

 <b>Nashua Community College</b>	<b>Mechanical/Electrical III CRTN 245N Spring 2021</b>
<b>Department</b>	<b>Industry and Transportation</b>
<b>Instructor</b>	<b>Randolph Biggs</b>
<b>NCC Email</b>	<b>rbiggs@ccsnh.edu</b>
<b>Telephone Number</b>	
<b>Office Hours</b>	By appointment
<b>Office Location</b>	Automotive Building Rm. 7
<b>Class Days/Meeting Time</b>	<b>Lecture Tuesday 10:00am-10:50am (online) Thursday 1:00pm-1:50pm (online) Lab Thursday 2:00pm-4:50pm</b>
<b>Class Location</b>	<b>Automotive Building Lab Rm.6</b>

### **Rationale:**

This course is designed to give students the knowledge to diagnose and repair common mechanical and electrical problems they may encounter during collision repair.

### **Course Description:**

Students will learn electrical component testing and diagnosis on switches, relays, motors, connectors and wiring, Discussion and demonstrations of safety with high voltage systems on hybrid vehicles will be covered. Inspection and replacement of fuel and exhaust system components.

Students will have hands on practice replacing supplemental restraint systems and components as well as diagnose DTC's related to SRS. Shop safety will be stressed and applied.

### **Course Competencies:**

<b>Competency (Knowledge and Skills)</b>	<b>Critical Thinking Level</b>
Students will be able to:	
Identify programmable electronic components, check MIL and record data	Knowledge/Application
Verify headlamp operation and practice in headlamp aiming	Application
Inspect, test and replace switches, relays, connectors, wires, motors and sockets in electrical circuits	Knowledge/Application
Demonstrate self-grounding procedures for handling electronics	Application
Identify safe handling and disabling of high voltage systems in hybrid vehicles	Knowledge
Inspect, remove and replace exhaust system components	Knowledge/Application
Inspect, remove and replace fuel system components	Knowledge/Application
Inspect, remove and replace evaporative system components	Application
Inspect, remove and replace seatbelts and shoulder harnesses	Knowledge/Application
Inspect and verify proper operation of seatbelts	Knowledge/Application
Disable and enable Supplemental Restraint Systems	Application
Inspect, remove and replace SRS wiring, sensors, air bags and pretensioners	Application
Diagnose DTC's for restraint systems	Application

## **Essential Questions:**

How do you find out what the various indicator lamps on your dash mean?  
What type of equipment is used to diagnose vehicle electrical problems?  
What precautions are necessary to work on hybrid vehicles?  
How do you diagnose why an air bag indicator lamp is on?

## **Required Textbook(s):**

Auto Fundamentals 11<sup>th</sup> Edition. By Stockel, Stockel, and Johnson  
ISBN 978-1-61960-820-7

## **Supplemental Materials:**

These may include notebook, additional readings, and required tools

## **Course Expectations:**

Class attendance is considered essential to academic success of students. Since there are constant learning opportunities between faculty members and students, and between students and other students within the classroom or lab, it is expected that students will attend each meeting of each course in which they are enrolled. In addition, the lesson disruptions caused by late arrivals and the resulting missed material is likely to negatively impact each student's learning experience. The instructor reserves the right to refuse admission to any student who repeatedly arrives late for class or lab. Attendance information is typically collected at the beginning of each class/lab meeting, consequently there is no distinction between absent and late. Furthermore, students may expect random, weekly participation quizzes on covered material and assigned reading. Participation quizzes are generally given at the beginning of class. Only those students who are present, and on time, may participate. Participation quizzes are not eligible for make-up.

If a student is absent more than the number of hours a course meets in a two week period, (10 hours) the faculty may withdraw that student from the course with an "AF" grade any time during the semester. An "AF" grade is calculated in the GPA as an "F". There is no provision in the course calendar for repeating of lectures, labs or demonstrations due to absenteeism.

