

# Reedley College Automotive Technology

Instructor: Mr. Guzman

Fall 1999

Office Hours: Mon., Tue., Wed. 1:30 – 2:30

Text: Auto Engines Technology

Author: James E. Duffy

**Reading Assignments:** All prescribed reading assignments are due on dates specified in study schedule. Additional assignments may be required as handouts.

**Quizzes:** There will be a quiz given once a week. Questions on quizzes will come primarily from instructor's lectures and reading assignments.

**Tests:** There will be one mid-term and one final exam for every section taught. The final exam will cover material taught during the whole semester. Questions for mid-term and final will come primarily from the A.S.E. national exam. You will need a scantron #882 and two #2 pencils.

**Notebook:** A notebook will be required at the end of the Fall semester. It will include a Title Page, Table of Contents, Study Schedule, Task Sheets, Class Notes, Attendance Records, Handouts, Quizzes and Tests.

**Lab Work:** You will be given Task Sheets. Groups will be chosen by the Instructor. Participation in all activities will be observed and graded by the instructor.

*Grade scale  
drop date*

**Attendance:** In the work place, attendance and being on time are critical. If  
You are absent more than three times, you will be dropped from the  
class. Three tardies equals one absence.

**Grading:** Quizzes and Notebook \_\_\_\_\_ 30%  
Tests \_\_\_\_\_ 30%  
Lab \_\_\_\_\_ 30%  
Employability \_\_\_\_\_ 10%

# Reedley College Automotive Technology "Engines"

Instructor: Mr. Guzman

DATE	CHAPTER TITLE	PAGE
August 16-20	Shop Safety : Micrometers, Measurements	89-94
August 23-27	Tools and Equipment	27-52
Aug. 30- Sept.3	Review of engine Operation	9-25
Sept. 6-10	Engine Removal, Disassembly, Cleaning	433-456
Sept. 13-17	Short Block Construction	157-184
Sept. 20-24	Engine Mechanical Problems	407-422
Sept. 27-Oct. 1	Engine Type, Classification	95-124
Oct. 4-8	Cleaning Parts	Handouts
Oct. 11-15	Engine Measurements	125-134
Oct. 18-22	Engine Performance Problems	399-406
Oct. 25-29	Cooling System, Lubricating System	285-316
Nov. 1-5	Top Engine Construction	185-206
Nov. 8-12	Short Block Service	457-486
Nov. 15-19	Top End Service	487-514
Nov. 22-24	Timing Mechanism Service	515-528
Nov. 29-Dec. 3	Front End, Manifold Gasket Construction	207-228
Dec. 6-10	Engine Reassembly, Installation, Break In	529-552
Dec. 13-17	<b>Final</b>	

## LAB ASSIGNMENT

Aug. 12- Sept. 16	Disassemble, Inspect, Clean Engine
Sept. 17- Oct. 12	Disassemble, Inspect, Clean Cylinder Heads
Oct. 13- Nov 17	Machine and Assemble Heads
Nov. 18- Dec. 7	Assemble Engine

## Automotive Electrical

## Attendance and Grading Policy

Reading assignments are due each Mon. of each week for each subject. QUIZZES will be given each Mon., Wed., or Fri.. TESTS and EXAMS are given at the beginning, mid term, and end of the semester. MAKE UP quizzes will not be available after the third week of school. Near the end of the semester, a survey of each student's quizzes will be made, the lowest score will be dropped and not averaged.

All work submitted for grading must contain: student surname, student grade number, date, and subject. Any documentation error in the preceding will cause a grade of Zero.

GRADING POLICY:	Tests and Quizzes	= 30%
	Final Exams	= 30%
	Quality Shop Work &	
	Documentation	= 30%
	Employability	= 10%
	Possible Total	= 100%

It is the student's responsibility to know his grade at all times during the semester. If you don't know your grade, first check the posted grades, and then ask your instructor. Be sure to retain all quiz and test cards.

The purpose of the RC Automotive Technician program is focused upon the employment needs of both the automotive service industry and the student. The technician training attempts to simulate the live tasks of the industry that it serves. Unfortunately, with the live industrial work comes the potential for serious accidents and/or property damage. The safety instructions and precautions for averting accidents precedes most shop activities. Therefore, the tardy or absent student places himself and others at risk by not being present at this critical time.

