

Agenda of Regular Meeting

The Board of Trustees Canutillo ISD

A Regular meeting of the Board of Trustees of Canutillo ISD will be held January 24, 2009, beginning at 9:30 AM in the Canutillo ISD Administration Office, 7965 Artcraft, El Paso, TX 79932.

The subjects to be discussed or considered or upon which any formal action may be taken are as listed below. Items do not have to be taken in the order shown on this meeting notice.

1. General Functions
 - A. Call to Order
 - B. Roll Call
 1. Special Board Instruction & Student Services Committee Members: Monica Cazares - Chairperson; Sergio Coronado, Armando Rodriguez
 2. Instruction and Student Affairs
 - A. Update regarding request to implement Spanish as a Second Language for Non-Spanish Speakers
Presenter: Dr. Pauline Dow
 - B. 2008-09 Scholarship Report
Presenter: Mr. Jim Fry
 - C. Update regarding high school transcripts in TEAMS
Presenter: Ms. LuAnn Escobar
 - D. Career and Technology Education Report - Robotics II Class 2
Presenter: Ms. Patricia Araujo
 3. Personnel
 - A. NONE
 4. Business and Finance
 - A. NONE
 5. Administration
 - A. Comments/Input from community members on items discussed on Instruction/Student Services Committee
 6. Adjournment
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If, during the course of the meeting, discussion of any item on the agenda should be held in a closed meeting, the Board will conduct a closed meeting in accordance with the Texas Open Meetings Act, Government Code, Chapter 551, Subchapters D and E. Before any closed meeting is convened, the presiding officer will publicly identify the section or sections of the Act authorizing the closed meeting. All final votes, actions, or decisions will be taken in open meeting.



Innovative Course Application 2009-2010

**Submission Deadline: Friday, January 30, 2009.
NO applications may be accepted after that deadline.**

Instructions:

1. Complete this application with care, remembering that if the course earns state approval, this application will be shared with other districts that may want to offer the approved course. **Please Note: This application is only to be used for newly-developed courses or expired courses approved prior to 2007. Courses approved in 2007 and 2008 do not require district application. Please see <http://www.tea.state.tx.us/curriculum/innovative/index.html> for more details.**
2. Obtain the approval of your local board of trustees prior to submitting your application.
3. Submit your application via email as an attachment. Use “[District name] Innovative Course Application” as your subject line, and address the email to curriculum@tea.state.tx.us. Expect a receipt confirmation within 5 business days.

Name of applying district or organization: Canutillo ISD

Complete mailing address: P. O. Box 100 Canutillo, TX 79835

Contact person: Patricia Araujo

Contact person's title: CTE Coordinator

Contact person's email address: paraujo@canutillo-isd.org

Contact person's phone number, area code first: 915-877-7441

County District Number (if applicant is a Texas school district): 071907001

Superintendent (if applicant is a Texas school district): Dr. Pam Padilla

Date of local board of trustees' approval of this innovative course application: [REDACTED]



Name of innovative course(s): **Robotics II**

(Only if this is an application for multiple levels of the same course may multiple course names be listed here. For example, an applicant may apply for approval of Latin Literature I and Latin Literature II with one submission.)

Subject area (Choose only one):

- | | |
|----------------------------------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> English Language Arts | <input type="checkbox"/> P.E./Equivalent |
| <input type="checkbox"/> Speech | <input type="checkbox"/> Languages Other Than English |
| <input type="checkbox"/> Mathematics | <input type="checkbox"/> Fine Arts |
| <input type="checkbox"/> Science | <input type="checkbox"/> Technology Applications |
| <input type="checkbox"/> Social Studies | <input checked="" type="checkbox"/> Career and Technical Education |
| <input type="checkbox"/> Economics/Free Enterprise | <input type="checkbox"/> Other Electives |
| <input type="checkbox"/> Health | |

Number of credits that may be earned: **1-2**

Grade level(s) to be served: **11-12**

Brief description of the course (150 words or less):

This course focuses on the technical and skills required in the manufacturing industry. Through modular lessons, students experience how to design of products and services, as well as the safety and maintenance issues relating to these emerging technologies are also covered.

