant 101L, Exploration of Occupation Through Activity
    (Laboratory hours changed from 128 to 134; Correction in prerequisite)
14. Pharmacy Technology 064, New Drug Update
    (Repeatability changed from R3 to NR)
15. Welding 029, Advanced Arc Welding
    (Minor wording changed in the catalog description)

REVISED COURSES WITH SLO – NO CHANGE TO CATALOG AND CLASS SCHEDULE DESCRIPTION

Human Services and Technology

16. Automotive Technology 006, Automotive Maintenance
17. Automotive Technology 008, Oxyacetylene – Arc Welding
18. Automotive Technology 022, Electronics Fundamentals
19. Automotive Technology 025, A – 6 Alternative Course – Electrical Systems
20. Automotive Technology 032, Tune – Up
21. Automotive Technology 033, A – 8 Alternative Course – Engine Performance
22. Automotive Technology 043, Automatic Transmission Service
23. Automotive Technology 044, Power Train Service
24. Automotive Technology 053, Brakes
25. Automotive Technology 054, Front Ends
26. Automotive Technology 062, Air Conditioning and Heating
27. Diesel 008, Oxyacetylene – Arc Welding
28. Diesel 013, Allison Transmission Service
29. Diesel 015, Introduction to Heavy Duty Mobile Hydraulics
30. Diesel 021, Mid – Range Diesel Engine Service
31. Diesel 022, Electronics Fundamentals
32. Diesel 025, Diesel and Heavy Duty Vehicle Engine Overhaul
33. Diesel 032, Diesel Fuel Injection Systems Service
34. Diesel 040, Diesel Electrical Systems
35. Diesel 050, Transport Refrigeration
36. Diesel 055, Marine Container Refrigeration
37. Diesel 062, Air Conditioning and Heating
38. Diesel 068, Transit Vehicle Engines
39. Diesel 069, Paratransit Driver Training
40. Diesel 070, Bus Driver Training
41. Diesel 071, Introduction to Coach Operations
42. Diesel 072, Transit Vehicle Electrical Systems
43. Diesel 073, Transit Vehicle Air Systems
44. Diesel 075, Transit Vehicle Automatic Transmissions
45. Diesel 077, Transit Vehicle Heating, Ventilation, Air Conditioning
46. Diesel 078, Transit Vehicle Drive Train Suspension
47. Diesel 079, Transit Vehicle Wheelchair Lifts
48. Fire Academy 200, Fire Public Education Officer I
49. Fire Academy 232C, Fire Prevention 2C: Special Hazard Occupancies
50. Fire Academy 233A, Fire Prevention 3A
51. Occupational Therapy Assistant 111, Applied Kinesiology
52. Occupational Therapy Assistant 202, Level II Fieldwork – Part I
53. Welding 008, Oxyacetylene – Arc Welding

#1

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Criminal Justice Academies 100, Basic Police Academy
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Criminal Justice Academies 100
Basic Police Academy
Units: 24
Class Hours:

Lecture Hours: 160
Laboratory Hours: 824
Arranged Hours: None
Total Semester Contact Hours: None

PREREQUISITE(S)
Prerequisite
Criminal Justice Academies 010 and admission to the course through Criminal Justice Academies office.

Student will receive instruction in all areas of criminal justice, as required by P.O.S.T., for entry-level law enforcement officers. This course is offered in cooperation with the Orange County Sheriff's Department.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
	I	2	30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	210500 - Administration of Justice	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/06/12 by:John Finch
Divison Chair Approval Date: 02/13/12 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

The performance objectives required of the students are published in "Educational Objectives for the Basic P.O.S.T course "Written by the California Commission of Peace Officers Standards & Training, June 1998, and are available in the Criminal Justice Office and the Orange County Sheriff's Academy. The student will be able to apply principles of theory through practical application to numerous role play situations.

LEARNING DOMAINS

1. History, Professionalism, Ethics **
2. Criminal Justice System **

3. Community Relations **
4. Victimology/Crisis Intervention
5. Introduction to Criminal Law **
6. Property Crimes **
7. Crimes Against Persons **
8. General Criminal Statutes **
9. Crimes Against Children **
10. Sex Crimes **
11. Juvenile Law and Procedure
12. Controlled Substances
13. ABC Law
14. Deleted
15. Laws of Arrest **
16. Search and Seizure **
17. Presentation of Evidence
18. Investigative Report Writing **
19. Vehicle Operations
20. Use of Force
21. Patrol Techniques
22. Vehicle Pullovers
23. Crimes in Progress
24. Handling Disputes/Crowd Control
25. Domestic Violence
26. Unusual Occurrences
27. Missing Persons **
28. Traffic Enforcement
29. Traffic Accident Investigation
30. Preliminary Investigation
31. Custody
32. Lifetime Fitness
33. Arrest and Control/Baton
34. First Aid and CPR
35. Firearms/Chemical Agents
36. Information Systems
37. Persons with Disabilities **
38. Gang Awareness **
39. Crimes Against The Justice System **
40. Weapons Violations
41. Hazardous Materials Awareness
42. Cultural Diversity **

** Indicates subjects that are lecture only.

TOTAL LECTURE HOURS 160 HOURS

1. Learning Domain Testing (Classroom materials)
2. Communications Skills Tests (Radio codes, spelling words)
3. Practical Application Tests (Hours included in LD 18 and 23)
4. Performance Testing (Night problems)
5. Arrest Control Techniques Test (Midterm/Final Exams)
6. P.O.S.T. Proficiency Exams (3)

ADMINISTRATION TIME- LABORATORY

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #2

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 002, Essentials
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 002
Essentials
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~48

PREREQUISITE(S) None

Intended for automotive majors. Introduction to basic practical applications of technology required for advanced-level courses. Theory, parts nomenclature, and description of systems are emphasized.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 10
SAM Priority Code:	~~D~~ C - ~~Possible~~ Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE ORIENTATION - 9.0 HOURS
Course expectations.
Introduction to the industry and the tools of the trade.
Types and grades of fastening devices and units of measurement.
How to use micrometers and torque wrenches.

ENGINES - 12.0 HOURS
How an engine is constructed, theory of combustion and identification of the parts used in the engine assembly.

ELECTRICAL SYSTEMS - 12.0 HOURS

Starting Systems
Charging Systems
Ignition Systems
Fundamentals of electricity and magnetism.

FUEL SYSTEMS - 9.0 HOURS
Automotive fuels, terms and ratings.
Fuel supply systems.
Carburetion and fuel injection.

EMISSION CONTROL - 6.0 HOURS
Introduction to the various devices used in automobiles to protect the environment.

NOTE: In all areas outlined above, emphasis will be placed on the basic sciences applicable to the material being presented.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 002, Essentials
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

Automotive Periodicals Examples: Underhood Service Magazine
Motor Magazine

Web Research Sites Examples: autonews.com

Other

Handouts/worksheets supplied by instructor

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1.	

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #3

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 024, Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 024
Electrical Systems
Units: 5
Class Hours:

Lecture Hours: 64
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Theory, operation, diagnosis and maintenance of the following systems and components: ~~batteries, cranking, charging,~~ lighting, instrument, and accessory circuits. Students furnish hand tools and safety equipment.
Suggested preparation: Automotive Technology 002 or 006, and 022.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

1. COURSE ORIENTATION - 12 LEC 12 LAB HOURS
- Course content, expectations, class organization, and shop safety.
- Use of wiring diagrams.
- Wiring terminals and connectors.
- Wire, cable, and harness construction.
- Use of meters.

2. ~~BATTERIES - 4~~ Meters 4 LEC 4 LAB HOURS
- ~~Battery construction, operation, rating methods, testing, and servicing~~Testing of vehicles with meters.

3. ~~STARTING SYSTEMS~~ Scan Tools and Lab Scopes - 8 LEC 8 LAB HOURS

• ~~System wiring and diagnosis. • Switches, relays, and solenoids. • Motor operation and construction. • Motor overhaul and bench testing. 4. CHARGING SYSTEMS~~ Introduction to the use of ScanTools.
• Introduction to the Use of Lab Scopes.

4. Computer Controlled Systems - 12 LEC 12 LAB HOURS
• ~~Regulator operation~~System operation.
• System wiring and diagnosis.
• ~~Generator (alternator) construction and~~ System operation and circuit testing.

5. LIGHTING CIRCUITS - 8 LEC 8 LAB HOURS
• Operation, testing, and repair of headlamp, tail and park lamps, directional signal, interior and instrument lamp circuits, and components.

6. INDICATING INSTRUMENTS - 8 LEC 8 LAB HOURS
• Operation, testing, and repair of:
1. Gauges
2. Transmitters
3. Lamps
4. Thermal and Pressure Switches
5. Fuel Gauge Circuits

7. ACCESSORY CIRCUITS - 12 LEC 12 LAB HOURS
• Operation, diagnosis, and repair procedures of:
1. Horn
2. Windshield washer and wiper
3. Power window, seat, and fan circuits

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 024, Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

Students will supply non-precision hand tools, safety eye wear, protective clothing ($300.00 estimated cost).

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #4

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 081, Fuel Injection Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 081
Fuel Injection Systems
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~48

PREREQUISITE(S) None

Covers the theory, operation and diagnosis of import and domestic gasoline fuel injection systems currently used with emphasis on those systems used on domestic and import vehicles. Suggested preparation: Automotive Technology 002 or 006 and 032 or one year tune-up related trade experience.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15751	I	1	10
SAM Priority Code:	~~C~~ B - Advance Occupational	**Repeatability:**		
TOPS Code:	-	~~R3 - Repeatable x3~~	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W

Topics Course: No
Open Entry/Exit: NO
Grading Options: Letter Grade or P/NP
Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION AND SHOP SAFETY - 2 hours.
Learn the school policies, procedures , shop safety , and lab maintenance.

THEORY AND OPERATION OF FUEL INJECTION SYSTEMS - 3 hours.
Trace the development of the fuel injection systems, learn major import systems in current use, and study generic theory of component operation.

VOLKSWAGEN BOSCH D-JETRONIC, K-JETRONIC, AND L-JETRONTIC FUEL INJECTION SYSTEMS - 12 hours.
Study systems theory, operation, and testing of both conventional and computer controlled Bosch based fuel injection systems used by Volkswagen.

TOYOTAELECTRONIC FUEL INJECTION SYSTEM - 9 hours.
Focus on operation of an electronic fuel injection system. Units will cover theory of operation component function and system testing.

NISSAN AFC FUEL INJECTION SYSTEMS DOMESTIC L-JET SYSTEMS - 12 hours.
Emphasis on system operation, component functions, systems testing, and the use of on-board computers.

HONDA FUEL INJECTION SYSTEM DOMESTIC SPEED DENSITY SYSTEMS- 10 hours.
Theory of operation identification, and use of on-board computer for self-diagnostics of system operation.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 081, Fuel Injection Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

Automotive Periodicals; Examples; Underhood Service Magazine, Motor Magazine.
Web Research Sites; Example; autonews.com.

Other

Instructor Handouts

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

	-
Communication Skills	5 - Essential- always try to achieve

1.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #5

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 082, Automotive Computer Sensors
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 082
Automotive Computer Sensors
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~48

PREREQUISITE(S) None

This course covers the function and testing of computerized engine sensors used on modern vehicles. The use of meters and test equipment will be emphasized. Suggested preparation: Automotive Technology 022, 032, or one year trade experience in automotive tune-up.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15751	I	1	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	-	~~R3 - Repeatable x3~~	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W

Topics Course: No
Open Entry/Exit: NO
Grading Options: Letter Grade or P/NP
Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

UNIT 1 - 4 hours
- Introduction
- Pre-Test
- Review of Pre-Test
- Computer Safety

The Pre-Test will assess the basic skill of the student in this area.

UNIT 2 - 6 hours
• Meter Fundamentals
Introduction to meters and test equipment. Problem solving strategies will be discussed.

UNIT 3 - 24 hours
• Sensors
Function and parameters of various sensors.

Unit 4 - 14 hours
• Sensor Testing
Advanced problem solving will be covered.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 082, Automotive Computer Sensors
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

Class handout as assigned

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

-

Communication Skills	5 - Essential- always try to achieve

1.

a. Listening Skills: Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material.

b. Reading and Writing: Students will read textbook assignments and complete written study guides for each assigned chapter. Students will also complete simulated written vehicle

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

6

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 083, Automotive Lab Scopes
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 083
Automotive Lab Scopes
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~48

PREREQUISITE(S) None

This course covers the use of automotive lab scopes for analyzing modern vehicles. Test procedures will be emphasized. Suggested preparation: Automotive Technology 002 or 006 and 032 or one year tune-up related trade experience. The use of San Tools will also be covered.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15751	I	1	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	-	~~R3 - Repeatable x3~~	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

UNIT I - 4 HOURS
- Introduction
- Pre-Test
- Review of Pre-Test
- Computer Safety

The Pre-test will assess the basic skills of the student in this area.

UNIT II - 8 HOURS
• Lab Scope and Scanner Fundamentals
The basic use of scopes and scanners will be discussed. Problem solving strategies will be introduced.

UNIT III - 24 HOURS
• Lab Scope Patterns and Scanner Data
Functions and parameters of various sensors and components will be discussed.

UNIT IV - 12 HOURS
• Lab Scope and Scanner Testing
Advanced level problem-solving will be covered.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 083, Automotive Lab Scopes
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

Classroom handouts as assigned.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1. a. Listening Skills: Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material.

b. Reading and Writing: Students will read textbook assignments and complete written study guides for each assigned chapter. Students will also complete simulated written vehicle inspection reports, work orders and parts requests.

Thinking and Reasoning	5 - Essential- always try

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 084, OBD-II
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 084
OBD-II
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~48

PREREQUISITE(S) None

This course will present an overview of the OBD-II (On Board Diagnostics) system used on modern automobiles. Terminology, codes, monitors and scantool use will be emphasized. Suggested preparation: Automotive Technology 002 or 006.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**		
-	15751	I	1	~~30~~	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**			
TOPS Code:	-	~~R3 - Repeatable x3~~	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No				
Open Entry/Exit:	NO				
Grading Options:	Letter Grade or P/NP				

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION, WHAT IS OBD-II? COMPUTER SAFETY, OBD-II TERMS - 6 HOURS
The student will read chapter 1 and complete OBD-II terminology worksheet.

OBD-II vs. OBD-I - 6 HOURS
The student will read chapter 2 and Appendix A, complete the OBD-II Identification worksheet, and take the OBD-II terminology quiz.

DIAGNOSTIC CODES - 6 HOURS
The student will read chapter 3 and complete the worksheets on codes and trips.

MONITORS - 6 HOURS
The student will read chapter 4, complete the worksheets on monitors and fuel trim correction, and will take the OBD-II fundamentals quiz.

SCAN TOOLS - 9 HOURS
The student will read chapter 5 and complete the scantools study guide.

OBD-II / OTHER FACTORS - 3 HOURS
The student will read chapter 6.

DIAGNOSTICS - 9 HOURS
The student will read chapter 7, will complete the freeze frame and readiness worksheets and complete the OBD-II problem vehicle worksheet.

FINAL EXAM - 3 HOURS
The student will study final exam study guide and take the final exam.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 084, OBD-II
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D., *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1.	

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#8

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 086, Advanced Clean Air Car Course
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 086
Advanced Clean Air Car Course
Units: 2
Class Hours:

Lecture Hours: 32
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~32

PREREQUISITE(S) None

This is a Bureau of Automotive Repair certified course. It is designed to provide advanced diagnostic training for smog licensed technicians. This course is required before taking the Smog License Renewal or initial smog exam. Suggested preparation: Automotive Technology 032 or a California Smog License.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 10
SAM Priority Code:	~~C~~B - Advance Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	R3 - Repeatable x3
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

SESSION 1 - LEC 4 HOURS
Course introduction

SESSION 2 - LEC 4 HOURS
Base Line Test Procedures

SESSION 3 - LEC 4 HOURS
Oxygen Sensor Testing

SESSION 4 - LEC 4 HOURS

Catalytic Converter Testing

SESSION 5 - LEC 4 HOURS
Diagnositc Flow Charts
Oxygen Sensor & Catalytic Converters

SESSION 6 - LEC 4 HOURS
Diagnostic Test Procedures

SESSION 7 - LEC 4 HOURS
Dyno Training
Nox Gas Training

SESSION 8 - LEC 4 HOURS
Review and Final Exam

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 086, Advanced Clean Air Car Course
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1. Students will read textbook assignments. Student will listen to lecture material and answer questions in class.	
Thinking and Reasoning	5 - Essential- always try to achieve
1. Students must understand diagnostic procedures emissions problems.	4 - Very

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 087, L-1 Alternative Course: Advanced Engine Performance
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 087
L-1 Alternative Course: Advanced Engine Performance
Units: 2
Class Hours:

Lecture Hours: 32
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~32

PREREQUISITE(S) None

This course is a Bureau of automotive Repair certified course. It is designed to prepare the student to pass the L-1 Alternative Course Exam.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 10
SAM Priority Code:	~~C~~B - Advance Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

UNIT 1: INTRODUCTION, COURSE OVERVIEW, PRE-TEST - 4 LEC HOURS
Present course overview, administer pre-test and grade and review test.

UNIT 2: GENERAL POWERTRAIN DIAGNOSIS - 4 LEC HOURS
General powertrain diagnosis, drivability problems.

UNIT 3: IGNITION SYSTEM DIAGNOSIS - 4 LEC HOURS
Wiring diagrams and ignition system diagnosis.

UNIT 4: COMPUTERIZED ENGINE CONTROLS DIAGNOSIS - 4 LEC HOURS

Sensors and actuators operation and diagnosis.

UNIT 5: FUEL SYSTEMS AND AIR INDUCTION DIAGNOSIS - 4 LEC HOURS
Fuel injection, carburetion and air induction systems diagnosis.

UNIT 6: EMISSION CONTROLS SYSTEMS DIAGNOSIS - 4 LEC HOURS
Emission controls diagnosis, P.C.V., EGR, air injection, catalytic converters and evaporative loss controls.

UNIT 7: I/M FAILURE DIAGNOSIS - 2 LEC HOURS
Diagnosing exhaust analyzer readings.

UNIT 8: AUTOMOTIVE SCAN TOOLS AND LAB SCOPES - 4 LEC HOURS
Diagnostic scan tool and lab scope test procedures.

FINAL EXAM - 2 HOURS
Administer fifty (50) question Final Exam.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 087, L-1 Alternative Course: Advanced Engine Performance
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: CIAT. *L1 Student Manual*, ed. CIAT, 2003, ISBN: none.

Recommended readings and/or materials.

None

Other

None

CIAT L1 Testing Service, 2003.

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1.	
Listening Skills	

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#10

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 009, Chassis Overhaul
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 009
Chassis Overhaul
Units: 8
Class Hours:

Lecture Hours: 64
Laboratory Hours: 192
Arranged Hours: None
Total Semester Contact Hours: ~~None~~256

PREREQUISITE(S) None

Inspection, service and overhaul procedures used on medium and heavy duty axles, steering and suspension components, clutches, transmissions, drivelines, differentials ~~and~~ , air brake, and ABS systems.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/28/12 by:Glen Hammonds
Divison Chair Approval Date: 02/29/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

SHOP SAFETY, PROPER USE OF TOOLS - 3 Lec 12 Lab
The need for shop safety and how to properly use shop tools.

BEARINGS AND GEARS - 3 Lec 12 Lab
Inspection and service techniques of a variety of types of bearing and gears.

CLUTCHES - 3 Lec 12 Lab
Identification and servicing single and double disc clutches.