Attendance (3 absences permitted) and timeliness (3 tardys equal one absence) are considered essential to employers and the safe conduct of a business. A student exceeding the rule of 3/3 may be dropped from class for reasons of safety. Mental absence and inattention are also unacceptable for reasons of safety and negatively impact the progress of the group. Positive participation and satisfactory progress must be maintained or a student may be dropped from the class. Class begins each day at 7:30 AM. Be prepared for work at 7:25.

Acknowledged and signed by: \_\_\_\_\_, date \_\_\_\_\_

## RC AUTO DEPT. RULES

Please read and place your initials in the box [ ] to the right of each of each rule. If, for any reason that you do not understand any of the rules, please contact your instructor and ask for assistance.

**HONESTY AND INTEGRITY** Every student is expected and required to:

A. Perform his/her own assignments in the classroom, shop, and homework without duplication or replication (computer) of another person's work. [ ]

B. Perform individually on tests, quizzes, exams, and other instruments of individual evaluation. The use of crib notes or looking at other students papers is regarded as cheating and the student(s) involved will be ejected from class. [ ]

C. Tests, quizzes, are the property of each instructor and must be returned to the instructor at the end of each evaluation. [ ]

D. Time cards will be used for evaluating student responsibility and to provide attendance data for institution funding. Falsifying a time card is regarded as cheating and the student(s) involved will be ejected from class. [ ]

E. Thou shalt not steal or tolerate those who do. All missing items, both private and school, will be immediately reported to the police dept. for investigation. [ ]

**ATTENDANCE, TIMELINESS and PARTICIPATION** Three days of absence from class is the maximum allowable per semester. [ ]

Tardiness, whether late arrival to school or in returning from a class break will be treated as an absence. Three tardys equate to one day of absence. Safety is our primary consideration. [ ]

Leaving class early or not returning from a class break without permission of the instructor will be regarded as a day of absence. [ ]

For reasons of safety, positive participation and satisfactory progress are required to maintain enrollment in the class. [ ]

A student will be counted as absent if for any reason he/she is asked to leave class for reasons of inappropriate behavior. [ ]

**VEHICLES AT THE SHOP** All vehicles at the shop are considered available for instructional work and are therefore under the control and responsibility of the instructor. Upon entering the shop area the owner/operator of said vehicle agrees to grant unconditional access to all compartments and components of the vehicle to the instructor. [ ]

Vehicles will not be leaned or sat on, used as a foot rest, or sat in. Audio and mirror adjustments will not be altered. [ ]

The security of the vehicle and special components thereof remain the responsibility of the vehicle owner/operator. [ ]

No vehicle may enter or be removed from the shop area without the specific permission of the instructor responsible for the instructional activity. No exceptions for lunch break. [ ]

Vehicles or parts thereof left at the shop beyond the first day of semester final exams will be considered abandoned, and the owner will be dunned for storage, and costs of disposition. [ ]

Unauthorized vehicles parked at the shop without a permit issued by an instructor will be ticketed by the campus police and towed at owner/operator expense. [ ]

All students must provide their Drivers License Number and license status to the instructor prior to operating any vehicle. [ ]

**FACILITY USE AND ACCESS** No vehicle or component repair or bench work may be performed within the shop area without specific permission of and the immediate supervision of an instructor or lab technician (Mr. Aguirre) [ ]

Shop equipment or tools may not be operated or used without specific permission and the immediate supervision of an instructor or lab technician (Mr. Aguirre). No tools will be loaned [ ]

Tools and supplies loaned to students must be resupplied with the exact quantity and part # prior to the end of the semester. Grades and transcripts will be frozen until replacement is completed. [ ]

Students will not be allowed in the shop area during break or lunch period. [ ]

**PROPER ATTIRE** Because the objective purpose of the training program is to gain and keep employment as a professional automotive technician, standards of appropriate dress are required.

