



Advanced Mechanics (Mech30)

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WELCOME TO MECHANICS 30!

Throughout this course, we will continue to focus on general and specific mechanical knowledge pertaining to automotive technology. Knowledge gained in this course will also apply to other industries such as marine, heavy duty and aeronautic fields.

As an advanced course, students will refine their skills developed in Intermediate Mechanics (Mech20) and prepare for entry into the workplace or a post-secondary program related to auto mechanics.

LEARNING OUTCOMES

- Students will refine their skills in: mechanical knowledge and dexterity, safe practices, tool management, task-oriented research, teamwork and adaptability.
- <http://www.learnalberta.ca/ProgramOfStudy.aspx?lang=en&ProgramId=231834#>

COURSE CONTENT

PREREQUISITES

- **MEC3030 – Engine Diagnosis** **MEC1040**
 - Students will learn how to diagnose the condition of an engine for worn or damaged parts and/or improper adjustments.
 - 1. demonstrate safe working practices while conducting an engine performance diagnosis
 - 2. diagnose the condition of an operating engine, using body senses; e.g., touch, sight, hearing
 - 3. assess engine conditions, using specialized test equipment and on-board diagnostic systems
 - 4. provide a report that describes the condition of an engine
 - 5. demonstrate basic competencies
- **MEC3040 – Engine Tune-up** **MEC3030**
 - Students will diagnose service and repair engine, fuel, ignition, charging and starting systems. Students will repair customer/lab vehicles.
 1. demonstrate safe work practices while performing an engine tune-up
 2. determine the mechanical condition of an engine
 3. check and service a carburetor and a fuel injection system
 4. use diagnostic equipment to check, interpret and service an ignition, and to check charging,
 5. starting, emission control and exhaust systems
 6. demonstrate basic competencies

- **MEC3050 – Engine Replacement**

MEC1040

- . Students will learn how to remove an engine and what processes are involved including Safety procedures, Hazardous materials handling and disposal.
- 1. use engine lifting equipment and related tools safely
- 2. 2. identify steps involved to prepare a vehicle for engine removal
- 3. 3. apply mechanical skills to remove and replace engine accessories
- 4. 4. apply mechanical skills to remove and install an engine in a chassis

- **MEC3060 – Engine Reconditioning – Head**

MEC1040

- Students will determine the need for service and perform the required service on the cylinder head and related components of an engine.
- 2. Determine the condition of a cylinder head before and after disassembly
- 3. Recondition a cylinder head and its related components
- 4. Reassemble and install a cylinder head
- 5. Demonstrate basic competencies

- **MEC3070 – Engine Reconditioning – Block**

MEC1040

- Students will determine the need for service and perform service on a cylinder block assembly and related components of an engine.
- 1. demonstrate safe work procedures while reconditioning a cylinder block
- 2. 2. determine the condition of a cylinder block before and after disassembly
- 3. 3. recondition a cylinder block and its related components
- 4. 4. reassemble a cylinder block assembly
- 5. 5. demonstrate basic competencies

COURSE EXPECTATIONS

- **Attendance:**
 - All students are expected to attend class every day.
 - Coming to class late is highly disruptive. The student will be at risk of missing out on important instructions, demonstrations, or, discussions.
 - If you must leave class (to use the washroom, etc.) you must notify the teacher in charge. You might be asked to wait as only one person is allowed to leave at a time.
- **Behavior:**
 - We will not tolerate or abide any of the following:
 - *Bullying of any kind*
 - *Harassment of any kind*
 - *Violence of any kind*
 - *The use of crude, sexist, homophobic, racist, or otherwise inappropriate language or gestures.*
 - *Horseplay or dangerous activity.*
- **Food and Drink:**
 - Students are discouraged from eating and drinking in the shop. If you must bring your food with you to class, you might be asked to finish it in the hallway or put it in your locker.
- **Personal Electronic Devices:**
 - Personal electronic devices, including cell phones, are not to be used in the shop as they are distracting and could pose a safety risk to you and those around you.
 - For your safety and the safety of others, personal electronics are not to be used in the shop.