Make Up Policy:

Not all missed work is eligible for make-up. It is the student's responsibility to inquire about missed work at the first class meeting after returning from an absence. The instructor will determine eligibility and provide an appropriate assignment. Any approved assignment must be completed and turned in as directed. There is no provision for make-up of a midterm exam, final exam, or lab practical exam.

## Grading:

Grades will be assigned according to the department scale:

Point/letter grade equivalents:	Grading Weights:
100-94: A	5% Attendance
93-90: A-	15% Quizzes and Homework
89-87: B+	20% Midterm Written Exam
86-84: B	20% Final Written Exam
83-80: B-	20% Lab Performance
79-77: C+	20% Lab Exam
76-74: C	
73-70: C-	
69-67: D+	
66-64: D	
63-60: D-	
Below 60: F	

## Available Support Services

**Tutoring, The Writing Center, Available Academic Services:** The Academic Success Center | Room 100 offers academic support services which are open to all NCC students looking for additional help with their college assignments. Math tutoring and writing assistance are available. The Writing Center is for any student seeking assistance with the writing process for any class, not just College Composition. For more information and to view the tutoring schedules view here: <http://www.nashuacc.edu/student-services/academic-success-center>

**Classroom Accommodations:** Students who have a documented disability (physical, learning, or mental health) and require reasonable classroom accommodations must meet with the Disabilities Support Coordinator to set up a NCC Reasonable Accommodation Plan (RAP). If you had an IEP or 504 in high school, you may qualify for a plan. If you would like more information or if you are not sure if you qualify for a plan, please contact Jodi Quinn, Disabilities Support Coordinator, located in The Academic Success Center (Room 100), 603-578-8900 ext. 1451. View additional information and the application here: <http://www.nashuacc.edu/student-services/academic-success-center/disability-services> In order to receive classroom accommodations, it is the student's

responsibility to meet with his/her instructor privately and provide a hard copy of the signed Reasonable Accommodation Plan (RAP) each term the student wants to utilize classroom accommodations even if the student has had that instructor in a previous term.

**Audio Record Classroom Lecture:** Please note that as a student in this class, you may have a classmate who by permission can audio record class lectures for his/her learning purposes. **Only students with prior written permission** from the instructor or the Disabilities Support Coordinator may audio record class lectures - *for educational purposes only*. Students who audio record class lectures are prohibited from selling, transcribing, or distributing the recordings in *any manner* and are asked to delete the recordings when it is no longer essential for their learning purposes.

**Title IX Statement:** Classroom instructors at Nashua Community College are encouraged to create and maintain a safe learning environment in which students feel able to share opinions and related life experiences in classroom discussions, in written work, and in meetings with professors. To the greatest extent possible, this information will be kept private. However, staff and faculty have a legal obligation to report information concerning sexual misconduct, violence and exploitation of individuals per federal statute and in compliance with established policies and procedures at Nashua Community College. If you have been subjected to sexual misconduct, violence or exploitation, we encourage you to contact your NCC Title IX representative Lizbeth Gonzalez, 603-578-8900 x1528\_ or [lgonzalez@ccsnh.edu](mailto:lgonzalez@ccsnh.edu) for support and assistance. You may also contact Bridges, the local crisis center, for free and confidential services at their 24hr support line 603-883-3044. You do not need to be in crisis to call.

Additional information including resources can be found at:

New Hampshire Coalition Against Domestic and Sexual Violence:  
[https://www.nhcadv.org/uploads/1/0/7/5/107511883/nhcadv\\_catchment\\_map.pdf](https://www.nhcadv.org/uploads/1/0/7/5/107511883/nhcadv_catchment_map.pdf)

uSafeUS <https://usafeus.org/app3/webviewer.html>

Bridges <https://www.bridgesnh.org/>

**Additional Student Support Services:** Information on additional support services for NCC students can be found at <http://nashuacc.edu/student-services/where-to-find-assistance-at-ncc>

## **Department Policies**

Cellphones, laptops, tablets and other electronic equipment should be shut off during class unless previously approved by instructor.

