	<b>Internal Combustion Engine AUTO106N Fall 2020</b>
<b>Department</b>	Transportation
<b>Instructor</b>	Tim Hogan
<b>NCC Email</b>	thogan@ccsnh.edu
<b>Telephone Number</b>	603-578-6885
<b>Office Hours</b>	Monday 10:00-10:50 Wednesday 10:00-10:50, 2-2:50
<b>Office Location</b>	Automotive Building
<b>Class Days/Meeting Time</b>	Lecture: Tuesday 8:00-8:50 Lab: Thursday 9:00-11:50
<b>Class Location</b>	Lecture: Gregg Hall Auditorium Lab: Auto building Room 33, off main shop

### Rationale:

Internal combustion engine is one of the 3 foundation classes for the Automotive program.

### Course Description:

This course examines 2 and 4 stroke engines, their operating systems, and related physical properties. Principals from basic carburation to variable cam timing, forced induction and performance parts are covered. The lab element of this course exposes the students to the construction methods, precision measurements, and tolerances related to engine design. It also covers basic diagnostics of a 4 stroke engine.

### Course Competencies:

Competency (Knowledge and Skills)	Critical Thinking Level
-----------------------------------	-------------------------

Students will be able to:	
Identify design and manufacturing techniques of automotive engines	Identify
Understand the physical properties of energy conversion	Identify
Explain the combustion principles of 2 and 4 stroke engines, gasoline and diesel	Identify
Identify the operating systems of gasoline and diesel engines	Identify and relate
Identify the internal components of an internal combustion engine	Identify
Develop a sense of precision fit of engine components	Analyze and compare
Use precision measurement tools to measure the internal components of an internal combustion engine	Apply and analyze
Diagnose no-start condition of single cylinder engines	Analyze

### Essential Questions:

What Safety precautions should I practice while performing work of this nature?

What kind of specialty equipment should I be using while performing work of this nature?

What could be the result of not using the proper equipment or safety precautions while performing work of this nature?

### Required Textbook(s):

Automotive Service, 5TH Edition.

Tim Gilles

ISBN 978-1-3051-1059-5

### Supplemental Materials:

notebook

### Course Expectations:

Including but not limited to:

Students are responsible for completing assignments on time.

Students are expected to take notes. Not all covered material is in the book.

Students are expected to be professional and courteous.

Students are expected to arrive on time for classes/labs.

Students are expected to have the essential books/supplies/tools.

Students must maintain appropriate personal hygiene

Protective eyewear is required in any lab (shop).

Food is prohibited in all labs and classrooms during classes.

Lab service bays must be cleaned and/or washed at the end of each lab session.

All students must contribute to the clean-up process.

No students will be dismissed from lab session until service bays are clean.

There is no make up for this class. Assignments are due at the beginning of class and are listed on the course calendar. If you are going to miss a class, you must email the assignment that is due that day before that class meets. If there is a quiz that day and you emailed me that you will not be able to attend, you will be allowed to make up that quiz. It is your responsibility to meet with me BEFORE the next lecture meets to take said quiz.

## Grading:

Point/letter grade equivalents:

100-94: A

93-90: A-

89-87: B+

86-84: B

83-80: B-

79-77: C+

76-74: C

73-70: C-

69-67: D+

66-64: D

63-60: D-

Below 60: F

Grading Weights:

10% Homework/from text

10% Quizzes

20% Midterm

20% Written Final Exam

20% Lab Eval

20% Lab practical Exam

<b>Work Habit or Trait</b>	<i>Description</i>	<b>1 to 5 Scale Evaluations</b>
Job knowledge	Overall knowledge or understanding of all aspects pertinent to the job (Materials equipment, techniques, product knowledge, etc).	
Quality of work	Accuracy, thoroughness, and neatness	
Quantity of work	Number of tasks performed during work period meets expectations	
Dependability	Punctuality and attendance, reliability in carrying out work assignments, amount of supervision required and conscientiousness.	
Behavior	Enthusiasm for job, level of cooperation with associates, supervision, etc. Receptivity to changes and new duties. Resourcefulness and versatility and safety	

### Daily Lab Evaluation

1=Student performs below expectations

3=Student performs satisfactorily with periodic supervision

5=Student demonstrates outstanding performance

Because of the safety related to this course a student must earn a minimum of a 15 or better for their overall grade to pass the lab portion of the course.

5 points = 0/F

10-15 points = 45/F

Minimum passing score- 15 points = C/75

20 point = B/85

Maximum score- 25 points = A/100

## Available Support Services

**Tutoring, The Writing Center, Available Academic Services:** The Academic Success Center | located in the library 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 in the library, 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 Title IX representative Lizbeth Gonzalez, 603-578-8900 x1528\_ or [lgonzalez@ccsnh.edu](mailto:lgonzalez@ccsnh.edu) for support and assistance.

Additional information including resources can be found at: New Hampshire Coalition Against Domestic and Sexual Violence:  
[http://www.nhcadv.org/Catchment%20map\(1\).pdf](http://www.nhcadv.org/Catchment%20map(1).pdf)

## Department Policies

Students are expected to attend all their regularly scheduled classes, laboratory periods, and other academic exercises. Should an absence from regularly scheduled academic exercise be unavoidable (beyond a student's control), it will be the student's responsibility to communicate with the professor, preferably beforehand, concerning the absence. Documentation of said absence may be required by the professor.

Students are advised that absence from class, for whatever reason, does not excuse them from meeting course requirements and objectives.

**If a student is absent more than six hours (for a four-credit course, the total is eight hours) of class time during the term or semester, the instructor may withdraw the student from class using an AF grade, which means an F will be averaged into the GPA.** In addition to absences from class, tardiness and leaving class early also calculate into missed class time. To avoid this AF, if a student cannot continue to attend class for any reason, he/she should obtain a withdrawal slip from the registrar and follow the process to officially withdraw. 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. Students should refer to the student handbook for additional information about the AF policy.

It is the responsibility of the student to make up any missed class work, homework assignment, quizzes, or tests in accordance with the instructor's make-up policy.

Depending on the instructor's policy, late papers may or may not be accepted for full credit. See this syllabus for policy details.

All assignments must be typewritten, unless otherwise instructed by the teacher. Any work that is not typewritten will not be accepted.

Specific policy details for the above are outlined in this syllabus.

Revised: 12/18/17

## Transportation Technologies Attendance Policies:

We understand that sometimes “life happens” and you cannot get to class on time or at all but all students are expected to attend each class for the full amount of time scheduled. It is an important part of your education and we want you to be successful.

All lectures and labs begin on the hour.

Tardiness: All students will be allowed 2 “late entrances” to class. On the third time that student will not be allowed into class and will receive a zero for that class. This will result in an absence and be counted towards the attendance policy for the AF grade.

Absences: Any student that will miss a class should notify the instructor by phone or email prior to the beginning of the class. All absences will result in accrued time towards the AF policy. Students are responsible for any make-up work, missed quizzes and exams due to absence. It is the instructor’s discretion to allow make-up work, take a quiz or exam.

### Make Up Policy

There is no make-up work. If you will miss a class, you may email your homework assignment, before the class meets, to me for full credit. There will be one extra credit assignment at the end of the semester.

