

**STATE UNIVERSITY OF NEW YORK  
COLLEGE OF TECHNOLOGY  
CANTON, NEW YORK**



**MASTER SYLLABUS**

**COURSE NUMBER – COURSE NAME  
AUTO 241 – SUSPENSION DESIGN AND SERVICE**

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**Updated by: Brandon Baldwin**

**Canino School of Engineering Technology**

**Department: Automotive Technology Program**

**Semester/Year: Fall 2018**

- A. **TITLE:** Suspension Design and Service
- B. **COURSE NUMBER:** AUTO 241
- C. **CREDIT HOURS:** (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

# Credit Hours: 2 !  
# Lecture Hours: 2 per week !  
# Lab Hours:        per week !  
  Other:        per week

Course Length: 15 Weeks

- D. **WRITING INTENSIVE COURSE:** Yes  No
- E. **GER CATEGORY:** None:  Yes: GER !  
*If course satisfies more than one: GER !*
- F. **SEMESTER(S) OFFERED:** Fall  Spring  Fall & Spring

G. **COURSE DESCRIPTION:**

This course covers the theory of, diagnostic and service procedures used in suspension and steering systems.

- H. **PRE-REQUISITES:** None  Yes  If yes, list below:

AUTO 101 and AUTO 111 or MSPT 101

**CO-REQUISITES:** None  Yes  If yes, list below:

AUTO 282

**I. STUDENT LEARNING OUTCOMES: (see key below)**

By the end of this course, the student will be able to:

<b><u>Course Student Learning Outcome</u></b> <b><u>[SLO]</u></b>	<b><u>Program Student Learning Outcome</u></b> <b><u>[PSLO]</u></b>	<b><u>GER</u></b> <i>[If Applicable]</i>	<b><u>ISLO &amp; SUBSETS</u></b>	
Identify the fundamentals of wheel alignment	ALO1, ALO2	N/A	1-Comm Skills 2-Crit Think 5-Ind, Prof, Disc, Know Skills	O CA IA IM
Identify the various types of vehicle chassis and suspension systems	ALO1, ALO2, ALO3	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA IM Subsets
Describe suspension equipment safely	ALO1, ALO2	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets
Classify suspension, steering and tire problems accurately	ALO1, ALO2, ALO3	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA PS IA Subsets
Identify factory special tools necessary to repair an automotive suspension or steering system	ALO1, ALO2	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	IA PS Subsets CA
Identify all steering components	ALO1, ALO2	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets

Locate service information to diagnose and repair manual and power steering gears.	ALO1, ALO2	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets
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<b>KEY</b>	<b><u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u></b>
<b>ISLO #</b>	<b>ISLO &amp; Subsets</b>
<b>1</b>	<b>Communication Skills</b> Oral [O], Written [W]
<b>2</b>	<b>Critical Thinking</b> <i>Critical Analysis [CA] , Inquiry &amp; Analysis [IA] , Problem Solving [PS]</i>
<b>3</b>	<b>Foundational Skills</b> <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
<b>4</b>	<b>Social Responsibility</b> <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
<b>5</b>	<b>Industry, Professional, Discipline Specific Knowledge and Skills</b>

\*Include program objectives if applicable. Please consult with Program Coordinator !

J. **APPLIED LEARNING COMPONENT:** Yes  No

If YES, select one or more of the following categories:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement              |
| <input type="checkbox"/> Internship               | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement       | <input checked="" type="checkbox"/> Research           |
| <input type="checkbox"/> Practicum                | <input type="checkbox"/> Entrepreneurship              |
| <input type="checkbox"/> Service Learning         | (program, class, project)                              |
| <input type="checkbox"/> Community Service        |  |

K. **TEXTS:**

Halderman,J. (2014). Automotive Steering, Suspension, and Alignment

L. **REFERENCES:**

Manufactures Reference Manulals, Mitchell Manuals, AllData, ShopKeyPro

M. **EQUIPMENT:** None  Needed: Technically enhanced classroom.

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

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Test, quizzes, homework, and classroom participation.

P. **DETAILED COURSE 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: None  Yes