

Student Work

4-23-2015

Ideafest Presentation Schedule 2015

Dordt College

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IDEAFEST

COME CHECK OUT THE
IDEAS THAT JUST MIGHT
CHANGE THE WORLD

CAMPUS CENTER | 23 APRIL | 1pm - 3:30pm

**An Interdisciplinary Celebration
of Research at Dordt College**

IDEAFEST 2015 – Presentation Schedule

	Campus Center – 317	Campus Center – 318	Campus Center – 319	Library Learning Lab
1:00 - 1:15	Abby De Vries <i>No Math Homework</i>	Levi Minderhoud <i>Understanding Al-Qaeda, ISIS and Ourselves</i>	Mason Davis <i>The Crucifixion toward Relationality</i>	Leanna Bentz <i>You can't just show up -- why and how music should be graded as an academic subject</i>
1:15 - 1:30	Gina VanLaan <i>High Frequency Words</i>	Maddie Vande Kamp <i>Was Adam a Real Person?: Four Views on the Historicity of Biblical Adam</i>	Tim Martin <i>Christian Authors: Past and Present</i>	Joseph Jasper <i>Teaching History with Google Earth</i>
1:30 - 1:45	Katie Argo <i>Love, Sex, and Feminism: A Critique of Fifty Shades of Grey</i>	Mariellen Hofland <i>Exploring the Interaction Between Cux1 and Grg4</i>	Annika Henckel <i>Views on the Grand Canal</i>	Emma Conley <i>Increasing multiplication fluency in 3rd grade</i>
1:45 - 2:00	Caeden Tinklenberg, Sam De Groot, Jahn Kuiper, Ashley Huizinga <i>Live the Legend</i>	Rachael Day <i>Hello? Can you Hear me Now? Unnatural Amino Acid Studies of Cellular Communications.</i>	Rachel Meinen <i>Dialogic Reading in the Preschool Classroom</i>	Trey Hugen <i>The Effects of Extra Kinesthetic Stimulation on the Behaviors of Third Grade Students</i>
2:00 - 2:15	Sam De Groot <i>Technology in the Literacy Classroom</i>	Rebecca Megchelsen <i>The Biomechanical Basis of Concussions</i>	Tricia Van Regenmorter <i>Improving Fine Motor Skills in Early Childhood</i>	Siri Nelson <i>Boosting Multiplication Skills in Middle School Using Times Tales</i>
2:15 - 2:30	John Van Weelden <i>Evaluating Energy Absorption in Chest Protector Material for the Prevention of Commotio Cordis</i>	Erica Hughes <i>The Heart of a Young Woman: A Poetry Reading</i>	Joshua Evans <i>Greatness and Wretchedness</i>	Emily Broers <i>Building Savy Self-Assessors</i>
2:30 - 2:45	Lee Ver Burg <i>Maybe Obamacare Isn't So Bad After All?</i>	Yonatan Ashenafi <i>Investigating Algebraic Properties of Odd Cycles Using Symbolic Power</i>	Rianne Van Wingerden <i>Klavarskribo: A Musical Notation</i>	Anna Gulsvig <i>Math and Music: The M&M's of Education - Are they meant to be together?</i>
2:45 - 3:00	Geno Maule, Maria Korver, Troy Davelaar, Sarah Faber, Megan Dietrich <i>Ongoing Restoration Work at Dordt</i>	Jinny Seo <i>Ugh. Reading is Hard!</i>	Kyle Miller <i>Drones in Agriculture: Round 2</i>	Kristin Madden <i>Are You Ready for Success? Engagement Strategies for Student Achievement in the Classroom</i>

	Campus Center 317	Campus Center 318	Campus Center 319	Library Learning Lab
3:00 - 3:15	Kyle Roelofs <i>Phenomenology: A Short Introduction</i>	Kami Reitsma <i>Fermi Questions</i>	Trevor Wagenaar, Mark Mouw, Abbie Darland <i>The Effects of Synergize on the Porcine Epidemic Diarrhea Virus</i>	Jayden Pieper <i>Phonics Phun</i>
3:15 - 3:30	Maria TeKolste <i>William Walker: Filibuster President of Nicaragua</i>	Chase Viss <i>Modeling Organism Population with Partial Differential Equations</i>	Chelsea Maxwell, Katie Nucaro <i>Head Start Analysis</i>	Adriana Greidanus <i>Factory Model Schools</i>
3:30 -3:45		Tanya Thalen <i>Injustice and Veterans</i>	Bailey McKee, Domenic Vermeulen <i>Grounded: The Social Aspect of Coffee Culture</i>	Seth Engen <i>Justice in the Russian Agriculture System</i>