EQUIPMENT & MATERIALS

- A course fee of \$35 will be requested to cover such things as:
 - coverall use for the semester (cleaning and mending)
 - mechanics' gloves
 - safety glasses
 - hearing protection
 - nitrile gloves
 - gases for welding
- Pen or pencil (dark ink)

COURSE EVALUATIONS

In CTS (Career and Technology Studies), modules are worth **1 credit**, and in order to earn that credit you must achieve a grade of 50% or higher in that module.

Breakdown of evaluation for each module is as follows (subject to change):

- **Shop:** **70%**
 - lab Activities
 - shop work
 - safety
 - employability
- **Theory:** **30%**
 - CDX Automotive
 - tests/quizzes

ASSESSMENT POLICY

At Dr. E. P. Scarlett High School, we believe that marks should be a fair and accurate reflection of our students' understanding of the course learning outcomes.

- In order for teachers to evaluate this, we believe that students need to complete all course work. All assignments and tests impact course grades.
- To that end and within reason, the staff and administration are committed to providing the students with opportunities to complete their course work.
- Students are encouraged to keep up to date with all their assignments in every course.
- If clarification is needed or a problem is anticipated, they should speak with their teacher.
- Students who are not completing course work on time can be asked to remain after school and/or work in the Completion Room until they are caught up.
- Our principles for assessment are explained in more detail on the school website.

RESOURCES

- Alberta Program of Studies, CTS, Mechanics (Mec)
 - Resources to support: (n.d.). Retrieved September 1, 2017, from <http://www.learnalberta.ca/ProgramOfStudy.aspx?lang=en&ProgramId=231834#>
- CDX Automotive instructional website <https://alberta.cdxauto.ca/scar/>
- ProDemand Automotive Repair Information
 - ProDemand Automotive Repair Information - Mitchell1, Snap-on Tools. (n.d.). Retrieved September 1, 2017, from <https://www.prodemand.com/>
- Modern Automotive Technology
 - Duffy, J. E. (2017). *Modern automotive technology: workbook*. Tinley Park, IL: Goodheart-Willcox Company, Inc.

HAZARDOUS ENVIRONMENT

Due to the nature of the environment, nicks and cuts are almost a daily occurrence in the shop. Please note that we supply gloves to reduce the chance of students hurting themselves. In such an event, we do assess the scratch/cut and then perform any first aid required. We will contact home if we feel that the situation requires further attention.

Mechanics 30 Agreement

I have reviewed the Mechanics 30 course outline and understand that:

1. Safety is our number one priority. Everyone is responsible for assuring everyone's well-being in class and, as such, will always:
 - a. Report any hazards or hazardous behavior.
 - b. Always wear the required personal protective equipment (PPE) and remind others if they have forgotten to wear theirs.
 - c. No student is to touch or use any piece of equipment they have not been trained on.
 - d. Personal Electronic Devices are not to be used in the shop unless otherwise specified (i.e. using cameras to photograph work done). They are distracting and could pose a safety risk to you and those around you.
 - e. Students need to remain in assigned areas of the shop until they are given permission to move (i.e. no wandering outside or up on the mezzanine.)
 - f. Accept that the teacher may exclude students from any activities if they feel the student is endangering themselves or others.
2. Regular attendance is crucial to success in Mechanics 30.
 - a. If a student is absent, they are responsible for finding out any materials or instructions they may have missed.
 - b. If a student is absent for an extensive period of time, they are responsible for making up the missed work or discussing an alternative assignment with the teacher. Each module is approximately three weeks long. If you miss a week of school, you will have missed one third of a module – this can affect your mark for that module significantly.
 - c. It is disruptive when students arrive to class late. Late students also miss out on important instructions.
 - d. If a student needs to leave class (to use the washroom or attend a guidance appointment, etc.), they may do so only after notifying the teacher. Time absent from class will be monitored, so, use your time wisely.
 - e. Students are discouraged from eating and drinking in the shop. If you must bring your food with you to class, you might be asked to finish it in the hallway or put it in your locker.
Students are responsible for cleaning up their mess.

Student Name (please print): _____

Student Signature: _____

Parent/Guardian Signature: _____

Date: _____