Brief justification (150 words or less) of how/why the course qualifies as “innovative” (i.e., essential knowledge and skills not covered in any other state-approved course):

Innovative through state and the district is currently offering the Robotics I class and to further provide rigorous and continuous technology applications to our student population.

Essential Knowledge and Skills of the course:

(These should be presented in the same format as the State Board of Education approved Texas Essential Knowledge and Skills (TEKS). You may find samples of this format in Chapters 110 – 128 of 19 Texas Administrative Code (TAC) at <http://www.tea.state.tx.us/rules/tac/index.html>. **Please Note: They should NOT be copied from the TEKS. Applications that include standards already found in the TEKS will not be approved.**)

Knowledge and skills.

- (1) Students will develop the abilities to apply the design process in the construction and manipulation of a robot. The student is expected to:
 - (A) Construct a robot using the design process.
 - (B) Refine a robot by using prototypes and modeling to ensure quality, efficiency, and productivity of the final product.
 - (C) Use an engineering notebook to track any and all prototypes, corrections, and/or mistakes in the design process.
 - (D) Use an engineering notebook to finalize the design, construction, and manipulation of the finished robot.



- (E) Implement an inventory system to track all components of the robot system and all elements involved with the operation, construction, and manipulative functions involved.
 - (F) Use the design process to incorporate robotic subsystems and other external systems involved in the operation of the robot.
 - (G) Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.
- (2) Students will develop the abilities to use and maintain technological products and systems. The student is expected to:
- (A) Understand the various factors of process control.
 - (B) Use computers and calculators to access, retrieve, organize, process, maintain, interpret, and evaluate data and information in order to manipulate a robot and any subsystems required in the operation of the robot functions.
 - (C) Document processes and procedures and communicate them to different audiences using appropriate oral and written techniques.
 - (D) Troubleshoot, analyze, and maintain systems to ensure safe and proper function and precision.
- (3) Students will develop an understanding of the core concepts of physics and robotics. The student is expected to:
- (A) Become familiar with motors and motor speed, angular velocity, linear velocity used to manipulate a robot and robot subsystems.
 - (B) Become familiar with DC motor types and uses in a robotic system.
 - (C) Become familiar with gears and gear trains used in robots and robotic subsystems.
 - (D) Become familiar with rotational dynamics, weight, friction and traction factors required for the operation of robotics systems.
 - (E) Become familiar with torque and power factors used in the operation of robotic systems.
- (4) Students will develop an understanding of sensors and their relationship to robotic systems. The student is expected to:
- (A) Become familiar with the different types of sensors used in robots and robotic subsystems.



- (B) Become familiar with the operation of sensors and their use in technologies other than robotics.
 - (C) Implement sensors in a robot and/or the robotic subsystem.
- (5) Students will develop an understanding of the characteristics and scope of Arms and End Effectors required for robotic functions. The student is expected to:
- (A) Become familiar with robotic arm construction.
 - (B) Understand the relationship of torque, gear ratio and weight of payload in robotic operations.
 - (C) The design of end effectors and their use in linkages and gearing of robots.
 - (D) Research and development is a specific problem-solving approach that is used intensively in business and industry to prepare devices and systems for the marketplace.
 - (E) Many technological problems require a multidisciplinary approach.
 - (F) Invention is a process of turning ideas and imagination into devices and systems. Innovation is the process of modifying an existing product or system to improve it.
 - (G) Technological problems must be researched before they can be solved.
 - (H) Not all problems are technological, and not every problem can be solved using technology.
 - (I) Engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.
- (6) Students will develop an understanding of the influence of technology on history.
- (A) Many inventions and innovations have evolved by using slow and methodical processes of tests and refinements.
 - (B) The specialization of function has been at the heart of many technological improvements.