There is no provision for make-up of a midterm exam, final exam, or lab practical exam.

### 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.

24/7 Canvas Support: To access support through email, phone or chat

click on the  icon. Students can also find guides, videos, and a Canvas community by clicking on the *CCSNH Resources* icon on the tool bar at the left of the Canvas screen then choosing Canvas Resources.

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 assignment.

**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 program coordinator will automatically be notified and the incident will be documented. If any further incidents of plagiarism are reported to the student’s program coordinator, 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.

### AUTN106N Course Calendar (Subject to Change), Fall 2020

Week #	Begins	LECTURE/DISCUSSION	LAB	ASSIGNMENTS DUE Thursdays Chapter Review
1	Tuesday Sep 1	Chapter 6 Review syllabus Introduction to the Engine	Introduction, Safety and hardware Review Ch6	Review Ch1,6,7
2	Sep 8	Chapter 15 Gasoline Engine Operation Basic 4 stroke quiz, 106-1	Vernier caliper Review Ch6	Ch15 Review 1-10, ASE 1-5
3	Sep 15	Chapter 16 Engine Classifications Blocks, Diesel, 2 stroke, Wankel	Micrometer	Ch16 ASE 1-10
4	Sep 22	Chapter 17 Engine Size and Measurements Quiz on Chapters 15, 16 and 17 106-2	Test run engines and begin disassembly. Vernier Caliper quiz	Ch17 Review 1-10, ASE 1-5
5	Sep 29	Chapter 18 up to page 271 Engine Upper End	Check valve lash clearance and lift, Measure valve guides and stems	Chapter 18 up to page 271
6	Oct 6	Chapter 18 from page 272 Engine Upper End(advanced cam timing) Quiz on chapter 18, 106-3	Measure cylinder bore and stroke, Remove piston and crankshaft	From page 272 ASE 1-5 and ASE 1-5
7	Oct 13	Chapter 19 Engine Lower (Bottom) End	Disassemble and inspect all components Valve guide measurement quiz	Ch19 Review 1-10, ASE 1-5
8	Oct 20	Review for the Mid Term Assign extra credit report	Measure piston, cylinder bore and crankshaft Begin reassembly	Review for Mid-Term
9	Oct 27	Chapter 42 up to p792 Intake and Exhaust Systems Quiz on chapter 42	Continue reassembly	Review Ch42
10	Nov 3	Chapter 42 up to p792 Intake and Exhaust Systems Quiz on chapter 42 106-4	Disassemble carburetor, check/set float level. Piston and cylinder quiz	Review Ch42
11	Nov 10	Chapter 42 from p792 Turbocharges, Blowers, and Nitrous Quiz on Turbos and Blowers, 106-5	Continue work on carbs	Ch42 ASE 1-10
13-1	Nov 17	Chapter 40 Fuel System Fundamentals, carburetors Quiz on Ch40	Finish Reassembly	Review Ch40
13-2	Nov 24	Fuel System Fundamentals, EFI Quiz on Ch40, 106-6	Test Run engines	Ch40 ASE 1-5
14	Dec 1	Chapter 37 Ignition System Fundamentals	Bug engines and diag for No-Start, low power output.	Review Ch37
15	Dec 8	Chapter 39 Petroleum Fuels and Alternative Fuel Technologies Begin Review and Written final Exam	Bug engines and diag for No-Start, low power output.	Review Chapter 39 Study and review all chapters to date.
16	Dec 14- 17	Lab Exam Schedule TBA		

**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.**

Updated: 8/2020

 <b>Nashua Community College</b>	<b>Basic Electricity and Wiring AUTO113 Fall 2020</b>
<b>Department</b>	Transportation Technology
<b>Instructor</b>	Ben Wagstaff
<b>NCC Email</b>	bwagstaff@ccsnh.edu
<b>Telephone Number</b>	603-882-6923 X-1543
<b>Office Hours</b>	Mon, Tue, Wed, Thu, Fri 3:00pm-4:00pm
<b>Office Location</b>	Automotive Building
<b>Class Days/Meeting Time</b>	Lecture: Tue 2:00-2:50 pm, Thu 2:00-2:50pm Lab AL1: Tue 9:00am-11:50am
<b>Class Location</b>	Lecture: Online; Lab: Auto Bldg. Room 8

### Rationale:

Develop safe work habits and respect for shop equipment and personnel.

### Course Description:

This course will cover the theory of automotive electrical systems and the diagnosis and troubleshooting of these systems. Wiring procedures, reading wiring diagrams, and repair techniques for electrical harness and components. Starting and charging systems will also be covered.

### Course Competencies:

Competency (Knowledge and Skills)	Critical Thinking Level
Students will be able to:	
How electricity is created and the relationships between electrical voltage, current and resistances.	Recognize
The theory of automotive electrical systems and the diagnosis and troubleshooting of these systems.	Recognize, apply and analyze
Wiring procedures, reading wiring diagrams, and repair techniques for electrical harness and components.	Recognize, apply and analyze
Understand basic electrical principles as applied to the different types of circuits.	Recognize, apply and analyze
To be able to analyze circuits using	Apply and analyze

Ohm's Law and related formulas.	
To become proficient at reading wiring diagrams and service manuals.	Identify and analyze
To develop skill in the use of electrical test equipment.	Identify and analyze
To build experience in the troubleshooting of electrical problems on vehicles.	Apply and analyze
Demonstrate knowledge of the design and function of starting and charging systems	Apply and analyze
To develop safe working habits and respect for equipment and shop management.	Identify and apply

### Essential Questions:

What Safety precautions should I practice while performing work of this nature?

What kind of specialty equipment should I be using while performing work of this nature?

What could be the result of not using the proper equipment or safety precautions while performing work of this nature?

### Required Textbook(s):

Automotive Technology: Principles, Diagnosis and Service; 5th Ed. 2016

ISBN#9780133994612

### Supplemental Materials:

Access to Electude.

### Course Expectations:

#### Attendance:

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.

### **Homework:**

Self-study assignments are required. Some are listed in the course calendar, some will be assigned throughout the semester. Chapter end questions assigned per the course calendar are due at the beginning of the first class meeting of the week assigned. Chapter-end questions should include the question number, answer letter as well as the related answer text. Please include the chapter number on your answer sheet.

Scheduled homework assignments are combined into the equivalent of two test grades. Assignments passed in one class late will be accepted at reduced credit. Assignments will not be accepted more than one class late.

Any assignment turned in via e-mail will be accepted provided it is mailed prior to the due date/time.

### **Grading:**

Please refer to your department grading scale.

Note: If you give a participation grade, you will need to provide students with a rubric that explains how this grade is calculated. Participation can count for no more than 15% of the final course grade.

## Available Support Services

**Tutoring, The Writing Center, Available Academic Services:** The Academic Success Center | located in the library 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 in the library, 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 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.

### **Students Who Wish to Provide "Live" Shop Work**

Any student who wishes to service an outside vehicle (whether owned by the student or not) during a lab must obtain **prior** permission from the instructor. Any charges incurred are due and payable immediately. Current students may be granted a "one school day" grace period, however any student with an excessively delinquent auto bill may be barred from taking a midterm, final, or lab exam. Instructors reserve the right to secure pre-payment for any invoice expected to exceed \$100.