MEDIUM AND HEAVY DUTY TRANSMISSON - 9 Lec 36 Lab
Inspection, service, and overhaul techniques of multiple gear transmissions.

DRIVELINES - 3 Lec 12 Lab
Identification, service, and overhaul of driveline components.

DIFFERENTIALS - 6 Lec 24 Lab
Identification, service, and overhaul of single and double reduction differentials, power dividers and two speed rear axles.

STEERING SYSTEMS - 3 Lec 12 Lab
Inspection, service, and overhaul of steering boxes and related components.

FRONT AXLES - 3 Lec 12 Lab
Be able to identify and perform services to front axles.

FRAMES AND SUSPENSIONS - 3 Lec 12 Lab
Service truck frames and rear suspension systems.

WHEEL ALIGNMENT - 3 Lec 12 Lab
Be able to identify and perform minor wheel alignment operations.

AIR BRAKES - ~~9~~ 6 Lec ~~36~~ 28 Lab
Inspection, service, and overhaul of air brake systems.

ABS (Anti-Lock Brake Systems) - 3 Lec 8 Lab
Inspection, service, and diagnosis of ABS Systems.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 009, Chassis Overhaul
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Bendix Air Brake Maintenance Manual #BW9600

Instructor Generated Handouts

Other

Students must furnish safety goggles and protective clothing (estimated cost $20.00)

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #11

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 080, Transit Vehicle Air Brake Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 080
Transit Vehicle Air Brake Systems
Units: 0.3
Class Hours:

Lecture Hours: 10
Laboratory Hours: 8
Arranged Hours: None
Total Semester Contact Hours: ~~None~~18

PREREQUISITE(S) None

Diagnosis, service and repair procedures of air brake systems used on Orange County Transportation buses. Actual work with components and controls on the air brake systems is accomplished.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/04/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in repair of the bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

INTRODUCTION 2 HOURS
Overview of air valves.

BRAKE CHAMBERS 3 HOURS
Types of chambers, adjusters that are on buses. Foundation brakes and brake linings, wedge brakes.

RETARDERS 3 HOURS
How and why retarders are on buses.

LABORATORY 8 HOURS
Hands-on skills with air systems.

MODULE REVIEW / EXAM 2 HOURS
Review and exam

~~**TEST**~~

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 080, Transit Vehicle Air Brake Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills — 5 - Essential- always try to achieve

1.

Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material. Students will complete all reading and writing assignments given in class.

Thinking and Reasoning — 5 - Essential- always try to achieve

1.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #12

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 095, Diesel Lab Experience
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 095
Diesel Lab Experience
Units: 0.5 – 4
Class Hours:

Lecture Hours: None
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: None

PREREQUISITE(S)
Prerequisite
Completion of corresponding Diesel course with a grade of C or better.

This diesel lab course is designed to give the diesel student lab experience in a diesel course previously completed with a grade of C or better. The student must be enrolled by the instructor. Students must furnish hand tools and safety equipment. May be repeated to a maximum of 4 units. ~~(Same as Automotive Technology 095.)~~

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	20
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	~~NR - Non-Repeatable: D, F, NC, W~~	94700 - Diesel Technology	VR - May Be Repeated up to maximum units

Topics Course: No
Open Entry/Exit: YES
Grading Options: Letter Grade or P/NP
Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 03/02/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in

diesel lab. Allow students to independently expand depth and breath of diesel lab knowledge.

VARIES ACCORDING TO SUBJECT AREA 48 hrs per unit
Advanced knowledge and skills development in specific areas of Diesel technology.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 095, Diesel Lab Experience
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Handouts provided by instructors.

Other

Students must furnish non-precision hand tools, safety goggles and protective clothing. ($200.00)

Text required from the course student is requesting to attend.

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category
~~Civic Responsibility~~
~~Life Skills~~
~~Careers~~

- **Communication Skills**	5 - Essential- always try to achieve
1. Lab demonstrations Individual supervision Assigned lab projects	
- **Thinking and Reasoning**	5 - Essential- always try to achieve
1. Students must understand diagnostic procedures for analyzing labs	

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#13

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Occupational Therapy Assistant 101L, Exploration of Occupation Through Activity
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Occupational Therapy Assistant 101L
Exploration of Occupation Through Activity
Units: 2.5
Class Hours:

Lecture Hours: None
Laboratory Hours: ~~128~~134
Arranged Hours: None
Total Semester Contact Hours: ~~128~~134

PREREQUISITE(S)
Prerequisite
English 101 or 101H, and 3 units of ~~Speech~~ Communication Studies (101 or 101H, or 102 or 140 or 145 or 152).

Clinical experience emphasizing the meaning and variability of occupation through analysis of occupational patterns, task analysis, opportunity to observe teaching and learning of selected populations, and practicing teaching and learning skills.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
15718	I	2	20
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	121800 - Occupational Therapy Technlogy	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 03/08/~~11/11~~12 by:Michelle Parolise
Divison Chair Approval Date: ~~08~~03/~~11~~09/~~11~~12 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in occupational therapy fundamentals. Allow students to independently expand depth and breadth of foundations of occupation and occupational therapy fundamentals knowledge.

Week 1
- Course overview, discussion of occupation performance
- Identify each individual's personal occupations including history and development of occupational ~~performance~~ performance choices and patterns
- Recognize the various influences that shape the patterns and choices of occupational performance of ~~people~~people
- Discuss personal and professional health and safety

Week 2
- ~~Analyze the task components and their relationship with cognitive, sensorimotor, and psychosocial functions~~ ~~Differentiate between performance areas, components and contexts using Uniform Terminology III~~Overview of performance areas using the Practice Framework, 2ed.
- Analyzing tasks for performance skills and contexts
-Analyzing tasks for performance patterns, activity demands and client factors

Week 3
- Define the terms activity analysis and purposeful activity and describe their purpose as used in occupational therapy
- Describe the process of activity analysis in occupational therapy
- Apply the use of activity analysis forms to simple tasks to appropriately execute the process

Weeks 4
- Describe the teaching/learning process in occupational therapy
- Apply the teaching/learning techniques in teaching a simple to complex tasks to peers
- Demonstrate an ability to use the resources of the library to find research materials

Weeks 5 & 6
- Define common occupations of children
- Recognize the influence of culture and developmental stages on children's occupation and choice of activity
- Explore and identify personal experiences in play activities
- Prepare and teach a simple paper craft, appropriate for children, and complete an activity analysis
- Demonstrate an understanding of the skills in teaching simple activities to children through fieldwork observation and analysis

Weeks 7-9
- Describe the transition of play to leisure activity as a part of human development
- Recognize and describe the therapeutic values of craft activities for specific adolescent and/or adult populations
- Develop skills for various craft activities and demonstrate the skill to analyze and adapt the activities for therapeutic use. Activities will include, but not be limited to: magazine collage, mosaic tile construction, copper embossed construction, pony beads, simple wood working and leather construction
- Describe the basic framework in selecting activities as a therapeutic tool in occupational therapy

Week 10
- Participate in and analyze self-esteem building activities

Week 11
- Plan, execute, and analyze selected group cooking task.

Weeks 12 - 16
- Student demonstration of teaching a scrap craft of individual selection. Student participation and critique of all presentation.

Level I Fieldwork Experience ~~32~~ 6 HOURS Arranged

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #14

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Pharmacy Technology 064, New Drug Update
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Pharmacy Technology 064
New Drug Update
Units: 1
Class Hours:

Lecture Hours: 16
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~16

PREREQUISITE(S) None

Continuing education course for pharmacy technicians and other allied health personnel. Discussion of newly approved medications and new drug delivery methods. Includes discussion of related changes in pharmacy law.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15719	I	1	10
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	122100 - Pharmacy Technology	~~R3~~ NR - ~~Repeatable x3~~ Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 02/05/12 by:KC Huynh
Divison Chair Approval Date: 03/05/12 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE INTRODUCTION - 1.0 HOUR
Course content, expectations, class organization

REVIEW OF DRUG RESEARCH AND DEVELOPMENT PROCESSES - 1.0 HOUR
Clinical testing procedures; drug patent life; post-marketing surveillance; drug information sources.

NEW DRUGS - 10.0 HOURS
For newly approved medications in each of the major pharmacological classes:
the mechanisms of action, efficacy, indications and contraindications for use, and primary adverse effects.
Comparison of the new medications with previously existing drug therapy.

NEW DRUG DELIVERY SYSTEMS - 1.0 HOUR
Describe the applications of new drug delivery systems and methods of drug administration.

PHARMACY LAW UPDATE - 1.0 HOUR
Changes in pharmacy law that affect the delivery of medications

MIDTERM AND FINAL EXAM - 2.0 HOURS

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Pharmacy Technology 064, New Drug Update
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Classroom handouts, including materials from pharmaceutical manufacturers.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills
1.

Students will read and discuss healthcare literature relating to newly approved drug products, drug delivery systems, and pharmacy law changes.

Thinking and Reasoning
1.

Students will analyze and evaluate information provided about many different drug products. Students will compare and contrast drugs within pharmacologic categories and demonstrate an understanding of the appropriate uses of the drugs.

Information Management
1. Students will obtain information about new medication products from print and on-line resources.

Diversity

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#15

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Welding 029, Advanced Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Welding 029
Advanced Arc Welding
Units: 3
Class Hours:

Lecture Hours: 16
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~112

PREREQUISITE(S)
Prerequisite
Welding 008, satisfactory completion of proficiency exam in arc welding skills, and concurrent enrollment in Welding 020.

Prerequisite
WELD-020

Provides advanced manipulative skills and technical knowledge needed to pass a 1" plate guided ~~bend~~ bended test required for structural steel certification.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15756	I	1	30
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	-	95650 - Welding Technology	R3 - Repeatable x3	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/05/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

UNIT I – LECTURE MATERIAL

Filler Material 3 HOURS
Identification and use of common electrodes.

Selection and Preparation of Weld Joints 5 HOURS
The correct weld joint to use to insure proper design and application

Standard Welding Symbols 3 HOURS
Identification and use of welding symbols.

Welding Codes 5 HOURS
Acceptable welding design and application according to appropriate codes.

UNIT II –LABORATORY ACTIVITIES

Flat Test Plate

8 HOUR
1" Mild Steel Plates, Vee Groove Using Back Up Stripe Use E7018 Electrode
How to set up test plate and successfully make the weld in each position.
How to test weld specimen.
How to prep test plates from cutting 1"steel to 22 1/2 degrees beveled groove
Horizontal Test Plate 28 HOURS
1" Mild Steel Plates
Vee Groove Using Back Up Stripe
Use E7018 Electrode
How to set up test plate and successfully make the weld in each position.
How to test weld specimen.

Vertical Test Plate 30 HOURS
1" Mild Steel Plates
Vee Groove Using Back Up Stripe
Use E7018 Electrode
How to set up test plate and successfully make the weld in each position.
How to test weld specimen.

Overhead Test Plate 30 HOURS
1" Mild Steel Plates
Vee Groove Using Back Up Stripe
Use E7018 Electrode
How to set up test plate and successfully make the weld in each position.
How to test weld specimen

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Welding 029, Advanced Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#16

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 006, Automotive Maintenance
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 006
Automotive Maintenance
Units: 4
Class Hours:

Lecture Hours: 48
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~112

PREREQUISITE(S) None

Introduces basic maintenance procedures in the areas of engines, drive lines, and electrical systems. This course is recommended for consumers and students interested in entering the automotive repair field. Students furnish hand tools and safety equipment.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15751	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE INTRODUCTION: 3 LEC 4 LAB HOURS
- SHOP SAFETY
- BASIC TOOL USE

Present course overview, basic tool lists. Cover shop safety and give safety test.

GENERAL SERVICE AND INSPECTION: 9 LEC 12 LAB HOURS
- BASIC UNDER CAR SERVICES
- TIRE AND WHEEL SERVICE

Learn under hood inspection of fluid levels, jack and hoist operation; chassis Lubrication; engine oil and filter change; tire rotation, inspection, repair, and wheel balance.

ELECTRICAL SERVICE: 12 LEC 16 LAB HOURS
- BATTERY SERVICE
- BASIC ELECTRICAL SYSTEM SERVICE
- STARTING SYSTEM SERVICE
- CHARGING SYSTEM SERVICE

Learn battery service and replacement; basic lighting circuit testing: fuse, flasher, and bulb replacement; test cranking and charging voltage; replace starter and alternator.

ENGINE SERVICE: 12 LEC 16 LAB HOURS
- FUEL SYSTEM SERVICE
- IGNITION SERVICE SECONDARY
- IGNITION SERVICE PRIMARY
- COOLING SYSTEM SERVICE

Learn 4 stroke cycle; service of air and fuel filter, P.C.V. and evaporative control system; compression testing, spark plug, and wire service; distributor service, primary and secondary voltage testing; cooling system service and testing; thermostat and hose replacement.

CHASSIS SERVICE: 12 LEC 16 LAB HOURS
- WHEEL BEARING SERVICE
- BRAKE SYSTEM SERVICE
- SUSPENSION AND STEERING SERVICE

Learn wheel bearing lubrication, adjustment and replacement; inspection; adjustment, shoe and pad replacement; suspension and steering inspection, shock replacement.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 006, Automotive Maintenance
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

Hand tools and safety equipment - $150.00 to $300.00

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#17

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 008, Oxyacetylene-Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 008
Oxyacetylene-Arc Welding
Units: 3
Class Hours:

Lecture Hours: 16
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~112

PREREQUISITE(S) None

Technical knowledge and basic skills needed for occupational oxyacetylene and arc welding processes and applications. Students must furnish safety equipment. (Same as Diesel 008 and Welding 008.)

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	D - Possible Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 03/06/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

WELDING SAFETY - LEC 5 / LAB 10 HOURS
An understanding of the safety rules and procedures involving oxyacetylene welding.

OXYACETYLENE WELDING EQUIPMENT - LEC 1 / LAB 5 HOURS
Different types of equipment available and how they function.

THE OXYACETYLENE PROCESS - LEC 1 / LAB 5 HOURS
How, why, and when the oxyacetylene process works and is used.

RUNNING BEADS AND OBSERVING RESULTS - LEC 2 / LAB 14 HOURS
Torch manipulation and when to use filler material to make a sound and proper weld.

BRAZING, USING THE OXYACETYLENE PROCESS - LEC 1 / LAB 14 HOURS
Light steel plate and cast iron brazing.

FLAME CUTTING LEC 1/ LAB 14 HOURS
The how's, why's, and where's of flame cutting.

WELDING SAFETY LEC 1 / LAB 5 HOURS
An understanding of all safety ~~practicies~~ practices relating to electric arc welding.

ARC WELDING EQUIPMENT LEC 1/ LAB 5 HOURS
Insight into the uses and functions of the various pieces of equipment and supplies necessary to arc welding.

THE ARC WELDING PROCESS LEC 2 / LAB 14 HOURS
How and why arc welding processes work.

WELDING METALLURGY LEC 1 / LAB 10 HOURS
The basic metallurgical concepts involved with arc welding.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 008, Oxyacetylene-Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category
~~Diversity~~

-	
Communication Skills	5 - Essential- always try to achieve

1. LISTENING SKILLS
Students will listen to lecture material. They will answer questions verbally in the classroom and lab pertaining to the lecture material. Students will be encouraged to ask questions related to the course material.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #18

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 022, Electronics Fundamentals
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 022
Electronics Fundamentals
Units: 5
Class Hours:

Lecture Hours: 64
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Introduction to the basic operating principles of electrical and electronic devices used in motor vehicles.
Suggested preparation: Automotive Technology 002 or 006. (Same as Diesel 022.)

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE ORIENTATION, ELECTRICAL SOURCES, CHARACTERISTICS OF MATERIALS - 4 LEC 4 LAB HOURS
- Course content, expectations, and safety.
- Brief history of electricity and electronics as applied to motor vehicles.
- The various ways electrical current can be created, and how it applies to vehicles.
- Characteristics of conductors.

ELECTRICAL TERMS AND UNITS, RESISTORS, OHM'S LAW - 8 LEC 8 LAB HOURS
- Electrical terms and their relationship in a closed circuit.
- Metric prefixes and engineering notations, and their use in computations.
- Construction, ratings, and characteristics of fixed and variable resistors.
- Symbols and the resistor color code

- Solve problems using Ohm's Law.

SERIES CIRCUIT ANALYSIS - 4 LEC 4 LAB HOURS
- Calculation of resistance, voltage, and current in a series circuit.
- Use of meters to make measurements

PARALLEL CIRCUIT ANALYSIS - 4 LEC 4 LAB HOURS
- Calculation of resistance voltage and current in parallel circuits.
- Measure actual quantities.

SERIES-PARALLEL CIRCUIT ANALYSIS - 8 LEC 8 LAB HOURS
- Identification of series and parallel circuit components.
- Simplification of circuits for calculations.
- Calculation of power in the various components.
- Circuit diagnosis, including the causes, common location of, and repair of faults which cause electrical feedback in vehicle circuits.

VOLTAGE SOURCES, SWITCHES, PROTECTIVE DEVICES, WIRE AND CABLE - 8 LEC 8 LAB HOURS
- Batteries in series and in parallel and their effect on system voltage.
- Types of switches, fuses, and circuit breakers and their uses, ratings, and test procedures.
- Wire and cable gauge and resistance.

MAGNETISM, COILS, RELAYS, CAPACITORS - 8 LEC 8 LAB HOURS
- Magnetic materials and types of magnets.
- Basic rules regarding magnetic fields
- Magnetic Terms.
- Construction and operation of electromagnetic devices.
- Circuits using relays as switching devices.
- Capacitor construction, operation, and use.

DIODE THEORY AND USE - 8 LEC 8 LAB HOURS
- Diode operation.
- Proper biasing of diodes.
- Use of diodes as switches or "check valves."
- Use of diodes in rectifier circuits.
- Testing procedures.

TRANSISTOR AND SENSOR OPERATON AND USE - 12 LEC 12 LAB HOURS
- Theory and operation of bipolar transistors and their use in circuits as relays and amplifiers.
- Testing procedures.
- Basic operations and characteristics of selected additional solid-state devices used as sensors.
- Soldering and splicing techniques.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 022, Electronics Fundamentals
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012. ISBN: 013-254261-7.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#19

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 025, A-6 Alternative Course--Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 025
A-6 Alternative Course--Electrical Systems
Units: 2
Class Hours:

Lecture Hours: 32
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~32

PREREQUISITE(S) None

This course is a Bureau of Automotive Repair certified course. It is designed to prepare the student to pass the Alternative A-6 Electrical Systems exam.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 10
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	R3 - Repeatable x3
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

MODULE 1 - LEC 4 HOURS
Introduction
Pre-test
Review of the Pre-test
Safety

MODULE 2 - LEC 4 HOURS
Basic Test Equipment

MODULE 3 - LEC 4 HOURS
Introduction to Meters

MODULE 4 - LEC 4 HOURS
Meter Applications

MODULE 5 - LEC 4 HOURS
Schematics and Wiring Diagrams

MODULE 6 - LEC 4 HOURS
Electrical Problems

MODULE 7 - LEC 4 HOURS
Advance Meter Usage
Review

MODULE 8 - LEC 4 HOURS
Administer California Alternative A-6 Exam

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 025, A-6 Alternative Course--Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: CIAT. *Automotive Electrical and Electronic Systems*, ed. CIAT, 1997, ISBN: none. $48.

Recommended readings and/or materials.

None

Other ~~None~~

Examination fee is $35.00. The exam is graded by a state designee.