Science Building -- 1606 Senior Engineering Design Projects

1:00 - 1:15	Jonathan De Graaf, Anthony Harbaugh, Austin Van Vuren	<i>Sioux Center Storm Sewer Design</i>
1:15 - 1:30	Joel Dykstra, Isaac De Jong, Ola Ilelaboye	<i>Solar Heating System</i>
1:30 - 1:45	Craig Disselkoen, Drew Nederhoff, Andrew De Haan	<i>Automated Circuit Board Buffer</i>
1:45 - 2:00	Thaddeus Van Essendelft, Alec Woods, Braden Graves	<i>Dordt College Press Box Design</i>
2:00 - 2:15	Todd Verhoef, John Hondred, Matthew Roghair	<i>Universal Load Test Stand</i>
2:15 - 2:30	<i>Break</i>	
2:30 - 2:45	Aaron French, Austin De Boer, Steven DeJong	<i>Round Bale Processing</i>
2:45 - 3:00	Amanda Donnell, Emily Rihi, Kim De Boer	<i>The Esther School Water Management Design</i>
3:00 - 3:15	John Van Weelden, Joseph Montgomery, Aaron Parks	<i>Measuring Impact Loads on the Hand during a Volleyball Hit</i>
3:15 - 3:30	Cameron Stuive, Tyler Jansen	<i>LVO Manufacturing sheet metal shear backstop redesign</i>

De Yager Activity Center -- Campus Center Lower Level

Various displays will be open from 1:30 - 2:30

Concrete Canoe presentation will take place at 2:45

Campus Center 317 – Moderators: Jenni Breems (1:00 – 2:15), Sarah Moss (2:15 – 3:30)

1:00 – 1:15 **No Math Homework** – Abby De Vries (Faculty Sponsor: Ed Starkenburg)

A typical math lesson in 6th grade covers the main daily concept(s) and students are given an assignment of practice problems. The students have time to work on the assignment in class and usually have some problems to complete as homework. The research I conducted was not intended to eliminate math homework, but rather to assess if there are more effective types of daily math assessment. Each lesson was broken up into sections to allow students to learn and apply their new knowledge and clarify any misconceptions. This presentation will describe the results of this intervention and the correlation I found between effective homework and student learning.

1:15 – 1:30 **High Frequency Words** – Gina VanLaan (Faculty Sponsor: Ed Starkenburg)

I will present the results of an action research project conducted in the resource room with a first grade student. With collaboration from my mentor teacher and college coordinator, I designed an intervention for a young student who scored poorly in sight word identification on a standardized test given in the fall of that year. The goal of the intervention was to help further the student's knowledge of sight words, which in turn, would enhance her reading ability. I worked with this student for three weeks, starting at the kindergarten level using the Dolch sight words. This presentation will describe the intervention process, as well as the results of the action research project.

1:30 – 1:45 **Love, Sex, and Feminism: A Critique of Fifty Shades of Grey** – Katie Argo (Faculty Sponsor: Mary Dengler)

The *Fifty Shades* trilogy has captivated over 100 million consumers. What makes these books stand out among others is not the literary style but the underlying aspects. Readers discover that the plot and characters of *Fifty Shades of Grey* are altogether intriguing, familiar, and dynamic. It is at its core a story of deception, love, revenge, and redemption. However, there are negative aspects to the book that we as Christians need to push back against, and there are positive aspects that we need to reclaim.

1:45 -2:00 **Live the Legend** – Caeden Tinklenberg, Sam De Groot, Jahn Kuiper, Ashley Huizinga (Faculty Sponsor: Mary Dengler)

The Celts, Scottish Highlanders, Robin Hood, and the darkness of your own inner self. Encounter these characters and more from the annals of British Isles lore as you engage with our distinguished book panel! Sam De Groot, Jahn Kuiper, Caeden Tinklenberg, and Ashley Huizinga present an interactive discussion on pieces of important myth and legend from Ireland, Scotland, Wales, and mainland England. Come and listen to, or engage with, as we discuss literature from four times, four cultures, and one geographic location!