## 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:

- A student submitting as his or her own work an entire essay or other assignment written by another person.
- 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.
- 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.
- The paraphrasing of another person's unique work with no acknowledgment of the original source.
- 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 program coordinator will automatically be notified and the incident will be documented. If any further incidents of plagiarism are reported to the student's program coordinator, 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**

- 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.


- 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.

**AUTO113 Course Calendar (Tentative) Fall 2020**

Week #	Week of	LECTURE/DISCUSSION	LAB	ASSIGNMENT
1	Aug 31	<b>Chapter 39</b> Electrical Fundamentals	Intro to Electrical Safety	<b>Due Thu</b> – Ch. 39 Quiz Question
2	Sept 7	<b>Chapter 44</b> Automotive Wiring and Wiring Repair	Soldering and Crimping Basics, Wire repair	<b>Due Tue</b> - <b>Due Thu</b> – Ch. 44 Quiz Questions
3	Sept 14	<b>Chapter 42</b> Digital Meters	Meter Demonstration	<b>Due Tue</b> - <b>Due Thu</b> – Ch. 42 Quiz Questions
4	Sept 21	<b>Chapter 40</b> Electrical Circuits and Ohm's Law	Building and testing circuits	<b>Due Tue</b> - <b>Due Thu</b> – Ch. 40 Review Questions

5	Sept 28	<b>Chapter 40</b> Electrical Circuits and Ohm's Law	Building and testing circuits	<u>Due Tue</u> - <u>Due Thu</u> – Ch. 40 Quiz Questions
6	Oct 5	<b>Chapter 41</b> Series Circuits, Parallel Circuits, Series Parallel Circuits	Building and testing circuits	<u>Due Tue</u> – <u>Due Thu</u> – Ch. 41 Review Questions
7	Oct 12	<b>Chapter 41</b> Series Circuits, Parallel Circuits, Series Parallel Circuits Mid Term Review	Building and testing circuits	<u>Due Tue</u> - <u>Due Thu</u> – Ch. 41 Quiz Questions
8	Oct 19	<b>Chapter 45</b> Wiring Diagrams Mid Term	Wiring diagrams and circuit testing	<u>Due Tue</u> - <u>Due Thu</u> – Ch. 45 Quiz Questions
9	Oct 26	<b>Chapter 56</b> Lighting Circuits	Testing light circuits	<u>Due Tue</u> - <u>Due Thu</u> – Ch. 56 Quiz Questions
10	Nov 2	<b>Chapter 47</b> Magnetism	Component ID Components that use electro-magnetism	<u>Due Tue</u> - <u>Due Thu</u> – Ch. 47 Quiz Questions
11	Nov 9	<b>Chapter 58</b> Safety, Comfort and Convenience Circuits	Location, removal, testing and inspection of Horn, Wiper and Blower motor circuits	<u>Due Tue</u> - <u>Due Thu</u> – Ch. 58 Quiz Questions
12	Nov 16	<b>Chapter 50</b> Battery Testing and Service	Battery Cleaning, Testing and Diagnosis Parasitic drain Diagnosis	<u>Due Tue</u> <u>Due Thu</u> – Ch. 50 Quiz Questions
13	Nov 23	<b>Chapter 54</b> Charging System Diagnosis and Service	Location, testing and service of charging system components	<u>Due Tue</u> <u>Due Thu</u> – Ch. 54 Quiz Questions
14	Nov 30	<b>Chapter 52</b> Cranking System Diagnosis and Service	Starter testing, removal and replacement	<u>Due Tue</u> - <u>Due Thu</u> – Ch. 52 Quiz Questions
15	Dec 7	Final Exam	Review	
16	Dec 14	Lab Final		Lab Final

	<b>AUTO121 AUTOMOTIVE SERVICE AND MAINTENANCE FALL 2020</b>
<b>Department</b>	Industry and Transportation
<b>Instructor</b>	Jason Felton
<b>NCC Email</b>	jfelton@ccsnh.edu
<b>Telephone Number</b>	(603)578-8950
<b>Office Hours</b>	By Appointment Only
<b>Office Location</b>	Automotive Building
<b>Class Days/Meeting Time</b>	Lecture: Tuesday 1:00 – 1:50 Auditorium Thursday 1:00 – 1:50 Online Lab: 8:00 – 11:50 Auto Lab
<b>Class Location</b>	Lecture: Auditorium/Online Lab: Automotive Building

## Rationale:

This course provides an understanding of maintenance requirements for today's vehicles. These concepts are important as they will be utilized when the student starts employment at a repair facility

## Course Description:

The study and development of skills in automotive maintenance and preventive maintenance procedures such as engine lubrication, exhaust systems, cooling systems, tire rotation and balance, and NH state motor vehicle inspection procedures, engine drive belt, thread repair, Oxy/acetylene torches. A student must earn a 'C' or better to achieve a passing grade in this course. This course contains a service learning opportunity

## Course Competencies:

1. The student will learn the safety procedures involved in the service and repair of automotive chassis systems, tool identification and usage, and proper/safe vehicle lifting.
2. Students will learn proper drilling, taping and repair of threaded holes.
3. The student will learn to properly identify fasteners, gaskets, seals, and the proper use of chemical gasket/fastener products.
4. The student will learn the proper procedures in using the oxygen acetylene torch to perform heating and cutting.
5. The student will learn the proper procedures for using the black-light for fluid leak detection.
6. Students will learn to perform a safety inspection on vehicles.

## Essential Questions:

1. What new information can I use at a repair facility?
2. Why is it important to know how to properly check over a vehicle?
3. What other information can be learned from properly checking over a vehicle?

## Required Textbook(s):

Automotive Service, 6<sup>TH</sup> Edition.  
Tim Gilles  
ISBN 978-1-3051-1059-5

## Supplemental Materials:

Access to Canvas  
Any additional materials supplied by the instructor

## Course Expectations:

### 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.

### Student Responsibilities, including but not limited to:

Students are responsible for completing reading and written assignments on time.

Students are expected to take notes. Not all covered material is in the book.

Students are expected to be professional and courteous.

Students are expected to arrive on time for classes/labs.

Students are expected to have the essential books/supplies/tools.

Protective eyewear is required in any lab (shop).

Food is prohibited in all labs and classrooms during classes.

Lab service bays must be cleaned and/or washed at the end of each lab session.

All students must contribute to the clean-up process.

No students will be dismissed from lab session until service bays are clean.

### Homework

Self-study assignments are required. Some are listed in the course calendar; some will be assigned throughout the semester. Chapter end questions assigned per the course calendar are due at the beginning of the first class meeting of the week assigned. Chapter-end questions should include the question number, answer letter as well as the related answer text. Re-copying the question text is not necessary. Please include the chapter number on your answer sheet.

Scheduled homework assignments are averaged into the equivalent of one quiz grade. Assignments will not be accepted late and a zero grade will be given, unless prior arrangements have been made. Any assignment turned in via e-mail will be accepted provided it is mailed prior to the due date/time. Occasionally work will be assigned that *must* be e-mailed, for those assignments a hard copy will not be accepted.