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category
~~Diversity~~

- **Communication Skills**	5 - Essential- always try to achieve
1. Students will read textbook assignments. Students will listen to lecture material and answer questions in class.	
- **Thinking and Reasoning**	5 - Essential- always try to achieve

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#20

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 032, Tune-Up
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 032
Tune-Up
Units: 5
Class Hours:

Lecture Hours: 64
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Tune-up procedures, including fuel, ignition, oscilloscope, emission control, and computer systems. Students furnish hand tools and safety equipment. Suggested preparation: Automotive Technology 002 or 006.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE ORIENTATION - 4 LEC 4 LAB HOURS
- Course content, goals, expectations, safety, and facility familiarization.

ENGINE OPERATION - 4 LEC 4 LAB HOURS
- Theory of engine operation as it relates to tune-up testing and repairs.

IGNITION SYSTEM - 12 LEC 12 LAB HOURS
- Theory of conventional and electronic ignition systems diagnosis, system testing and repairs.

OSCILLOSCOPE - 8 LEC 8 LAB HOURS
- Theory of scope diagnosis, basic patterns and testing procedures.

EMISSION CONTROLS - 12 LEC 12 LAB HOURS
• Theory of emission controls, identification of major pollutants and operation of emission devices.

COMPUTER CONTROLS - 12 LEC 12 LAB HOURS
• Theory of electronic engine controls. Unit covers application diagnosis and test procedures of typical computer controls.

ALTERNATIVE ASE PREPARATION - 12 LEC 12 LAB HOURS
• Review automotive theory, 5 gas analysis, on boar computer operations, ignition systems, fuel injection and carburetion.

TOTAL - 64 LEC 64 LAB HOURS

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 032, Tune-Up
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

Students will furnish basic hand tools, safety eye wear, protective clothing, and a valid drivers license. ($350.00 estimated cost)

Other

Automotive periodicals; Example: Underhood Service Magazine
Motor Magazine

Web Research; Example: autonews.com
Instructor handouts

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#21

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 033, A-8 Alternative Course--Engine Performance
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 033
A-8 Alternative Course--Engine Performance
Units: 2
Class Hours:

Lecture Hours: 32
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~32

PREREQUISITE(S) None

This course is a Bureau of Automotive Repair certified course. It is designed to prepare the student to pass the Alternative A-8 Engine Performance exam.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 10
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	R3 - Repeatable x3
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

MODULE 1 - LEC 4 HOURS
Introduction
Pre-test
Review of the Pre-test

MODULE 2 - LEC 4 HOURS
Basic Test Equipment

MODULE 3 - LEC 4 HOURS
Introduction to Oscilloscopes

MODULE 5 - LEC 4 HOURS

Diagnosing Electronically Controlled Fuel Systems

MODULE 6 - LEC 4 HOURS
Diagnosing Engine Mechanical Problems

MODULE 7 - LEC 4 HOURS
Four-Gas Exhaust Diagnosis

MODULE 8 - LEC 4 HOURS
Administer the California Alternative A-8 Exam

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 033, A-8 Alternative Course--Engine Performance
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: CIAT. *Engine Performance*, ed. CIAT, 1997, ISBN: none.

Recommended readings and/or materials.

None

Other

None

State approved examination, graded by state approved designee.

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1. Students will read textbook assignments. Students will listen to lecture material and answer questions in class.	
Thinking and Reasoning	5 - Essential- always try to achieve
1. Students must understand diagnostic procedures for diagnosing Engine Performance related problems.	
	4 - Very

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 043, Automatic Transmission Service
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 043
Automatic Transmission Service
Units: 4
Class Hours:

Lecture Hours: 32
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Theory, operation, diagnosis, and service procedures of automatic transmissions. Students furnish hand tools and safety equipment. Suggested preparation: Automotive Technology 002 or 006.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in automatic transmission fundamentals. Allow students to independently expand depth and breadth of automotive fundamentals knowledge.

INTRODUCTION TO AUTOMATIC TRANSMISSION OPERATING PRINCIPLES AND COMPONENTS - 8 LEC 24 LAB
• The student will gain an understanding of automatic transmission powerflow and hydraulic systems operation.
• The student will be able to identify the major components of the automatic transmission hydraulic system and gear train.

OVERHAUL AND SERVICE PROCEDURES: REAR WHEEL DRIVE - 8 LEC 24 LAB
• The student will learn proper overhaul and service techniques for various types of rear wheel drive transmissions.

OVERHAUL AND SERVICE PROCEDURES: FRONT WHEEL DRIVE - 8 LEC 24 LAB
• The student will learn proper overhaul and service techniques for various types of front wheel drive transmissions.

IN-THE-CAR TRANSMISSION SERVICE - 8 LEC 24 LAB
• The student will learn transmission removal and installation, minor service, and diagnosis procedures.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 043, Automatic Transmission Service
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

The student will provide safety glasses and a basic set of hand tools. A list of required tools will be given out in class. Approximate cost $350.

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1.

a. Listening Skills: Students will listen to the lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material.

b. Reading and Writing: Students will read textbook assignments and complete written study

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #23

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 044, Power Train Service
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 044
Power Train Service
Units: 4
Class Hours:

Lecture Hours: 32
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Theory, operation, diagnosis, and service of manual transmissions, transaxles, clutches, drive shafts, and differentials. This course also covers minor service of automatic transmissions. Students furnish hand tools and safety equipment. Suggested preparation: Automotive Technology 002 or 006.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

CLUTCH OPERATION AND SERVICE - 4 LEC 12 LAB HOURS
The student will learn clutch, basic operation, parts identification, and service procedures.

MANUAL TRANSMISSION OPERATION AND SERVICE (REAR WHEEL DRIVE). MANUAL TRANSAXLES (FRONT WHEEL DRIVE) - 10 LEC 30 LAB HOURS
The student will learn transmission and transaxles operation, power train, parts identification, and service procedures.

DRIVE SHAFT, UNIVERSAL AND CONSTANT VELOCITY JOINTS - 6 LEC 18LAB HOURS
The student will identify the basic types of drive shafts and joints. The student will also remove, replace, and service constant velocity and universal joints.

DIFFERENTIAL AND REAR AXLE OPERATION AND SERVICE - 4 LEC 12 LAB HOURS
Differential and rear axle operation, diagnostic, and service will be learned by the student.

TRANSFER CASE OPERATION AND SERVICE - 4 LEC 12 LAB HOURS
The student will demonstrate understanding of transfer case operation and identify basic transfer case parts.

AUTOMATIC TRANSMISSION MINOR SERVICE - 4 LEC 12 LAB HOURS
The student will demonstrate ability to perform automatic transmission fluid and filter changes and replace external transmission seals.

TOTAL - 32 LEC 96 LAB HOURS

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 044, Power Train Service
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

Automotive Periodicals; Example: Underhood Service Magazine
Motor Magazine
4X4 Magazine

Web Research Sites; Example: autonews.com

Instructor Handouts

Other

Students will furnish non-precision hand tools, safety goggles and protective clothing. ($350.00 - estimated cost)

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#24

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 053, Brakes
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 053
Brakes
Units: 4.5
Class Hours:

Lecture Hours: 48
Laboratory Hours: 80
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Theory of operation, diagnosis and service of drum, disc and anti-lock brake systems. Students must furnish hand tools and safety equipment. Suggested preparation: Automotive Technology 002 or 006.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION T0 COURSE - 6 LEC 10 LAB HOURS
1. Shop safety.
2. Special tools used in servicing brake systems.
3. How to read a micrometer and dial indicator.

BRAKE THEORY - 6 LEC 10 LAB HOURS
1. Theory of hydraulic brake components.
2. Basic theory of drum and disc brake systems.

DRUM BRAKE & DISC BRAKE BASIC INSPECTION ADJUSTMENT & SERVICE - 12 LEC 20 LAB HOURS:
1. Brake inspection procedures.

2. Remove and replace brake lining on drum brake training units.
3. Remove and replace brake pads on disc brake training units.
4. Bleed and adjust brakes on training units.

DISC BRAKE SYSTEM - 12 LEC 20 LAB HOURS
1. Component identification of the disc brake system.
2. How to inspect and service disc brakes.
3. How to use a dial indicator on rotors.
4. Operation of various disc brake hydraulic valves.

HYDRAULIC SYSTEMS AND A.B.S. SYSTEMS - 12 LEC 20 LAB HOURS
1. Hydraulic brake operation.
2. Master cylinder operation and service.
3. Wheel cylinder and caliper overhaul procedures.
4. A.B.S. (anti-lock brake system) operation and service.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 053, Brakes
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

Tools and safety equipment as specified in course outline, totaling approximately $250-$300

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1.

a. Listening Skills: Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#25

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 054, Front Ends
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 054
Front Ends
Units: 4.5
Class Hours:

Lecture Hours: 48
Laboratory Hours: 80
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Designed to instruct the student in the operation and service of the following: steering, suspension systems and wheel alignment procedures. Suggested preparation: Automotive Technology 002 or 006.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15751	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION TO FRONT ENDS - 6 LEC 10 LAB HOURS
1. Safety
2. Basic alignment angles
3. Front suspension & steering parts and inspection
4. Wheel alignment procedures (training aids)

SUSPENSION SYSTEMS - 6 LEC 10 LAB HOURS
1. Parts and operation
2. Suspension types
3. Rear suspension types
4. Shock absorbers

MANUAL & POWER STEERING SYSTEMS - 6 LEC 10 LAB HOURS
1. Operating principles
2. Re-circulating ball steering gear
3. Rack & pinion steering gear
4. Steering linkage
5. Power steering pumps

WHEEL ALIGNMENT SERVICE - 9 LEC 15 LAB HOURS
1. Diagnosing alignment problems
2. Alignment procedures

SUSPENSION SERVICE - 9 LEC 15 LAB HOURS
1. Wheel bearing service
2. Lubrication
3. Suspension inspection & service

STEERING SYSTEM SERVICE - 6 LEC 10 LAB HOURS
1. Manual steering service
2. Power steering service

FRONT WHEEL DRIVE SERVICE - 6 LEC 10 LAB HOURS
1. Drive axle inspection service
2. Four wheel drive service

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 054, Front Ends
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles,Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

Tools and safety equipment as specified in course overview. Students will furnish their own tools and safety equipment (approximately $250-$300).

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #26

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 062, Air Conditioning and Heating
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 062
Air Conditioning and Heating
Units: 3
Class Hours:

Lecture Hours: 36
Laboratory Hours: 60
Arranged Hours: None
Total Semester Contact Hours: ~~None~~96

PREREQUISITE(S) None

Operation, testing, and servicing of air conditioning and heating systems. Students must furnish hand tools and safety equipment. Suggested preparation: Automotive Technology 002 or 006. (Same as Diesel 062.)

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15751	I	1 30
SAM Priority Code:	B - Advance Occupational	**Repeatability:**	
TOPS Code:	-	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION AND BASIC THEORY - 12 HOURS
Course content, expectations, class organization, and shop safety. Theory of heat transfer, temperature, pressure, humidity, and comfort. Basic system operation. Operation and installation of diagnostic equipment.

SYSTEM COMPONENTS - 18 HOURS
Operation of compressors, clutches, expansion valves, pressure control devices, driers, and air conditioner and engine protective pressure and thermal switches.

ENGINE COOLING AND AIR CONDITIONING SYSTEM SERVICING - 12 HOURS
Diagnosis of engine cooling systems, problems including system flow, integrity, pump problems, belts.

SYSTEM DIAGNOSIS PROCEDURES - 18 HOURS
Troubleshooting of cycling clutch systems, evaporator pressure control systems, fixed tube systems, and diagnosis of specific problems in various components.

SYSTEM REPAIR AND COMPONENT REPLACEMENT - 18 HOURS
System flushing. Replacement of compressors, condensers, driers, evaporators, and metering and control devices. Recycle and Recovery Procedures.

VACUUM AND ELECTRICAL SYSTEMS - 18 HOURS
Operation, diagnosis, service, and replacement of vacuum motors and control valves. Analysis of blower systems and components.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 062, Air Conditioning and Heating
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

Students will furnish non-precision hand tools, safety goggles and protective clothing. (estimated cost: $300)

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1. LISTENING SKILLS: Students will listen to the lecture material, answer questions verbally in the classroom pertaining to the lecture presentations. Students will be encouraged to ask questions related to the course material.

READING AND WRITING SKILLS: Students will read textbook assignments and complete written worksheets.

Thinking and	5 - Essential-

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#27

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 008, Oxyacetylene-Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 008
Oxyacetylene-Arc Welding
Units: 3
Class Hours:

Lecture Hours: 16
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~112

PREREQUISITE(S) None

Technical knowledge and basic skills needed for occupational oxyacetylene and arc welding processes and applications. Students must furnish safety equipment. (Same as Automotive Technology 008 and Welding 008.)

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	D - Possible Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 03/04/12 by:Glen Hammonds
Divison Chair Approval Date: 03/06/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

WELDING SAFETY - LEC 5 / LAB 10 HOURS
An understanding of the safety rules and procedures involving oxyacetylene welding.

OXYACETYLENE WELDING EQUIPMENT - LEC 1 / LAB 5 HOURS
Different types of equipment available and how they function.

THE OXYACETYLENE PROCESS - LEC 1 / LAB 5 HOURS
How, why, and when the oxyacetylene process works and is used.

RUNNING BEADS AND OBSERVING RESULTS - LEC 2 / LAB 14 HOURS

Torch manipulation and when to use filler material to make a sound and proper weld.

BRAZING, USING THE OXYACETYLENE PROCESS - LEC 1 / LAB 14 HOURS
Light steel plate and cast iron brazing.

FLAME CUTTING - LEC 1 / LAB 14 HOURS
The how's, why's and where's of flame cutting.

WELDING SAFETY - LEC 1 / LAB 5 HOURS
An understanding of all safety practices relating to electric arc welding.

ARC WELDING EQUIPMENT - LEC 1 / LAB 5 HOURS
Insight into the uses and functions of the various pieces of equipment and supplies necessary to arc welding.

THE ARC WELDING PROCESS - LEC 2 / LAB 14 HOURS
How and why arc welding processes work.

WELDING METALLURGY - LEC 1 / LAB 10 HOURS
The basic metallurgical concepts involved with arc welding.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 008, Oxyacetylene-Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

William Bowditch and Kevin Bowditch, Welding Technology Fundamentals,The Goodheart-Wilcox Company, Inc. Tenly Park, Illinois, ISBN#1-56637-314-x

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1.	

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#28

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 013, Allison Transmission Service
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 013
Allison Transmission Service
Units: 5
Class Hours:

Lecture Hours: 64
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

A course of study designed to familiarize the student with the operation, service, overhaul, and troubleshooting procedures of Allison transmissions. Students must furnish hand tools and safety equipment.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15752	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R3 - Repeatable x3	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 02/28/12 by:Glen Hammonds
Divison Chair Approval Date: 02/29/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION, SAFETY, AND TOOLS - 2 Lec 2 Lab
Special tools and safety.

GENERAL TRANSMISSION INFORMATION. USE OF MANUALS, SERVICE, AND PARTS - 2 Lec 2 Lab
Proper use of manuals and layout.

GENERAL OVERHAUL INFORMATION - 2 Lec 2 Lab
Overhaul requirements.

TRANSMISSION DISASSEMBLY INTO SUB-ASSEMBLIES - 8 Lec 8 Lab
Overhaul procedures.

REBUILD OF SUB-ASSEMBLIES - 2 Lec 2 Lab
Rebuild methods.

TORQUE CONVERTERS, DESIGN, BASIC OPERATION - 2 Lec 2 Lab
Component names and operation.

PRINCIPLES OF PLANETARY GEARING AND GEAR RATIOS - 2 Lec 2 Lab
Component names and operation.

ALLISON TRANSMISSION OPERATION - POWER FLOW - 8 Lec 8 Lab
Operation of transmission ranges.

ASSEMBLY OF TRANSMISSION FROM SUB-ASSEMBLIES - 8 Lec 8 Lab
Proper assembly procedures.

BASIC HYDRAULIC PRINCIPLES AND FUNDAMENTALS - 2 Lec 2 Lab
Component names and operation.

APPLICATION OF HYDRAULICS TO THE ALLISON TRANSMISSION OPERATION - 8 Lec 8 Lab
Function and operation of hydraulic shift control.

BASIC ELECTRICAL AND ELECTRONIC THEORY - 2 Lec 2 Lab
OHMS law, circuits and component operation.

OPERATION AND USE OF MULTI-METERS, CONNECTORS, AND WIRING REPAIRS - 8 Lec 8 Lab
The operation and use of.

WORLD TRANSMISSION OPERATION AND DIFFERENCES - 2 Lec 2 Lab
Operation and component names.

TRANSMISSION AND ELECTRONICS DIAGNOSTIC TOOLS - 2 Lec 2 Lab
Required tools, use and operation of tools.

HYDRAULIC TRANSMISSION TROUBLESHOOTING - 2 Lec 2 Lab
Troubleshooting procedure.

WORLD TRANSMISSION TROUBLESHOOTING - 2 Lec 2 Lab
Troubleshooting procedure.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 013, Allison Transmission Service
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

 #29

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 015, Introduction to Heavy Duty Mobile Hydraulics
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 015
Introduction to Heavy Duty Mobile Hydraulics
Units: 4
Class Hours:

Lecture Hours: 64
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

This course presents operation and service procedures for hydraulic devices found on heavy duty diesel equipment and trucks. Students must furnish tools and own safety equipment.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15752	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 02/28/12 by:Glen Hammonds
Divison Chair Approval Date: 02/29/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION TO COURSE APPLICATIONS OF HYDRAULICS PHYSICAL ELEMENTS – 4 Lec 4 Lab
Force, Resistance, Motion, Forms of Energy, Pressure, Power.

HYDRAULIC TRANSMISSION OF FORCE – 12 Lec 12 Lab
Fluids and Liquids (molecule, compressibility), Energy Transmission, Force Transmission, Pascal's Law. Actuators (cylinders, motors), Pumps, Pressure Differential, Transmission Lines.

PUMPS AND PUMP REQUIREMENTS – 8 Lec 8 Lab
Types of Pumps, Inlet Requirements, Cavitation/Aeration, Component Diagnosis, Maintenance, Symbols/Graphic.

CONTROL VALVES – 12 Lec 12 Lab
Pressure Control, Volume Control, Direction Control, Counterbalance Values, Maintenance Requirements, Component Diagnosis, Safety Precautions, Symbols/Graphic.

ACTIVATORS – ~~12~~ 10 Lec ~~12~~ 10 Lab
Cylinders (single acting, double acting, multi-staged, cushions), Troubleshooting Cylinders, Motors (gear vane, piston) Symbols/Graphic, Safety Precautions.

FILTERS ~~= 8 Lec 8~~ – 6 Lec 6 Lab
Types, Maintenance, Reservoirs, Aux-Equipment.

HYDRAULIC LINES AND FITTINGS - 4 Lec 4 Lab
Types, Maintenance, and Assembly of Medium and High Pressure Lines and Fittings.

SCHEMATIC READING – 8 Lec 8 Lab
Symbol Reviews, Symbol Identification.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 015, Introduction to Heavy Duty Mobile Hydraulics
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Industrial Hydraulic Technology Bulletin 0232-B1, 2nd edition, Parker Fluid Power Group.