2:00 – 2:15 **Technology in the Literacy Classroom** – Sam De Groot (Faculty Sponsor: Mary Dengler)

Technology is forever changing secondary student literacy. Perhaps technology's largest impact on secondary student literacy is the creation of a whole new literacy – digital literacy – that is not currently being addressed in many schools as fully as it should be. The first part of this study aims to make teachers aware of the differences between print and digital literacy as well as the effects each is having on students. The second part looks at the practical implications of this awareness – pedagogical guides and practices for developing students' digital literacy.

2:15 – 2:30 **Evaluating Energy Absorption in Chest Protector Material for the Prevention of Commotio Cordis** – John Van Weelden (Faculty Sponsor: Kayt Frisch)

Commotio cordis, which is ventricular fibrillation due to an impact over the heart during a vulnerable part in the heart cycle, is the second most common cause of death in youth sports. With 40% of deaths due to commotio cordis occurring with chest protectors worn, it is important to study how chest protectors can be made to better prevent commotio cordis. Energy-absorption and absorption efficiency diagram methods show that particular material samples were more efficient at absorbing stresses that could correlate to instances of commotio cordis.

2:30 – 2:45 **Maybe Obamacare Isn't So Bad After All?** – Lee Ver Burg (Faculty Sponsor: Jan van Vliet)

The status quo of the American Health Care System is currently in dire shape. America, compared with other industrialized countries, is ranked last in many health care categories, including, but not limited to, things like health care costs per capita, obesity rates, and % of population that is uninsured. Through my research, I discovered that there may be a way out of this mess by following the precedent that many of our European friends have adopted.

2:45 – 3:00 **Ongoing Restoration Work at Dordt** – Geno Maule, Troy Davelaar, Sarah Faber, Megan Dietrich, Maria Korver (Faculty Sponsor: Robb De Haan)

We will present on a project that we have been working on in our Restoration Ecology and Applied Stewardship course, which is to create a restoration plan for a site and take part in the restoration work.

- 3:00 – 3:15 ***Phenomenology: A Short Introduction*** – Kyle Roelofs (Faculty Sponsor: Neal De Roo)
 Phenomenology's basic definition is the study of phenomena. Phenomena are given to a subject through experience. Phenomenology examines the very act of experiencing. Phenomenology has a manifold of different branches: phenomenology of consciousness, phenomenology of perception, etc. In this paper, I will supply a few elementary definitions of phenomenology; show the difference between the natural attitude and the phenomenological attitude; and describe the basic structure of the subject: the living present, and the microstructures of which it is composed.
- 3:15 – 3:30 ***William Walker: Filibuster President of Nicaragua*** – Maria TeKolste (Faculty Sponsor: Scott Culpepper)
 Labeled "The King of the Filibusters," William Walker held a title that has little meaning today, but in the 19th Century it showed him to be a guardian of American values. As an American holding the office of President of Nicaragua, his involvement in Nicaragua from 1855 to 1857 would set the tone for years of negative interactions between the United States of America and Nicaragua. Walker would create conflict with several major groups in Nicaragua ensuring that his presidency would be doomed to failure.

Campus Center 318 – Moderators: Tony Jelsma (1:00 – 2:15), Alexis Kreun (2:15 – 3:45)

