COURSE OUTLINE
AUTO 241 – SUSPENSION DESIGN AND SERVICE

Prepared By: Issac R. Thomas
Revised By: Kenneth C. Wurster
A. **TITLE:** Suspension Design and Service

B. **COURSE NUMBER:** AUTO 241

C. **CREDIT HOURS:** 2

D. **WRITING INTENSIVE COURSE:** NO

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
   2, 50 minute lectures per week

H. **CATALOGUE DESCRIPTION:** This course covers the theory of, diagnostic and service procedures used in suspension and steering systems.

I. **PRE-REQUISITES/CO-REQUISITES:**
   a. Pre-requisite(s): AUTO 101 and AUTO 111 or MSPT 101
   b. Co-requisite(s): AUTO 282

J. **GOALS (STUDENT LEARNING OUTCOMES):**
   By the end of this course, the student will:

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<tr>
<th>Course Objective</th>
<th>Institutional SLO</th>
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| Identify the fundamentals of wheel alignment. | SLO-1: Communications Skills  
SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence |
| Identify the various types of vehicle chassis and suspension systems. | SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence |
| Describe suspension equipment safely. | SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence |
| Classify suspension, steering and tire problems accurately. | SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence |
| Identify factory special tools necessary to repair an automotive suspension or steering system. | SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence |
| Identify all steering components | SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence |
| Locate service information to diagnose and repair manual and power steering gears. | SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence |

SLO-1: Communications Skills  
SLO-2: Critical Thinking Skills  
SLO-3: Professional Competence  
SLO-4: Inter/Intrapersonal Skills

L. **REFERENCES:** Manufacturers Reference manuals, Mitchell manuals, All Data

M. **EQUIPMENT:** Students required automotive tool kit. All special tool provided by the lab.

N. **GRADING METHOD:** A-F

O. **MEASUREMENT CRITERIA/METHODS:** Quizzes, Exams, Homework, Classroom Participation and Attendance.

P. **DETAILED TOPICAL OUTLINE:**

1. Orientation
   - A. Classroom policy
   - B. Course Overview
   - C. Classroom expectations

2. Wheel Bearings
   - A. Types of Wheel Bearings
   - B. Construction - Bearing Support
   - C. Types of Lubricants
   - D. Seals
   - E. Problem Diagnosis

3. Tire and Wheels
   - A. Performance Requirements
   - B. Tire Construction
   - C. Tire Performance
   - D. Tire and Wheel Sizes
   - E. Tire and Wheel Inspection
   - F. Vibration Diagnosis

4. Suspension Systems
   - A. Suspension Types
   - B. Sprung and Unsprung Weight
   - C. Spring Requirements
   - D. Spring Types
   - E. Suspension Control Devices
   - F. Shock Absorbers

5. Suspension Control
   - A. Suspension Characteristics
   - B. Steering Linkage Characteristics
C. Ride Height and Handling  
D. Vehicle Steer  
E. Ride Quality  

6. Steering and Wheel Alignment  
   A. Steering and Suspension  
   B. System Geometry  
   C. Steering Linkages  
   D. Wheel Alignment  
   E. Problem Diagnosis  

7. Steering Systems  
   A. Manual Steering Gear Operation  
   B. Power Steering System Operation  
   C. Power Steering Pumps  
   D. Power Steering Gears  
   E. Power Steering Diagnosis  

Q. **LABORATORY OUTLINE:** N/A