Other

$10.00 Safety Goggles

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1.

a. Listening Skills: Students will listen to the lecture material, answer questions verbally, in the classroom and the lab; pertaining to the lecture presentations. Students will be encouraged to ask

#30

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 021, Mid-Range Diesel Engine Service
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 021
Mid-Range Diesel Engine Service
Units: 4.5
Class Hours:

Lecture Hours: 48
Laboratory Hours: 80
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Troubleshooting and service and repair techniques for medium-duty diesel engines and fuel systems. Students must furnish own safety equipment.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	B - Advance Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/28/12 by:Glen Hammonds
Divison Chair Approval Date: 02/29/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

REVIEW OF BASIC THEORY, TOOLS, EQUIPMENT AND SAFETY - ~~3~~2 LEC ~~5~~4 LAB HOURS
Basic engine operation, proper use of shop equipment and tools, shop safety.

SERVICE REQUIREMENT - 6 LEC 10 LAB HOURS
Proper selection and use of engine oils, fuels, coolant, and service to filters.

FUEL SYSTEMS, TROUBLESHOOTING - ~~24~~20 LEC ~~40~~30 LAB HOURS
Diagnosis of a variety of domestic and foreign diesel engine fuel systems.

ALTERNATIVE FUEL (CNG) SYSTEMS - Lec 10 Lab 22
Safety, operation, servie, repair, and troubleshooting.

MINOR COMPONENT REPAIR - ~~15 LEC 25 LAB~~ 10 Lec 20 Lab HOURS
Techniques in removing and replacing engine accessories and fuel system components and minor repair procedures.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 021, Mid-Range Diesel Engine Service
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Norman / Corinchock. *Diesel Technology Fundamentals, Service, and Repair*, ed. Goodheart Wilcox, 2005, ISBN: 10: 1-59070-7.

Recommended readings and/or materials.

None

Other

Protective clothing and safety eye wear (estimated cost $20.00)

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills — 5 - Essential- always try to achieve

1.

a. Listening Skills: Students will listen to the lecture material, answer questions verbally, in the classroom and the lab; pertaining to the lecture presentations. Students will be encouraged to ask questions related to the course material.

b. Reading and writing: Students will read textbook assignments and complete written chapter assignments. Students will complete written lab assignments upon completion of assigned lab work.

Thinking and Reasoning — 5 - Essential- always try to achieve

1.

#31

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 022, Electronics Fundamentals
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 022
Electronics Fundamentals
Units: 5
Class Hours:

Lecture Hours: 64
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Introduction to the basic operating principles of electrical and electronic devices used in motor vehicles.
Suggested preparation: Automotive Technology 002 or 006. (Same as Automotive Technology 022.)

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/28/12 by:Glen Hammonds
Divison Chair Approval Date: 02/29/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE ORIENTATION ELECTRICAL SOURCES CHARACTERISTICS OF MATERIALS - 4 Lec 4 Lab
1. Course content, expectations, and safety.
2. Brief history of electricity and electronics as applied to motor vehicles.
3. The various ways electrical current can be created, and how it applies to vehicles.
4. Characteristics of conducts.

ELECTRICAL TERMS AND UNITS, RESISTORS, OHM'S LAW - 8 Lec 8 Lab
1. Electrical terms and their relationship in a closed circuit.
2. Metric prefixes and engineering notations, and their use in computations.
3. Construction, ratings, and characteristics of fixed and variable resistors.
4. Symbols and the resistor color code.

5. Solve problems using Ohm's Law.

SERIES CIRCUIT ANALYSIS - 4 Lec 4 Lab
1. Calculation of resistance, voltage, and current in a series circuit.
2. Use of meters to make measurements.

PARALLEL CIRCUIT ANALYSIS - 4 Lec 4 Lab
1. Calculation of resistance voltage and current in parallel circuits.
2. Measure actual quantities.

SERIES-PARALLEL CIRCUIT ANALYSIS - 8 Lec 8 Lab
1. Identification of series and parallel circuit components.
2. Simplification of circuits for calculations.
3. Calculations of power in the various components.
4. Circuit diagnosis, including the causes, common location of, and repair of faults which cause electrical feedback in vehicle circuits.

VOLTAGE SOURCES, SWITCHES, PROTECTIVE DEVICES, WIRE AND CABLE - 8 Lec 8 Lab
1. Batteries in series and in parallel and their effect on system voltage.
2. Types of switches, fuses, and circuit breakers and their uses, ratings, and test procedures.
3. Wire and cable gauge and resistance.

MAGNETISM, COILS, RELAYS, CAPACITORS - 8 Lec 8 Lab
1. Magnetic materials and types of magnets.
2. Basic rules regarding magnetic fields.
3. Magnetic Terms.
4. Construction and operation of electromagnetic devices.
5. Circuits using relays as switching devices.
6. Capacitor construction, operation, and use.

DIODE THEORY AND USE - 8 Lec 8 Lab
1. Diode operation.
2. Proper biasing of diodes.
3. Use of diodes as switches or "check valves".
4. Use of diodes in rectifier circuits.
5. Testing procedures.

TRANSISTOR AND SENSOR OPERATION AND USE - 12 Lec 12 Lab
1. Theory and operation of bipolar transistors and their use in circuits as relays and amplifiers.
2. Testing procedures.
3. Basic operations and characteristics of selected additional solid-state devices used as sensors.
4. Soldering and splicing techniques.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 022, Electronics Fundamentals
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #32

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 025, Diesel and Heavy Duty Vehicle Engine Overhaul
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 025
Diesel and Heavy Duty Vehicle Engine Overhaul
Units: 8
Class Hours:

Lecture Hours: 64
Laboratory Hours: 192
Arranged Hours: None
Total Semester Contact Hours: ~~None~~256

PREREQUISITE(S) None

Overhaul and repair of heavy duty diesel engines. Designed to acquaint the student with the theory of operation, trouble diagnosis, service and repair of two and four-cycle heavy duty diesel engines.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 02/29/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

GENERAL SHOP SAFETY TOOLS OF THE TRADE - ~~2~~ 1 Lec ~~6~~ 3 Lab
Proper shop safety procedures.
Tool description and proper use.
Types and proper use of measuring instruments.

REVIEW OF TWO AND FOUR-CYCLE ENGINE PRINCIPLES AND DESIGN TYPES OF FOUR-CYCLE DIESEL COMBUSTION SYSTEMS - ~~2~~ 1 Lec ~~6~~ 3 Lab
Theory and principles of four-cycle diesel engines identification of different types of combustion systems.

CYLINDER HEAD SERVICE AND REPAIR - 8 Lec 24 Lab
Ability to remove and install cylinder heads, Identification of components and knowledge of their functions.
Ability to clean, inspect, and measure for wear limits.

Service and repair cylinder heads and related components on four-cycle heavy diesel engines.

CYLINDER BLOCK SERVICE AND REPAIRS - 40 Lec 120 Lab
Ability to disassemble, clean, and inspect two and four cycle cylinder blocks.
Ability to pressure test and inspect blocks.
Inspection, service, and installation of the following in cylinder blocks:
- Crank shaft and bearing
- Cam shaft and bearing
- Cylinder linears
- Pistons, piston rings, and connecting rods.

LUBRICATION SYSTEMS - 4 Lec 12 Lab
The function, service, and repair of four-cycle diesel engine lube system components and passages.

COOLING SYSTEMS - 4 Lec 12 Lab
The function, service, and repair of the two and four cycle diesel engines cooling system components and passages.

EXHAUST / AFTER-TREATMENT SYSTEMS - 2 Lec 6 Lab
Operation, service and repair of diesel exhaust after-treatment components.

START UP AND TUNE- UP AND ADJUSTMENT PROCEDURES - 4 Lec 12 Lab
Ability to start, test, and adjust four-cycle heavy duty diesel engines.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 025, Diesel and Heavy Duty Vehicle Engine Overhaul
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Norman / Corinchock. *Diesel Technology: Fundamentals, Service, and Repair*, ed. Goodheart / Wilcox, 2005, ISBN: 1-59070-770-2.

Recommended readings and/or materials.

As assigned or provided by instructor.

Other

Protective clothing and safety eye wear (estimated cost $20.00)

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

#33

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 032, Diesel Fuel Injection Systems Service
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 032
Diesel Fuel Injection Systems Service
Units: 5
Class Hours:

Lecture Hours: 48
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~144

PREREQUISITE(S) None

Theory, testing, and service of mechanical and electronic diesel fuel injection systems. Engine tune-up and troubleshooting techniques on current production heavy-duty diesel engines. Students must furnish safety equipment and protective clothing.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 02/29/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in fuel systems. Allow students to independently expand depth and breath of fuel system knowledge.

SHOP AND TOOL SAFETY - 0.5 HOURS
Shop, hand tool, and equipment safety practices.

DIESEL ENGINE OPERATION - 1 HOUR
Operation of two and four cycle diesel engines.

MECHANICAL DIESEL FUEL INJECTION SYSTEMS COMPONENTS AND OPERATION - 1 HOUR
Mechanical fuel injection components operation.

MECHANICAL DIESEL FUEL INJECTION SYSTEMS SERVICE AND REPAIR - 1

~~.5 HOURS~~

HOURS
Procedures used to service and repair systems and components.

MECHANICAL DIESEL FUEL INJECTION SYSTEM TUNE-UP -

~~2~~

1.5 HOURS
Proper tune-up procedures.

MECHANICAL DIESEL FUEL INJECTION SYSTEM TROUBLESHOOTING PROCEDURES - 1.5 HOURS
Troubleshoot systems and components.

ELECTRONIC DIESEL FUEL INJECTION SYSTEMS COMPONENTS AND OPERATION - 1.5 HOURS
Function of components used on electronic diesel injection systems.

ELECTRONIC DIESEL FUEL INJECTION SYSTEMS SERVICE AND REPAIR - 1.5 HOURS
Ability to service and repair electronic fuel system components.

ELECTRONIC DIESEL FUEL INJECTION SYSTEM TUNE-UP - 2.5 HOURS
Ability to tune-up electronic injection systems.

ELECTRONIC DIESEL FUEL INJECTION SYSTEMS TROUBLESHOOTING PROCEDURES - 2.5 HOURS
Ability to troubleshoot electronic fuel injection systems using standard industry diagnostic equipment.

LNG FUELED HEAVY DUTY ENGINE FUEL SYSTEMS 1.5 HOURS Ability to service and repair LNG Fuel Systems.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 032, Diesel Fuel Injection Systems Service
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Norman / Corinchock. *Diesel Technology Fundamentals Service and Repair*, ed. Goodheart / Wilcox, 2005, ISBN: 1-59070-770-2.

Recommended readings and/or materials.

None

Other

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #34

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 040, Diesel Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 040
Diesel Electrical Systems
Units: 5
Class Hours:

Lecture Hours: 48
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~144

PREREQUISITE(S) None

Diagnosis, service, and repair procedures for starting, charging, lighting, and instrument systems. Students furnish safety equipment and protective clothing.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 03/02/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE ORIENTATION / SCHEMATICS Lec 6 hrs Lab 12 hrs Course content, expectations, class organization, and shop safety. Use of wiring diagrams. Wiring terminals and connectors. Wire, cable, and harness construction. Circuit troubleshooting.

BATTERIES Lec 3 hrs Lab 6 hrs Battery construction, operation, rating methods, testing, and servicing.

STARTING SYSTEMS Lec 9 hrs Lab 18 hrs Systems wiring and diagnosis. Switches, relays, and solenoids. Motor overhaul and bench testing.

CHARGING SYSTEMS Lec 9 hrs Lab 18 hrs Regulator operation. System wiring and diagnosis. Generator (alternator) construction and operation, overhaul, and bench testing procedures.

LIGHTING CIRCUITS Lec 6 hrs Lab 12 hrs Testing, adjustment, and repair of: headlamp, tail and park lamp, turn signal and hazard lamp, back-up lamp, interior and instrument lamp circuits and components.

INDICATING INSTRUMENTS Lec 6 hrs lab 12 hrs Operation, testing, and repair of: gauges, transmitters, lamps, thermal and pressure "a" switches, and fuel gauge circuits.

DIESEL ENGINE ELECTRONIC CONTROL SYSTEMS Lec 6 hrs Lab 12 hrs Operation, service, and repair of diesel engine electronic controls, CAN and multiplexing systems used by the transportation industry.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 040, Diesel Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Bell, Joseph A.. *Modern Diesel Technology Electricity and Electronics*, ed. Thompson, 2008, ISBN: 1-4018-8013-4.

Recommended readings and/or materials.

None

Other ~~None~~

Student will supply safety eye wear and protective clothing. Estimated cost $20.00.

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category
~~Thinking and Reasoning~~
~~Information Management~~
~~Diversity~~
~~Civic Responsibility~~
~~Life Skills~~
~~Careers~~

-	------ 5 - Essential- always try to achieve
Communication Skills	

1. Listening and SpeakingStudents will listen to lecture material, answer questions verbally in the classroom and the lab pertaining to the lecture presentations. Students will be encouraged to ask questions related to course material 2. Reading and WritingStudents will read textbook assignments on completion of assigned lab work. Students will complete written assignments upon completion of assigned lab work.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#35

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 050, Transport Refrigeration
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 050
Transport Refrigeration
Units: 8
Class Hours:

Lecture Hours: 96
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~192

PREREQUISITE(S) None

Theory and operation of truck, trailer, and container single and multi-temperature refrigeration, electrical and microprocessor control systems used on current production Carrier and Thermo King units. Service, repair, and troubleshooting procedures used by the industry will be covered.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 03/02/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

TRANSPORT REFRIGERATION SAFETY - ~~3 Lec 3~~ 1.5 Lec 1.5 Lab
Common safety practices used by the industry.

CARB REQUIRED TRU-REGULATIONS 1.5 Lec 1.5 Lab California Regulations for Transport Refrigeration Units.

PRE-TRIP AND START-UP PROCEDURES - 3 Lec 3 Lab
Inspections, checkout, and start-up procedures on truck and trailers units.

REFRIGERATION SYSTEM FUNDAMENTALS, BASIC THEORY DEFINITIONS - 3 Lec 3 Lab
Fundamentals and terminology of refrigeration systems.

BASIC REFRIGERATION CYCLE - 3 Lec 3 Lab
Function and operation of the basic refrigeration cycle.

REFRIGERATION SYSTEMS COMPONENTS, OPERATION, AND DESCRIPTION - 6 Lec 6 Lab
Ability to identify and know the operation and location of system component.

CARRIER TRANSICOLD REFRIGERATION SINGLE AND MULTI-TEMP SYSTEMS - 6 Lec 6 Lab
Components and system operation in cool, heat and defrost, single and multi-temps units.

THERMO KING REFRIGERATION SINGLE AND MULTI-TEMP SYSTEMS - 6 Lec 6 Lab
Components and systems operation in cool, heat, and defrost, single and multi-temp units.

REFRIGERATION AND REFRIGERANT OILS - 6 Lec 6 Lab
Different types of refrigerants and oil.

TOOLS AND EQUIPMENT - 3 Lec 3 Lab
Proper use and handling of service tools and equipment

REFRIGERATION SYSTEM SERVICE PROCEDURES AND TROUBLESHOOTING: THERMO KING, CARRIER TRANSICOLD - 9 Lec 9 Lab
Ability to service and troubleshoot the refrigeration system using proper test equipment and tools.

REFRIGERATION SYSTEM COMPONENT REPAIR - 3 Lec 3 Lab
Ability to repair or replace system components.

REFRIGERATION SYSTEM CLEAN-UP - 3 Lec 3 Lab
Ability to use clean-up tools and properly clean a contaminated system.

SILVER BRAZING, SOFT SOLDERING AND OXYACETYLENE SAFETY - 3 Lec 3 Lab
Proper safety procedures and methods of silver brazing and soft soldering flares and swedge connections.

DIRECT CURRENT ELECTRICAL THEORY - 3 Lec 3 Lab
Electron theory and Ohms law.

ELECTRICAL COMPONENTS AND SYMBOLS - 3 Lec 3 Lab
Ability to identify components and symbols.

WIRING DIAGRAMS AND SCHEMATICS FOR THERMO KING - 3 Lec 3 Lab
Ability to read and use Thermo King schematics and wiring diagrams.

WIRING DIAGRAMS AND SCHEMATICS FOR CARRIER TRANSICOLD - 3 Lec 3 Lab
Ability to read and use Carrier Transicold schematics and wiring diagrams.

ELECTRICAL TEST METERS - 3 Lec 3 Lab
Proper use of meters and test procedures.

CARRIER TRANISCOLD ELECTRICAL CIRCUITS OPERATION AND TEST OF BASIC AND OPTIONAL EQUIPMENT - 9 Lec 9 Lab
Ability to test electrical components and circuits on Thermo Kings units.

THERMO KING ELECTRICAL CIRCUITS OPERATION AND TESTING OF BASIC AND OPTIONAL EQUIPMENT - 9 Lec 9 Lab
Ability to test electrical components and circuits on Thermo King units.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #36

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 055, Marine Container Refrigeration
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 055
Marine Container Refrigeration
Units: 4
Class Hours:

Lecture Hours: 64
Laboratory Hours: 64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Theory of operation of refrigeration, electrical, electronic and microprocessor controller systems used by Thermo King and Carrier on current production marine container refrigeration units. Service, repair, and troubleshooting procedures used by the industry will be covered.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15752	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R2 - Repeatable x2	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 03/02/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTIONS, SAFETY AND SHOP EQUIPMENT - LEC 2.0 HOURS
The student will learn the proper use of special tools and all safety requirements when working on high voltage units.

FUNDAMENTALS OF REFRIGERATION, HEAT TRANSFER, BASIC REFRIGERATION CYCLE, COMPONENTS AND REFRIGERANT PRESSURE-TEMPERATURE RELATIONSHIPS - LEC 2.0 / LAB 4.0 HOURS
The student will be able to describe the operation of a basic refrigeration system, I.D. system components and determine refrigerant pressure-temperature relationships at various temperatures and pressures.

INSTALLATION AND REMOVAL PROCEDURES OF MANIFOLD GAUGE SETS - LEC 2.0 / LAB 2.0

HOURS
The student will be able to install and remove gauge sets per the EPA 608 regulations.

REFRIGERATION SYSTEM PRESSURE READINGS - LEC 2.0 / LAB 2.0 HOURS
The student will learn to interrupt system pressure readings at various temperatures.

CARRIER REFRIGERATION SYSTEM COMPONENTS AND OPERATION - LEC 4.0 / LAB 4.0 HOURS
The student will learn the operation of Carrier system components in cool, heat, null and defrost modes.

THERMO KING SYSTEMS COMPONENTS AND OPERATION - LEC 4.0 / LAB 4.0 HOURS
The student will learn the operation of Thermo King system components in cool, heat, null and defrost modes.

REFRIGERANTS AND OILS - LEC 2.0 / LAB 2.0 HOURS
The student will learn the proper handling and use of the various types of refrigerants and oils used by the industry.

REFRIGERATION SYSTEM SERVICE TOOLS AND EQUIPMENT - LEC 2.0 / LAB 2.0 HOURS
The student will learn the proper use of special refrigeration service tools and equipment.

REFRIGERATION SYSTEM SERVICE PROCEDURES, COMPONENT REPAIR AND SYSTEMS TROUBLESHOOTING: CARRIER UNITS, THERMO KING UNITS - LEC 16.0 / LAB 16.0 HOURS
The student will be able to perform the required refrigeration system service procedures, component repair and troubleshooting methods required of certified technicians on Carrier and Thermo King marine container refrigeration systems.

BASIC ELECTRICAL/ELECTRONIC THEORY - LEC 2.0 / LAB 2.0 HOURS
DIGITAL MULTI-METER OPERATION
The student will learn the principles of basic electrical and electronic theory. Proper digital multi-meter operation to measure volts, ohms, and current.