### Grading:

#### Point/letter grade equivalents:

100-94: A  
93-90: A-  
89-87: B+  
86-84: B  
83-80: B-  
79-77: C+  
76-74: C  
73-70: C-  
69-67: D+  
66-64: D  
63-60: D-  
Below 60: F

#### Grading Weights:

10% Quizzes  
5% Homework  
30% Lab Evaluation/Task Sheets  
15% Midterm exam  
20% Final exam  
20% Lab exam

## Available Support Services

**Tutoring, The Writing Center, Available Academic Services:** The Academic Success Center | located in the library 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 in the library, 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 Title IX representative Lizbeth Gonzalez, 603-578-8900 x1528\_ or [lgonzalez@ccsnh.edu](mailto:lgonzalez@ccsnh.edu) for support and assistance.

Additional information including resources can be found at: New Hampshire Coalition Against Domestic and Sexual Violence:  
[http://www.nhcadv.org/Catchment%20map\(1\).pdf](http://www.nhcadv.org/Catchment%20map(1).pdf)

## Department Policies

We understand that sometimes “life happens” and you cannot get to class on time or at all but, all students are expected to attend each class for the full amount of time scheduled. It is an important part of your education and we want you to be successful.

All lectures and labs begin on the hour.

Tardiness: All students will receive 2 “late entrances” to class. On the third time that student will not be allowed into class and will receive a zero for that class. This will result in an absence and be counted towards the attendance policy for the AF grade.

Absences: Any student that will miss a class should notify the instructor by phone or email prior to the beginning of the class. All absences will result in accrued time towards the AF policy. Students are responsible for any make-up work, missed quizzes and exams due to absence. It is the instructor’s discretion to allow make-up work, take a quiz or exam.

### **Lab Policies and Expectations**

Working in a typical automotive shop or “lab” environment requires that all participants observe and abide by all safety rules while, at the same time, practicing good common sense. Students must always be aware of the many moving parts, pressurized components and electric items encountered when servicing a vehicle. Extreme caution must be practiced when lifting or hoisting a vehicle. **Safety for all shop personnel is job one.**

Consideration must be given to the vehicle and the service operation that no harm comes to the vehicle. Students are required to treat each vehicle, including training vehicles, with respect. Students are expected to reassemble components correctly and with all fasteners installed and torqued.

Consideration must also be given to the learning experience related to the operation. Service information is available to the student in print form and through online information systems. Students are expected to reference related procedures and specifications for the job at hand. The student is also required to consult with the instructor to confirm proper procedure before attempting any repair that is unfamiliar to the student. This is a learning environment so don’t be afraid to ask for help.

The NCC Honda PACT program utilizes *task sheets* covering NATEF recommended topics. Task sheets outline a specific service operation with instructions and may include checklists for the student to document his/her progress as well as areas for the student to fill in test results. Students are required to complete task sheets during each lab session. These task sheets must be turned in to the instructor at the end of each lab and will be graded. Task sheets are available from the instructor and will soon be available on Blackboard.

Any student who wishes to service an outside vehicle (whether owned by the student or not) during a lab must obtain prior permission from the instructor. A "repair request" form must be completed and submitted to the instructor before the vehicle will be allowed into the shop. Any charges incurred are due and payable immediately. Students are responsible for all charges and fees related to any vehicle that the student brings in for service. Any student with an excessively delinquent auto bill will be barred from taking a midterm, final, or lab exam.

As noted above, protective eyewear is required in all labs, food is not allowed, and service bays must be cleaned at the end of each lab session. All students must contribute to the clean-up process.

## 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.

24/7 Canvas Support: To access support through email, phone or chat

click on the  icon. Students can also find guides, videos, and a Canvas community by clicking on the *CCSNH Resources* icon on the tool bar at the left of the Canvas screen then choosing Canvas Resources.

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 assignment.

**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 program coordinator will automatically be notified and the incident will be documented. If any further incidents of plagiarism are reported to the student’s program coordinator, 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 #	Begins	LECTURE/DISCUSSION	LAB	ASSIGNMENT DUE
1	Aug 31	Chapter 2 and 3 Course introduction, careers, certification, safety	Safety tour, SDS(MSDS), Hazardous waste, tools and usage, Fire, lifting and jacking a vehicle, SRS/Hybrid/HID	Ch2 and 3
2	Sep7	Chapter 7 Hardware, Fasteners, Drills and Thread repair Quiz 121-1 Hardware, taps, dies	HeliCoil Preparing Vehicle for Service Preparing Vehicle for Customer Vehicle inspections, oil change, tire rotate, TPMS reset	Ch7 Review 1-10 and ASE 1-5
3	Sep 14	Chapter 12 Engine Lubrication Quiz 121-2 Oil	Helicoil, Oil change demo, tire rotation demo Concern, Cause, Correction	Ch12 ASE 1-10
4	Sep 21	Chapter 13 Under hood and body Inspection	Vehicle inspection	Ch13 ASE 1-10
5	Sep 28	Chapter 62 Wheel and Tire Service Quiz 121-3 Wheels and Tires	Vehicle inspection, oil changes, tire rotation and balancing	Ch 62 ASE 1-10
6	Oct 5	Chapter 14 Under Car inspection	Under car inspection	Ch14 ASE 1-10
7	Oct 12	Chapter 51 Engine Sealing, Gaskets, Fastener Torque	Vehicle inspections, oil change, tire rotate, TPMS reset	Ch51 ASE 1-10
8	Oct 19	Mid Term Review	Review all material up to this point	Mid Term
9	Oct 26	Chapter 20 Cooling system Quiz 121-4 Cooling	Coolant exchange and flush	Ch20 ASE 1-10
10	Nov 2	Chapter 22 Automotive Belts	Inspect and adjust accessory drive belts	Ch22 ASE1-5
11	Nov 9	Chapter 23 Automotive Hoses Quiz 121-5 Belts and Hoses	Hose and clamp inspection, replacement	Ch23 ASE 1-5
12	Nov 16	Chapter 42 Air intakes and Exhaust	Inspect air filter, continue vehicle inspections and bolt exercise Oxy/Acetylene torch demo	Review Ch42
13	Nov 23	Vehicle inspection	Vehicle inspection	
14	Nov 30	Pre purchase, used car inspection	Pre purchase, used car inspection	
15	Dec 7	Review for final	Review for final	Review for final
16	Dec 14-18	Lab Exam Schedule TBA		

**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.**

Updated: 5/18

 <b>Nashua Community College</b>	<b>ADVANCED AUTOMOTIVE ELECTRICITY AND ELECTRONICS AUTO205 Fall 2020</b>
<b>Department</b>	Transportation Technology
<b>Instructor</b>	Ben Wagstaff
<b>NCC Email</b>	bwagstaff@ccsnh.edu
<b>Telephone Number</b>	603-882-6923 X-1543
<b>Office Hours</b>	Mon, Tue, Wed, Thu, Fri 3:00pm-4:00pm
<b>Office Location</b>	Automotive Building
<b>Class Days/Meeting Time</b>	Lecture: Mon 10:00-10:50 am, Wed 2:00-2:50pm Lab AL1: FRI 8:00am-11:50am
<b>Class Location</b>	Lecture: Room. Online; Lab: Auto Bldg. Room 8

### Rationale:

Develop safe work habits and respect for shop equipment and personnel.

