Course Outline

COURSE: JLE 153
DIVISION: 50
ALSO LISTED AS:

TERM EFFECTIVE: Spring 2019
CURRICULUM APPROVAL DATE: 10/9/2018

SHORT TITLE: TRAFFIC INTERMEDIATE
LONG TITLE: Traffic Collision Investigations Intermediate

<table>
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<tr>
<th>Units</th>
<th>Number of Weeks</th>
<th>Contact Hours/Week</th>
<th>Total Contact Hours</th>
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<td>2</td>
<td>18</td>
<td>Lecture: 1.33</td>
<td>Lecture: 23.94</td>
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<td>Lab: 3.1</td>
<td>Lab: 55.8</td>
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<td>Other: 0</td>
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<td>Total: 4.43</td>
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COURSE DESCRIPTION:

This course teaches the proper techniques for scene assessment, vehicle assessment, physical evidence, photography, definitions and terminology, and field and practical exercises in traffic collision investigations. This is a pass/no pass course. PREREQUISITE: POST Basic Certificate or Equivalent.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES
P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:
02 - Lecture and/or discussion
03 - Lecture/Laboratory
04 - Laboratory/Studio/Activity
STUDENT LEARNING OUTCOMES:
1. Identify the four standard types of signage.
Measure of assessment: written exam
Institution Outcome Map
1. Communication:
1.1 Students will communicate effectively in many different situations, involving diverse people and viewpoints.
1.2 Speaking: Students will speak in an understandable and organized fashion to explain their ideas, express their feelings, or support a conclusion.
1.3 Listening: Students will listen actively and respectfully to analyze the substance of others' comments.
1.4 Reading: Students will read effectively and analytically and will comprehend at the college level.
1.5 Writing: Students will write in an understandable and organized fashion to explain their ideas, express their feelings, or support a conclusion.
3. Information Competency:
3.1 Students will use printed materials, personal communication, observation, and electronic resources to find and evaluate information.
3.2 Research: Students will do research at a level that is necessary to achieve personal, professional, and educational success.
3.3 Technological Competency: Students will use technological applications to find, organize, and present information effectively.
7. Content Specific:
2. Identify road scars at a mock collision scene.
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2. Cognition:
2.1 Students will think logically and critically in solving problems; explaining their conclusions; and evaluating, supporting, or critiquing the thinking of others.
2.2 Analysis and Synthesis: Students will understand and build upon complex issues and discover the connections and correlations among ideas to advance toward a valid independent conclusion.
2.3 Problem Solving: Students will identify and analyze real or potential problems and develop, evaluate, and test possible solutions, using the scientific method where appropriate.
2.4 Creative Thinking: Students will formulate ideas and concepts in addition to using those of others.
2.5 Quantitative Reasoning: Students will use college-level mathematical concepts and methods to understand, analyze, and explain issues in quantitative terms.
2.6 Transfer of Knowledge and Skills to a New Context: Students will apply their knowledge and skills to new and varied situations.
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7. Content Specific:
3. Demonstrate identifying proper location, damage match points, imprints, and recovery damage on scene of collision.