ELECTRICAL AND ELECTRONIC COMPONENTS OPERATION - LEC 4.0 / LAB 4.0 HOURS
The student will develop the understanding of the operation of electrical/electronic components used on marine container units.

CARRIER MARINE CONTAINER ELECTRICAL/ ELECTRONIC SYSTEM OPERATION - LEC 4.0 / LAB 4.0 HOURS
The student will be able to understand the various operating modes of Carrier container unit electrical/electronic systems and components.

THERMO KING CONTAINER ELECTRICAL/ELECTRONIC SYSTEM OPERATION - LEC 4.0 / LAB 4.0 HOURS
The student will be able to understand the various operating modes of Thermo King container unit electrical/electronic systems and components.

ELECTRICAL/ELECTRONIC SYSTEM WIRING/SCHEMATIC DIAGRAMS: CARRIER UNITS, THERMO KING UNITS - LEC 8.0 / LAB 8.0 HOURS
The student will be able to read, understand and use Carrier and Thermo King wiring and schematic diagrams for electrical/electronic systems troubleshooting.

MARINE CONTAINER GENERATOR THEORY OF OPERATION - LEC 2.0 / LAB 2.0 HOURS
The student will understand the theory of operation of high voltage alternating current generators.

GENERATOR SERVICE, REPAIR AND TROUBLESHOOTING PROCEDURES - LEC 4.0 / LAB 4.0 HOURS

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#37

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 062, Air Conditioning and Heating
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 062
Air Conditioning and Heating
Units: 3
Class Hours:

Lecture Hours: 36
Laboratory Hours: 60
Arranged Hours: None
Total Semester Contact Hours: ~~None~~96

PREREQUISITE(S) None

Operation, testing, and servicing of air conditioning and heating systems. Students must furnish hand tools and safety equipment. Suggested preparation: Automotive Technology 002 or 006. (Same as Automotive Technology 062.)

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15752	I	1	30
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 03/02/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

INTRODUCTION AND BASIC THEORY - 12 HOURS
Course content, expectations, class organization, and shop safety. Theory of heat transfer, temperature, pressure, humidity, and comfort. Basic system operation. Operation and installation of diagnostic equipment.

SYSTEM COMPONENTS - 18 HOURS
Operation of compressors, clutches, expansion valves, pressure control devices, driers, and air conditioner and engine protective pressure and thermal switches.

ENGINE COOLING AIR CONDITIONING SYSTEM SERVICING - 12 HOURS
Diagnosis of engine cooling systems, problems, including system flow, integrity, pump problems, belts, fan

clutch, and thermostat. Air conditioner discharging, evacuation and recharging procedures.

SYSTEM DIAGNOSIS PROCEDURES - 18 HOURS
Troubleshooting of cycling clutch (aftermarket) systems, evaporator pressure control systems, fixed orifice tube systems, and diagnosis of specific problems in various components.

SYSTEM REPAIR COMPONENT REPLACEMENT - 18 HOURS
System flushing. Replacement of compressors, condensers, driers, evaporators, and metering and control devices. Recycle and Recovery Procedures.

VACUUM AND ELECTRICAL SYSTEMS - 18 HOURS
Operation, diagnosis, service, and replacement of vacuum motors and control valves. Analysis of blower systems and components.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 062, Air Conditioning and Heating
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

None

Other

Students will furnish non-precision hand tools. Safety goggles and protective clothing. ($300.00 estimated cost)

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1.

LISTENING SKILLS
Students will listen to the lecture material, answer questions verbally in the classroom pertaining to the lecture presentations. Students will be encouraged to ask questions related to the course material.

#38

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 068, Transit Vehicle Engines
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 068
Transit Vehicle Engines
Units: 0.8
Class Hours:

Lecture Hours: 27
Laboratory Hours: 15
Arranged Hours: None
Total Semester Contact Hours: ~~None~~42

PREREQUISITE(S) None

Designed to acquaint the student with the basic theory of operation, diagnostic and troubleshooting techniques, repair and service of engines.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15753	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 03/02/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

ENGINE THEORY 3 HOURS Service topics, basic engine principles, horsepower

GENERAL CONSTRUCTION I 3 HOURS Engine components, disassembly

GENERAL CONSTRUCTION II 3 HOURS Engine components, disassembly

UPPER ENGINE COMPONENTS 3 HOURS Analysis failure, upper engine disassembly

LOWER ENGINE COMPONENTS 3 HOURS Cylinder blocks and kits, crankshafts, crankshaft disassembly

MECHANICAL FUEL SYSTEM 3 HOURS Fuel systems, fuel system disassembly, fuel injectors, fuel injector disassembly

AIR SYSTEM 3 HOURS Air system components, blowers, blower disassembly, turbo charger disassembly, air system troubleshooting

LUBRICATION SYSTEM 3 HOURS Lubrication, oil pumps, oil coolers, troubleshooting, Disassembly/assembly

COOLING SYSTEMS 3 HOURS Cooling system components, types of cooling systems

GOVERNORS 3 HOURS Governor components, governor disassembly

MECHANICAL ENGINE TUNE-UP 3 HOURS Tune-up and troubleshooting procedures, tune-up mechanical engines.

ELECTRICAL ENGINE TUNE-UP 3 HOURS DDEC II, basic electricity, DDEC II components, DDED II engine hardware

CUMMINS M11 3 HOURS C select familiarization, tune-up and troubleshooting

MODULE REVIEW AND TEST 3 HOURS

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 068, Transit Vehicle Engines
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication	5 - Essential-

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#39

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 069, Paratransit Driver Training
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 069
Paratransit Driver Training
Units: 1
Class Hours:

Lecture Hours: 30
Laboratory Hours: 24
Arranged Hours: None
Total Semester Contact Hours: ~~None~~54

PREREQUISITE(S) None

Orientation to paratransit bus system defensive driving techniques, equipment orientation, performance of pre-operation, inspections, customer escorting techniques, operation of lifts and proper use of equipment restraints, Americans with Disabilities Act policies and procedures, and Orange County Transit Authority requirements for servicing the disabled.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/01/12 by:Glen Hammonds
Divison Chair Approval Date: 03/06/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in paratransit driver training fundamentals. Allow students to independently expand depth and breadth of paratransit driver training fundamentals knowledge.

ORIENTATION 4 HOURS
Module I: Introduction, Paratransit Driver Training overview/objectives, training uniform standards, grooming and appearance standards, training attendance police, licensing regulations, GPPV rules and regulations, paratransit services.

EQUIPMENT OPERATION 4 HOURS
Module II: Equipment policies, vehicle specification, vehicle specification, vehicle pre-operation inspection.

EXAM 2 HOURS Exam on Modules I & II

DEFENSIVE DRIVING ACCIDENT PREVENTION 4 HOURS
Perfect trip, accident prevention formula,

per

pre-operation inspection, skill course, wheelchair securement, road training driving in adverse condition, accident reporting procedures, emergency procedures.

EQUIPMENT ORIENTATION 4 HOURS Contractor Site

BEHIND THE WHEEL TRAINING 4 HOURS Contractor Site

EXAM 2 HOURS Exam on Modules III & IV; Module VII; Record Keeping, trip sheet; Module VIII; Radio communications.

BEHIND THE WHEEL TRAINING 4 HOURS Contractor Site

EXAM 2 HOURS Exam on Modules VII & VIII; Module IX; Customer awareness, passenger handling, empathy, wheelchair, securement, classroom, passenger escorting techniques

LABORATORY 24 HOURS Pre-operation Inspection, yard safety procedures, bus fleet orientation, defensive driving techniques, bus operation bases, customer service.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 069, Paratransit Driver Training
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#40

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 070, Bus Driver Training
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 070
Bus Driver Training
Units: 2.3
Class Hours:

Lecture Hours: 58
Laboratory Hours: 56
Arranged Hours: None
Total Semester Contact Hours: ~~None~~114

PREREQUISITE(S) None

Orientation to the fixed route bus system, defensive driving techniques, equipment orientation, including performance of pre-trip inspections, Americans with Disabilities Act (ADA) policies and procedures, customer service techniques, and an introduction to internal system knowledge such as transit terminology and bus route information. Students must pass all written exams with a score of 80% or better.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/01/12 by:Glen Hammonds
Divison Chair Approval Date: 03/06/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

ORIENTATION MODULE I 4 HOURS
Provide the student with program rules, regulations, policies and procedures, and various types of transit services.

EQUIPMENT OPERATION MODULE II 4 HOURS
Introduce the student to equipment policies, specifications and pre-trip inspection.

DEFENSIVE MODULE III 3 HOURS
Defensive driving-accident prevention, introduction to rules, regulations, policies, and procedures for operation of commercial vehicles for the prevention of accidents.

DEFENSIVE MODULE IV 9 HOURS
Defensive driving-accident/emergencies, introduction to adverse driving conditions, and defenses to avoid accidents. Emergency procedures, policies, and documentation of incidents and emergency occurrences.

INTERNAL MODULE V 12 HOURS
Internal system knowledge/radio communication, internal information required for successful operation of the transit system bus route. Introduction to radio communication, policies, and procedures. Types of customers, services, and method of fare payment. Identifying transfer points and issuance of day passes. Operation of the transit vehicle fare box.

CUSTOMER SERVICE 6 HOURS
Assessment of your own professional image. Principals of communication. Transit operators' role in providing excellent customer service. Policies and goals when dealing with difficult customers. The American Disabilities Act and how if affects transit operations. Disability and empathy training.

TRANSIT SYSTEM 8 HOURS
Introduction to the Orange County Transportation Authority fixed route bus system.

EXAM 12 HOURS

LABORATORY 56 HOURS
Pre-trip inspection, yard safety procedures, bus fleet orientation, defensive driving techniques, bus operation bases, transit terminals, operating a route, paddles, route of the line sheets, transit terminals, transfer points, and customer service.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 070, Bus Driver Training
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Tranportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#41

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 071, Introduction to Coach Operations
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 071
Introduction to Coach Operations
Units: 0.3
Class Hours:

Lecture Hours: 18
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~18

PREREQUISITE(S) None

To provide students with an overview of the Certified Maintenance Course. Covers ground rules and expectations. Discusses safety issues and familiarizes students with the proper use of hand tools. Includes overview of the functions and procedures for the preventive maintenance on a bus.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	10
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/03/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in paratransit driver training fundamentals. Allow students to independently expand depth and breadth of paratransit driver training fundamentals knowledge.

Introduction 2 HOURS Ground rules are explained with expectations.

Hand Tools 4 HOURS Safety issues are covered with proper use of hand tools.

Preventive Maintenance 3 HOURS Familiarize students with functions and different types of preventive

maintenance.

Oil and Grease 3 HOURS Using oil and grease in bus maintenance.

Oil and Fuel 3 HOURS Using

~~oil~~

oils and

~~fuel~~

fuels in bus maintenance.

Filters and Module 3 HOURS Using filters and module in bus maintenance.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 071, Introduction to Coach Operations
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1. Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material. Student will complete all reading and writing assignments given in class.	
Thinking and	5 - Essential-

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#42

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 072, Transit Vehicle Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 072
Transit Vehicle Electrical Systems
Units: 0.2
Class Hours:

Lecture Hours: 26
Laboratory Hours: 10
Arranged Hours: None
Total Semester Contact Hours: ~~None~~36

PREREQUISITE(S) None

To provide students with functions and components of the electrical systems on a bus. Principles of electricity and safety with an overview of troubleshooting techniques for both conventional and computer controlled buses.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/03/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in repair of the bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

INTRODUCTION 4 HOURS
Overview of electrical systems.

SAFETY 6 HOURS
Safety issues are covered with proper use of electricity.

CONVENTIONAL BUSES 8 HOURS
Familiarize students with functions and different types of conventional controlled buses.

COMPUTER BUSES 8 HOURS
Familiarize students with functions and different types of conventional computer buses.

LABORATORY 10 HOURS
Hands-on skills with wiring, batteries and charging, relays, solenoids, schematics, logic controllers.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 072, Transit Vehicle Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills — 5 - Essential- always try to achieve

1.

Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material. Students will complete all reading and writing assignments given in class.

Thinking and Reasoning — 5 - Essential- always try to achieve

1. Students are encouraged to use a systematic approach to analyzing and solving problems on coach systems. Students will perform tests, inspections and measurements to analyze system problems. Students will study and comply with State and Federal laws concerning coach system repairs.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #43

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 073, Transit Vehicle Air Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 073
Transit Vehicle Air Systems
Units: 0.2
Class Hours:

Lecture Hours: 8
Laboratory Hours: 4
Arranged Hours: None
Total Semester Contact Hours: ~~None~~12

PREREQUISITE(S) None

To provide students with functions and components of the air systems on a bus. Principles of air supply and safety with an overview of troubleshooting techniques for both conventional and computer controlled buses.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15753	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 03/03/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in repair of the bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

INTRODUCTION LEC 3 / LAB 1 HOURS
Air systems overview, compressor review, wipers and washers, air circulation systems.

AIR DRYER

~~LEC 3~~

LEC 2 / LAB 2 HOURS
Air dryer purpose and function, types of air dryers.

DOORS LEC 2 / LAB 1 HOURS
Operation and troubleshooting on air door systems.

REVIEW AND

~~TEST~~

TEST LEC 1 HOUR

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 073, Transit Vehicle Air Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills — 5 - Essential- always try to achieve

1.

Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material. Students will complete all reading and writing assignments given in class.

Thinking and Reasoning — 5 - Essential- always try to achieve

1. Students are encouraged to use a systematic approach to analyzing and solving problems on coach systems. Students will perform tests, inspections and measurements to analyze system

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#44

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 075, Transit Vehicle Automatic Transmissions
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 075
Transit Vehicle Automatic Transmissions
Units: 0.5
Class Hours:

Lecture Hours: 18
Laboratory Hours: 6
Arranged Hours: None
Total Semester Contact Hours: ~~None~~24

PREREQUISITE(S) None

Designed to acquaint the student with the basic theory of operation, diagnostic and troubleshooting techniques, repair and service of automatic transmissions.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/03/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in repair of the bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

THEORY 3 HOURS
History of Detroit Diesel Allison, service manuals, transmission applications, general construction.

DISASSEMBLY 3 HOURS
Disassembly procedures, transmission disassembly.

TORQUE CONVERTERS 3 HOURS
Torque converter assembly, torque converter principles, disassembly.

PLANETARY SYSTEMS 3 HOURS
Basic laws of planetary gearing, gear identification, transmission assembly.

POWER FLOWS 3 HOURS
Power flow ranges, transmission assembly.

HYDRAULICS: VALVE BODIES 3 HOURS
Hydraulic theory, valve bodies, transmission assembly.

PREVENTIVE MAINTENANCE (DIAGNOSTICS) 3 HOURS
Preventive maintenance, troubleshooting procedures, using the

~~troubleshoot~~

troubleshooting chart.

TROUBLESHOOTING THE ATEC 3 HOURS
HT748 automatic transmission components, computerized system.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 075, Transit Vehicle Automatic Transmissions
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1.

Students will listen to lecture material. They will answer questions verbally in the classroom and

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#45

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 077, Transit Vehicle Heating, Ventilation, Air Conditioning
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 077
Transit Vehicle Heating, Ventilation, Air Conditioning
Units: 0.5
Class Hours:

Lecture Hours: 18
Laboratory Hours: 6
Arranged Hours: None
Total Semester Contact Hours: ~~None~~24

PREREQUISITE(S) None

Designed to acquaint the student with the basic theory of operation, diagnostic and troubleshooting techniques, repair and service of heating, air conditioning and ventilating buses.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/04/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in repair of the bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

HVAC THEORY 4 HOURS
Air conditioning theory, systems, safety, servicing bus components, heating systems, preventive maintenance.

SERVICING A/C EQUIPMENT 4 HOURS
Safety, servicing bus components, heating systems, preventive maintenance.

COMPRESSOR DISASSEMBLY 4 HOURS
Compressor overview, troubleshooting – compressors, disassembly.

ELECTRICAL DIAGRAMS SCHEMATICS TROUBLESHOOTING 4 HOURS
Electrical schematics, reading Thermo-King schematics, adjusting the Trane compressor

~~ulloading~~

un-loading mechanism.

MODULE REVIEW AND TEST 2 HOURS

LABORATORY 6 HOURS

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 077, Transit Vehicle Heating, Ventilation, Air Conditioning
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1.

Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will b encouraged to ask questions related to the course material. Students will complete all reading and writing assignments given in class.

Thinking and Reasoning	5 - Essential- always try to achieve

1. Students are encouraged to use a systematic approach to analyzing and solving problems on

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#46

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 078, Transit Vehicle Drive Train Suspension
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 078
Transit Vehicle Drive Train Suspension
Units: 0.4
Class Hours:

Lecture Hours: 15
Laboratory Hours: 6
Arranged Hours: None
Total Semester Contact Hours: ~~None~~21

PREREQUISITE(S) None

Designed to acquaint the student with the basic theory of operation, diagnostic and troubleshooting techniques, repair and service of drive train suspension.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/04/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in repair of the bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

DRIVE TRAIN SUSPENSION THEORY 4 ~~HOURS~~ LEC
Theory of suspension systems, drive shafts and U joints.

WHEEL BEARINGS ~~5 HOURS~~3 LEC 2 LAB
Use, service, troubleshooting.

ALIGNMENT ~~5 HOURS~~3 LEC 2 LAB
Alignment overview, diagnostic review, troubleshooting.

HYDRAULIC STEERING SYSTEMS ~~5 HOURS~~3 LEC 2 LAB
Hydraulic steering systems overview, assembling, disassembling, troubleshooting.

MODULE REVIEW / EXAM 2 ~~HOURSTEST~~LEC

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 078, Transit Vehicle Drive Train Suspension
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

-

Communication Skills — 5 - Essential-always try to achieve

1.

Students will listen to lecture material. They will answer questions verbally in the classroom and the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material. Students will complete all reading and writing assignments given in class.

-

Thinking and Reasoning — 5 - Essential-always try to achieve

1.

Students are encouraged to use a systematic approach to analyzing and solving problems on coach systems. Students will perform tests, inspections and measurements to analyze system problems. Students will study and comply with State and Federal laws concerning coach system

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#47

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 079, Transit Vehicle Wheelchair Lifts
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 079
Transit Vehicle Wheelchair Lifts
Units: 0.2
Class Hours:

Lecture Hours: 8
Laboratory Hours: 4
Arranged Hours: None
Total Semester Contact Hours: ~~None~~12

PREREQUISITE(S) None

Designed to acquaint the student with the basic theory of operation, diagnostic and troubleshooting techniques, repair and service of wheelchair lifts.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15753	I	1	30
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	94700 - Diesel Technology	R1 - Repeatable x1	
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/04/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in repair of the bus fundamentals. Allow students to independently expand depth and breadth of bus repair knowledge.

WHEELCHAIR THEORY

~~3HOURS~~

2 LEC 1 LAB
Theory of RTS wheelchair lift.

ADDITIONAL TYPES

~~3 HOURS~~

2 LEC 1 LAB
EEC wheelchair lift.

MOBIL UNITS

~~3 HOURS~~

2 LEC 1 LAB
Mobil Tech wheelchair lift.

LIFT-U WHEELCHAIR LIFT

~~3 HOURS~~

1 LEC 1 LAB
Lift-U wheelchair lift.

MODULE REVIEW AND TEST 1 LEC

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 079, Transit Vehicle Wheelchair Lifts
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

Provided by Orange County Transportation Authority.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #48

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Fire Academy 200, Fire Public Education Officer I
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Fire Academy 200
Fire Public Education Officer I
Units: 1
Class Hours:

Lecture Hours: 40
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~40

PREREQUISITE(S) None

Public fire safety education with emphasis on planning, local problems, public education strategies, audio visual aids, public media, and target populations. Meets California Fire Academy requirements.