- 1:00 – 1:15 ***Rethinking America's Middle Eastern Policy*** – Levi Minderhoud (Faculty Sponsor: Walker Cosgrove)
 America's current foreign policy of military dominance and involvement in the Middle East has led to numerous problems for America as well as for the Middle Eastern nations. If the situation is to improve, the United States must reconsider its interventionist policy. A crucial piece in determining this revised policy involves not only understanding the nature of America's enemies, specifically Al-Qaeda and ISIS, but also considering America's action in global affairs.
- 1:15 – 1:30 ***Was Adam a Real Person?: Four Views on the Historicity of Biblical Adam*** – Maddie Vande Kamp (Faculty Sponsor: Tony Jelsma)
 At the core of the creation-evolution debate is the question: was Adam a real person? Some consider this to be the most important issue. There are four views that are commonly held in regards to whether Adam was a real person. The first argues that Adam was not historical; rather, the Bible uses him as a means to present spiritual truths. The other three consider Adam to be a real person, but differ on their interpretations of Genesis. In this presentation I will explain the four views on historical Adam and the implications they have on the Christian faith.
- 1:30 – 1:45 ***Exploring the Interaction between Cux1 and Grg4*** – Mariellen Hofland (Faculty Sponsor: Tony Jelsma)
 Cux1 is a complex protein that is involved in many developmental processes in the body and is found in several different forms in the cell. Various domains (portions) of Cux1 have been tested to understand which specific area of the protein interacts with other proteins. Based on the work of past researchers, we know that Cux1 interacts with another protein (Grg4). Together Cux1 and Grg4 suppress the work of a third protein (p27kip1) that regulates the cell cycle. Therefore, the way that Cux1 and Grg4 work together can indirectly have a big impact on the progression of cell growth. We have already determined the domain of Cux1 that interacts with other proteins. Now we want to see which of Grg4's two domains (TLE_N or WD40) interacts with Cux1.
- 1:45 – 2:00 ***Hello? Can You Hear Me Now? Unnatural Amino Acid Studies of Cellular Communications*** – Rachael Day (Faculty Sponsor: Darren Stoub)
 Signal Transduction Pathways, the ways cells communicate with each other and themselves are complicated and not well understood. By mutating an amino acid in a protein of interest we are able to study molecules interacting with the protein and have an insight into cellular communication.
- 2:00 – 2:15 ***The Biomechanical Basis of Concussions*** – Rebecca Megchelsen (Faculty Sponsor: Adam Conway)
 The purpose of this study was to understand concussions from a biological perspective by pinpointing the cause of brain damage at a cellular level and understanding how the symptoms of concussions are directly tied to the areas of the brain that were damaged. At a cellular level, brain damage occurs because of a neurometabolic cascade, or unregulated ion flow, that occurs immediately after a concussion, causing a cellular energy crisis and disrupting neurons. Different types of concussions cause this to happen in different areas of the brain, affecting what types of symptoms are experienced.
- 2:15 – 2:30 ***The Heart of a Young Woman: A Poetry Reading*** – Erica Hughes (Faculty Sponsor: Howard Schaap)
 This year I have written a lot of poetry, which is mostly influenced by my surroundings, spiritual struggles, social justice, and social circumstances. The focus of the poetry is my experience living as a 22 year old woman who struggles with identity and fitting in. Ranging from spoken word to sonnet form, the collection I hope to share will be diverse and invigorating.

- 2:30 – 2:45 ***Investigating Algebraic Properties of Odd Cycles Using Symbolic Power*** – Yonatan Ashenafi (Faculty Sponsor: Mike Janssen)
In this paper we discuss some properties of graphs using Algebraic methods. From Ellis and Wilson we found a correspondence between a graph and a Ring which is an ideal I that is generated by $x_i x_j$ where x_i and x_j are elements in a Ring and edge-connected vertices' in a graph. Ellis and Wilson conjecture that the symbolic power and the regular power of this ideal are equal for certain powers. We attempt to prove this conjecture and explore the properties and connections of Graph Theory and Ring Theory.
- 2:45 – 3:00 ***Ugh. Reading is Hard!*** – Jinny Seo (Faculty Sponsor: Pat Kornelis)
We see students who dislike and almost fear reading. The fear of reading can come from student's lack of comprehension skills and a resulting lack of confidence in reading. In ESL class, I noticed how students have no motivation for reading because they do not understand the text and they find reading too challenging. The research shows that having more vocabulary knowledge enhances comprehension level. So, I conducted research on a student to see how having an in-depth study of vocabulary, such as spelling, dissecting words, and applying the words in contexts, improves the student's reading comprehension level.
- 3:00 – 3:15 ***Fermi Questions*** – Kami Reitsma (Faculty Sponsor: Valorie Zonnefeld)
Join this session to learn what a Fermi question is and how to approximate quantities that are difficult or impossible to measure. For example, "How many Lego bricks would it take to make a stack as tall as the Empire state building?". Fermi questions are solved by breaking down questions into manageable sizes for easier estimations. This interactive session will allow you to use your estimation skills as well.
- 3:15 – 3:30 ***Modeling Organism Population with Partial Differential Equations*** – Chase Viss: (Faculty Sponsor: Tom Clark)
I will provide an overview of the mathematical model I have been working on with Professor Clark this semester. Its purpose is to understand and predict how log debris in a river can relate to the population of certain microorganisms. I will go over the development of the model as well as finding a numeric solution through computer simulation.
- 3:30 – 3:45 ***Injustice and Veterans*** – Tanya Thalen (Faculty Sponsor: Jay Shim)
I will be speaking about the injustices that our American military veterans face once they have returned stateside from deployment. Within this main topic, I will be touching base on three subtopics: Veterans vs. Homelessness, Veterans vs. Drug Use, and Veterans vs. Suicide.

