

Washtenaw Community College Comprehensive Report

ABR 201 Lightweighting Composite Repair Effective Term: Winter 2020

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Transportation Technologies
Discipline: Auto Body Repair (new)
Course Number: 201
Org Number: 14100
Full Course Title: Lightweighting Composite Repair
Transcript Title: Lightweighting Composite Repai
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:

Consultation with all departments affected by this course is required.

Course description

Outcomes/Assessment

Rationale: Update of master syllabus after assessment. We found the assessment tools very difficult to use and in need of an update.

Proposed Start Semester: Fall 2019

Course Description: In this course, students learn about composite materials and their uses in modern vehicles. Students are introduced to material types (such as resins with reinforcing carbon fiber) and their construction uses, specialty equipment, and the importance of vacuum bagging. Students develop and execute repair plans using composite materials and make molds as part of the "light-weighting" and repair process.

Course Credit Hours

Variable hours: No

Credits: 4

Lecture Hours: Instructor: 45 **Student:** 45

Lab: Instructor: 60 **Student:** 60

Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 105 **Student:** 105

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

Prerequisite

ABR 123 minimum grade "B-"

or

Prerequisite

ASV 131 minimum grade "C"

General Education**Request Course Transfer**

Proposed For:

Student Learning Outcomes

1. Recognize and apply shop rules, procedures and safety standards associated with composite materials.

Assessment 1

Assessment Tool: Departmentally-developed safety test

Assessment Date: Winter 2022

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 75% of students will score 100% on their first attempt, and all students must score 100%.

Who will score and analyze the data: Departmental faculty

2. Create projects utilizing composite materials.

Assessment 1

Assessment Tool: Student project

Assessment Date: Winter 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 75% of students will score 80% or better.

Who will score and analyze the data: Departmental faculty

3. Perform repairs to various composite materials including the application, infusion and curing of polymer resins.

Assessment 1

Assessment Tool: Student repair project

Assessment Date: Winter 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 75% of students will score 80% or better.

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Identify and apply all safety standards and equipment associated with composite materials.
2. Read and interpret uses of composite materials in lightweighting vehicles.
3. Diagnose and evaluate damage to a composite repair site.
4. Identify and interpret fiber cloth axial orientation.
5. Demonstrate proper use of pre-preg and non-resin carbon fiber cloth.
6. Demonstrate proper use of resin in composite materials.
7. Recognize and perform repairs to damaged composite structures.
8. Demonstrate proper use of a vacuum bag compression mold for creating a composite part.

9. Recognize and apply proper techniques in cutting and applying composite material.
10. Demonstrate use of hot bonding and/or heat blanket systems.
11. Demonstrate proper use of tools as associated with composite materials.
12. Diagnose and repair various types of composite and lightweight materials in the automotive industry.

New Resources for Course

Course Textbooks/Resources

Textbooks

Wanberg, John. *Composite Materials: Fabrication Handbook*, Volumes 1-3 ed. Wolfgang Publications, 2012

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Computer workstations/lab

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Robert Lowing</i>	<i>Faculty Preparer</i>	<i>Aug 06, 2019</i>
Department Chair/Area Director: <i>Justin Morningstar</i>	<i>Recommend Approval</i>	<i>Aug 07, 2019</i>
Dean: <i>Brandon Tucker</i>	<i>Recommend Approval</i>	<i>Aug 22, 2019</i>
Curriculum Committee Chair: <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Sep 14, 2019</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Sep 20, 2019</i>
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Sep 26, 2019</i>