Budget Unit	Classification Code	Transfer Code	Method of Instruction	
-	15715	I	2	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	213350 - Fire Academy	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 12/08/11 by:Terri Wann
Divison Chair Approval Date: 12/16/11 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

OVERVIEW OF PUBLIC EDUCATION - 3.5 LEC HOURS
Examples of successful Public Education programs. What the public needs to know to minimize fire injuries and property loss. Statistics relating to fires.

PLANNING PROCESS FOR PUBLIC EDUCATION - 3.5 LEC HOURS
Interfacing with schools and civic organization to provide public education programs.

PUBLIC EDUCATION STRATEGIES - 3.5 LEC HOURS
How to achieve maximum cooperation of existing institutions and programs to promote and develop public education.

COMMUNICATION SKILLS - 3.5 LEC HOURS
Transactional analysis, communication theory, social models.

EDUCATION OF SMALL CHILDREN - 3.5 LEC HOURS
Activities and teaching props appropriate in teaching small children about fire dangers.

FIRE BEHAVIOR - 3 LEC HOURS
Sources of ignition, explosions, products of combustion.

AUDIO VISUAL PREPARATION - 6 LEC HOURS
Preparing photo, audio, video and computer materials for both teaching and PSAs.

USE OF PUBLIC MEDIA - 3.5 LEC HOURS
Interfacing with newspapers, radio and TV stations; preparing PSAs that are likely to be used by public media.

BURN EDUCATION - 3.5 LEC HOURS
Accident prevention, injury treatment (immediate and long term), costs in human and financial terms.

PUBLIC SERVICE ANNOUNCEMENT - 3 LEC HOURS
Directed activities in developing and refining PSAs.

LOCAL PROBLEMS - 3.5 LEC HOURS
Research and database sources to determine local problems and issues.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Fire Academy 200, Fire Public Education Officer I
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

	-
Communication Skills	5 - Essential- always try to achieve

1. Students will demonstrate active listening skills (note taking and outlining0, contribute to class

#49

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Fire Academy 232C, Fire Prevention 2C: Special Hazard Occupancies
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Fire Academy 232C
Fire Prevention 2C: Special Hazard Occupancies
Units: 1
Class Hours:

Lecture Hours: 40
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: 40

PREREQUISITE(S) None

Fire Protection regulation, design and inspection of special hazard occupancies. Meets NFPA 1031 Fire Inspector Professional Qualifications and CFSTES standards for Fire Prevention Officer II.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15715	I	2	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	213350 - Fire Academy	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 12/08/11 by:Terri Wann
Divison Chair Approval Date: 12/16/11 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

REGULATORY STANDARDS - 8 LEC HOURS
The intent and scope of the Uniform Building Code, the Uniform Fire Code, T-19/24 and National Standards as they pertain to special hazard occupancies.

PYROTECHNICS, MOTION PICTURES - 8 LEC HOURS
Regulations governing the use of pyrotechnics for public display and motion pictures. Class will meet at Warner Brothers Studios.

FIRE PROTECTION SYSTEMS AND EQUIPEMNT - 6 LEC HOURS
Protection of special hazards using special agents. Title 19 regulations regarding the maintenance and testing of special systems. Class will meet at Fire Master, Inc.

TESTING, LISTING AND APPROVING NEW PROCESSES - 4 LEC HOURS
Methods for testing and approving new equipment and processes for fire safety evaluations. Class will meet at U.S. Testing laboratory.

LABORATORY AND MEDICAL OCCUPANCIES - 4 LEC HOURS
Fire Protection processes & equipment in laboratories & medical occupancies. Hazard & mitigation methods specific to these occupancies. This class will meet at UCLA.

ASSEMBLY AND HIGH DENSITY RESIDENTIAL OCCUPANCIES - 4 LEC HOURS
Fire Protection processes & equipment found in assembly & high density residential occupancies. Hazard & mitigation methods specific to these occupancies.

STORAGE AND HANDLING OF HAZARDOUS MATERIALS - 4 LEC HOURS
Use, storage and handling of hazardous materials and flammable/combustible liquids in quantities which exceed the exempt amounts found in the Uniform Building Code.

FINAL EXAM - 2 LEC HOURS

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Fire Academy 232C, Fire Prevention 2C: Special Hazard Occupancies
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

5 - Essential-always try to achieve

Communication Skills

1.

Students will demonstrate active listening skills (note taking and outlining), contribute to class discussions, speak in a coherent and organized fashion, to explain their ideas and express their feelings; engage ideas courteously and remaining on topic. Students learn professional nomenclature and specifications to communicate accurately and report both verbally and in writing.

5 - Essential-always try to achieve

Thinking and Reasoning

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#50

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Fire Academy 233A, Fire Prevention 3A
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Fire Academy 233A
Fire Prevention 3A
Units: 1
Class Hours:

Lecture Hours: 40
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~40

PREREQUISITE(S) None

Specialized and technical information regarding fire protection sprinkler design. This course will review the mathematics and drafting skills necessary to design systems.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15715	I	2	10
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	213350 - Fire Academy	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 12/08/11 by:Terri Wann
Divison Chair Approval Date: 12/16/11 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

WATER SUPPLIES AND SERVICES - 8 LEC HOURS
Factors affecting fire flow demands water systems pressure and piping requirements, hydrant construction location and spacing.

SPRINKLER SYSTEMS - 8 LEC HOURS
Design and operation of various types of systems; inspection and maintenance procedures. Demonstration of sprinkler operation.

FIRE ALARM SYSTEMS - 4 LEC HOURS
Types of alarm systems, their design and operation.

DETECTORS AND SYSTEMS - 8 LEC HOURS

Types of detector systems, their design and operation; how they relate to extinguishing systems.

PRINCIPLES OF CONSTRUCTION - 4 LEC HOURS
Definition of loads, forces and reactions on columns, beams and other structural elements.

FIRE DOORS - 3 LEC HOURS
Requirements and standards for fire doors in different areas of various occupancies.

PRINCIPLES OF FIRE RESISTANCE - 4 LEC HOURS
Fire behavior of interior finishes in buildings.

FINAL EXAM - 1 LEC HOUR

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Fire Academy 233A, Fire Prevention 3A
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills — 4 - Very important-often try to achieve

1. Students will demonstrate active listening skills (note taking and outlining), contribute to class discussions, speak in a coherent and organized fashion, to explain their ideas and express their feelings; engage ideas courteously and remaining on topic. Students learn professional nomenclature and specifications to communicate accurately and report both verbally and in writing.

Thinking and Reasoning — 4 - Very important-often try to achieve

1. Case studies and problem solving activities (both individual and group) will enable students to improve their "higher order" thinking skills such as abstract reasoning, ability to predict outcomes, evaluate by external criteria and analyze logical inconsistencies.

51

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Occupational Therapy Assistant 111, Applied Kinesiology
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Occupational Therapy Assistant 111
Applied Kinesiology
Units: 1
Class Hours:

Lecture Hours: 16
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: 16

PREREQUISITE(S)
Prerequisite
Biology 149 or 239 and 249.

This course will focus on understanding human movement as an integral component of occupational performance and will examine how kinesiology and biomechanics are utilized in treatment by the Occupational Therapy Assistant.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
15718	I	2	10
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	121800 - Occupational Therapy Technlogy	NR - Non-Repeatable: D, F, NC, W	
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 03/08/12 by:Michelle Parolise
Divison Chair Approval Date: 03/09/12 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in O.T.A. fundamentals. Allow students to independently expand depth and breadth of O.T.A. fundamentals knowledge.

Week 1 - Introduction to the course
- Background and rationale for understanding kinesiology and biomechanics as a frame of reference

- Application of these concepts with the practice of the O.T.A
- Understanding the role of the central and peripheral nervous system and the muscloskeletal system in movement

Week 2
- Understand kinesiology and biomechanics as a frame of reference.
- Differentiate three types of muscle contraction
- Define the terms agonist, antagonist, and synergist in terms of muscle contraction

- ~~Differentiate active and passive joint ranges of motion and describe the use of a goniomoter to measure joint range of motion~~ **Week 3**
- ~~Identify the difference between mass and weight.- Describe the terms used in manual measurement of muscle strength-~~ Understand basic movements of the body and how they are performed at various joints
- Demonstrate an understanding of the major skeletal movements in terms of planes
- Define ~~the term excursion~~and differentiate the different types of joints in the body

Week 4
- Demonstrate an understanding of the role of gravity and force on human movement
- Describe how gravity influences motor development
- Identify the role of gravity in functional daily living activities

Week 5
- Introduction to the role of force in movement including external forces, internal forces, rotary force, torque, and lever systems

Week 6
- ~~QUIZ~~**~~Week 7-~~** Define and differentiate rotary and linear motion
-Describe active and passive insufficiency

Week 7
- Differentiate active and passive joint ranges of motion and describe the use of a goniomoter to measure joint range of motion
-Describe the terms used in manual measurement of muscle strength
-Define the term kinematic chain and differentiate between open and closed chain movements

Week 8
- Introduction to movements of the torso, trunk alignment, positioning, and forces that act on the head and neck
- Describe how stabilization of the trunk affects use of the extremities
- Differentiate between open and close chain movements

Week ~~8~~9
- Introduction t the shoulder complex
- Identify the articulations of the shoulder
- Discuss the role of the scapula in the movement of the shoulder

~~Week 9~~Week 10
- Identify the muscles and the role of the rotator cuff
- Demonstrate an understanding of the biomechanical basis for shoulder subluxation

Week ~~10~~~~- Quiz~~**~~Week 11~~**
- Introduction to the distal upper extremity with focus on wrist and hand movement.
- Explain the basic functions of the extrinsic and intrinsic muscle of the hand

#52

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Occupational Therapy Assistant 202, Level II Fieldwork - Part I
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Occupational Therapy Assistant 202
Level II Fieldwork - Part I
Units: 6
Class Hours:

Lecture Hours: None
Laboratory Hours: 320
Arranged Hours: None
Total Semester Contact Hours: ~~None~~320

PREREQUISITE(S)
Prerequisite
Occupational Therapy Assistant 103, 103L and 201.

Supervised fieldwork experience in an occupational therapy practice setting that will provide the student appropriate opportunities to apply learned knowledge and skills.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
15718	I	2	-	20
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	121800 - Occupational Therapy Technlogy	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 03/08/12 by:Michelle Parolise
Divison Chair Approval Date: 03/09/12 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

- Week 1
Facility orientation and observation.
Students should become familiar with the physical plant, policies & procedures, role of occupational therapy, documentation requirements, treatment philosophies and approaches and safety procedures.
Check on-line class for announcements, updates and any coordinator or fellow student communication.

- Week 2
Observation of a variety of treatments.

Observation of initial evaluation.
Develop and carry out 2-5 treatment sessions
Document on all treatment performed
Develop work schedule in conjunction with supervisor
Check on-line class for announcements, updates and any coordinator or fellow student communication.

- Week 3
Develop and maintain working schedule.
Manage a caseload of 1-3 patients including planning, implementation, and documentation of all treatment.
Participate in relevant meetings with supervisor.
Check on-line class for announcements, updates and any coordinator or fellow student communication.

- Week 4
Receive assignment for special project
Manage caseload of 2-4 patients including planning, implementation and documentation of all treatment.
Interpret role of occupational therapy to patient and/or family members
Participate and communicate in all relevant meetings with supervisor
Check on-line class for announcements, updates and any coordinator or fellow student communication.

- Week 5
Manage caseload of 3-5 patients without direct supervision
Perform selected assessment procedures
Participate in all meeting related to caseload with supervisor
Conduct family/staff training for patients on caseload
Self assess skill level and request assistance as needed
Check on-line class for announcements, updates and any coordinator or fellow student communication.

- Week 6
Manage caseload of a minimum of 4 patients
Demonstrate increased proficiency with treatment planning, implementation and documentation skills.
Participate in community based treatment, if applicable, with direct supervision
Participate in relevant meetings with or without supervisor
Check on-line class for announcements, updates and any coordinator or fellow student communication.

- Week 7
Manage a caseload of 4-6 patients
Continue to refine all skills
Check on-line class for announcements, updates and any coordinator or fellow student communication.

- Week 8
Complete and present special project
Plan for completion of fieldwork including updating treatment plans and termination with patients
Complete all documentation
Demonstrate competency as an entry level OTA
Check on-line class for announcements, updates and any coordinator or fellow student communication.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Occupational Therapy Assistant 202, Level II Fieldwork - Part I
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #53

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Welding 008, Oxyacetylene-Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Welding 008
Oxyacetylene-Arc Welding
Units: 3
Class Hours:

Lecture Hours: 16
Laboratory Hours: 96
Arranged Hours: None
Total Semester Contact Hours: ~~None~~112

PREREQUISITE(S) None

Technical knowledge and basic skills needed for occupational oxyacetylene and arc welding processes and applications. Students must furnish safety equipment. (Same as Automotive Technology 008 and Diesel 008.)

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15756	I	1 30
SAM Priority Code:	D - Possible Occupational	**Repeatability:**	
TOPS Code:	-	95650 - Welding Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 03/05/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

WELDING SAFETY - LEC 5 / LAB 10 HOURS
An understanding of the safety rules and procedures involving oxyacetylene welding.

OXYACETYLENE WELDING EQUIPMENT - LEC 1 / LAB 5 HOURS
Different types of equipment available and how they function

THE OXYACETYLENE PROCESS - LEC 1 / LAB 5 HOURS
How, why, and when the oxyacetylene process works and is used.

RUNNING BEADS AND OBSERVING RESULTS - LEC 2 / LAB 14 HOURS
Torch manipulation and when to use filler material to make a sound and proper weld.

BRAZING, USING THE OXYACETYLENE PROCESS - LEC 1 / LAB 14 HOURS
Light steel plate and ~~cast iron brazing~~plasma cutting on steel, stainless steel and aluminum process

FLAME CUTTING - LEC 1/ LAB 14 HOURS
The how's, why's, and where's of flame cutting

WELDING SAFETY - LEC 1 / LAB 5 HOURS
An understanding of all safety ~~practicies~~ practices relating to electric arc welding.

ARC WELDING EQUIPMENT - LEC 1/ LAB 5 HOURS
Insight into the uses and functions of the various pieces of equipment and supplies necessary to arc welding.

THE ARC WELDING PROCESS - LEC 2 / LAB 14 HOURS
How and why arc welding processes work

WELDING METALLURGY - LEC 1 / LAB 10 HOURS
The basic metallurgical concepts involved with arc welding.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Welding 008, Oxyacetylene-Arc Welding
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials. ~~None~~

William Bowditch & Kevin Bowditch, Welding Technology Fundamentals. The Goodheart-Willcox Company, Inc. Tinely Park, Illinois ISBN#1-56637-314-x

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1. LISTENING SKILLS
Students will listen to lecture material. They will answer questions verbally in the classroom and lab pertaining to the lecture material. Students will be encouraged to ask questions related to the course material.

CURRICULUM & INSTRUCTION COUNCIL MARCH 26, 2012

REVISED COURSES – FIRST READING

Human Services and Technology

1. Automotive Technology 080, Computer Controls
2. Automotive Technology 085, Basic Clean Air Car Course
3. Diesel 024, Electrical Systems
4. Fire Academy 080B, S – 190 Introduction to Wildland Fire Behavior
5. Fire Academy 241A, Training Instructor IA
6. Fire Academy 241B, Training Instructor IB
7. Human Development 102, Exploring Parenting
8. Pharmacy Technology 072, Pharmacy Technology Externship
9. Welding 020, Welding Laboratory
10. Welding 041, Welding Certification Exam Preparation

NEW PROGRAM – FIRST READING

Human Services and Technology

11. Automotive Business Technology Certificate (sac.autbu.ca)

REVISED PROGRAMS – FIRST READING

Human Services and Technology

12. Law Enforcement Option Certificate (sac.cjle.ca)
13. Occupational Therapy Assistant Degree (sac.ota.as)
14. Welding Technology Degree 9 (sac.weld.as)

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 080, Computer Controls
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 080
Computer Controls
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~48

PREREQUISITE(S) None

Theory, component function, and diagnosis of ~~the following~~ automotive computer controlled systems~~: G.M.'s, TBI, and PFI; Ford's EEC IV and V; and OBD II~~. Examples include GM, Ford, and import OBD-2 systems.
Suggested preparation: Automotive Technology 002 or 006 and 032 or one year tune-up related trade experience.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15751	I	1	10
SAM Priority Code:	~~C~~B - Advance Occupational	**Repeatability:**		
TOPS Code:	-	~~R3 - Repeatable x3~~	94800 - Automotive Technology	NR - Non-Repeatable: D, F, NC, W

Topics Course: No
Open Entry/Exit: NO
Grading Options: Letter Grade or P/NP
Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

AUTOMOTIVE POLLUTION - 3 hours.
Types and sources of automotive emissions and the controls used to reduce them.

COMMON COMPUTER COMPONENTS - 12 hours.
Automotive computer systems, its component parts, and theory of operation. ~~THROTTLE BODY INJECTION - 3~~

L1 COMPOSITE VEHICLE- 12 hours.
Theory of ~~fuel injection~~ computer operation. Operation of sensors, processors, and actuators are covered in depth.~~PORT FUEL INJECTORS - 3 hours.Theory and operation of G.M. sequential and non-sequential port fuel injection systems.FORD EEC IV AND V - 9 hours. How the Ford electronic Engine Control system works. Unit will include both theory of unit operation and basic troubleshooting.~~

INTRODUCTION TO DIAGNOSTIC EQUIPMENT -~~6~~ 9 hours.

DIAGNOSIS/ OBD II - 12 hours.
Student familiarization with computer OBD-II system. The retrieval of trouble codes and circuit diagnosis will be stressed.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 080, Computer Controls
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: Halderman, James D.. *Automotive Technology: Principles, Diagnosis, and Service*, 4th ed. Prentice Hall, 2012, ISBN: 013-254261-7.

Recommended readings and/or materials.

Class handouts as assigned.

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve

1.

LISTENING SKILLS: Students will listen to lecture material. They will answer questions verbally in the classroom and in the lab, pertaining to the lecture presentation. Students will be encouraged to ask questions related to the course material.

READING AND WRITING: Students will read textbook assignments and complete written

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #2

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Automotive Technology 085, Basic Clean Air Car Course
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Automotive Technology 085
Basic Clean Air Car Course
Units: 5
Class Hours:

Lecture Hours: 80
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~80

PREREQUISITE(S) ~~**Prerequisite** Minimum of 9 semester units of automotive tune-up/electrical course work or 1 year of verifiable automotive tune-up electrical trade experience.~~ None

Bureau of Automotive Repair recognized Basic Clean Air Car Course. This course fulfills one of the required courses the student needs to take the State Smog Technician Exam.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15751	I	1	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	-	94800 - Automotive Technology	R3 - Repeatable x3	
Topics Course:	No			
Open Entry/Exit:	YES			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 01/19/12 by:Glen Hammonds
Divison Chair Approval Date: 02/28/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires students to analyze statements for validity, and solve problems relating to the subject matter. Requires student to research and analyze assigned reading material to arrive at correct responses to questions and statements on research papers. Requires the student to apply the solutions to the problems encountered in emissions fundamentals. Allow students to independently expand depth and breadth of emissions fundamentals knowledge.