Uniforms must be worn correctly at all times in the shop, and laundry service must be paid by the 3rd week of the semester. [ ]

Closed toe shoes are required at all times in the shop area. [ ]

Hair longer than collar length must be contained within a brimless hat when working in the shop area. Baseball hats OK. [ ]

Hats of any type will not be worn within the classroom. [ ]

**SAFETY AND CONDUCT** Conduct by all students at all times must reflect attitudes of safety and considerate behavior toward all personnel and the professional objectives of the program. [ ]

Safety glasses must be worn at all times in the shop area. [ ]

Horseplay in any form will not be tolerated. [ ]

Persons suspected of the influence of alcohol or a controlled substance will be asked to leave the class and reported to Health and Security Services. [ ]

#### **GENERAL CONDUCT**

Tobacco products use and sunflower seeds are not permitted within the facility, parking area, or front garden area. [ ]

Spitting on any facility area or fountain is not permitted. [ ]

Persons lacking proper toilet habits will be referred to Student Health Services for remedial training. [ ]

Food and beverages will not be permitted in the shop area. [ ]

Telephones may be used by permission only. [ ]

The teacher's desk and tool chest contains confidential and personal materials and is "OFF LIMITS" to all students. [ ]

I, \_\_\_\_\_(signature), \_\_\_\_\_(DMV#).

have read and understood the above rules of conduct of the RC Auto Tech. Dept. date \_\_\_\_/\_\_\_\_/\_\_\_\_.  
rules rev. August 16, 1999

Automotive Electrical

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rules rev. August 16, 1999

Fall 1999

p. 1 of 2

Mr. Jewell

Study Schedule

Automotive Electrical

Lecture	Wk.#	Subject	Chapt./Text	CAC p
Aug. 12-13		Teachers Duty Day		
16-20	01	First class meeting and lecture		
23-25	02	Battery & Testing	7c, 3s	p.02
30-01	03	Basic Elec. Meas.	2S	21,26
Sept 08-10	04	Basic Electricity	1c	18,13
13-15	05	Ohm's Law	1c	06,07
20-22	06	Measurement	2s	21,26
27-29	07	Circuits & Symbols	6c	10,16
Oct. 04-06	08	Wiring & Fasteners	5c, 1s,	p.11
11-13	09	Magnetism	2c	p.14
18-20	10	Starter Systems	10c,11c 6s,7s	
25-27	11	Engine Ignition Sys.	12c, 8s, 9s,	p.40
Nov. 01-03	12	Ign. Pri. & Sec. Cir.	13,14c 8,9s	p.62
08-10	13	Distributor Service	10s	p.89
15-17	14	Timing & Advance Tests	15c, 10s,11s	79,87
23-25	15	Oscilloscope Testing	2s,8s,9s, .	H.O. p.96
29-01	16	Basic Electronics	3c	18,19
Dec. 06-08	17	Electronic Ignition	16c, 10s,11s	p.71
		Test & Shop Clean up		
13-17	18	Final Exams	Scantrons & Pencils	

Chapter assignments are "subject assignments" that include terms that may be found in the glossary, or as ASE sample questions such as those found in the Guide To The Mechanics Certification.

Please Note: A Quiz may be given on the day that any of the above assignments are scheduled or any day there after. You should always be prepared with Scantron cards and at least 2, sharpened, #2 pencils in your pocket. Scantron penalties may result, with no credit given, for poorly erased scantron selections. Answers to questions provided by the authors may be incorrect, and if used, will be graded as incorrect responses. Further: Additional assignments may be required as handouts or outside assignments. i.e. notebooks, employment app's, interviews.

Quizzes may be given Monday, Wednesday, or Friday or any day in shop. Tests and exams are given at the beginning, mid term, and end of the semester. Required Texts: Automotive Electrical & Electronic Sys. by Check Chart, "c" = classroom text, "s" = shop text. Recommended Texts: Guide to the Mechanics Certification by James Hughes, Clean Air Car Course by State of California, "CAC".

OFFICE HOURS 7:05-7:30 AM daily. Room AT6.

Please see "Attendance and Grading Policy".

