COURSE SYLLABUS

EDTC 5630 – 02 Mary G. Beckmann
Summer 2004 2 credits

Robotics in the Classroom
Advanced Topics in Classroom Technologies

Course Description:
In this class students will build a TechCard chassis-based robot using principles of basic electronics. Students will create a robot that is aesthetically pleasing and one that solves a real-world problem and does something. Students will examine how incorporating robotics technology into pre-existing lesson plans will create investigative play through the design of meaningful projects, encourage group participation, enhance social skills, increase comprehension, retention, and thinking and learning skills. Students will examine and discuss how robot building involves probability, planning and predicting, designing, hypothesizing, measuring, and applying mathematical and scientific principles. Students will access the Internet to search for and examine robotic sites that include NASA robotic information, robotic games and activities for age appropriate classroom use, and to print items such as a paper ruler that will be used to convert to and from metric and imperial systems of measurement.

Discussions will include how robotics relate to education, how to incorporate robotics into existing lesson plans to enrich and expand on already existing lessons at any grade level in multiple disciplines. Kits, pre-built robots, and mechanical aspects of beginning robotics, will be discussed. Students will become adept at purchasing products from various sources.

Learning Outcomes:
At the end of this class students will:

- examine and explain to an age appropriate classroom, the three elements of a robot
- analyze the history of robots and discuss the Russian/American scientist and author, Isaac Asimov
- explain the value of robots in everyday life, in Hollywood, and in space
- compare and contrast artificial intelligence robots, vehicular robots, micro robots, nanobots, and humanoids, and spider bots
- explain and demonstrate the use of gears, wheels, chassis, motors, sensors, batteries, switches
- examine various uses of Legos in classrooms

create a lesson plan incorporating technology robotics in a classroom within a discipline

design and create a working chassis-based robot

design a method for analyzing and evaluating a finished product

examine how to successfully group students to build a chassis-based robot

discuss and examine various outlets for purchasing robotic supplies

The Missouri Show-Me Standards are addressed within the content of this course. Identification of specific standards are included within course assignments. Integration of Missouri Assessment Program (MAP) standards and grade levels will be integrated into this course when appropriate.

Resources: **Ultimate Robot Kit** (kit and small text included), **ISBN**: 0789479451, **Publisher:** DK Publishing, Inc.

Evaluation (see schedule for point values)
Project
Critiques
Participation on the bulletin board

Letter Grades:

93-100 = A

90-92 = A-

86-89 = B+

83-85 = B

80-82 = B-

76-79 = C+

73-75 = C

70-72 = C-

Final projects: The final project will be a completed vehicular robot and will be evaluated on the final day of class along with a completed robotics lesson plan.

Regular attendance and participation is required - this syllabus is subject to change at the discretion of the instructor.