Module 1 - LEC 35 HOURS
Subject
Orientation and Safety
Rules and Regulations

Emissions relations & analyzation
TAS operations
ASM operations

MODULE 2 - LEC 20 HOURS
OBD II Training
Generic Scan Tool Operation

MODULE 3 - LEC 10 HOURS
Update 2003 Training (current laws)

MODULE 4 - LEC 15 HOURS
Update 2005 Training
Advance Scan Tool Usage
Electric schematic

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Automotive Technology 085, Basic Clean Air Car Course
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

None

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

- **Communication Skills**	5 - Essential- always try to achieve

1.

Students will read textbook assignments. Students will listen to lecture material and answer questions in class.

- **Thinking and Reasoning**	5 - Essential- always try to achieve

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #3

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Diesel 024, Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Diesel 024
Electrical Systems
Units: ~~4~~5
Class Hours:

Lecture Hours: ~~32~~64
Laboratory Hours: ~~96~~64
Arranged Hours: None
Total Semester Contact Hours: ~~None~~128

PREREQUISITE(S) None

Theory, ~~component construction~~operation, diagnosis, and ~~service~~ maintenance of ~~instrument systems. Preparation for California Lamp and ASE Examination. Students must~~ the following systems and components: lighting, instrument, and accessory circuits. Students furnish hand tools and safety equipment. Suggested preparation: Diesel 022.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
-	15752	I	1 30
SAM Priority Code:	C - Occupational	**Repeatability:**	
TOPS Code:	-	94700 - Diesel Technology	NR - Non-Repeatable: D, F, NC, W
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 02/29/12 by:Glen Hammonds
Divison Chair Approval Date: 03/01/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

COURSE ORIENTATION SCHEMATICS LEC 12 / LAB 12 HOURS
Course content, expectations, class organization, and shop safety.
Use of wiring diagrams.
Wiring terminals and connectors.
Wire, cable, and harness construction.
Use of meters.

~~BATTERIES~~

METERS LEC 4 / LAB 4 HOURS

~~Battery construction, operation, rating methods, testing, and servicing.STARTING SYSTEMS~~

Testing of vehicles with meters.

SCAN TOOLS and LAB SCOPES LEC 8 / LAB 8 HOURS

~~System wiring and diagnosis. Switches, relays and solenoids. Motor operation and construction. Motor overhaul and bench testing.CHARGING~~

Introduction to the use of Scan Tools.
Introduction to the use of Lab Scopes.

COMPUTER CONTROL SYSTEMS LEC 12 / LAB 12 HOURS

~~Regulator~~

System operation.
System wiring and diagnosis.

~~Generator (alternator) construction and operation. Overhaul and bench testing procedures.~~

System operation and diagnosis.

LIGHTING CIRCUITS LEC 8 / LAB 8 HOURS
Operation, testing, and repair of headlamp, tail and park lamps, directional signal, interior and instrument lamp circuits, and components.

INDICATING INSTRUMENTS LEC 8/ LAB 8 HOURS
Operation, testing, and repair of:
Gauges
Transmitters
Lamps
Thermal and Pressure Switches
Fuel Gauge Circuits

ACCESSORY CIRCUITS LEC 12 / 12 LAB HOURS
Operation, diagnosis, and repair of procedures of:
Horn
Windshield washer and wiper
Power window, seat and fan circuits

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Diesel 024, Electrical Systems
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#4

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Fire Academy 080B, S-190 Introduction to Wildland Fire Behavior
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Fire Academy 080B
S-190 Introduction to Wildland Fire Behavior
Units: 0.2
Class Hours:

Lecture Hours: 8
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~8

PREREQUISITE(S) None

Designed to train firefighters in the basic fire behavior factors that will aid them in safe and effective control of wildland fires.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15715	I	1	10
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	213350 - Fire Academy	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 12/08/11 by:Terri Wann
Divison Chair Approval Date: 12/16/11 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

FIRE BEHAVIOR - 2 LEC HOURS
Review of basic fire behavior principles.

FIRE WEATHER - 2 LEC HOURS
Effects of climate on fire prediction and behavior.

FUEL AND TOPOGRAPHY - 2 LEC HOURS
Effects of area topography, man-made and natural fuels for wild land responses.

TOOLS AND EQUIPMENT - 2 LEC HOURS
Review of tools used in wild land firefighting.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Fire Academy 080B, S-190 Introduction to Wildland Fire Behavior
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: NWCG. NFES 002901 S-190 Student Workbook, NWCG, 01-01-2006

Recommended readings and/or materials.

Provided by instructor

Other

Provided by instructor

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	4 - Very important-often try to achieve

1. Students will demonstrate active listening skills (note taking and outlining), contribute to class discussions, speak in a coherent and organized fashion, to explain their ideas and express their feelings; engage ideas courteously and remaining on topic. Students learn professional nomenclature and specifications to communicate accurately and report both verbally and in writing. Simulation activities and outside assignments reinforce vocabulary and accepted modes of communication and record keeping. Students will learn to input data to (and interpret) the Emergency Medical Services Agency Patient Contact Form and all required state FERS/UFERS reports.

Thinking and Reasoning	5 - Essential-always try to achieve

1. Students will be able to create public service announcements to encourage safe behavior in adults and children; students will devise lessons for presentation at schools and civic organizations with the level of presentation appropriate for the audience. Case studies and problem solving activities (both individual and group) will enable students to improve their "higher order" thinking skills such as abstract reasoning, ability to predict outcomes, evaluation by external criteria and analysis of logical inconsistencies.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #5

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Fire Academy 241A, ~~Fire~~ Training Instructor IA
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Fire Academy 241A
~~Fire~~ Training Instructor IA
Units: 1
Class Hours:

Lecture Hours: 40
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~40

PREREQUISITE(S)
Prerequisite ~~Fire Technology 101 and 102.~~

An introduction to fire service training methods with emphasis on using the occupational analysis, identifying training needs, and training others to perform manipulative skills.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15715	I	2	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	213350 - Fire Academy	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 12/09/11 by:Terri Wann
Divison Chair Approval Date: 12/16/11 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

ORIENTATION - 1

~~LEC HOUR~~

HR
Overview of the course.

REASONS FOR INSTRUCTOR TRAINING -

~~1 LEC HOUR~~

1 HR
Why Instructor Training is necessary in the Fire Service.

OCCUPATIONAL ANALYSIS -

~~2 LEC HOURS~~

2 HRS
How to use the occupational analysis.

TRAINING NEEDS -

~~2 LEC HOURS~~

2 HRS
How to identify training needs.

COURSE OBJECTIVES -

~~2 LEC HOURS~~

2 HRS
How to identify course objectives.

IDENTIFYING COURSE CONTENT -

~~2 LEC HOURS~~

2 HRS
How to develop a course outline.

PREPARING A JOB ANALYSIS -

~~2 LEC HOURS~~

2 HRS
How to prepare a job analysis.

MANIPULATIVE LESSON PLANS -

~~2 LEC HOURS~~

2 HRS
How to prepare a manipulative lesson plan.

MANIPULATIVE SKILLS

~~5 LEC HOURSLecture &~~

& DEMONSTRATIONS - 5 HRS
How to teach manipulative skills

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #6

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Fire Academy 241B, ~~Fire~~ Training Instructor IB
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Fire Academy 241B
~~Fire~~ Training Instructor IB
Units: 1
Class Hours:

Lecture Hours: 40
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~40

PREREQUISITE(S) ~~**Prerequisite** Fire Academy 241A.~~ None

A continuation of Fire Academy 241A with emphasis on preparation to train others in technical skills as stipulated for Fire Officer I candidates.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15715	I	2	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**		
TOPS Code:	213350 - Fire Academy	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 12/09/11 by:Terri Wann
Divison Chair Approval Date: 12/16/11 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

ORIENTATION -

~~1 LEC~~

1 LEC HOUR
Overview of the course.

~~REVIEW OF FIRE INSTRUCTOR 1A MATERIAL - 1 LEC HOURRefreshing memory of instructor terminology and standards. PREPARING A COURSE OUTLINE - 2 LEC HOURSHow to prepare a course outline. LEVELS OF INSTRUCTION - 2 LEC HOURSHow to establish levels of instruction according to Bloom Taxonomy. STUDENT BEHAVIORAL OBJECTIVES - 2 LEC HOURSHow to construct student~~

~~performance goals. TECHNICAL LESSON PLAN - 3 LEC HOURSHow to prepare a technical lesson plan. TEST PLANNING SHEET - 2 LEC HOURSHow to prepare test planning sheets to assure adequate sampling of course objectives. EVALUATION - 3 LEC HOURSHow to interpret test evaluations. WRITTEN TESTS - 2 LEC HOURSHow to construct test items and utilize written tests. SUPPLEMENTAL INSTRUCTION SHEETS - 2 LEC HOURSHow to prepare and utilize supplemental instruction sheets. CREDENTIALING REQUIREMENTS - 1 LEC HOURCurrent credential requirements and minimum qualifications. INSTRUCTIONAL AIDS - 2 LEC HOURSHow to develop and utilize training aids. THE CALIFORNIA UNIFORM FIRE TECHNOLOGY CURRICULUM - 1 LEC HOURWhere to acquire and how to use the California Uniform Fire Technology Curriculum. EEO AND AA - 2 LEC HOURSHow to treat each student equally and fairly. Requirements that tests and promotional activities be job related. TESTS AND TEST ITEMS - 1 LEC HOURHow to analyze a test and test items. INSTRUCTIONAL AIDS - 2 LEC HOURSHow to utilize instructional aids. Costs of equipment and supplies. STANDARDS FOR COLLEGE LEVEL INSTRUCTION - 2 LEC HOURSTitle 5 and standards of quality and rigor for Fire Training to be eligible for college credit. TECHNICAL SKILLS - 5 LEC HOURSLecture and demonstrations. How to present technical lesson plans. SUMMARY OF COURSE - 2 LEC HOURSBasic review. MIDTERM & FINAL EXAM - 2 LEC HOURSExam~~

REASONS FOR INSTRUCTOR TRAINING - 1 LEC HOUR
Why Instructor Training is necessary in the Fire Service.

OCCUPATIONAL ANALYSIS - 2 LEC HOURS
How to use the occupational analysis.

TRAINING NEEDS - 2 LEC HOURS
How to identify training needs.

COURSE OBJECTIVES - 2 LEC HOURS
How to identify course objectives.

IDENTIFYING COURSE CONTENT - 2 LEC HOURS
How to develop a course outline.

PREPARING A JOB ANALYSIS - 2 LEC HOURS
How to prepare a job analysis.

MANIPULATIVE LESSON PLANS - 2 LEC HOURS
How to prepare a manipulative lesson plan.

MANIPULATIVE SKILLS - 5 LEC HOURS
Lecture & How to teach manipulative skills demonstrations.

LEVELS OF INSTRUCTION - 2 LEC HOURS
How to establish levels of instruction.

STUDENT PERFORMANCE GOALS - 2 LEC HOURS
How to construct student behavioral objectives.

THE FOUR STEP METHOD OF INSTRUCTION - 2 LEC HOURS
How to utilize the four step method of instruction.

INSTRUCTIONAL METHODS - 2 LEC HOURS
How to utilize instructional methods.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #7

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Human Development 102, Exploring Parenting ~~Processes~~
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Human Development 102
Exploring Parenting ~~Processes~~
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: ~~None~~48

PREREQUISITE(S) None

A comprehensive introduction to parenting that demonstrates how parents and caregivers interact to translate their feelings, care, and nurturing of children into effective parenting/caregiving behaviors. Designed to acquaint caregivers and parents with brain-age appropriate parenting and/or caregiving strategies to enhance the development of children from birth through adolescene.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15717	I	2	10
SAM Priority Code:	D - Possible Occupational	**Repeatability:**		
TOPS Code:	130500 - Child Devlpmnt/Early Care/Educ	NR - Non-Repeatable: D, F, NC, W		
Topics Course:	No			
Open Entry/Exit:	NO			
Grading Options:	Letter Grade or P/NP			

Curriculum Office Use Only.

Department Chair Approval Date: 02/27/12 by:Gwen Morgan-Beazell
Divison Chair Approval Date: 03/05/12 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Define the parenting process - 4 HOURS
-Understanding the changes in the parenting roles and expectations and how these affect outcomes for children.
-Debate the ramifications of requiring a parent license.
-Discuss the impact of the nature/nurture controversy on the parenting process
-~~Learn~~ Investigate how parenting support varies among cultures

Identify the stages of parenting and theories of development - 4 HOURS

-~~Learn~~ Investigate how the major developmental theories are applied to the parenting process and development.
-~~Become familiar with~~ Discuss the Lifespan Attachment Theory as ~~applied~~ it applies to parenting.
-Discuss and learn about the various theories of knowing about the world, assimilating and applying knowledge as its relates to parenting.
-Connect parenting styles, behavioral dimensions, self-efficacy to outcomes for children.

Cultural influences in Parenting - 4 HOURS
Define race, ethnicity, acculturation, prejudice, ethnic identity, bicultural identity, socioeconomic status, and poverty as it affects the parenting process.
-~~Evaluate~~ Compare cultural models of parent-children relationships
-Discuss the impact of poverty and status on parenting and the parent-child bond.
-Evaluate patterns of immigration and the effect on the parenting process.

Establishing close emotional relationships with children - 4 HOURS
-~~Understand~~ Evaluate the power of positive relationships to help children develop.
-Define eight forms of parent-child (caregiver-child) communication and the impact on the child and parent (caregiver).
-Gain practical insight into the value of storytelling, family rituals, and family displays of for encouragement and respect.
-Evaluate and practice scripts for dealing with anger.

Shaping and modifying children behavior - 4 HOURS
-~~Learn~~ Review supportive behaviors for child rearing and caregiving.
-Define adult behaviors and responses that promote learning.
-Discuss disciplines and levels of adult response to misbehavior.
-Debate the harm versus benefits of physical punishment.

Parenting at Developmental Stages The Beginning-Becoming Parents - 3 HOURS
-~~Learn how timing of when one becomes affects~~
-Explore the effects of parents' age and status on parenting choices.
-Discuss psychological qualities that affect parenting.
-Define the child bearing option for parents and discuss how this may affect the parenting process.
-Debate the merits of older versus younger parents.
-~~Learn~~ Discuss how foster parenting and adopting affect adult development.

Parenting in Infancy and Early Childhood- Birth to Age Five. - 6 HOURS
-~~Learn about~~ Survey the concerns and challenges of parenting/caregiving in infancy.
-~~Learn~~ Explore basic brain development of children for this period.
-Discuss developmental milestones during this period and their effect on parenting (caregiving).
-~~Learn about~~ Evaluate adult behaviors and practices that support healthy self-concept.
-~~Learn~~ Explore the challenges of parents ~~disabled~~ of disabled or developmentally delayed children.

Parenting the School Age and Teen Age years - 6 HOURS
-~~Learn about~~ Survey the concerns and challenges of parenting/caregiving in ~~infancy~~the School Age and Teen years.
-~~Learn~~ Explore basic brain development of children for this period.
-Discuss developmental milestones during this period and their effect on parenting (caregiving).
-~~Learn about~~ Evaluate adult behaviors and practices that support healthy self-concept.
-~~Learn~~ Explore the challenges of parents disabled or developmentally delayed children.
-~~Learn about~~ Discuss the influence ethnic identity on development.
-~~Discuss and understand~~ Explore the relationship between puberty and parenting stress

Parenting and Working - 3 HOURS

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #8

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE:Pharmacy Technology 072, Pharmacy Technology Externship
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Pharmacy Technology 072
Pharmacy Technology Externship
Units: 0.5 – 6
Class Hours:

Lecture Hours: None
Laboratory Hours: 40 – 480
Arranged Hours: None
Total Semester Contact Hours: 40 – 480

PREREQUISITE(S)
Prerequisite ~~Pharmacy Technology 056, 057, or 060 with a grade~~
Completion of the following classes are pre-requisites for the respective Externship Rotation: Phar 056: Retail Pharmacy Externship Rotation Phar 057 and Phar 056: Inpatient Externship (hospital) and Retail Externship Phar 060: Sterile Products Externship Classes need to be completed with grades of C or better~~;~~ : current TB clearance; ~~Speech Communications~~ Communication Studies 097, 101, 101H or 102.

On-site training in three pharmacy practice settings. Students must complete the related lab course prior to placement in a specific rotation: PHAR 056 for outpatient, PHAR 057 and PHAR 056 for inpatient, PHAR 060 for sterile products. Students must pass the trade-generic test prior to placement. Some sites require additional screening. Completion of all three rotations (320 hours) required for the advanced certificate. Preceptors may assign NP grade for incomplete or failing competencies. Students receiving NP grades must repeat the rotation hours (40 hours increments).

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
15719	I	1	54
SAM Priority Code:	B - Advance Occupational	**Repeatability:**	
TOPS Code:	122100 - Pharmacy Technology	VR - May Be Repeated up to maximum units	
Topics Course:	No		
Open Entry/Exit:	YES		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: ~~11~~02/~~13~~03/~~11~~12 by:KC Huynh
Divison Chair Approval Date: ~~11~~03/~~16~~09/~~11~~12 by:Kristina Ross
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

PHARMACY TECHNOLOGY EXTERNSHIP COMPETENCIES

Under the supervision of the pharmacist, the extern will complete the following critical elements of externship. For these critical elements, the term "medication" includes all dosage forms, including parenterals.

1. The extern will comply with all of the facility's policies and procedures relating to medication preparation and distribution.

2. The extern will maintain patient medication profiles. As required by the facility's procedures, the extern may:
   a. Process admissions and discharges
   b. Transcribe / input medication orders
   c. Generate update lists and fill lists
   d. Produce medication labels

3. The extern will prepare medication for ward stock and for distribution to extended care facilities.

4. The extern will maintain emergency kits, stat boxes, and/or crash carts.

5. The extern will complete the calculations necessary for medication preparation.

6. The extern will extemporaneously repackage medications into unit dose form, label the doses, and maintain the necessary control records.

7. The extern will fill unit dose cassettes / cubicles or automated dispensing devices with the correct medications and supplies.

8. The extern will properly clean and set up the laminar flow hood for sterile products preparation.

9. The extern will properly scrub before preparing any sterile products.

10. The extern will aseptically prepare sterile products.

11. The extern will be oriented in the policies and procedures used for processing biohazardous materials.

12. The extern will deliver medications and/or medication carts as necessary.

13. The extern will perform inventory control functions. This may include drug ordering, check-in, stocking under the proper storage conditions, and processing returns and/or recalls.

14. The extern will locate needed information in pharmacy reference materials.

15. The extern will perform necessary billing procedures.

16. The extern will perform necessary record-keeping functions.

17. The extern will adapt to changes in the practice of pharmacy and the delivery of pharmaceutical care.

18. The extern will handle interpersonal communications with patients and with other health care personnel as appropriate.

19. The extern will maintain the pharmacy area in a clean and orderly manner.

20. The extern may assist the pharmacist in the distribution of controlled or restricted drugs.

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last #9

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE: Welding 020, Welding Laboratory
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Welding 020
Welding Laboratory
Units: 0.5 – ~~5~~10
Class Hours:

Lecture Hours: None
Laboratory Hours: 24 – 480
Arranged Hours: None
Total Semester Contact Hours: ~~None~~24 – 480

PREREQUISITE(S)
Prerequisite
Concurrent enrollment in any welding course required.