Campus Center 319 – Moderators: Ben Lappenga (1:00 – 2:15), Sheryl Taylor (2:15 – 3:45)

- 1:00 – 1:15 ***The Crucifixion toward Relationality*** – Mason Davis (Faculty Sponsor: Jason Lief)
Too often Christians try to systematize the events of the cross with judicial language and a modernist understanding of the world. With relational language and a proper understanding of Gods vulnerability through a Trinitarian dialectic, Christians can properly open up to others and bring significance to the act of penance in their theology.
- 1:15 – 1:30 ***Christian Authors: Past and Present*** – Tim Martin: (Faculty Sponsor: Jason Lief)
In this presentation, I explore the ways in which Christian authors and the books we as Christians read have changed from the past to the present - specifically looking at changes from the 1930s onwards. Works examined will include: "Cost of Discipleship", "Mere Christianity", and "Love Wins". The shift from a modern to postmodern context and the authors' responses to that shift will be examined in detail. Different responses will be compared to both each other and Scripture in hopes of finding a proper response that is culturally relevant while still staying true to God's Word.
- 1:30 – 1:45 ***Views on the Grand Canal*** – Annika Henckel (Faculty Sponsor: Walker Cosgrove)
The Grand Canal is a great engineering feat that was built over 2,500 years ago. The building of this extensive canal system is viewed in opposing fields depending on whether the person finds that the finished product has higher value than the cost to build it. Some find that the brutality inflicted on the workers is outweighed by the economic and political influence that China gained through the Grand Canal.
- 1:45 – 2:00 ***Dialogic Reading in the Preschool Classroom*** – Rachel Meinen (Faculty Sponsor: Gwen Marra)
A goal for preschool teachers is for their students to be expanding their vocabulary. It is very important that preschool students have vocabulary knowledge because it is one of the strongest predictors of future reading comprehension. However, for certain students, the area of vocabulary acquisition is difficult. For my Teacher Inquiry Project, I explored an intervention to help these students with their vocabulary growth – dialogic reading with nonfiction books. Every day for three weeks, I read a nonfiction book with a small group of students using the dialogic reading technique. I am pleased with the positive impact it had on my students' vocabulary growth.

- 2:00 – 2:15 ***Improving Fine Motor Skills in Early Childhood*** – Tricia Van Regenmorter (Faculty Sponsor: Gwen Marra)
This presentation presents the results of a Teacher Inquiry Project I initiated in the Early Childhood PDS. After conducting initial screening assessments, I identify four preschoolers in low-ability range of fine motor skills. I worked intentionally with these four students in daily ten-minute intervals for three weeks utilizing specific manipulative tools and strategies. At the end of the intervention period, I again administered the screening assessment to determine if improvement in fine motor skills was developed. The intervention proved to be successful as improvement in fine motor skills occurred for each student based on the data from the screening assessments.
- 2:15 – 2:30 ***Greatness and Wretchedness*** – Joshua Evans (Faculty Sponsor: Mark Tazelaar)
Man's greatness and man's wretchedness.
- 2:30 – 2:45 ***Klavarskribo: A Musical Notation*** – Rianne Van Wingerden (Faculty Sponsor: John MacInnis)
The word “music” elicits many responses: music ranges from a sound in specific settings to physical written notation. For example, some people learn to play music by listening and imitating while others receive rigorous training in reading and composing written music. Over the centuries, music notation developed to meet the needs of the changing musical culture. In *The Story of Notation* (1903), C.F. Abdy Williams says, “If the shelves of the various libraries of Europe were searched, it would probably be found that for some centuries a new notation has appeared about every three or four year, each of which is called by its author “The” new notation, for he fondly thinks that will become universal”. Klavarskribo, which is innovative and approachable for music students, is a musical notation that enhances musical experiences because of its logical approach and direct relationship between the sound and written notes.
- 2:45 – 3:00 ***Drones in Agriculture: Round 2*** – Kyle Miller (Faculty Sponsor: Chris Goedhart)
Drones have been a hot button topic in agriculture in the past couple years. I will be presenting the changes in this industry since I last presented at IDEAFEST in 2014.
- 3:00 – 3:15 ***The Effects of Synergize on the Porcine Epidemic Diarrhea Virus*** – Trevor Wagenaar, Mark Mouw, Abbie Darland (Faculty Sponsor: Duane Bajema)
The goal of our project was to test the efficacy of Synergize in disinfecting hog facilities. We not only wanted to prove whether it was effective or not. We also wanted to see if a specific method of application was necessary. When testing for Synergize, we had three different questions. These included the effect of application type, effect of duration, and the effect of three different surface types.
- 3:15 – 3:30 ***Head Start Analysis*** – Chelsea Maxwell (Faculty Sponsor: Abby Foreman)
This report was written by Social Work students for the Social Welfare Policy class. It addresses the Head Start program, which originated under Title VI of the Economic Opportunity Act of 1964. Head Start was created as an early childhood education and intervention for low-income children and families. Today, Head Start works towards its objectives by providing services through a holistic approach. It not only addresses the direct educational needs of children, but also indirect needs of the family that impact the child’s ability to succeed. At the conclusion of the report, recommendations are made to improve the program.
- 3:30 – 3:45 ***Grounded: The Social Aspect of Coffee Culture*** – Bailey McKee, Domenic Vermeulen (Faculty Sponsor: Mark Volkers)
This video is the culmination of our semester-long project for our *Documentary Film Making* course.