Rev. August 16, 1999

INSTRUCTOR: MR. OGAWA  
OFFICE: AT 6 (Phone: 638-3641 ext. 3251)  
OFFICE HRS: MON.-WED. 1:30-2:30 pm, THURS. 1:30-2:30 pm.  
LECTURE: TUESDAY, THURSDAY, & FRIDAY  
COURSE: GEAR TRAIN  
a. Manual Transmission  
b. Clutch and Support Systems  
c. Automatic Transmission

DATE: FALL  
TEXTS:

1. MANUAL TRANS & TRANSAXLE (Class) 2nd Ed. ERJAVEC  
MANUAL TRANS & TRANSAXLE (Lab) 2nd Ed. ERJAVEC
2. AUTOMATIC TRANS (Class) 3rd Ed. . . . . CHEK-  
CHART  
AUTOMATIC TRANS (Lab) 3rd Ed. . . . . CHEK-  
CHART
3. GUIDE TO AUTO CERT. EXAMINATION . . . . . HUGHES

- GRADING: Straight percentage system (70% passing)
1. Quizzes. . . . . 1/3  
a. Notebook (notes, hand-outs, tests)
  2. Lab. . . . . 1/3  
a. Technical Reports  
b. Hands-on Evaluation
  3. Final Exams. . . . . 1/3  
a. Specific Areas  
1. Manual Drive Train and Clutch/Support  
Systems  
2. Automatic Transmission

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TOTAL GRADE

4. ATTENDANCE may play a factor if you are to  
successfully pass this course.  
a. Three absences allowed per semester for  
all Instructors.  
b. Three tardies equal one absence. Please be  
on time.
5. Mid-term grade will be calculated by quiz and  
exam scores only. The deadline to drop the  
course without penalty will be Oct. 15 (Friday).
6. A computer print-out will be distributed or  
posted periodically with your grade total.  
It is your responsibility to keep returned  
tests, quizzes, and homework assignments for  
grade disputes. KEEP TRACK OF YOUR  
PERFORMANCE.

*Grade scale  
drop date*

ASSIGNMENTS:

1. Reading assignments will be assigned after each lecture period or student will follow assignment schedule.
2. Tests and quizzes can be given at any time.
3. Make-up of tests and quizzes
  - a. It is the students responsibility to contact Instructor.
  - b. Test or quiz cannot be made-up if:
    1. Reviewed in class.
    2. Excuse for absence unacceptable.
    3. Student is limited to two make-ups per semester.
  - c. Make-up quizzes will be arranged by instructor.
4. All homework, special assignments, and technical (lab) reports, will be handed-in on the assigned date. All late assignments will be penalized a minimum of one grade and one grade for each day late if allowed to be handed in late (discretion of Instructor).
5. Electronic duplication from other students or sources is prohibited if not approved by instructor.

LAB:

1. Time (approx.) in lab per group.
  - a. 12 days Manual Transmission and Clutch and support systems
    - (1) 6 days manual transmission
    - (2) 6 days demos and live-car repair
  - b. 12 days Automatic Transmission
    - (3) 6 days automatic transmission
    - (4) 6 days demos and live-car repair

CLASS LECTURE AND READING SCHEDULE

- TEXTS: (1) Manual Transmissions and Transaxle (Class & Lab)  
(2) Automatic Transmission (Class & Lab)

Week 1 . . . . .Metrics  
Week 2-7. . . . .Manual Transmission and  
Clutch/Support Systems  
Week 8-13 . . . . .Automatic Transmission

## Manual Transmission and Clutch/Support Systems

Saginaw four speed transmission . . . . . Hand-out

1. Safety (Class). . . . . Chapter 1  
Safety (Lab). . . . . Chapter 1  
Basic Tools/Procedures (Lab). . . . . Chapter 2
2. Drive Train Theory (Class). . . . . Chapter 2
3. Manual Transmission/Transaxles (Class). . Chapter 4  
Servicing Transmissions/Transaxles (Lab). Chapter 4
4. Bearings and Seals. . . . . Lecture
5. Clutches (Class). . . . . Chapter 3  
Servicing Clutches (Lab). . . . . Chapter 3
  
