

EDTECH 597 – Special Topics
Autonomous Robotics for Teaching and Learning

3 Credit Online Course

Instructor Information

Name: Youngkyun Baek

Contact Information: 426-1023

Office Hours: Mon, Wed, Thu 10:00 – 14:00

Availability: Anytime by appointment, open to email or Skype etc.

Website: <http://edtech.boisestate.edu/>

Course Description

This course introduces methods for integrating robotics technologies into K-12 classroom settings. Participants build and program an educational robot. Basic concepts about robotics will be introduced. Participants discuss about ways of using robotics to learn different subjects such as math, physics, science, and computer programming. This course provides hands-on experience by assembling robot models and by programming robots. Video production skill is needed. A web site for keeping learning journal throughout the course is required.

Course Outcomes

Students read course related articles and the textbook in order to get a basic understanding of robotics in view of teaching and learning. They search for different articles and scholarly journals in relation to the robotics that are used in current education systems. They watch clips that are related to robotic assembling and programming. They discuss and present the completed robotic model and different ways of utilizing the robotics in teaching and learning.

Course Location and Login Information

This is an online course delivered in Moodle (<http://edtech.mrooms.org/>). The Moodle login page explains how to login to Moodle. Contact Moodle Support at moodlesupport@boisestate.edu if you have problems accessing Moodle. If you have forgotten your password, click the link below the login box, "lost password?" and you will be able to reset it.

Course Materials

Books: (1) Lego EV3 User Guide, (2) Invent To Learn: Making, Tinkering, and Engineering in the Classroom (2013) by Sylvia Libow Martinez and Gary S. Stager, (3) Robotics: Discover the Science and Technology of the with 20 Projects (Build It Yourself) Paperback – August 1, 2012, (4) Robots in K-12 Education: A New Technology for Learning (Premier Reference Source) Feb 29, 2012 by Bradley S. Barker and Gwen Nugent.

Software: Lego EV3 or other software for student's selected robot, Camtasia or equivalents.

Hardware: Computer, Lego Mindstorms NXT 2.0, Lego Mindstorms EV3 (Preferred), or Robots permitted by the Instructor. These hardware is required to keep throughout the course. You may

rent a kit. Visit <https://www.pley.com/en-US/theme/Creator/Mindstorms-EV3-31313>; <https://netbricks.biz/lego-sets/mindstorms-lego-sets/mindstorms-ev3-lego-set/> or search Internet for your fit. For missing parts, visit <http://shop.lego.com/en-US/> or <http://www.bricklink.com/store.asp?p=1001bricks>

Internet Connectivity

You need an up-to-date computer with an Internet connection in this course.

Course Schedule, Major Activities & Assignments

Students are expected to spend 9-12 hours *each* week. Detailed information about each assignment is posted in Moodle. Check Moodle and your Boise State email regularly each week; announcements and course updates can be posted at any time.

Week	Major Activities & Assignments: Check Moodle for Details	Points	Due Date
1	- Introduce Yourself	10	Jan 15
	- Structure your robotics website and post it	10	Jan 15
	- Assignment 1: Summary & reflection on educational robotics papers	20	Jan 15
	- Respond to two classmates' self-introductions and robotics website	10	Jan 15
2	- Controlling robot / Assembling (I, Education version)	50	Jan 22
	- Assignment 2: Robot I Assembling - Respond to two classmates' projects	10	Jan 23
3	- Controlling robot / Assembling (II)	50	Jan 29
	- Assignment 3: Robot II Assembling - Respond to two classmates' projects	10	Jan 30
4	- Controlling robot / Assembling (III)	50	Feb 5
	- Assignment 4: Robot III Assembling - Respond to two classmates' projects	10	Feb 6
5	- Programming robot (Motion) / Discussion & reflection	50	Feb 12
	- Assignment 5: Programming I (Motion) - Respond to two classmates' projects	10	Feb 13
6	- Programming robot (Vision) / Discussion & reflection	50	Feb 19
	- Assignment 6: Programming II (Vision) - Respond to two classmates' projects	10	Feb 20
7	- Programming robot (Control) / Discussion & reflection	50	Feb 26
	- Assignment 7: Programming III (Control) - Respond to two classmates' projects	10	Feb 27
8	- Programming robot (Time & Position) / Discussion & reflection - Assignment 8: Programming IV (Time & Position)	50	Mar 5

	- Respond to two classmates' projects	10	Mar 6
9	- Planning competition with your assembled robot - Assignment 9: Planning activities - Respond to two classmates' projects	50 10	Mar 12 Mar 13
10	- Planning collaboration with your assembled robot - Assignment 10: Planning activities - Respond to two classmates' projects	50 10	Mar 19 Mar 20
11	Spring Break		
12	- Planning activities with robot I - Assignment 11: Planning activities with Robot I of Module 2 - Respond to two classmates' projects	50 10	Apr 2 Apr 3
13	- Planning activities with robot II - Assignment 12: Planning activities with Robot II of Module 2 - Respond to two classmates' projects	50 10	Apr 9 Apr 10
14	- Planning activities with robot III - Assignment 13: Planning activities with Robot III of Module 2 - Respond to two classmates' projects	50 10	Apr 16 Apr 17
15	- Reflections - Course Evaluation	10 10	Apr 23 Apr 23
16	- Developing a robotics project for K-12 classrooms - Respond to two classmates' projects - Completion of Robotics Planning & Portfolio site	140 10 60	Apr 30 Apr 30 Apr 30
	Total	1000	

AECT Standards

Course assignments are aligned to the Association for Educational Communications and Technology (AECT) Standards, 2012 version.

Assignments are listed by number (based on the assignments list above) in the following table under the standards they are aligned to.