### Course Description:

The course includes operating principles and troubleshooting of various systems, body computers, multiplexing, keyless entry, etc. Testing of sensors and circuits and On-board diagnostics related to these systems will be covered.

### Course Competencies:

Competency (Knowledge and Skills)	Critical Thinking Level
Students will be able to:	
To develop safe working habits and respect for equipment and shop management.	Recognize and apply
Understand the operation of components found in solid state circuitry, such as capacitors, transistors, diodes and resistors.	Identify and apply
Proper knowledge and interpretation of wiring diagrams of computer controlled systems.	Recognize and apply
Diagnose systems with the use of diagnostic test equipment.	Analyze
Understand the basics of multiplex systems.	Recognize

To become proficient at reading wiring diagrams and service manuals.	Recognize, apply and analyze
To build experience and competence in the troubleshooting of electrical problems on vehicles.	Recognize, apply and analyze

## Essential Questions:

What Safety precautions should I practice while performing work of this nature?

What kind of specialty equipment should I be using while performing work of this nature?

What could be the result of not using the proper equipment or safety precautions while performing work of this nature?

## Required Textbook(s):

Automotive Technology: Principles, Diagnosis and Service; 5th Ed. 2016

ISBN#9780133994612

## Supplemental Materials:

Access to Canvas.

## Course Expectations:

### Attendance:

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.

### **Homework:**

Self-study assignments are required. Some are listed in the course calendar, some will be assigned throughout the semester. Chapter end questions assigned per the course calendar are due at the beginning of the first class meeting of the week assigned. Chapter-end questions should include the question number, answer letter as well as the related answer text. Please include the chapter number on your answer sheet.

Scheduled homework assignments are combined into the equivalent of two test grades. Assignments passed in one class late will be accepted at reduced credit. Assignments will not be accepted more than one class late.

Any assignment turned in via e-mail will be accepted provided it is mailed prior to the due date/time.

### **Grading:**

Please refer to your department grading scale.

Note: If you give a participation grade, you will need to provide students with a rubric that explains how this grade is calculated. Participation can count for no more than 15% of the final course grade.

## **Available Support Services**

## **Available Support Services**

**Tutoring, The Writing Center, Available Academic Services:** The Academic Success Center | located in the library 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 in the library, 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 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.

### **Students Who Wish to Provide "Live" Shop Work**

Any student who wishes to service an outside vehicle (whether owned by the student or not) during a lab must obtain **prior** permission from the instructor. Any charges incurred are due and payable immediately. Current students may be granted a "one school day" grace period, however any student with an excessively delinquent auto bill may be barred from taking a midterm, final, or lab exam. Instructors reserve the right to secure pre-payment for any invoice expected to exceed \$100.

## 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:

- A student submitting as his or her own work an entire essay or other assignment written by another person.
- 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.
- 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.
- The paraphrasing of another person’s unique work with no acknowledgment of the original source.
- 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 program coordinator will automatically be notified and the incident will be documented. If any further incidents of plagiarism are reported to the student’s program coordinator, 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**


- 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.
- 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.

<b>AUTO205 Course Calendar (Tentative) Fall 2020</b>				
<b>Week #</b>	<b>Week of</b>	<b>LECTURE/DISCUSSION</b>	<b>LAB</b>	<b>ASSIGNMENT</b>
1	Aug 31	<b>Chapter 53</b> Cranking system diagnosis and service	Testing starters and starter circuits	<b>Due Thu</b> – Ch.53 Quiz Questions
2	Sept 7	<b>Chapter 55</b> Charging system diagnosis and service	Testing alternators and charging circuits	<b>Due Tue</b> – <b>Due Thu</b> – Ch.55 Quiz Questions
3	Sept 14	<b>Chapter 46</b> Capacitance and Capacitors	Testing Capacitance, Capacitor safety	<b>Due Tue</b> – <b>Due Thu</b> – Ch.46 Quiz Questions
4	Sept 21	<b>Chapter 48</b> Electronic Fundamentals	Building and testing Electronics	<b>Due Tue</b> – <b>Due Thu</b> – Ch.48 Review Questions
5	Sept 28	<b>Chapter 48</b> Electronic Fundamentals	Safe testing and handling of circuits	<b>Due Tue</b> – <b>Due Thu</b> – Ch. 48 Quiz Questions
6	Oct 5	<b>Chapter 71</b> Computer Fundamentals	Safe handling of computer circuits	<b>Due Tue</b> – <b>Due Thu</b> –Ch. 71 Review Questions
7	Oct 12	<b>Chapter 71</b> Computer Fundamentals	Testing computer circuit inputs and outputs	<b>Due Tue</b> – <b>Due Thu</b> – Ch. 71 Quiz Questions
8	Oct 19	<b>Chapter 49</b>	Network communication	<b>Due Tue</b> –

		CAN and Network Communications	faults	<b>Due Thu</b> – Ch.49 Review Questions
9	Oct 26	<b>Chapter 49</b> CAN and Network Communications	Testing Network communication	<b>Due Tue</b> – <b>Due Thu</b> – Ch. 49 Quiz Questions
10	Nov 2	<b>Chapter 57</b> Driver Information and Navigation	Testing Driver info systems and Navigation	<b>Due Tue</b> – <b>Due Thu</b> –Ch. 57 Quiz Questions
11	Nov 9	<b>Chapter 59</b> Accessory Circuits	Testing Accessory circuits	<b>Due Tue</b> – <b>Due Thu</b> –Ch. 59 Quiz Questions
12	Nov 16	<b>Chapter 60</b> Airbag and SRS	Airbag testing, safety and service	<b>Due Tue</b> – <b>Due Thu</b> –Ch. 60 Quiz Questions
13	Nov 23	<b>Chapter 61</b> Audio System Operation and Diagnosis	Testing audio system components	<b>Due Tue</b> – <b>Due Thu</b> –Ch. 61 Quiz Questions
14	Nov 30	<b>Chapter 89</b> Intro to Hybrid Vehicles	Hybrid vehicle Identification	<b>Due Tue</b> – <b>Due Thu</b> –Ch. 89 Quiz Questions
15	Dec 7	<b>Chapter 90</b> Hybrid Safety and Service Precautions	Safe working habits on Hybrid vehicles	<b>Due Tue</b> – <b>Due Thu</b> –Ch. 90 Quiz Questions
16	Dec 14	Lab Final		

	<b>Manual Transmissions  AUTO226  Fall 2020</b>
<b>Department</b>	Transportation
<b>Instructor</b>	Tim Hogan
<b>NCC Email</b>	thogan@ccsnh.edu
<b>Telephone Number</b>	603-578-6885
<b>Office Hours</b>	Monday 10:00-10:50 Wednesday 10:00-10:50, 2-2:50
<b>Office Location</b>	Automotive Building
<b>Class Days/Meeting Time</b>	Lecture: Mon: 1:00-1:50 ONLINE Tues 1:00- 1:50 H286 Lab: Tuesday 1:00-4:50
<b>Class Location</b>	Lecture: Online/H286 Lab: Auto building Room 8, and main shop

### Rationale:

The Diagnostic and repair of the drivetrain is critical to satisfaction of our customers. Being able to identify what component has failed and how to correct it is crucial.