6. Four-Wheel-Drive Systems (Class). . . . . Chapter 8  
Servicing Four-Wheel-Drive Systems (Lab). Chapter 8
7. Drive Train Electrical  
Electronic Systems (Class). . . . . Chapter 9  
Servicing Drive Train  
Electrical Systems (Lab). . . . . Chapter 9

## Automatic Transmission

THM 350 . . . . . Handout

1. Introduction to Automatic Trans-  
missions and Transaxles . . . . .Chapter 1 (Class)  
Shop Practices, Measuring, and  
Conversion . . . . .Chapter 1 (Lab)
2. Gears and Gearsets . . . . .Chapter 2 (Class)
3. Apply Devices . . . . .Chapter 6 (Class)  
In Chassis Adjustment and Service .Chapter 3 (Lab)
4. Transmission Fluids, Filters, and  
Coolers . . . . .Chapter 7 (Class)  
Transmission Fluid, Filter, and  
Cooler Service . . . . .Chapter 2 (Lab)
5. Hydraulic Fundamentals . . . . .Chapter 3 (Class)
6. Transmission Hydraulic Systems . .Chapter 4 (Class)
7. Fluid Coupling and Torque Con-  
verters . . . . .Chapter 5 (Class)  
Torque Converter Testing and  
Service . . . . .Chapter 8 (Lab)
8. Electronic Control System  
Fundamentals . . . . .Chapter 9 (Lab)
9. Electronic Control Systems . . . .Chapter 10 (Class)  
Electronic Control System  
Service . . . . .Chapter 5 (Lab)

## Lab Reading Assignment:

1. Disassembly, Cleaning, and  
Inspection . . . . .Chapter 9 (Lab)
2. Gaskets, Seals, Bushings, Bearings,  
Washers, and Snaprings . . . . .Chapter 8 (Class)
3. Gasket, Seal, Bushing Replacement,  
and Thread Repair . . . . .Chapter 10 (Lab)
4. Unit Assembly . . . . .Chapter 11 (Lab)
5. Transmission Bench Testing . . . .Chapter 12 (Lab)

COURSE DESCRIPTION AND GOAL:

To comprehend and critically evaluate the operation of the automotive gear train: manual transmission and clutch/support systems and automatic transmission. The combination of lecture and lab will enable the student to successfully trouble-shoot, disassemble, and assemble to specifications all the gear train systems listed above. The student will be evaluated by technical and oral reports, hands-on efficiency, and quizzes and exams. A grade of 70% must be obtained to successfully pass the course.  
GLAD TO HAVE YOU THIS FALL!

AUTOMOTIVE TECHNOLOGY

1 YEAR - 1100 hours

Associate in Science Degree

Certificate of Achievement

**Purpose:** To provide the student with a one-year, 1100-hour, intensified program providing the basic skills and knowledge needed to enter the automotive service trade at the advanced apprentice level. Upon completion of the program, the student should qualify for the National Institute for Automotive Service Excellence (ASE) examinations and qualify as a Certificated General Automotive Technician once the ASE experience requirements are met.

The program is certified by the State of California, Bureau of Automotive Repair (BAR), to provide license preparation for emission control, brake, and lamp inspectors.

The eight automotive systems covered in this course follow the ASE automotive technician certification program. These specific areas are:

1. Engine Repair
2. Automatic Transmission and Transaxle
3. Manual Drive Train and Axles
4. Suspension and Steering
5. Brakes
6. Electrical Systems
7. Heating and Air Conditioning
8. Engine Performance

**Major Courses:**

Fall (Day) AT 10 . . . . . 16 Units  
Spring (Day) AT 11 . . . . . 16 Units

Total Units 32

Certification of Achievement -- will be issued after the successful completion of Fall and Spring semesters with a 70 % score plus scores of 70% on six of the eight automotive systems listed. Final semester score will be computed by the average score of all three instructors.

<u>Instructors:</u>	<u>Laboratory Technician:</u>	<u>Room:</u>	<u>Phone:</u>
Mr. Jewell	Mr. Aguirre	Automotive Lab	638-0372
Mr. Tuzman			
Mr. Ogawa			



Kings River Community College  
Industrial Technology Department  
Automotive Technology Program

Itemized expense list for the academic year.