**Required Tools:**

All students are required to possess hand tools per the *Required Tool List*. Each student is expected to have the tools available for each lab session. The instructor reserves the right to refuse admission to (or dismiss from) lab any student who is not regularly prepared with the required tools. All tools should be at the college no later than the first Monday in October.

## College Policies

**AF Policy:** If a student misses more than the number of hours the course meets during a two-week period (e.g. six hours for a three credit course), the faculty may withdraw a student from the course with an "AF" grade. Please note that absences, tardies, and leaving class early all count towards "missed class time."

Students should also understand an AF grade can be assigned by an instructor or an administrator at any time for reasons other than poor grade performance or failure to meet attendance requirements e.g., violation of the Student Code of Conduct, disruptive behavior, etc.

Please be advised that if the behavior of any student (or students) continually disrupts the learning of his/her classmates, the following steps will be taken 1) verbal warning; 2) meeting with instructor and department chair; 3) referral to Vice President of Academic Affairs and/or removal from the course with AF grade.

An "AF" grade is calculated in the GPA as an "F". Students should refer to the student handbook for additional information about the AF policy.

**Canvas:** All instructors at NCC will be using Canvas. Canvas is the online learning management system used by instructors and learners at Nashua Community College. Instructors may post syllabi, course related documents and grades in Canvas. Students may be required to submit assignments and/or take assessments through Canvas and/or participate in discussion boards.

To directly link to Canvas On Demand tutorials, please visit the following link:

[https://community.canvaslms.com/community/answers/guides/video-guide#jive\\_content\\_id\\_Students](https://community.canvaslms.com/community/answers/guides/video-guide#jive_content_id_Students)

If you have forgotten your Easy Login Password information, please visit the following link: <https://password.ccsnh.edu/accounts/Reset>

**If class is ever cancelled because of instructor illness or inclement weather, students will need to check Canvas for their assignments.**

**College Email System:** Nashua Community College has established a College electronic mail ("email") system as a means of the College sending official information to enrolled students, and for students to send communication to their instructors and College personnel. All students registered at NCC will be assigned a College email account/address to be used as the only email address for all email communication: 1) sent to the students from their instructors and from all College personnel; and, 2) sent by the students to their instructors and to all College personnel.

In addition:

- Students should check their College email account regularly to ensure they are staying current with all official communications. Official communication includes, but is not limited to, policy announcements, registration and billing information, schedule changes, emergency notifications and other critical and time sensitive information.
- Students should also check their college email account to be sure that they are current with all email communication from their faculty.
- The student email account/address should be the only e-mail address students use to send email to faculty and College personnel so that student email is recognized and opened.
- This service is provided exclusively to the students of NCC. Accounts are for individual use only, and are not transferable or to be used by any other individual.
- Students using their College email account do so under the policies set forth in the Student Handbook under "Student Computer Conduct Code".

**Sensitive Materials Policy:** During the semester, in order to cover certain academic topics, there may be occasions to view or discuss material which may not meet the student's own personal definition of appropriateness. At such times, every student has the right to decide not to participate. Every effort will be made by the instructor to notify students in advance of when such sensitive material will be used so that students can make alternative arrangements. Faculty will guide students in the identification of alternate learning opportunities consistent with relevant course objectives so that students opting out of scheduled "sensitive" learning experiences will not be penalized academically in any way. Please note the opportunity to leave the classroom discretely is always available to each student when such sensitive material is being discussed. The student then has the responsibility before the next class meeting to inform the instructor as to the reason for leaving.

