**MECHATRONICS 20/30**

**INSTRUCTOR**: Steven Schultz – [steven.schultz@wolfcreek.ab.ca](mailto:steven.schultz@wolfcreek.ab.ca); 403-782-6615 ext 5205; REMIND sign up: **text @lchs-elt10 to 845-538-4555**

**OVERVIEW**: In partnership with Red Deer College, LCHS is offering an afterschool Mechatronics program. The course is an introduction to the concepts and application of Mechatronics. Mechatronics is the integration of mechanical systems, electronic systems, and software, which is employed in the development of automation and robotic applications. Upon completion of the course, the student will have an understanding on how to assemble their robotics platform, read the schematics, and program the vehicle to perform basic navigational algorithms. The course will be an intense course with portions of the class at Red Deer College, at LCHS and at one or more competitions. The course may be offered in conjunction with the other ELT courses but can be taken as a stand-alone course for students needing to earn credits. Participation in SKILLS ALBERTA, VEX, FTC and FRC robotics club after school will allow you to earn Project Course credits.

**POTENTIAL 20 LEVEL COURSES:**

* HSS1080 Leadership fundamentals: Students explore basic principles of leadership and evaluate their personal leadership characteristics and qualities. Students develop a plan for their personal growth as a member of a leadership team and examine the various behaviors, skills and roles of team members that contribute to team effectiveness.
* HSS1050 Introduction to mentorship: Students learn about the characteristics of positive mentoring relationships in their personal lives and society. Students prepare to engage in a mentoring relationship. Students apply basic mentoring skills to a mentoring relationship and explore considerations for safety related to mentoring.
* ELT 2010 Introduction to Electro-Assembly 2: Students apply electro-assembly technology to manufacture circuit boards.
* ELT 2130 Magnetic Control Devices: Students demonstrate the fundamentals of electromagnetic control devices.
* ELT 2140 Robotics 2: Students demonstrate the fundamental concepts of sensor devices and control systems by building an electronic circuit to control a direct wire or mobile robot.
* ELT 2150 Electronic Controls: Students demonstrate the fundamentals of ladder/relay logic programming and how the programmable logic controller (PLC) system operates.
* ELT 2160 Robotics Sensors 1: Students demonstrate how basic sensors are used in a robotic system.
* ELT 2170 Robotics Sensors 2: Students demonstrate how specialized sensors are used in a robotic system.
* ELT 2910 ELT Project B: Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant. (Possible Projects: Build a FLL, VEX robot or FTC robot)
* ELT 2920 ELT Project C: Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant. (Possible Projects: Build a FLL, VEX robot or FTC robot)

**POTENTIAL 30 LEVEL COURSES:**

* HSS2050: Mentorship: Students analyze the relationship between mentoring and the wellness of individuals and communities. Students build a personal profile to prepare for their role as a mentor and demonstrate mentoring skills.
* ELT 3150 Robotics 3: Students demonstrate remote/autonomous control systems by constructing circuits to control robotic behaviour.
* ELT 3160 Control Applications: Students demonstrate the fundamentals of programmed controls and demonstrate how sensing devices are integrated to control output devices.
* ELT 2910 ELT Project D: Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant. (Possible Projects: Build a FLL, VEX robot or FTC robot)
* ELT 2920 ELT Project E: Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant. (Possible Projects: Build a FLL, VEX robot or FTC robot)

**SUMMATIVE ASSESSMENT:**

* Theory Assignments & RESEARCH…………………………………40%
* Practical TASKS …………………………………………………………40%
* Basic Competencies (fundamental, Personal & teamwork skills)…….…20%

**RESOURCES and MATERIALS NEEDED :**

1. One folder or binder to keep ENGINEERING NOTEBOOK
2. One folder or binder to keep THEORY assignments & COMPETENCY evaluations
3. Close toed shoes, work gloves(provided) & agricultural tools (provided)
4. PEN or PENCIL
5. Course Fee of \_\_\_\_\_ for consumables and Field trip Fee of \_\_\_\_\_ for Trips to RDC

|  |  |  |
| --- | --- | --- |
| **LCHS Assessment Policy**  **(For the complete policy please see** [**https://goo.gl/ByAvQN**](https://goo.gl/ByAvQN)**)** | | |
| **Assessment Design and Evaluation** | **Steps take for Late Assignment** | **Reassessment** |
| * All Assessments are based on the learning outcomes written by Alberta Education. * All grades are criteria based and indicate the level of student achievement in relation to mastery of the outcomes. * Students will receive feedback on work that is completed on time. | 1. Late assignments need to be submitted the following day. 2. Failure to do so with result in parent contact and an assigned flex 3. Failure to meet this deadline will result in a meeting with administration and INCOMPLETE (weighted as a zero) being placed in Power School. | * Students may request a reassessment within two days of receiving the marked assessment. * The requirements and date of reassessment will be set by the teacher during a conference. * Student must show evidence of new learning before the reassessment date. |

**Interventions for student success**:

* Career and Technology Courses (CTS) expect students to complete all assigned work to meet expected learner outcomes. In ELT, there are tasks EVERYDAY. If a student misses a task an “INCOMPLETE” or “I” will be placed into Power Teacher until the student completes that learning task. The “INCOMPLETE will be weighted as a zero for the calculation of their final marks.
* In CTS, Curriculum Competency Skills must be demonstrated and meet expected learner outcomes as we prepare our students for the real world.
* In addition, Lacombe Composite High School CTS dept. has incorporated strategies of intervention for the success of all students such as: Meetings with teachers and/or administration to find solutions, use of flex time, exam week or before school to complete missing work, providing opportunities to improve grades (additional work/project), Online resources & working with parents

**EXPECATIONS FOR SUCCESS:**

1. Respect Yourself, Others, Tools you work with and the Gardens you work in
2. Attend Regularly and on time
3. Complete your work to the best of your ability
4. Leave your materials in class or in your locker, but bring them to class
5. Follow the Code of Conduct found in the Student Handbook
6. Eat Healthy Foods and Drinks
7. Have a positive attitude and you will enjoy this class