Text Books

- |     |   |          |
|-----|---|----------|
| 1.  | <u>Guide to Automobile Certification Examination</u>  | OPTIONAL |
| 2.  | <u>Automotive Electrical &amp; Electronic Systems</u> | FALL     |
| 3.  | <u>Electronic Engine Controls</u>                     | SPRING   |
| 4.  | <u>Automotive Electrical Handbook</u>                 | FALL     |
| 5.  | <u>Manual Transmission &amp; Transaxle</u>            | FALL     |
| 6.  | <u>Automatic Transmission 2nd</u>                     | FALL     |
| 7.  | <u>Automotive Engine Rebuilding</u>                   | FALL     |
| 8.  | <u>Automotive Service &amp; Repair Tools</u>          | NOT/USED |
| 9.  | <u>Automotive Air Conditioning 6th</u>                | SPRING   |
| 10. | <u>Automotive Suspension &amp; Steering Systems</u>   | SPRING   |
| 11. | <u>MVPC Handbook</u>                                  | SPRING   |
| 12. | <u>Lamp Handbook</u>                                  | SPRING   |
| 13. | <u>Brake Handbook</u>                                 | SPRING   |
| 14. | <u>Clean Air Car (Workbook pkg.)</u>                  | SPRING   |
|     | a. Calif. Handbook package                            |          |
| 15. | <u>Fuel System and Emission Controls</u>              | SPRING   |
| 16. | <u>Automotive Brake Systems</u>                       | SPRING   |

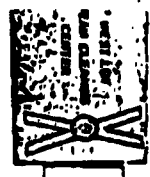
General Supplies

- |     |   |       |
|-----|---|-------|
| 1.  | Scantrons   | _____ |
| 2.  | Scantron Quiz Cards                                 | _____ |
| 3.  | 5 Felt Pens (Multi color)                           | _____ |
| 4.  | Tire Gage   | _____ |
| 5.  | Pocket Screwdriver                                  | _____ |
| 6.  | Sparkplug Gap Gage (wire type)                      | _____ |
| 7.  | <u>Safety Glasses</u>                               | _____ |
| 8.  | Small Pocket knife (2")                             | _____ |
| 9.  | Notebook (3 ring, 1", Black and <u>hard cover</u> ) | _____ |
| 10. | Tabbed Index pages (3 ring) 6+                      | _____ |
| 11. | 4 clear page protectors                             | _____ |
| 12. | Pocket pen lite                                     | _____ |
| 13. | Report cover (clear)                                | _____ |
| 14. | Pencil clips (2 ea.)                                | _____ |
| 15. | Index cards (3x5)                                   | _____ |
| 16. | 2 Pencils (#2)                                      | _____ |