### Course Description:

This course is designed to introduce students to the basic principles employed in the construction, operation and diagnosis of the various components and systems involved in the manual drive train of current automotive vehicles. Topics for this course include clutches, manual transmissions/transaxles, both front and rear wheel drive train components including drive shafts, axles and differentials. Four-wheel drive and all-wheel drive systems are discussed as well. This course is designed to meet the requirements of NATEF certification in the topic of manual drive train and axles.

## Course Competencies:

<b>Understand Basic clutch operation and components</b>	<b>Critical Thinking Skills</b>
Understand basic manual transmission operation and components	Recognize, identify
Understand drive line operation and components	Identify
Understand differential operation and components	Identify
Understand four wheel and AWD operation and components	Identify and analyze

## Essential Questions:

What Safety precautions should I practice while performing work of this nature?

What kind of specialty equipment should I be using while performing work of this nature?

What could be the result of not using the proper equipment or safety precautions while performing work of this nature?

## Required Textbook(s):

Manual Transmissions & Transaxles- 7th Edition- Jack Erjavec (Delmar) ISBN# 978-1-337-79546-3

## Supplemental Materials:

Notebook, tool kit

## Course Expectations:

Including but not limited to:

Students are responsible for completing assignments on time.

Students are expected to take notes. Not all covered material is in the book.

Students are expected to be professional and courteous.

Students are expected to arrive on time for classes/labs.

Students are expected to have the essential books/supplies/tools.



Students must maintain appropriate personal hygiene  
 Protective eyewear is required in any lab (shop).  
 Food is prohibited in all labs and classrooms during classes.  
 Lab service bays must be cleaned and/or washed at the end of each lab session.  
 All students must contribute to the clean-up process.  
 No students will be dismissed from lab session until service bays are clean.

There is no make up for this class. Assignments are due at the being of class and are listed on the course calendar. If you are going to miss a class, you must email the assignment that is due that day before that class meets. If there is a quiz that day and you emailed me that you will not be able to attend, you will be allowed to make up that quiz. It is your responsibility to meet with me BEFORE the next lecture meets to take said quiz.

## Grading:

Point/letter grade equivalents:

100-94: A  
 93-90: A-  
 89-87: B+  
 86-84: B  
 83-80: B-  
 79-77: C+  
 76-74: C  
 73-70: C-  
 69-67: D+  
 66-64: D  
 63-60: D-  
 Below 60: F

Grading Weights:

40% Homework/from text  
 20% Midterm  
 20% Written Final Exam  
 20% Lab Eval  
 20% Lap practical Exam

Work Habit or Trait	Description	1 to 5 Scale Evaluations
Job knowledge	Overall knowledge or understanding of all aspects pertinent to the job (Materials equipment, techniques, product knowledge, etc).	
Quality of work	Accuracy, thoroughness, and neatness	
Quantity of work	Number of tasks performed during work period meets expectations	
Dependability	Punctuality and attendance, reliability in carrying out work assignments, amount of supervision required and conscientiousness.	
Behavior	Enthusiasm for job, level of cooperation with associates, supervision, etc. Receptivity to changes and new duties. Resourcefulness and versatility and safety	

### Daily Lab Evaluation

1=Student performs below expectations

3=Student performs satisfactorily with periodic supervision

5=Student demonstrates outstanding performance

Because of the safety related to this course a student must earn a minimum of a 15 or better for their overall grade to pass the lab portion of the course.

5 points = 0/F

10-15 points = 45/F

Minimum passing score- 15 points = C/75

20 point = B/85

Maximum score- 25 points = A/100

## Available Support Services

**Tutoring, The Writing Center, Available Academic Services:** The Academic Success Center | located in the library 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 in the library, 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 Title IX representative Lizbeth Gonzalez, 603-578-8900 x1528\_ or [lgonzalez@ccsnh.edu](mailto:lgonzalez@ccsnh.edu) for support and assistance.

Additional information including resources can be found at: New Hampshire Coalition Against Domestic and Sexual Violence:

[http://www.nhcadv.org/Catchment%20map\(1\).pdf](http://www.nhcadv.org/Catchment%20map(1).pdf)

## Department Policies

Students are expected to attend all their regularly scheduled classes, laboratory periods, and other academic exercises. Should an absence from regularly scheduled academic exercise be unavoidable (beyond a student's control), it will be the student's responsibility to communicate with the professor, preferably beforehand, concerning the absence. Documentation of said absence may be required by the professor.

Students are advised that absence from class, for whatever reason, does not excuse them from meeting course requirements and objectives.

**If a student is absent more than six hours (for a four-credit course, the total is eight hours) of class time during the term or semester, the instructor may withdraw the student from class using an AF grade, which means an F will be averaged into the GPA.** In addition to absences from class, tardiness and leaving class early also calculate into missed class time. To avoid this AF, if a student cannot continue to attend class for any reason, he/she should obtain a withdrawal slip from the registrar and follow the process to officially withdraw. 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. Students should refer to the student handbook for additional information about the AF policy.

It is the responsibility of the student to make up any missed class work, homework assignment, quizzes, or tests in accordance with the instructor's make-up policy.

Depending on the instructor's policy, late papers may or may not be accepted for full credit. See this syllabus for policy details.

All assignments must be typewritten, unless otherwise instructed by the teacher. Any work that is not typewritten will not be accepted.

Specific policy details for the above are outlined in this syllabus.

Revised: 12/18/17

## Transportation Technologies Attendance Policies:

We understand that sometimes “life happens” and you cannot get to class on time or at all but all students are expected to attend each class for the full amount of time scheduled. It is an important part of your education and we want you to be successful.

All lectures and labs begin on the hour.

Tardiness: All students will be allowed 2 “late entrances” to class. On the third time that student will not be allowed into class and will receive a zero for that class. This will result in an absence and be counted towards the attendance policy for the AF grade.

Absences: Any student that will miss a class should notify the instructor by phone or email prior to the beginning of the class. All absences will result in accrued time towards the AF policy. Students are responsible for any make-up work, missed quizzes and exams due to absence. It is the instructor’s discretion to allow make-up work, take a quiz or exam.

### Make Up Policy

There is no make-up work. If you will miss a class, you may email your homework assignment, before the class meets, to me for full credit. There will be one extra credit assignment at the end of the semester.

There is no provision for make-up of a midterm exam, final exam, or lab practical exam.

### 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.

24/7 Canvas Support: To access support through email, phone or chat

click on the  icon. Students can also find guides, videos, and a Canvas community by clicking on the *CCSNH Resources* icon on the tool bar at the left of the Canvas screen then choosing Canvas Resources.

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 assignment.

**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 program coordinator will automatically be notified and the incident will be documented. If any further incidents of plagiarism are reported to the student's program coordinator, 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.