Description of the specific student needs this course is designed to meet:

Major resources and materials to be used in the course:

Robotics II requires a programmable robot for each designated team, peripheral hardware items necessary for the proper function of the robot, and a functional work area for various exercises and projects.

Required activities and sample optional activities to be used:



In Robotics II, the student will design, program, set up, and run robots and robotic subsystems using various automated systems: apply troubleshooting techniques as necessary for success of exercise; learn to communicate effectively, write a report, and work as a team member.

Methods for evaluating student outcomes:

In Robotics II, the student will be evaluated upon the completion and mastering of the Texas Essential Knowledge and Skills for Robotics II as determined by the instructor.

Description of the specific student needs this course is designed to meet:

Students enroll in Industrial Technology/Manufacturing program of study also a technology credit.

Major resources and instructional materials to be used in the course:

Hands-on modular units; textbooks; and computer.

Required activities and sample optional activities to be used: Member of the TSA Technology Student Association. Topics: Design Process; Electrical Systems/Quality Assurance; Manufacturing Processes; Plastics Technology; Design Structures; Fluid Power Systems; Automated Material Handling; Mechanical Systems; and Computer Control Systems.

Methods for evaluating student outcomes:

Student hands-on and written test.

Required qualifications of teachers:

The teacher for this course shall be certified in the area of Technology Education, Mathematics/Physical Science/Engineering, Physics or Science Composite.

Additional information (optional):



Course: Robotics II

PEIMS Code :

Abbreviation:

Number of credits that may be earned: 1 - 2 credits

Brief description of the course (150 words or less):

Robotics II is the study of robots, programming languages, and software integrated to develop work cells and complete robotic systems. Topics include automation basics, interfacing, safety, design procedures, and robotic subsystems.

Essential Knowledge and Skills of the course:

(a) General requirements. This course is recommended for students in Grades 11-12. The recommended prerequisite for this course is Robotics I and/or Technology Systems.

(b) Introduction. In Technology Education, students gain knowledge and skills in the application, design, production, and assessment of products, services, and systems. Knowledge and skills in the proper application of technology, the design of technology, the efficient production of technology, and the assessment of the effects of technology prepare students for success in the modern world. The study of technology allows students to reinforce, apply, and transfer their academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. In addition to their general academic and technical knowledge and skills, students gain an understanding of career opportunities available in technology and what employers require to gain and maintain employment in these careers.

(c) Knowledge and skills.

(1) Students will develop the abilities to apply the design process in the construction and manipulation of a robot. The student is expected to:

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- (B) Refine a robot by using prototypes and modeling to ensure quality, efficiency, and productivity of the final product.
- (C) Use an engineering notebook to track any and all prototypes, corrections, and/or mistakes in the design process.
- (D) Use an engineering notebook to finalize the design, construction, and manipulation of the finished robot.
- (E) Implement an inventory system to track all components of the robot system and all elements involved with the operation, construction, and manipulative functions involved.
- (F) Use the design process to incorporate robotic subsystems and other external systems involved in the operation of the robot.
- (G) Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.



- (2) Students will develop the abilities to use and maintain technological products and systems. The student is expected to:
- (A) Understand the various factors of process control.
 - (B) Use computers and calculators to access, retrieve, organize, process, maintain, interpret, and evaluate data and information in order to manipulate a robot and any subsystems required in the operation of the robot functions.
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Methods for evaluating student outcomes:

In Robotics II, the student will be evaluated upon the completion and mastering of the Texas Essential Knowledge and Skills for Robotics II as determined by the instructor.

Required qualifications of teachers:

The teacher for this course shall be certified in the area of Technology Education, Mathematics/Physical Science/Engineering, Physics or Science Composite.



Additional information (optional):

The student will utilize a computer and/or a programmable logic controller (PLC) to program a robot to perform basic tasks; apply troubleshooting skills; and demonstrate effective teambuilding and communication skills.