**Plagiarism Policy:** Plagiarism is a serious violation of a student's academic integrity and the trust between a student and his or her teachers. Plagiarism is the

act of a person presenting another person's work as if it were his or her own original work. Such acts of plagiarism include, but are not limited to:

1. A student submitting as his or her own work an entire essay or other assignment written by another person.
2. A student taking word for word a section or sections of another person's work without proper acknowledgment of the source and that the material is quoted.
3. A student using statistics or other such facts or insights as if these were the result of the student's efforts and thus lacking proper acknowledgment of the original source.
4. The paraphrasing of another person's unique work with no acknowledgment of the original source.
5. Copying another student's work on a quiz or test.

When a student is found to have plagiarized an academic assignment, it will be up to each instructor to determine the penalty. Depending on the severity of the incident, this could range from a warning to a loss of credit for the assignment. In all cases of plagiarism, the student's advisor will be notified and the incident will be documented. If any further incidents of plagiarism are reported to the student's advisor, additional sanctions will be imposed. These may include notification of the Vice President of Academic Affairs; loss of credit for the course; suspension or dismissal from a department program; academic probation; and/or expulsion from the College.

### **Credit Hour Guidelines**

1. A credit hour shall be the equivalent of one (1) hour of classroom or direct faculty instruction and a minimum of two (2) hours of out-of-class student work each week for 15 or 16 weeks.
2. A credit hour shall be allocated based on the following:

Category	Contact Hours per Week	Contact Hours per Sem. (based on minimum 15 week semester)
Class	1	15
Laboratory	2 or 3	30-45
Clinical	3 to 5	45-75
Practicum, Fieldwork	3	45
Internship	3 to 6	45-90
Co-op	Variable by Dept.	Variable by Dept.

## **Course Calendar**



Week	Month	Day	Topic	Assignment Due	Targeted Competencies*
1	Jan	19	<u>Basic auto electronics</u>	<u>Reading Chapter 7</u>	<u>Using scan tools</u>
2	Jan	25	<u>Charging and starting systems</u>	<u>Reading Chapter 16</u>	<u>Checking Electrical systems</u>
3	Feb	1	<u>Chassis electrical systems</u>	<u>Reading Chapter 17</u>	<u>Diagnosing chassis electrical issues</u>
4	Feb	8	<u>Chassis electrical systems cont.</u>	<u>Homework Review Questions Chapter 17</u>	<u>Continue chassis electrical</u>
5	Feb	15	<u>Hybrid Vehicle systems</u>	<u>Reading Handouts</u>	<u>Safety precautions for hybrid vehicles</u>
6	Feb	22	<u>Fuel Systems</u>	<u>Reading Chapter 11</u>	<u>Replacing fuel system components</u>
7	Mar	1	<u>Review for midterm exam</u>	<u>Review for midterm exam</u>	<u>Continue fuel systems</u>
8	Mar	8	<u>Midterm exam</u>		<u>Emission system components</u>
	Mar	15-19	<u>SPRING BREAK</u>	<u>SPRING BREAK</u>	<u>SPRING BREAK</u>
9	Mar	22	<u>Emission systems</u>	<u>Reading Chapter 15</u>	<u>Emission system repairs</u>
10	Mar	29		<u>Reading</u>	

11	Apr	5	<u>Exhaust systems</u>	<u>Chapter 14</u>	<u>Exhaust system repairs</u>
12	Apr	12	<u>Exhaust systems</u> <u>SRS Systems</u>	<u>Reading Chapter 14</u> <u>Homework Review questions Chapter 15</u>	<u>Exhaust system repairs cont.</u> <u>Identify SRS components</u>
13	Apr	19	<u>SRS systems and seatbelts</u> <u>Review for Final exam</u>	<u>Reading Review for final exam</u>	<u>Diagnose air bag systems</u>
14	Apr	26	<u>Final exam</u>	<u>Review for lab final</u>	<u>Finish Lab Projects</u>
15	May	3	<u>LAB FINAL</u>		

\*Targeted competencies refer to the established course competencies listed above.

**This schedule is subject to change. In the event of class cancellation due to inclement weather or instructor illness, students are directed to the course Canvas site for an alternate assignment for that day.**