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CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS
Curriculum Approval Date: 10/9/2018
1. Registration and Introduction of Class Instructors
   a. Expectation of the students
2. Introduction to the Nine-Cell Matrix
   a. Humans, vehicles, environment
   b. Pre-collision, At-collision, Post-collision
   c. Importance of a methodical approach to the investigation
3. Highway Engineering (introduction)
   a. The highway environment
   b. Standard terminology
   c. As-Built plans
   d. Signage and roadway markings
      i. Four standard types of signs
   e. Visibility and line-of-sight
   f. Involving your city / county / State highway engineers
4. Definitions and Terminology
a. Definitions and characteristics
   i. Tire friction mark
   ii. Marking characteristics
b. Basic causes of tire friction marks
   i. Extreme deceleration
   ii. Extreme acceleration
   iii. Extreme change of direction
c. Types of tire friction marks (SLIC)
   i. Impending
   ii. Locked
   iii. Side
   iv. Yaw (critical speed scuffs)
   v. Skip
   vi. Gap
   vii. Acceleration
   viii. Collision scrub
   ix. Deflated tire mark
   x. Vehicle specific
d. Course specific terminology and definitions
5. Identification of Physical Evidence
   a. Skid mark identification
      i. Marking found at the collision scene
      ii. Marking seen in photograph
   b. Basic marking mechanism
      i. Smear
      ii. Tire Abrasion
      iii. Tire Abrasion with Smear
      iv. Pavement grinding
      v. Erasing
      vi. Tire Smear
      vii. Tire Printing
      viii. Squeegee marks
      ix. Stains
c. Road Scars
   i. Scratches and scrapes
   ii. Gouges and grooves
   iii. Chops
   iv. Chips
d. Debris
   i. Types of debris
   ii. Significance of debris
   iii. Debris pattern
e. Vehicle / Body fluids
   i. Spatter
   ii. Dribble (fluid trail)
   iii. Puddle (pool)
   iv. Run-off
   v. Soak-in
vi. Tracking

6. Photography
   a. Collision scene photography
      i. Number of photographs
   ii. Overview to close-ups
   iii. From different directions
   iv. From each driver’s perspective
   v. Environment (weather)
   b. Daytime vs. Nighttime photography
      i. Oblique lighting
      ii. Flash equipment
      iii. Glare
   c. Vehicle
      i. At the crash scene (position of rest)
      ii. At the tow yard
      iii. Orientation to the vehicle
   d. Video
      i. With and without narration
      ii. Sound capture
   e. People
      i. At the collision scene
      ii. Injury and autopsy photos

7. Scene Assessment
   a. Scene management responsibilities
   b. Keeping the roadway open vs. closing a roadway to all traffic
   c. Officer safety
   d. Duration of incident
      i. Traffic control
      ii. Warning signs and cones

8. Vehicle Damage Assessment
   a. Location and severity
   b. Contact vs. Induced damage
   c. Primary vs. Secondary contact
   d. Intrusion
   e. Paint / material transfers
   f. Imprints
   g. Damage match points
   h. Photography
      i. Marking of vehicle’s POR before removal
   j. Tow out / recovery damage

9. Math Review
   a. Calculator orientation and logic
      i. Functions
      ii. Operations
   c. Basic mathematics (review)
      i. Order of operation
      ii. Addition, subtraction
      iii. Multiplication, division
iv. Fractions, decimals
v. Square and square roots
d. Algebra
   i. Variables
   ii. Solving for unknowns
e. Physics (basic overview)
   i. Newton’s Laws
f. Overview of basic speed equation derivations
   i. Speed from locked wheel tire friction marks
   ii. Speed from yaw equation

10. Drag Factor
a. Coefficient of friction
   i. Definition
   ii. Static vs. dynamic
b. Methods to determine
   i. Estimation
a. Experience
b. Published values
ii. Drag sled
iii. Slide a patrol car
iv. Slide/pull the actual collision vehicle
c. Factors affecting Coefficient of Friction
   i. Roadway surface
   ii. Grade / super elevation
   iii. Weather
   iv. Other factors
      a. Higher speeds
      b. Vehicle
      c. Tire size
d. Drag Sled
   i. Weight of sled
   ii. Force required to move sled
   iii. Formula
e. Braking Efficiency
   i. Worn Brakes
   ii. Low brake fluid
   iii. Brakes out of adjustment
   iv. Overloaded vehicles
   v. Loss of hydraulic pressure
   vi. Brake fade
f. Resultant Drag Factor
   i. Weigh transfer
   ii. Locked vs. rolling wheel
   iii. Other
      1. Pedestrian
      2. Downsiding motorcycle
      3. Sheet metal

