Washtenaw Community College Comprehensive Report

ATT 201 Lightweighting Composite Repair
Effective Term: Fall 2025

Course Cover

College: Advanced Technologies and Public Service Careers
Division: Advanced Technologies and Public Service Careers
Department: Transportation Technologies
Discipline: Automotive & Transportation Tech (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: Course Change
Change Information:
Course discipline code & number
Rationale: Update the course for the new discipline.
Proposed Start Semester: Fall 2025
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. Additionally, students will develop and execute project plans to build composite parts such as a composite laminate and a 3D laminate utilizing a core material. This course was previously ABR 201.

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
ATT 111 minimum grade "C"
or

Prerequisite
ATT 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: Outcome-related departmentally-developed safety test questions
   Assessment Date: Winter 2026
   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.
   Who will score and analyze the data: Departmental faculty

2. Create projects utilizing composite materials.
   Assessment 1
   Assessment Tool: Outcome-related student project plan
   Assessment Date: Winter 2026
   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: Outcome-related student repair project
   Assessment Date: Winter 2026
   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 composite material in a laminate that utilizes a core.
9. Recognize and apply proper techniques in cutting and applying composite material.

10. Demonstrate use of short-wave infrared and autoclave as heating sources to cure a laminate.
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.
13. Demonstrate the proper use of a mold shape in creating a three-dimensional part with a composite material.

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

Reviewer	Action	Date
Faculty Preparer:		
Shawn Deron	*Faculty Preparer*	*Aug 28, 2024*
Department Chair/Area Director:		
Rocky Roberts	*Recommend Approval*	*Aug 28, 2024*
Dean:		
Eva Samulski	*Recommend Approval*	*Aug 28, 2024*
Curriculum Committee Chair:		
Randy Van Wagnen	*Recommend Approval*	*Mar 20, 2025*
Assessment Committee Chair:		
Jessica Hale	*Recommend Approval*	*Mar 20, 2025*
Vice President for Instruction:		
Brandon Tucker	*Approve*	*Mar 21, 2025*

Washtenaw Community College Comprehensive Report

ABR 201 Lightweighting Composite Repair
Effective Term: Fall 2024

Course Cover

College: Advanced Technologies and Public Service Careers
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.
Pre-requisite, co-requisite, or enrollment restrictions
Objectives/Evaluation
Rationale: Updating course based on changes to industry needs.
Proposed Start Semester: Fall 2023
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. Additionally, students will develop and execute project plans to build composite parts such as a composite laminate and a 3D laminate utilizing a core material.

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 111 minimum grade "C"

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: Outcome-related departmentally-developed safety test questions
   Assessment Date: Winter 2026
   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.
   Who will score and analyze the data: Departmental faculty

2. Create projects utilizing composite materials.
   Assessment 1
   Assessment Tool: Outcome-related student project plan
   Assessment Date: Winter 2026
   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: Outcome-related student repair project
   Assessment Date: Winter 2026
   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 composite material in a laminate that utilizes a core.

9. Recognize and apply proper techniques in cutting and applying composite material.
10. Demonstrate use of short-wave infrared and autoclave as heating sources to cure a laminate.
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.
13. Demonstrate the proper use of a mold shape in creating a three-dimensional part with a composite material.

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

Reviewer	Action	Date
Faculty Preparer:		
Robert Lowing	*Faculty Preparer*	*Jul 25, 2023*
Department Chair/Area Director:		
Rocky Roberts	*Recommend Approval*	*Aug 16, 2023*
Dean:		
Jimmie Baber	*Recommend Approval*	*Aug 17, 2023*
Curriculum Committee Chair:		
Randy Van Wagnen	*Recommend Approval*	*Mar 09, 2024*
Assessment Committee Chair:		
Jessica Hale	*Recommend Approval*	*Mar 13, 2024*
Vice President for Instruction:		
Brandon Tucker	*Approve*	*Mar 15, 2024*

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

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