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| **Robotics/Electronic Systems Technology****Course Syllabus** |  |  |  | **2017 – 2018****Revised: 5/16** |

*Lake Area Technical Institute: superior, comprehensive technical education that changes lives and launches careers.*

**COURSE:** RBTC 227 (A) – Robot Operation and Programming

**CREDITS:** 2 - Semester Credits (56 hours)

**INSTRUCTOR:** Bob Poor; Room 904; Email: bob.poor@lakeareatech.edu ; Work Phone: 605-882-5284 ext.250

**OFFICE HOURS:** The course (via My Portal) is available 24 hours a day, seven days a week. Your instructor is available on-campus 8:00 am to 4:00 pm M-F and by appointment. However, you can expect a reply to any e-mail within 24 hours M-F and 48 hours Saturday/Sunday.

**PREREQUISITES:** RBTC 205 & RBTC 217

**COURSE MEETING TIMES AND LOCATION:** TR 2:00 PM – 3:50 PM; Room 906

**REQUIRED TEXT:** N/A

**REQUIRED SUPPLIES:** Program Toolbox

**REQUIRED TECHNOLOGY:** Computer/laptop

**RATIONALE AND COURSE GOALS:** Robotic Operation and Programming is the basics of programming for different robots that you could encounter out in industry. This course is designed to build off of previously learned material.

**STUDENT LEARNING OUTCOMES:**

SimCell/Pegasus Robots

* Demonstrate safety procedures when working with robots
* Define what a robot is and the advantages of robotics
* Identify the basic components of robots
* Describe the purpose of the homing procedure
* Identify the components of a servo robot axis
* Jog the robot using teach pendant and control software
* Manually operate an End Effector
* Describe the function and operation of a robot program
* Use a teach pendant to teach and edit robot points
* Write, Test and Run a robot program to perform a task
* Use advance commands in programming such as subroutines
* Program input and output commands
* Interface between robot, PLC and Auxiliary equipment

Fanuc/Kawasaki/Motoman Robots

* Power up and jog the robot
* Recover from common programs and robot faults
* Define robot Frames
* Demonstrate the use of Frames, branching instructions and the setup of I/O signals
* Demonstrate how to write a program with the proper Program Header Information
* Teach positions to achieve the required task
* Test run the program at a safe speed
* Run the program in Auto Mode
* Safely add motion instructions to the program
* Use position registers in the program
* Demonstrate opening and closing the gripper within a program
* Manipulate programs and files
* Perform file backups
* Back up a controller as an image

**FORMAT AND PROCEDURES:**

**GRADING POLICIES:**

 **Grading Scale:**

94 – 100% = A87 – 93% = B80 – 86% = CUnder 80% = F

1. Tests not taken on the scheduled test day will be assessed a 10% late penalty unless other arrangements have been made prior to test day. If you are absent the day of a test and get a hold of the instructor, the late penalty will be assessed and that test must be taken within **one week** or a score of zero will be awarded. If you do not get a hold of the instructor the day you are absent a zero will be awarded for that test. *Note: This test may NOT be the same test given in class.*
2. Points are awarded for assignments completed. Assignments will be submitted through and My Portal. **No submissions through email.** You will need to know how to navigate My Portal. Assignment due dates and instructions can be found on My Portal under the Coursework section. Assignments/tests are due on the date specified unless an extenuating circumstance has been approved by the instructor. Late assignments will not be accepted unless due to extenuating circumstances and will be penalized by 10%. Failure to complete the projects, simulations, and final exams/activities will result in failing the entire course regardless of the other grades in the individual assignments.

**ATTENDANCE:**

**For *on-campus students***

A student may miss two hours per credit of any one class during the semester (2 credit class = 4 hours). Upon missing the fifth hour, a drop slip will be filled out and submitted to the registrar. Within three days of being dropped, the student may appeal by filling out an appeal form with the registrar. The registrar will then set up a meeting with the student and the instructor. The appeal will be considered and a decision reached on an individual basis.

**For *online students***

Attendance will be based on logging in to the course website on My Portal. If you have not logged in or communicated with your instructor for ten (10) consecutive days, a drop slip will be filled out and submitted to the registrar. Within three days of being dropped, the student may appeal by filling out an appeal form with the registrar. The registrar will then set up a meeting with the student and the instructor. The appeal will be considered and a decision reached on an individual basis. Communicating with your instructor is very important. All correspondence must be through the LATI email system.

