Fond du Lac Tribal and Community College
COURSE OUTLINE FORM

03/19/19

Please return this form to the college vice president of academic affairs and the chairperson of the Academic Affairs and Standards Council (AASC)

1. Prepared by:_____

2. Date submitted:_____

3. Date approved:_____   Date revised___04/30/19___

4. Department/discipline: ____Computer Science_____

5. Department(s) endorsement(s):_____
   (Signatures of the person(s) providing the endorsement are required.)

6. Course Title:____Introduction to Engineering: Robotics_____
   Abbreviated course title for Transcripts (25 characters or less):_____

7. Course Designator:___CSCI_____   8. Course Level:___1021_____

9. Number of Credits: Lecture _____   Lab__1__

10. Control Number (on site)___20_____   Control Number (online)_____

11. Catalog/Course description:

    Basic programming languages will be used and discussed.

12. Course prerequisite(s) or co-requisite(s): Accuplacer scores/ Other courses

    Prerequisite(s): MATH 0020 Beginning Algebra or consent of instructor.
    Co-requisite:

13. **Course Materials** (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers).

    All materials will be provided to the student.

14. **Course Content** (Provide an outline of major topics covered in course)

    The course will provide a general understanding of how robotic systems work as well as the necessary science and assembly techniques needed to build and operate a simple mobile robot. Lecture and Lab will provide the following competencies:

    1. Knowledge of Basic Robotic Systems and their components
    2. Assembly Skills: Working skill in soldering electronic circuits and mechanical assembly of the project robot.
    3. 3D Printing: Experience with 3D printing technology enabling students to manufacture some of the robotic components needed for the project.
    4. Electronics: Understanding the basic function of electronics in the project robotic system.
    5. Programming: Experience with writing and editing computer code that will control the project robot.
    6. Wireless control of project robot.

15. **Learning Goals, Outcomes, and Assessment**

At FDLTCC we have 4 Competencies Across the Curriculum (CAC) areas. They are as follows:

A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information)
B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)
C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)
D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one's own traditions and culture, knowledge of others' traditions and cultures, culture of work, culture of academic disciplines and/or respect for global diversity.)

Course Learning Outcomes will fulfill the identified competencies.

Upon completion of this course, the student will be able to:

Learning Outcomes	Competencies (CAC)	Cultural Standards
Identify functional components of a robotic system and how they relate to one another.	A, B	1, 4
Correctly solder and assemble basic electronic circuits on a circuit breadboard.	A, B, C	1, 4
Import CAD generated file of one of the structural parts of the project robot and make that part with 3D printer.	A, C	1, 4
Correctly read and wire simple circuits from a schematic onto an electronic breadboard.	A, C	1, 4
Understand and apply the computer commands to control the robot.	A, B, C	1, 4
Demonstrate the basics of wireless communication and how to implement a wireless control of the project robot.	A, C	

WINHEC Cultural Standards:

1. **GIKENDAASOWIN –** *Knowing knowledge:* To develop human beings who value knowledge, learning, and critical thinking and are able to effectively use the language, knowledge, and skills central to an Ojibwe-Anishinaabe way of knowing.

2. **GWAYAKWAADIZIWIN –** *Living a balanced way:* To develop balanced human beings who are reflective, informed learners who understand the interrelatedness of human society and the natural environment, recognize the importance of living in harmony with creation, and are able to apply a systems approach to understanding and deciding on a course of action.
3. **ZOONGIDE'EWIN –** *Strong hearted:* To increase the students' capacity to live and walk with a strong heart, humble and open to new ideas and courageous enough to confront the accepted truths of history and society.
4. **AANGWAAMIZIWIN –** *Diligence and caution:* To develop students' capacity to proceed carefully, after identifying, discussing, and reflecting on the logical and ethical dimensions of political, social, and personal life.
5. **DEBWEWIN –** *Honesty and integrity:* To increase students' capacity to think and act with honesty and integrity as they understand and face the realities of increasingly interdependent nations and people
6. **ZAAGI' IDIWIN –** *Loving and Caring:* To encourage students' acceptance of the diversity within their school, community, and environment by developing healthy, caring relationships built on respect for all.
7. **ZHAWENINDIWIN –** *Compassion:* To expand students' knowledge of the human condition and human cultures and the importance of compassion especially in relation to behavior, ideas, and values expressed in the works of human imagination and thought.

16. **Minnesota Transfer Curriculum (MnTC):** List which goal area(s) – up to two – this course fulfills.

   See www.mntransfer.org

   Goal Area(s):_____

   Provide the specific learning outcomes as listed on the mntransfer.org website that pertain to this course.

17. Are there any additional licensing/certification requirements involved?
   _____Yes ___X___ No

   Provide the required documentation to show course meets required licensing/certification standards.

   03/19/19