Library Learning Center – Moderators: Jeff Ploegstra (1:00 – 2:15), Steve Bogaard (2:15 – 3:45)

- 1:00 – 1:15 ***You Can't Just Show Up – Why and How Music Should be Graded as an Academic Subject*** – Leanna Bentz (Faculty Sponsor: Pat Kornelis)
After doing background research on the assessment and grading practices at the primary and secondary levels, I developed a hypothetical assessment plan for a high school instrumental ensemble, detailing the goals and objectives of the course and linking them to national standards. I will be presenting the assessment plan and the reasoning behind it, as well as a brief discussion of grading practices.
- 1:15 – 1:30 ***Teaching History with Google Earth*** – Joseph Jasper (Faculty Sponsor: Pat Kornelis)
Utilizing technology to teach subjects like history or geography can be more challenging than for other subjects. However, *Google Earth* is a tool that has an opportunity to create an interactive and visual experience that can be used instead of – or in conjunction with – a more traditional PowerPoint presentation. In this session, I will explain and demonstrate some ways in which I have explored using this tool in a classroom in order to have a more valuable educational experience, along with the results and reactions of its use.

- 1:30 – 1:45 ***Increasing Multiplication Fluency in 3rd grade*** – Emma Conley (Faculty Sponsor: Pat Kornelis)
 For this study I worked with four third-graders who struggle with multiplication. The intervention strategy I chose was to play short multiplication games with the students. To measure these students' growth, I gave the whole class a pre-test of 100 multiplication facts and timed each student. At the end of the unit, I gave the same test to the whole class again. I compared the four students' growth to the growth of their classmates. Each of the four students I worked with improved their times by more than 33 percent, while the average improvement was 28 percent.
- 1:45 – 2:00 ***The Effects of Extra Kinesthetic Stimulation on the Behaviors of Third Grade Students*** – Trey Hugen (Faculty Sponsor: Pat Kornelis)
 This inquiry project focused on the behavioral effects of using extra kinesthetic stimulation (hand-eye coordination tennis ball activities with partner) in a 3rd grade math classroom. For this project I observed students during a math unit in which they did not receive any extra kinesthetic stimulation, and then their behaviors during a new math unit with 5 minutes of extra kinesthetic stimulation built into the lesson. I collected data in 3 areas of behavior, and also how often the teacher redirects students. I recorded data on these behaviors for the entire class, as well as four focus students. In this presentation, I'll share the results of my project.
- 2:00 – 2:15 ***Boosting Multiplication Skills in Middle School Using Times Tales*** – Siri Nelson (Faculty Sponsor: Pat Kornelis)
 Elementary school teachers practice multiplication facts with their students daily. When students do not have their multiplication facts memorized by fifth grade, they may continue to struggle with future math courses and grow to dislike math. In my research project I decided to work with two students who consistently scored lower than their peers did on a three minute multiplication test that had forty problems on it. I used *Times Tales* as an intervention strategy to increase their ability to not only complete a multiplication test, but to complete it accurately. I will be sharing my results of my intervention strategy in this presentation.
- 2:15 – 2:30 ***Building Savvy Self-Assessors*** – Emily Broers (Faculty Sponsor: Pat Kornelis)
 I took a look at where students are in their self-assessment skills, particularly in 4th grade. I let them self-assess their writing work without any guidance, and then compared the girls to the boys and the students with higher writing grades to the students with lower ones. I then taught an entire writing unit while incorporating four different self-assessment building strategies and recorded implemented the same self-assessment at the end. I then recorded my data which I will present at IDEAFEST.
- 2:30 – 2:45 ***Math and Music: The M&M's of Education – Are They Meant to be Together?*** – Anna Gulsvig (Faculty Sponsor: Barb Hoekstra)
