

# DAKOTA HIGH SCHOOL

## 2015 – 2016 Research and Development Capstone Project – LEVEL 3

### Hello Parents:

Our Research and Development students had the opportunity to select a **Senior Level Capstone Project** based on their research, design and fabrication aptitude and their ability to maintain cost efficiency. After many weeks of research and a pre-cost analysis your son / daughter has chosen a Level 3 capstone project for the 2015 – 2016 school year. This will be the most challenging project but will have the greatest reward when completed. It will comprise of a team developed project and require all members to work together to accomplish their project goals.

This challenge follows a proven hands-on, real-world problem-solving approach to learning. Students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, fabricate, and test their solutions while working closely with the instructor and industry professionals who provide possible mentoring opportunities. Finally, student teams present and defend their original solution.

These projects whether simple or complex requires extensive time, effort and usually corporate sponsorship.

Students responded to the benchmarks below and determined they were able to complete the required criteria and undertake a major capstone project for the school year by answering yes to all of the items. *Note: If students answered “NO” to more than 3 of the benchmarks they should have considered a much less challenging and cost effective project. Please see Project Level 1 or 2 for more details.*

#### *Benchmarks Required (Must meet 13 or more)*

<b>Benchmarks:</b>	<b>Yes</b>	<b>No</b>
Does my project demonstrate growth in learning		
Can I build my project within the time constraints		
Can I build my project within the cost constraints		
Can I be a leader and show great work ethic daily		
Do I have ample time to examine alternative funding sources		
Can I prioritize my time		
Do I have goals and objectives for the project I choose		
Can I take a business like or professional approach to solving problems		
Can I make my project safe and reliable		
Is my project innovative		
Am I self-motivated and willing to be a team player		
Am I comfortable using all the tools and equipment in the fabrication lab		
Do I have access to transportation for after school activities		
Am I willing to get sponsorships or donations to help offset the cost of my project		
Am I willing to work after school, on weekends and during breaks if needed		
Am I willing to commit 100% to this project		

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### **PROJECT REQUIREMENTS - LEVEL 3**

This is the ultimate project selection which requires the most amount of work and cost the largest amount of money to complete. **Note:** Students may be limited by their knowledge, ability and project cost.

*Examples: Motorcycle Powered Vehicles, Electric Powered Vehicles, PVC Vehicles, Sand Rails, Competition Robots, Hydraulic Vehicles, Large Scale Modeling and/or Fabrication Equipment Tools and Training*

#### Project Requirements:

- Students may select only one project to complete for the school year
- Instructor and CTE Director must approve project prior to design and development
- Students must research every aspect of project
- Students must design 100% of project before beginning the fabrication process
- Students must complete a Final Cost Analysis before fabrication
- All monetary support and part components must be obtained, paid for, and ordered before any fabrication will begin
- Students will most likely need to work after school, on weekends and during some breaks to complete the project (Anticipate 60 Extra Hours Minimum)
- **Chippewa Valley Schools Career Technical Education (CTE) will pay a percentage of the cost up to a pre-determined amount.** This type of project **cannot** be completely done within district funding
- Students will obtain corporate sponsorships and/or donations to cover all other additional costs for specific projects that go above and beyond the standard scope of the original project. Additional costs apply if student choose to pursue fabrication capabilities or parts supplies outside of the fabrication lab which can range from \$500 to \$10,000.
  - **Note: At no time should parents or relatives be asked for any type of financial assistance**
- Students must maintain a weekly journal that includes time, dates and schedule
- Students will have to maintain a professional portfolio
- Students will give a 30 minute oral presentation using different types of media upon project completion
- Students must follow designated rubric for final grading
- Students must meet all performance indicators and complete project on time or before given date and on budget to receive a final grade

### **Research and Development Attendance Policy**

Active attendance in Research and Development is a valuable and integral part of the student's grade. Attendance is the responsibility of the student and his/her parents or guardian. Attendance has a bearing on academic achievement and will reflect in a student's over-all grade. Excessive absence or tardiness, whether excused or unexcused, can result in a failing grade during the marking period or semester. Working on individual or team projects is a privilege and one that requires 100% commitment from the student. Students in R&D with **Excused Absences** must make-up the work immediately upon return; Students with **Two (2) or more Unexcused Absences** per marking period will be removed from their individual or team project and an alternative assignment, determined by the instructor, will be given. Also students will lose 50% of their participation grade per missed day.

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## 2015 – 2016 Research and Development Capstone Project – LEVEL 3

This document is the consent acknowledgement form for the student. Once a decision is made and the document is signed by both parent and student it may not be changed for the school year.

### **STUDENTS ONLY – CONSENT FORM**

Project Name: \_\_\_\_\_

- Type of Project:

**LEVEL 3 - TEAM**

- Team Members:

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### **Cost Analysis**

- Estimated Project Cost:

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- Estimated Amount Paid by Career Technical Education (CTE):

\_\_\_\_\_

- Total Amount Needed for Project Completion:

\_\_\_\_\_

I acknowledge and consent that I will continue to work and complete my project before the end of the school year.

\_\_\_\_\_  
Please Print Student Name Here

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Date

## DAKOTA HIGH SCHOOL

### 2015 – 2016 Research and Development Capstone Project – LEVEL 3

**This document is the consent acknowledgement form for the parent. Once a decision is made and the document is signed by both parent and student it may not be changed for the school year.**

The goal of Research and Development is to have students become successful and walk away from the Design Technology program with pride in their work, a sense of accomplishment, success for the future and a positive learning environment. It is important for our program to have parents involved in the decision making process.

**PARENTS:** We encourage students to discuss, in detail, the entire R&D capstone process with you before any final decisions are made in this process. If you have any questions or concerns please contact the instructor, Mr. Scott E. Mitchell, for further clarification at (586) 723-2856 or email at [smitchell@cvs.k12.mi.us](mailto:smitchell@cvs.k12.mi.us)

### **PARENTS ONLY – CONSENT FORM**

You have the ultimate say and decision when it comes to your child. After looking over the document and the cost analysis read below to make your selection.

If you feel confident that your son or daughter will perform at the highest level and complete their project based on your discussions with them, please check the “**YES**” box then sign and date.

If you feel that your son or daughter will be too busy during the school year with other activities or believe that a level 3 project may be too difficult to achieve or cost prohibitive, or this project requires too much responsibility for him / her please select the “**NO**” box then sign and date. At this point they will automatically be placed on level 1 projects for the remainder of the school year.

**Note:** Funding for these projects is not the responsibility of the parent and at no time should you be asked to pay for their project. Parents or relatives should not be asked for any type of financial assistance Funding will be

I acknowledge and consent that my son / daughter may work on a Level 3 Project for the school year.

☐ **YES**

☐ **NO**

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Please Print Parent Name Here

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Parent Signature

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Date