**AUTO226 Course Calendar (Tentative) Fall 2020**

Week #	Week of	LECTURE/DISCUSSION Reading Assignment (Chapter)	LAB	Homework Assignment
1	Aug 31	<b>Introduction to transmission and drivetrain layouts</b>	Inspection of different drivetrain layout	
2	Sept 7	<b>Monday Sep 7<sup>th</sup> Labor Day, no classes</b> <b>Chapter 1 + 2</b> Manual Drive Trains and Axles Drivetrain Theory	Clutch Adjustment Hydraulic Clutch Bleeding	<b>Due Weds</b> – Ch. 1 Multiple Choice – Ch. 2 Multiple Choice
3	Sept 14	<b>Chapter 3</b> Clutches design and function		
4	Sept 21	<b>Chapter 3</b> Clutches Servicing and failures	Clutch Replacement	<b>Due Wed</b> – Ch. 3 Multiple Choice
5	Sept 28	<b>Chapter 4</b> Manual Transmissions/Transaxles Design and Function	Transmission/Transaxle Service and Inspection	
6	Oct 5	<b>Chapter 4</b> Manual Transmissions/Transaxles Servicing and Failures	Transmission/Transaxle Service and Inspection	Due Wed– Ch. 4 Multiple Choice
7	Oct 12	<b>Chapter 5</b> Front Drive Axles Design and Function	CV joint service and Front Drive axle removal and replacement	
8	Oct 19	<b>Chapter 5</b> Front Drive Axles Servicing and failures	CV joint service and Front Drive axle removal and replacement	Due Wed – Ch. 5 Multiple Choice
9	Oct 26	<b>Mid-term review and exam</b>		
10	Nov 2	<b>Chapter 6</b> Driveshafts and Universal Joints	Driveshaft removal, balancing and U-joint Replacement	Due Wed – Ch. 6 Multiple Choice
11	Nov 9	<b>Weds Nov 11<sup>th</sup> Veterans Day, no classes</b> <b>Chapter 7</b> Differentials and Drive Axles Design and Function	RWD axle service, diagnosis and repair	
12	Nov 16	<b>Chapter 7</b> Differential and Drive Axles Servicing and Failures	RWD axle overhaul	Due Wed – Ch. 7 Multiple Choice
13	Nov 23	<b>Chapter 8</b> Four Wheel Drive Systems	Transfer case inspection Locking Hubs	Due Wed – Ch. 8 Multiple Choice
14	Nov 30	<b>Chapter 9</b> Advanced Four Wheel Drive Systems	Rear Drive Units, AWD component inspection	Due Wed- Ch. 9 Multiple Choice
15	Dec 7	Review and Final Exam (tentative)	Clean shop area and review	
16	Dec 14- 18	Lab Final		

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.

Updated: 8/2020

	<b>Automatic Transmissions AUTO 227N Fall 2020</b>
<b>Department</b>	Transportation
<b>Instructor</b>	Tim Hogan
<b>NCC Email</b>	thogan@ccsnh.edu
<b>Telephone Number</b>	603-578-6885
<b>Office Hours</b>	Monday 10:00-10:50 Wednesday 10:00-10:50, 2-2:50
<b>Office Location</b>	Automotive Building
<b>Class Days/Meeting Time</b>	Lecture: Monday 11:00-11:50 ONLINE Weds 11:00-11:50 H286 Lab: Thurs 1-4:50 Main shop area and lab
<b>Class Location</b>	Lecture: H286 Lab: Auto building Room 33, off main shop

### Rationale:

Most vehicles are now sold with automatic transmissions and are one of the most complicated and expensive units on the vehicle. Being able to accurately and quickly identify if the unit is bad or if there is just a bad component that can be replaced is a skill that will make you money and in more demand.

### Course Description:

This course covers the theory of operation and overhaul of automatic transmissions. The lecture focuses on the operation of automatics and uses case studies to show common failures and diagnostic steps. The lab focuses on hands-on diagnosis and repair, R&R of complete units, transmission overhauls and the installation of Shift kits

## Course Competencies:

Competency (Knowledge and Skills) Students will be able to:	Critical Thinking Level
Road test a vehicle and determine if the transmission has a problem	Recognize and apply
To acquire an understanding of basic power transmission principles	Recognize
To acquire an understanding of fluid coupling principles	Comprehension
To develop skill in diagnose if a failure is internal or external and appropriate repair procedure	Analyze and apply
To develop skill in removing and disassembling an automatic transmission	Apply
To develop skill in the inspection of internal components	Analyze
To develop skill in the overhaul of automatic transmissions	Apply and identify
To develop skill in making internal and external adjustments of the transmission and control systems	Recognize apply and analyze
To develop skill in using special tools and test equipment	Identify and apply

## Essential Questions:

What Safety precautions should I practice while performing work of this nature?

What kind of specialty equipment should I be using while performing work of this nature?

What could be the result of not using the proper equipment or safety precautions while performing work of this nature?

## Required Textbook(s):

Automatic Transmissions & Transaxles, 7th Edition

Halderman

ISBN 978013461797

## Supplemental Materials:

Notebook, tool kit

## Course Expectations:

Including but not limited to:

Students are responsible for completing assignments on time.

Students are expected to take notes. Not all covered material is in the book.

Students are expected to be professional and courteous.

Students are expected to arrive on time for classes/labs.

Students are expected to have the essential books/supplies/tools.

Students must maintain appropriate personal hygiene

Protective eyewear is required in any lab (shop).

Food is prohibited in all labs and classrooms during classes.

Lab service bays must be cleaned and/or washed at the end of each lab session.

All students must contribute to the clean-up process.

No students will be dismissed from lab session until service bays are clean.

There is no make up for this class. Assignments are due at the beginning of class and are listed on the course calendar. If you are going to miss a class, you must email the assignment that is due that day before that class meets. If there is a quiz that day and you emailed me that you will not be able to attend, you will be allowed to make up that quiz. It is your responsibility to meet with me BEFORE the next lecture meets to take said quiz.

## Grading:

Point/letter grade equivalents:

100-94: A  
93-90: A-  
89-87: B+  
86-84: B  
83-80: B-  
79-77: C+  
76-74: C  
73-70: C-  
69-67: D+  
66-64: D  
63-60: D-  
Below 60: F

Grading Weights:

5% Homework/from text  
10% Quizzes  
20% Midterm  
20% Written Final Exam  
20% Lab Eval  
20% Lab practical Exam

<b>Work Habit or Trait</b>	<i>Description</i>	<b>1 to 5 Scale Evaluations</b>
Job knowledge	Overall knowledge or understanding of all aspects pertinent to the job (Materials equipment, techniques, product knowledge, etc).	
Quality of work	Accuracy, thoroughness, and neatness	
Quantity of work	Number of tasks performed during work period meets expectations	
Dependability	Punctuality and attendance, reliability in carrying out work assignments, amount of supervision required and conscientiousness.	
Behavior	Enthusiasm for job, level of cooperation with associates, supervision, etc. Receptivity to changes and new duties. Resourcefulness and versatility and safety	

### Daily Lab Evaluation

1=Student performs below expectations

3=Student performs satisfactorily with periodic supervision

5=Student demonstrates outstanding performance

Because of the safety related to this course a student must earn a minimum of a 15 or better for their overall grade to pass the lab portion of the course.