11. Speed Computation
a. Introduction to the Basic Speed Equation
b. Application
   i. Basic Speed Equation
   ii. Blackboard examples problems
   iii. Classroom exercises
c. Introduction to the Combined Speed Equation
   i. Equation forms
   ii. Application of combined speed equations
   iii. Special cases
   iv. Classroom problems
d. Introduction to the Critical Speed Equation
   i. Critical Speed Equation
   ii. Radius Equation
   iii. Skid mark Identification and Interpretation
v. Application of Critical Speed Scuffmark Equation
vi. Determining the critical speed of a curve
12. Measuring and Diagramming
   a. Importance of measuring
   b. Measuring equipment
      i. Estimates
      ii. Odometer
      iii. Pacing / footing
      iv. Rolatape
      v. Measuring tape
      vi. Surveying equipment
c. Marking equipment
   i. Lumber crayons
   ii. Spray paints
   iii. Nail/stakes
iv. 3x5 cards and other marking devices
d. Marking types / methods
   i. Brackets vs. dots
ii. Vehicle POR’s
      iii. Tire friction marks
      iv. Other types of ground evidence
      v. Bodies
      vi. Fluids
e. Pre-measuring techniques
   i. Officer safety
   ii. Pre-planning what and how to measure
   iii. Sketches
   iv. Note taking
f. Measuring methodologies
   i. Spot-coordinate system (most common)
   ii. Triangulation
   iii. Stationing
g. Spot-Coordination System
   i. Definition
ii. Establishing the grid

h. Triangulation
   i. Definition
   ii. Establishing reference points
   iii. Required accuracy

i. Stationing – Straight Roadway
   i. Definition and terminology
   ii. Establishing the Station Line
   iii. Numbering the station line
   iv. Taking off-set measurements from the station line
   v. Note taking and recording measurements
   vi. Using the station line to complete form 555
   vii. Combining triangulation with a station line

j. Minimum number of spots required to document physical evidence
   i. Tire friction marks
   ii. Vehicle locations (POR)
   iii. Bodies
   iv. Short marks, gouges and other small elements of evidence
   v. Large areas of evidence (debris, fluid pools, stains, etc.)

j. Diagramming the collision scene
   i. Scale diagram vs. Proportional diagram
   ii. Equipment / drawing aids
   iii. Plotting the scene evidence
   iv. Labeling
   v. Symbols

13. Field / Practical Exercises
   a. Tire mark Demonstration and Analysis
      i. Low speed
      ii. High speed
      iii. Critical speed scuff
      iv. Motorcycles
      v. Commercial vehicles (as available)
   b. Student exercises
      i. Test skids
         1. Instructor supervised
         2. Data gathering
      ii. Document / Diagram
         1. Narrative reports
         2. Diagrams
METHODS OF INSTRUCTION:
Skills Demonstration, Lecture, Scenario Training

OUT OF CLASS ASSIGNMENTS
Required Outside Hours:
Assignment Description: review - Basic Mathematics and Algebra review handouts

METHODS OF EVALUATION:
Writing assignments
Percent of total grade: 25.00 %
Percent range of total grade: 10 % to 15 % completing written collision Reports. If this is a degree applicable course, but substantial writing assignments are NOT appropriate, indicate reason Course primarily involves skill demonstration or problem solving
Problem-solving assignments
Percent of total grade: 25.00 %
Percent range of total grade: 30 % to 40 % Field Work; Other: Skills Exam
Skill demonstrations
Percent of total grade: 50.00 %

REPRESENTATIVE TEXTBOOKS:
n/a
ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:
CSU GE:
IGETC:
CSU TRANSFER:
    Transferable CSU, effective 201430
UC TRANSFER:
    Not Transferable

SUPPLEMENTAL DATA:
Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
Program Status: 2 Stand-alone
Special Class Status: N
CAN:
CAN Sequence:
CSU Crosswalk Course Department: JLE
CSU Crosswalk Course Number: 153
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: C
Maximum Hours: 2
Minimum Hours: 2
Course Control Number: CCC000551745
Sports/Physical Education Course: N
Taxonomy of Program: 210550