Independent practice for advanced knowledge and skills development in specific areas of welding technology. Students furnish own equipment.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**	
-	15756	I	1	20
SAM Priority Code:	C - Occupational	**Repeatability:**		
TOPS Code:	-	~~R3 - Repeatable x3~~	95650 - Welding Technology	VR - May Be Repeated up to maximum units

Topics Course: No
Open Entry/Exit: NO
Grading Options: Letter Grade or P/NP
Curriculum Office Use Only.

Department Chair Approval Date: 03/06/12 by:Glen Hammonds
Divison Chair Approval Date: 03/08/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Requires the student to constantly apply the principles of welding, to consistently evaluate his/her work, and from this, deduce valid conclusions based on industry's models.
Requires the student to identify and explain, through class discussion, the principles of welding theory. Exams require the student to compare and contrast their work to industry standards.

Varies according to subject area

~~48 hours/unit~~

Advanced knowledge and skills development in specific areas of welding technology.

~~16 hours directed lab and 8 hours arranged.~~

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE: Welding 020, Welding Laboratory
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Recommended readings and/or materials.

None

Other

Student must provide own arc welding equipment ~~(approximately $25.00)~~

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

Communication Skills	5 - Essential- always try to achieve
1. Students will pass a written safety test, before welding in the lab. Students will actively listen to lecture, and welding demonstrations. Students will follow written and verbal instructions in the lab.	
Thinking and Reasoning	5 - Essential- always try to achieve

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#10

SANTA ANA COLLEGE COURSE OUTLINE
DISCIPLINE, NUMBER, TITLE: Welding 041, Welding Certification Exam Preparation
(If the discipline, number or title is being revised, above should reflect the NEW information;) AND, the complete former course name MUST be included in the CATALOG ENTRY below.)

CATALOG ENTRY
Welding 041
Welding Certification Exam Preparation
Units: 3
Class Hours:

Lecture Hours: 48
Laboratory Hours: None
Arranged Hours: None
Total Semester Contact Hours: 48

PREREQUISITE(S)
Prerequisite
Welding 008 or Welding ~~098/03 or Welding~~ 025

This practical course is for advanced welding students. Instruction will cover design, prequalified base/filler material, procedure/welder qualifications, fabrication essentials, and testing as specified by American Welding Society (AWS D1.1) Structural Code specifications leading to Los Angeles City or AWS welding certifications.

Budget Unit	**Classification Code**	**Transfer Code**	**Method of Instruction**
15756	I	1	10
SAM Priority Code:	B - Advance Occupational	**Repeatability:**	
TOPS Code:	95650 - Welding Technology	~~R2~~ NR - ~~Repeatable x2~~ Non-Repeatable: D, F, NC, W	
Topics Course:	No		
Open Entry/Exit:	NO		
Grading Options:	Letter Grade or P/NP		

Curriculum Office Use Only.

Department Chair Approval Date: 03/08/12 by:Glen Hammonds
Divison Chair Approval Date: 03/12/12 by:Dietrich Kanzler
Curriculum and Instruction Council Chair Approval Date:

COURSE CONTENT
(Include major topics of the course, time required, and what the student is expected to learn.)

Scope of AWS D1.1 Lec 7 hours

Discusses the requirements for fabricating and erecting welded steel structures.

Weldment Design Lec 7 hours

Explanation of weldment designs and weldment connection requirements.

Prequalified of Welding Procedures Lec 11 hours

Knowledge of prequalifed base/filler metal as used in established weld procedures.

Qualifications Lec 11 hours

Explanation of welder performance and welding procedure qualifications.

Fabrication Lec 8 hours

Study of the fabrication and erection of welded assemblies produced with AWS recognized procedures.

Inspection Lec 4 hours

Review of inspection qualification and responsibility as it pertains to an acceptance criteria.

SANTA ANA COLLEGE PLAN OF INSTRUCTION
DISCIPLINE, NUMBER, TITLE:Welding 041, Welding Certification Exam Preparation
(If the discipline, number or title is being revised, above should reflect the NEW information.)

COURSE MATERIALS
Required texts and/or materials.(Include price and date of publication.)

Required: AWS (American Welding Society). *Structural Welding Code- Steel AWS D1.1.*, 21st ed. AWS, 2008, ISBN: N/A.

Recommended readings and/or materials.

None

Other

LADBS (Los Angeles Dept. of Building & Safety) Information Bulletins 2002-046.

Handouts provided by instructor.

WHAT STUDENT LEARNING OUTCOMES DOES THIS COURSE ADDRESS? WHAT ACTIVITIES ARE EMPLOYED?
(USE A SCALE OF 1-5 TO SHOW EMPHASIS OF THE LEARNING OUTCOMES WITHIN THE CONTEXT OF THIS COURSE.)

STUDENT LEARNING OUTCOMES

List subcategories and activities as needed for Category

5 - Essential-always try to achieve

Communication Skills

1. Reading and Writing Students must be able to understand text, and comprehend given instruction and complete given exam task.

5 - Essential-always try to achieve

Thinking and Reasoning

1. Critical Thinking Students will be required to analyze text information given in matrix, list and graphic forms.

#11

PROGRAM OF STUDY

Automotive Business Technology Certificate of Achievement (Transcripted)

The certificate curriculum in Automotive Business is designed to prepare the student for employment as a shop manager or automotive shop owner. The student completes automotive courses in their area of interest as well as essential business courses. Through the completion of this program a prospective owner, manager, or technican would be better aware of the business and the technical aspects of the automotive industry.

Core Courses		**Units**
AUTO 002	Essentials	3
	or	
AUTO 006	Automotive Maintenance	4
BUS 100	Fundamentals of Business	3

Electives: 9 Units **Select electives from the following list**		**Units**
AUTO 032	Tune-Up	5
	or	
AUTO 043	Automatic Transmission Service	4
	or	
AUTO 044	Power Train Service	4
	or	
AUTO 053	Brakes	4.5
	or	
AUTO 054	Front Ends	4.5
	or	
AUTO 062	Air Conditioning and Heating	3
	or	
AUTO 072	General Automotive Engine Service	4.5
	or	
AUTO 076	Engine Repair	4.5
	or	
AUTO 080	Computer Controls	3
	or	
AUTO 081	Fuel Injection Systems	3
	or	
AUTO 082	Automotive Computer Sensors	3
	or	
AUTO 083	Automotive Lab Scopes	3
	or	
AUTO 084	OBD-II	3
	or	
AUTO 085	Basic Clean Air Car Course	5
	or	
AUTO 022	Electronics Fundamentals	5
	or	
AUTO 024	Electrical Systems	5

Electives: 3 Units Select electives from the following list		Units
ACCT 010	Accounting Procedures	3
	or	
BUS 170	Principles of Small Business Management	3
	or	
MKTG 113	Principles of Marketing	3
	or	
BUS 120	Principles of Management	3 - 0
Total Units		**18 - 19**

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#12

PROGRAM OF STUDY

Law Enforcement Option Certificate (sac.cjle.ca) Certificate of ~~Proficiency~~ Achievement (~~Untranscripted~~Transcripted)

The Criminal Justice associate degree curriculum is designed to provide students with a solid base for additional study at a four-year institution and for entry level employment in federal, state, local or private criminal justice agencies. Completion of the law enforcement certificate program exceeds the minimum P.O.S.T. requirements for entry level employment as peace officers. Completion of course requirements listed for the law enforcement reserve officer provides students with the knowledge and skills in excess of those required by the California Commission on P.O.S.T. for entry level service as a reserve officer. The Law Enforcement Custody and Advanced Officer course offerings are designed to upgrade the skills and knowledge required for employed peace officers as well as to provide knowledge and skills based on new legal and/or judicial rulings.

Major requirements for the certificate:			
Course			
CJA 010	Pre-Employment Preparation for Law Enforcement	1	
CJA ~~100~~ 100A	Basic Police Academy	~~24~~	19 - 21
CJ 101	Introduction to Criminal Justice	3	
CJ 103	Concepts of Criminal Law	3	
CJ 105	Legal Aspects of Evidence	3	
CJ 107	Principles and Procedures in the Criminal Justice System	3	
CJ 109	Community Interaction	3	
Total Units		~~40~~	35 - 37

PID 67335

~~SPCH~~
~~SPCH~~
~~SPCH~~
~~/2007)~~

PROGRAM OF STUDY

Occupational Therapy Assistant Degree (sac.ota.as) A.A. Degree

The Occupational Therapy Assistant Program provides a strong foundation in the skills and knowledge necessary for entry level occupational therapy assistant competencies. The program is accredited by the Accreditation Council for Occupational Therapy Education, American Occupational Therapy Association, 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD, 20824-1220, phone number (301) 652-2682. Graduates of the program are qualified to sit for the national certification examination, administered by the National Board of Certification for Occupational Therapy (NBCOT), ~~800 S. Fredrick~~ 12 South Summit Avenue, ~~Suite 200~~ Suite 100, Gaithersburg, MD 20877, phone number (301) 990-7979. Students who have completed all requirements will also need to apply for a license to practice in the State of California through the Board of Occupational Therapy, ~~444 N. 3rd~~ 2005 Evergreen Street, Suite 2050, Sacramento, CA ~~9581~~95815, phone number (916) ~~322~~263-~~3394~~2294. Occupational therapy is a discipline which focuses on function as well as quality of life. Occupational therapy assistants provide service to individuals with physical, mental or environmental disabilities, across life phases, who need to remediate skills of everyday tasks of work, self care and leisure. The major requires general education courses including: biological, social, and behavioral science, in addition to, occupational therapy courses. The program utilizes classroom instruction and fieldwork experiences to prepare the student to meet certification and employment standards.
Advanced placement in the program for those students with prior occupational therapy assistant education will be evaluated on an individual basis by program facilitator.
When applying for the certification examination with the National

Board of
Certification in Occupational Therapy (NBCOT), applicants will be asked
to answer questions related to the topic of felonies. Application for state
licensure with the Board of Occupational Therapy (BOT) requires fingerprinting.
For information about limitations based on felonies applicants are advised to call NBCOT and BOT (address and phone numbers above) anytime prior to the application process. Further, there is a high probability
that students will be required to be fingerprinted (at the student's cost) and/or have a drug test and criminal background check at a fieldwork site.
Problems with fingerprinting and background could result in a delay or
failure of program completion.
These requirements are required prerequisites for Occupational Therapy
101, Foundations of Occupation and Occupational Therapy or 101L, Exploration of Occupation through Activity or Occupational Therapy 100,
Medical Terminology and Documentation for Occupational Therapy.
1. Completion of the following tests: (Required of all applicants except
those that have a baccalaureate degree.) These tests are for purposes of guidance and for establishment that prerequisite skills of 101 and 101L have been met.
a. College Test of English Placement (reading section only) with a minimum score of 25 or above. Students scoring below 25 will be referred to Student Success Center.
b. Santa Ana College Test in Math, Level ~~H~~III, showing a total score at ~~26~~18
or above or successful completion of Intermediate Algebra 080 or 081 with a grade of "C" or better.
2. English 101 or 101H, with a grade of "C" or better.
3. Oral Communication Skill (3 units) - Satisfactory completion ~~of SpeechCommunication~~ of Communication Studies 101 or 101H, ~~102~~ 102, 140, 145, 152.
4. Biology 149, Human Anatomy & Physiology (4 units) or *Biology 239,
Anatomy and *Biology 249, Human Physiology (8 units total) with a grade of "C" or better. (This is a prerequisite for Occupational Therapy
Assistant 100.)
5. Psychology 100 or 100H with a grade of "C" or better. (This is a prerequisite
for Psychology 250.)
6. Evidence of a physical examination and appropriate immunizations must be submitted verifying the applicants physical ability to perform the
fieldwork requirement of an Occupational Therapy Assistant (O.T.A.).
SAC Instructional Programs / 85

*Students contemplating transfer to four-year institutions should take these courses.

Admission Procedures:

Admission into the program will be based on "first to complete all of the requirements, first admitted". Students who successfully complete all requirements but who are not accepted because of limited class size will have priority in the next class.

Major requirements for the associate degree in Occupational Therapy Assistant.

First Year		
First Semester		-
~~PSYC 250~~	~~Introduction to Abnormal Psychology~~	~~3~~
Units		
OTA 100	Terminology and Documentation for the O.T.A.	1
OTA 101	Foundations of Occupation and Occupational Therapy	4
OTA 101L	Exploration of Occupation Through Activity	2.5
OTA ~~111~~	~~Applied Kinesiology~~	~~1~~
Second Semester		-
OTA 102	Psychosocial Function and Dysfunction	4
OTA 102L	Psychosocial Components of Occupation	2.5
OTA 111	Applied Kinesiology	1
OTA 115	Human Disease and Occupation	2
PSYC ~~140~~ 250	Introduction to Abnormal Psychology ~~of Adulthood and Aging~~	3
Second Year		
Third Semester		-
OTA 103	Physical Function and Dysfunction	4
OTA 103L	Physical Components of Occupation	2.5
OTA 201	Contemporary Models of Occupational Therapy Practice	4

110	Human Occupation Across Lifespan	3
Units		
~~BIOL 217~~	~~Pathophysiology~~	

~~HUD 107~~	~~Child Growth and Development (DS1)~~	~~3~~	
			~~or~~
~~PSYC 157~~	~~Introduction to Child Psychology~~	~~3~~	
-			
Fourth Semester		-	Units
OTA 202	Level II Fieldwork - Part I	6	
OTA 203	Level II Fieldwork - Part II	6	
Graduation Requirements for the Associate Degree in Occupational Therapy Assistant			
Course		-	Units
Total Occupational Therapy Assistant units required		~~48~~45.5	
BIOL 149	Human Anatomy and Physiology	~~0~~	4
	or		
BIOL 239	General Human Anatomy	4	
	and		
BIOL 249	Human Physiology	4	
~~SPCH~~ CMST 101	Introduction to Interpersonal Communication	~~0~~	3
	or		
~~SPCH~~ CMST 101H	Honors Introduction to Interpersonal Communication	3	
-	or		
CMST 102	Public Speaking	3	
-	or		
CMST 140	Argumentation and Debate	3	
-	or		
CMST 145	Group Dynamics	3	
	or		
~~SPCH~~	Oral Interpretation	3	

CMST 152			
ENGL 101	Freshman Composition	4	
	or		
ENGL 101H	Honors Freshman Composition	4	
PSYC 100	Introduction to Psychology	3	
	or		
PSYC 100H	Honors Introduction to Psychology	3	
U.S. History or Political Science (American Institutions		3	~~Sociology 100~~
-	~~or~~		
~~Sociology 100H~~		Humanities	3
Cultural Breadth		3	
Communication & Analytical Thinking		3	
~~Computer Applications~~		~~3~~	
MATH 080	Intermediate Algebra.....(~~Revised~~	4	~~4~~
	or		
MATH 081	Intermediate Algebra with Lab	~~0~~	4
	or		
above OR score on the SAC math placement test indicating placement in a course higher than Math 080/081			
	or		
-			
Total Units		~~128 - 143~~	
		~~PID 157~~	
71.5 - 79.5			
		PID 353	

first *Click on the changed parts for a detailed description. Use the left and right arrow keys to walk through the modifications.* last

#14

~~list of recommended electives~~

PROGRAM OF STUDY

Welding Technology Degree (sac.weld.as) and Certificate (sac.weld.ca) A.S. Degree

The associate degree and certificate curriculum in welding technology is designed to provide comprehensive occupational training in all common types of welding methods relating to the needs of today's welding fabrication industry. The program provides students with manipulative skills and technical knowledge required to operate oxyacetylene, shielded electric arc, M.I.G., T.I.G. and semiautomatic flame cutting welding equipment. In addition, students will be prepared for certification as required by employment in the welding industry. Employment opportunities available are: welder, welder technician, inspector, maintenance welder, production welder in manufacturing, construction industries and shipbuilding. The Santa Ana College Welding Program is a Los Angeles Certified Testing Lab Facility. The program offers training and testing for the following certifications: SMAW, FCAW, T.I.G., and M.I.G.

Major requirements for the associate degree and certificate:

Course		-	Units
WELD 008	Oxyacetylene-Arc Welding	3	
WELD 029	Advanced Arc Welding	3	
WELD 039	Inert Gas Welding	4	
MNFG 011	Basic Blueprint Reading	2	
MNFG 028	Basic Metals Technology	3	
WELD 025	Intermediate Arc Welding	3	
Electives: 4 units		4	
-			
Please select 4 units from		~~4~~	
-			
~~Recommended electives~~the following list:		Units	
BUS 170	Principles of Small Business Management	3	
ENGL 061	Introduction to Composition	3	
MNFG 053	Technical Mathematics	3	
~~SPCH~~ CMST 101	Introduction to Interpersonal Communication	3	
	or		
~~SPCH~~ CMST 101H	Honors Introduction to Interpersonal Communication	3	
WELD 020	Welding Laboratory	0.5 - 5	
Total Units		~~19~~	22

APPENDIX C: Department Assessment Analysis Form

Transfer and Basic Skills
Career Technical Education
Department Assessment Analysis Form

This is the required form that Program/Department Chairs must use to record the department assessment results and plans to improve teaching and learning. It is included in the *Department Planning Portfolio* and attached to the *Portfolio Assessment/Program Review* when the department is in a PA/PR quadrennial cycle year.

Department	
Meeting Date	
Number of faculty/staff in attendance (indicate full-time and adjunct)	
Course SLOs measured	
What core competency do the SLOs relate to?	
Assessment Tools (Give examples of major assignments used to measure SLO/core competency)	
Assessment Results (Summarize overall results of the department) **What student needs and issues were revealed?** **Were there any areas where student performance was outstanding?** **Any areas where it can be improved?** **Next Steps in Classroom to Improve Student Learning** **(check all the items faculty/staff felt would help them address the needs and issues revealed by the**	o State goals or objectives of assignment/activity more explicitly o Revise content of assignment/activities o Revise activities leading up to and/or supporting

assessment) **How might student performance be improved**	assignments/activities o Increase in-class discussions and activities o Increase student collaboration and/or peer review o Provide more frequent or fuller feedback on student progress o Use more CATs (Classroom Assessment Techniques—Cross/Angelo) o Increase guidance for students as they work on assignments o Use methods and questions that encourage competency o State criteria for grading more explicitly o Increase interaction with students outside of class o Ask a colleague to critique assignments/activities o Collect more data o Nothing: assessment indicates no improvement necessary o Other (please describe)
Next Steps in the Department to Improve Student learning **(check all that the department felt would help them improve student learning)**	o Offer/encourage attendance at seminars, workshops or discussion groups about teaching methods o Consult teaching and learning experts about teaching methods o Encourage faculty to share activities that foster competency o Write collaborative grants to fund departmental projects to improve teaching o Procure articles/books on teaching about competency o Visit classrooms to provide feedback (mentoring) o Create bibliography of resource material o Have binder available for rubrics and results (Put in Department Planning Portfolio) o Analyze course curriculum to determine that competency skills are taught so that the department can build a progression of skills as students advance through courses o Nothing: Assessments indicate no improvements necessary o Other (please describe)
Priorities to Improve Student Learning **(List the top three-six things faculty/staff felt would <u>most</u> improve student learning)**	
Implementation **(List the department plans to implement these three-six priorities)**	

What specifically will you do next semester to improve student learning? ***How will you measure whether student learning was improved?*** ***How will this inform future plans for the program?***	
Timeline for Implementation **(Make a timeline for implementation of the top priorities)**	

Route to Division Curriculum Committee:
Department Chair or designee_____ **Date:**_____