5 points = 0/F

10-15 points = 45/F

Minimum passing score- 15 points = C/75

20 point = B/85

Maximum score- 25 points = A/100

## Available Support Services

**Tutoring, The Writing Center, Available Academic Services:** The Academic Success Center | located in the library 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 in the library, 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 Title IX representative Lizbeth Gonzalez, 603-578-8900 x1528\_ or [lgonzalez@ccsnh.edu](mailto:lgonzalez@ccsnh.edu) for support and assistance.

Additional information including resources can be found at: New Hampshire Coalition Against Domestic and Sexual Violence:  
[http://www.nhcadv.org/Catchment%20map\(1\).pdf](http://www.nhcadv.org/Catchment%20map(1).pdf)

## Department Policies

Students are expected to attend all their regularly scheduled classes, laboratory periods, and other academic exercises. Should an absence from regularly scheduled academic exercise be unavoidable (beyond a student's control), it will be the student's responsibility to communicate with the professor, preferably beforehand, concerning the absence. Documentation of said absence may be required by the professor.

Students are advised that absence from class, for whatever reason, does not excuse them from meeting course requirements and objectives.

**If a student is absent more than six hours (for a four-credit course, the total is eight hours) of class time during the term or semester, the instructor may withdraw the student from class using an AF grade, which means an F will be averaged into the GPA.** In addition to absences from class, tardiness and leaving class early also calculate into missed class time. To avoid this AF, if a student cannot continue to attend class for any reason, he/she should obtain a withdrawal slip from the registrar and follow the process to officially withdraw. 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. Students should refer to the student handbook for additional information about the AF policy.

It is the responsibility of the student to make up any missed class work, homework assignment, quizzes, or tests in accordance with the instructor's make-up policy.

Depending on the instructor's policy, late papers may or may not be accepted for full credit. See this syllabus for policy details.

All assignments must be typewritten, unless otherwise instructed by the teacher. Any work that is not typewritten will not be accepted.

Specific policy details for the above are outlined in this syllabus.

Revised: 12/18/17



## Transportation Technologies Attendance Policies:

We understand that sometimes “life happens” and you cannot get to class on time or at all but all students are expected to attend each class for the full amount of time scheduled. It is an important part of your education and we want you to be successful.

All lectures and labs begin on the hour.

Tardiness: All students will be allowed 2 “late entrances” to class. On the third time that student will not be allowed into class and will receive a zero for that class. This will result in an absence and be counted towards the attendance policy for the AF grade.

Absences: Any student that will miss a class should notify the instructor by phone or email prior to the beginning of the class. All absences will result in accrued time towards the AF policy. Students are responsible for any make-up work, missed quizzes and exams due to absence. It is the instructor’s discretion to allow make-up work, take a quiz or exam.

### Make Up Policy

There is no make-up work. If you will miss a class, you may email your homework assignment, before the class meets, to me for full credit. There will be one extra credit assignment at the end of the semester.

There is no provision for make-up of a midterm exam, final exam, or lab practical exam.

### 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.

24/7 Canvas Support: To access support through email, phone or chat

click on the  icon. Students can also find guides, videos, and a Canvas community by clicking on the *CCSNH Resources* icon on the tool bar at the left of the Canvas screen then choosing Canvas Resources.

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 assignment.

**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 program coordinator will automatically be notified and the incident will be documented. If any further incidents of plagiarism are reported to the student's program coordinator, 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.



## AUTN227N Course Calendar (Subject to change), Fall 2020

Week #	Begins	LECTURE/DISCUSSION	LAB	ASSIGNMENT DUE Chapter Review
1	Aug 31	Chapter 2 and 3 Fluids, filters, coolers Hydraulic Systems	Ch14 In-Vehicle Transmission/Transaxle Service In Vehicle Transmission Service Flush machine Removal and disassembly	Chapters 2 and 3 due Sunday by Midnight
2	Sep 7	Monday Sep 7 <sup>th</sup> Labor Day, no classes Chapter 4 Hydraulic System Parts and Operation Case Study 32 Ford Coupe Case Study 98 Dodge Ram, no upshift	Disassembly of bench transmission Stall tests	Ch4 Chapter Quiz
3	Sep 14	Chapter 5 Torque Converter Case study- E-350, slipping Case Study- 98 Explorer, OD light flashes Quiz 227-2	Transmission Condition Diagnostics Disassembly of bench transmission Gear ranges of planter gear set	Ch5 Chapter Quiz
4	Sep 21	Chapter 6 Power Flow Through Planetary Gear Sets Quiz on Symbols handout Case Study Jag, no 2 <sup>nd</sup> gear Quiz 227-3	Transmission Condition Diagnostics Reassembly of bench transmission R&R of transmission	Ch6 review Symbols Handout
5	Sep 28	Chapter 7 Clutches and Bands Case Study 04 F-350 Hard 1-2 shift Case Study 04 Cherokee, slips Quiz 227-4	Transmission Condition Diagnostics Reassembly of bench transmission R&R of transmission	Ch7 Chapter Quiz Review chapters 13 and 15
6	Oct 5	Chapter 9 Electronic Transmission Controls Case Study 2000 Frontier, no downshift Case Study 2000 Taurus, won't move Quiz 227-5	Transmission Condition Diagnostics Reassembly of bench transmission R&R of transmission	Ch9 Chapter Quiz Review chapters 13 and 15
7	Oct 12	Review for the Mid Term Explain extra credit report Case Study 2010 Elantra	Transmission Condition Diagnostics Disassembly of bench transmission R&R of transmission	Review for Mid-Term
8	Oct 19	Mid Term		
9	Oct 26	Chapter 16 Valve Bodies and Valve Body Service Case Study 03 Outback, delayed shift	Transmission Condition Diagnostics Disassembly of bench transmission R&R of transmission	Ch16 Chapter Quiz
10	Nov 2	Chapter 13 Transmission Condition Diagnosis Case Study 07 Freestar	Transmission Condition Diagnostics Reassembly of bench transmission R&R of transmission	Ch13 Chapter Quiz
10	Nov 9	Chapter 10 Hybrid Electric Vehicle Transmissions	Transmission Condition Diagnostics Reassembly of bench transmission R&R of transmission	Review Ch10
11	Nov 16	Weds Nov 11, Veterans Day, no classes Chapter 11 + 12 Continuously Variable Transmissions Dual Clutch Transmissions	Transmission Condition Diagnostics R&R of transmission Flush machine	Ch12 Chapter Quiz Due Thurs by Midnight-Thank a Vet
12	Nov 23	Chapter 17 Assembly and installation <b>Thanksgiving, no classes Nov 26-27</b>	<b>No Lab-Thanksgiving</b>	Ch 17 Chapter quiz
13	Nov 30	Transmission Modifications, Reprogram kits (Shift Kits), Aftermarket solutions Case Study F-150 Case Study E-350 slips after turbo was installed	Transmission Condition Diagnostics R&R of transmission Flush machine	
14	Dec 7	Review	Finish all project and clean lab area	Study and bring in questions
15	Dec 14-18	Written Final	Review for lab final	

**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.**

---

Updated: 8/2020