General Student Expenses

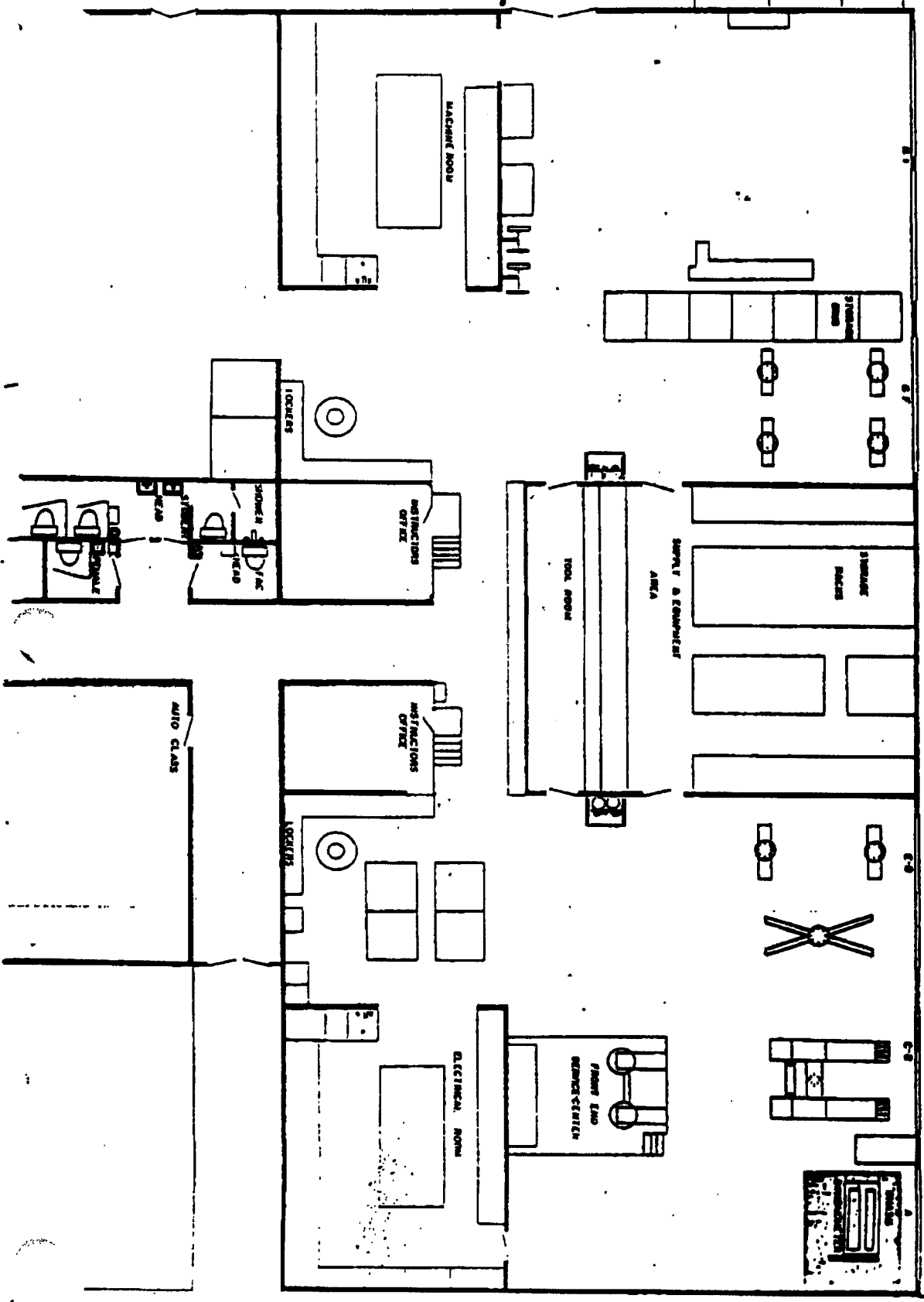
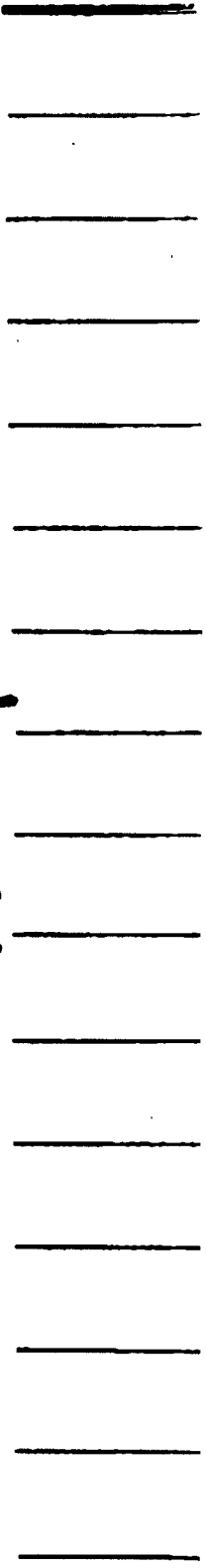
- |    |                                 |       |
|----|---------------------------------|-------|
| 1. | Fall and Spring Registration    | _____ |
| 2. | Fall and Spring Parking Permits | _____ |
| 3. | Fall and Spring Coverall Fees   | _____ |
| 4. | California State License Exams  |       |
|    | 4.1 BAR 90                      | _____ |
|    | 4.2 Brake                       | _____ |
|    | 4.3 Lamp                        | _____ |
| 5. | ASE Exams (plus registration)   | _____ |

WEST



EXHAUST HOODS, TYPED UP & AWAY

PARKING



EAST