 The purpose of this study was to investigate how the integration of music and math would affect the development of math fact fluency in Kindergarten students. Over the course of three weeks, the music video entitled "Sum Fun" from *Rock 'N Learn's Addition and Subtraction* Rap DVD was used with the students in one Kindergarten classroom to practice basic addition facts. Students in this classroom and a classroom where the song was not used were both pre- and post-assessed on their addition fact fluency to determine if the use of the song positively impacted student fluency with basic addition problems.
- 2:45 – 3:00 ***Are You Ready for Success? Engagement Strategies for Student Achievement in the Classroom*** – Kristin Madden (Faculty Sponsor: Barb Hoekstra)
 Teachers are challenged to find the most effective methods of instruction to ensure academic achievement. This presentation will examine the effects of strategies to increase student participation and engagement to increase achievement in a third grade classroom. I conducted observational research and identified students who I wanted to see growth in. I used pre- and post-test scores as evidence of improvement. I implemented strategies that research indicated increases participation. Again I collected pre and posttest data to compare the results. This presentation will describe the design, implementation and result of using effective instruction at the elementary level.
- 3:00 – 3:15 ***Phonics Phun*** – Jayden Pieper (Faculty Sponsor: Barb Hoekstra)
 In my student teaching experience, I have been working one-on-one with a struggling reader. I have targeted the skill of long vowel sounds to help him improve his reading skills. I have been using research-based strategies and activities to help him understand the sounds long vowels can make and how to identify them.

3:15 – 3:30 **Factory Model Schools** – Adriana Greidanus (Faculty Sponsor: Dave Mulder)

Sir Ken Robinson did a TED talk where he mentioned the idea of our schools being modeled around factories like those in the industrial revolution. We seem to want all kids to be like robots. But is that what God created humans to be? Of course not. Our education system needs to be evaluated and improved upon – what we have now is not the best way to make responsible disciples.

3:30 – 3:45 **Justice in the Russian Agriculture System** – Seth Engen (Faculty Sponsor: Jay Shim)

Russian agriculture has problems with receiving Government financial support for agriculture. So, there are multiple problems that occur just because of this lack of support from the Government. In my presentation, I will illustrate the injustices in the Russian agricultural system, and I will offer a solution that may resolve this issue of injustice in the Russian agricultural system.

Science Building 1606 – Engineering Senior Design Projects

1:00 – 1:15 **Sioux Center Storm Sewer Design** – Jonathan De Graaf, Anthony Harbaugh, Austin Van Vuren (Faculty Sponsor: Justin Vander Werff)

Sioux Center identified a need to expand the housing area. As a part of this, a new storm sewer system is needed to divert the water within the subdivision. The solution will be to remove the water through a concrete pipe in the ground as well as channeling the excess water in the street to bring it to the low point of the project. The design incorporates the storm sewer system and the detention basin design of the current stream to add no additional water down stream of the project. This ensures flood mitigation from the effects of the project.

1:15 – 1:30 **Solar Heating System** – Joel Dykstra, Isaac De Jong, Ola Illelabye (Faculty Sponsor: Nolan Van Gaalen)

Our project seeks to unfold God's creation through cultivating and exploring solar energy. Our goal is to assist in the learning process for students and faculty by demonstrating, in a tangible way, the important role that solar energy plays within the larger energy field. This presentation will describe the design and installation of three solar hot air collectors on the roof of the Charles Adam's Engineering Center to be used in conjunction with existing solar lab equipment. Specifically we will consider aspects of experimental functionality, stress analysis, and ducting design.