**ADDITIONAL COURSE INFORMATION:**

*For online and on-campus students*

1. It is expected that students will spend 2 hours per credit hour outside of class time for each course. For example, for a 3 credit course you can expect to spend 3 hours working with the concepts presented (for on-campus students this would be the time you attend class) plus 6 additional hours per week (2 hours x 3 credits) completing assigned homework and projects as well as studying for tests.
2. Laptops are LATI property during class and will be used for academic purposes only. Social networking is distracting to those around you. Please be courteous during classroom instructional time (lecture and other class activities).
3. Cellphones and other mobile devices (iPods) are to be turned off and put away unless being used for classroom activities (as specified by your instructor). Any texting during class will not be allowed. Please inform the instructor if there is an emergency call expected. No cell phones should be on or visible during exams.
4. The instructor has the right to alter the syllabus and assignments during the course. Any changes will be announced.
5. Personal responsibility is expected of all students. You are responsible for knowing the material as well as meeting all due dates. It is suggested that each student develop a method for keeping track of due dates.
6. Professional behavior is expected in class and on-campus at all times. Professionalism in the classroom and in the workplace are vital to your success. Unprofessional behavior including, but not limited to, swearing, cheating, making rude comments or gestures, showing disrespect, and talking during instructional time will not be tolerated.
7. Excellent communication is a vital tool to success in the classroom and workplace. This communication includes in-person and email as well as any other methods utilized by your instructor. The course (via My Portal) is available 24 hours a day, seven days a week. Your instructor is available 8:00 am to 4:00 pm M-F and by appointment. However, you can expect a reply to any e-mail within 24 hours M-F and 48 hours Saturday/Sunday. *It is expected that you will check your LATI email at least 5 days a week* to ensure you are receiving up to date information. As your instructor, I am here to assist you. If I do not know you have questions or are struggling, I am not able to help. Please feel free to call, stop by my office, or send an email if you have any questions or need assistance.

*Communication guidelines for email:*

* When emailing, always use LATI’s email system for communicating with your instructor.
* Include a subject line to let me know what the message is about.
* Please include a salutation (Hi) and a closing (thank you, sincerely,)
* Clearly describe your question or information you would like to share.
* Use complete sentences including capital letters and punctuation. Email (in an academic and workplace setting) should follow a professional format; it is not the same as texting or sending a quick reply to a close friend.

*Professional Online Etiquette:*

* <http://www.lakeareatech.edu/onlinelearner/onlineetiquette.html>
1. Without my permission, you do not have the authority to record any of my class, its class members, or any content expressed here.
2. For health and safety reasons, food is to be eaten in the cafeteria, food will not be allowed in the classroom or lab. There may be special occasions where we may have food in the classrooms or lab. However, it’s just best to eat in the cafeteria.
3. Soda bottles must have lids, NO SODA CANS ON BENCHES. Spilled soda is sticky, damaging and dangerous!
4. Pants and closed toed shoes are to be worn in the labs at all times. No shorts or opened toed shoes are allowed. If you come to class with shorts or opened toed shoes, you will be sent home to change.

**LATI POLICIES and STUDENT SERVICES**

*The LATI Student Handbook is available under the Current Students menu on the LATI webpage. Please review this handbook to familiarize yourself with the student handbook. Some policies and student services listed in the handbook are outlined below.*

* *Academic Honesty/Dishonesty Statement*

Students’ Responsibilities: Students are responsible for their own behaviors and are expected to maintain stated standards of academic honesty. Students share the responsibility with the faculty for maintaining an environment that supports academic honesty and discourages plagiarism or cheating.

Faculty and Administrator Responsibilities: Faculty are responsible for creating a classroom and testing environment that discourages cheating, confronts suspected violators and insures fair treatment of all students. Administrators also share the responsibility for developing an environment that discourages academic dishonesty.

If a student is participating in academic dishonesty and is caught, he/she may be dismissed from the course.

Students come to LATI not only to improve their minds, gain knowledge, and develop skills that will assist them in their life’s work, but also to build character. Students should seek to be totally honest in their dealing with others. They should complete their own work and be evaluated upon that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, falsification, cheating and other academic misconduct. Per the LATI student conduct policy: Dishonesty and/or plagiarism in class, laboratory, shop work, or on tests is regarded as a serious offense, and the student is subject to disciplinary action including dismissal by the instructor and authorized representatives of the institute. It is essential that students in this course understand plagiarism and how to avoid it. Consult this website for more information about plagiarism: <http://www.plagiarism.org/plagiarism-101/overview/>

* *Career Counseling*

Guidance is available for students when investigating career choices or in reaffirming the choice already made.

* *Personal Counseling*

Knowing that student life can be stressful, Lake Area Tech provides personal on-campus counseling for either school-related or non-school-related issues. At times, referral to another counseling service may be warranted. Check with the on-campus counseling staff if you have concerns you need to discuss. Specific referrals for drug and alcohol-related issues will be made by on-campus counselors.

* *Americans with Disabilities Act Policy*

Students are entitled to ‘reasonable accommodations’ under provisions of the Americans with Disabilities Act.  Those in need of such accommodations should notify the instructor and make appropriate arrangements with the Counseling Office.

* *Inclusivity Statement*

We understand that our members represent a rich variety of backgrounds and perspectives. The Robotics/Electronic Systems Technology program/department is committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

* + share their unique experiences, values and beliefs
	+ be open to the views of others
	+ honor the uniqueness of their colleagues
	+ appreciate the opportunity that we have to learn from each other in this community
	+ value each other’s opinions and communicate in a respectful manner
	+ keep confidential discussions that the community has of a personal (or professional) nature
	+ use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the Lake Area Tech community
* *Student Tutoring*

The Educational Services Center staff and peer tutors provide tutoring for all courses. If you are a student in need of help in any of your classes, please contact the Educational Services Coordinator located in the LATI library.

* *Online Learner Information*

Additional information and support for online learners at LATI is available at: <http://www.lakeareatech.edu/onlinelearner/index.html>

* *Online Learner Support*

<http://www.lakeareatech.edu/onlinelearner/supportforonlinelearners.html>

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