	Standard 1 Content Knowledge	Standard 2 Content Pedagogy	Standard 3 Learning Environments	Standard 4 Professional Knowledge & Skills	Standard 5 Research
Creating	1	1		2, 3, 4	

Using				5, 6, 7, 8, 11, 12, 13	
Assessing/ Evaluating					
Managing				5, 6, 7, 8	
Ethics					
Diversity of Learners					
Collaborative Practice				9, 10	
Leadership					
Reflection on Practice					
Theoretical Foundations					
Method					

Grade Scale

Final grades are based on the following scale.

Grade	Points Required
A+	97% ~ 100% (970 ~)
A	93% ~ 96% (930 ~ 969)
A-	90% ~ 92% (900 ~ 929)
B+	87% ~ 89% (870 ~ 899)
B	83% ~ 86% (830 ~ 869)
B-	80% ~ 82% (800 ~ 819)
C+	77% ~ 79% (770 ~ 790)
C	73% ~ 76% (730 ~ 769)

C-	70% ~72% (700 ~ 729)
D+	67% ~ 66% (670 ~ 699)
D	63% ~ 66% (630 ~ 669)
D-	60% ~ 62% (600 ~ 629)
F	599 and below

Grading Cycle

For each assignment, a rubric will be provided. Based on the rubric, the feedback will be given by the week after each assignment's due date.

Additional Information about Assignments

Major assignments will be posted at least one week in advance of the assignment due date. The assignments are mostly asynchronous delivery and will be completed and submitted in digital multi-media forms.

Late Work Policy

All assignments should be submitted at the designated time, unless pre-arranged with the instructor. The instructor is not responsible for any text or software that is not obtained in enough time to complete the assignments.

Technical Difficulties

On occasion, you may experience problems accessing Moodle or class files located within Moodle, Internet service connection problems, and/or other computer related problems. Make the instructor aware if a technical problem prevents you from completing coursework. If a problem occurs on our end, such as Moodle or EDTECH2 server failure, then an automatic due date extension is granted.

Reasonable Accommodations

Any student who feels s/he may need accommodations based on the impact of a disability should contact the instructor privately to discuss specific needs. You will also need to contact the Disability Resource Center to schedule a meeting with a specialist and coordinate reasonable accommodations for any documented disability.

The Disability Resource Center is located on the first floor of the Lincoln Parking Garage, on the corner of Lincoln Ave. and University Dr. at Boise State University. They are available Monday through Friday 8:00 a.m. to 5:00 p.m. Mountain Time.

Phone: 208.426.1583

Email: drcinfo@boisestate.edu

Website: <http://drc.boisestate.edu/http://drc.boisestate.edu/>

Privacy Information

EDTECH courses involves online delivery and for some courses public display of assignments on websites or social media spaces. In the online course, your name, email address, and Moodle profile may be visible to others who have logged into Moodle. You are advised to familiarize yourself with privacy settings on Moodle or social media sites associated with the course. Privacy settings can sometimes be adjusted to restrict certain types of information. Please contact your instructor if you have questions or concerns.

Academic Honesty

Students are expected to create original work for each assignment. Students must follow the Boise State Student Code of Conduct as well as observe U.S. copyright laws in this course.

In the event of academic dishonesty, a complaint is filed with the Boise State Student Conduct Office with supporting documentation. This complaint remains on file and actions may be taken against the student (e.g., loss or credit, grade reduction, expulsion, etc.).

Note: Instructors may append additional course-specific policies as needed.

Policy for Incompletes

Incompletes are not guaranteed. However, when they are given incompletes adhere to Boise State University guidelines as follows:

Instructors can enter a grade of I - for incomplete - if both of the following conditions are present:

- Your work has been satisfactory up to the last three weeks of the semester.
- Extenuating circumstances make it impossible for you to complete the course before the end of the semester.

In order to receive an incomplete, you and your instructor must agree to a contract stipulating the work you must do and the time in which it must be completed for you to receive a grade in the class. The terms of this contract are viewable on my.BoiseState under Your Student Center To Do List. The contract time varies as set by the instructor but may not exceed one year. If no grade other than incomplete has been assigned one year after the original incomplete, the grade of F will automatically be assigned. The grade of F may not be changed without approval of the University Appeals Committee. You may not remove the incomplete from your transcript by re-enrolling in the class during another semester. A grade of incomplete is excluded from GPA calculations until you receive a final grade in the course.

Boise State University Academic Calendar

Please refer to the Boise State University Academic Calendar for University dates and deadlines: <http://registrar.boisestate.edu/academic-calendar.shtml><http://registrar.boisestate.edu/academic-calendar.shtml>
<http://registrar.boisestate.edu/academic-calendar.shtml>

Graduate Catalog

Graduate Catalogs for present and prior academic years can be found online at: <http://graduatecatalog.boisestate.edu/><http://graduatecatalog.boisestate.edu/>

College of Education - The Professional Educator

Boise State University strives to develop knowledgeable educators who integrate complex roles and dispositions in the service of diverse communities of learners. Believing that all children, adolescents, and adults can learn, educators dedicate themselves to supporting that learning. Using effective approaches that promote high levels of student achievement, educators create environments that prepare learners to be citizens who contribute to a complex world. Educators serve learners as reflective practitioners, scholars and artists, problem solvers, and partners.

Department of Educational Technology Mission

The Department of Educational Technology is a diverse and international network of scholars, professional educators and candidates who:

- Lead research and innovations in online teaching and learning
- Model, promote, manage, and evaluate digital-age work and learning resources in educational environments
- Inspire creativity and expertise in digital media literacies
- Design and develop imaginative learning environments
- Empower learners to be evolving digital citizens who advocate cultural understanding and global responsibility
- Promote and pattern participatory culture, professional practice, and lifelong learning
- Forge connections between research, policy, and practice in educational technology