1:30 – 1:45 **Automated Circuit Board Buffer** – Craig Disselkoen, Drew Nederhoff, Andrew De Haan (Faculty Sponsors: Kevin Timmer, Nolan Van Gaalen)

The concept of automation has existed since the 18th century with the introduction of the governor for windmills. Since then, the concept has grown into a field – control systems. With the advent of computer control in the 20th century, automated processes have been able to usurp human control for many processes. The advantages of automated control include decreasing error, increasing process speed, and decreasing monotony. Our design achieves all of these for the Printed Circuit Board (PCB) assembly line at Sencore by automating the process of feeding circuit boards into the assembly line. This allows the manufacturing floor worker to focus on other, more complicated tasks. By doing so, it is a needed and normative solution for the problem Sencore approached us with. Our design further develops the current solution used at Sencore by incorporating features which are specific to their situation. These features include the ability to load PCB's from behind rather than through the conveyor system, faster operation, higher capacity, and the ability to modify operation through open-source code.

1:45 – 2:00 **Dordt College Press Box Design** – Thaddeus Van Essendelft, Alec Woods, Braden Graves (Faculty Sponsor: Ben Saarloos)

The Dordt College soccer program is in need of a permanent press box storage facility. Currently, games are filmed from mobile scaffolding. Event staff takes game statistics and commentates from a small tent. Equipment is stored in decentralized buildings intended to be used for other needs. This current setup is unable to meet a variety of media-related needs, lacks aesthetic quality, and lacks sufficient storage space. Our team has designed a press box to meet these needs. We have produced construction drawings and performed a cost estimate in order to offer a recommendation for the eventual construction of this facility.

2:00 – 2:15 **Universal Load Test Stand** – Todd Verhoef, John Hondred, Matthew Roghair (Faculty Sponsor: Kevin Timmer)

This is our presentation of our senior design project. The goal was to construct a test apparatus that would be capable of large loads and record data for a wide variety of specimens.

2:15 – 2:30 **BREAK**

- 2:30 – 2:45 **Round Bale Processing** – Aaron French, Austin De Boer, Steven DeJong (Faculty Sponsor: Ethan Brue)
Dr. Brue, a professor in the Dordt College Engineering Department, is looking for a way to convert round bales into a workable fuel for a fluidized bed biomass gasifier. The intent of this project is to assist Dr. Brue in the design process of a low-cost, low-power, and low-rate round bale processing system. A design concept was chosen and a small scale model was designed and built to prove the viability of this concept. After verifying the concept tests were performed to collect data to be used in designing the full scale round bale processor.
- 2:45 – 3:00 **The Esther School Water Management Design** – Amanda Donnell, Emily Riihl, Kim De Boer (Faculty Sponsors: Kevin Timmer, Nolan Van Galen)
The Esther School of rural Zambia needs a more sustainable water management system. Problems with calcium deposits, drying wells, erosion around the buildings, and collecting greywater for orchards have led to the need for a sustainable water system. To meet this need, our senior design group has designed a rainwater harvesting system and a greywater irrigation system. The rainwater will be soft, solving the calcium problem, and it will take pressure off the freshwater wells in the community, allowing the community and school to grow more sustainably. The greywater system will further recycle this rainwater by collecting the used water in the washroom for distribution in the orchard.
- 3:00 – 3:15 **Measuring Impact Loads on the Hand during a Volleyball Hit** – John Van Weelden, Joseph Montgomery, Aaron Parks (Faculty Sponsor: Kayt Frisch)
The purpose of this project is to create a device to measure and record the force on the hand during a volleyball hit and to transmit the data for analysis. The data must be processed and displayed in a way that can be easily and properly recorded and aligned with any other measurements collected during the hitting event. This device will ultimately contribute to a larger project studying the kinematics, kinetics and internal forces on the arm during a volleyball swing. This larger study is being conducted in order to understand how to better prevent volleyball related shoulder injuries.
- 3:15 -3:30 **LVO Manufacturing sheet metal shear backstop redesign** – Cameron Stuive, Tyler Jansen (Faculty Sponsor: Ben Saarloos)
Our senior design was to redesign and rebuild the backstop of a sheet metal shear. Our presentation will talk about our design process, the work that went into our final design. And our final product.

Poster Abstracts

Impact of Exercise on Hopelessness – Seth Borchard, Jake Clark (Faculty Sponsor: Nathan Tintle)

This study is a follow up on a study by Susan Dunn, PhD that looks at the reverse impact of hopelessness on cardiac rehabilitation exercise. The study focuses on how a cardiac patient's state and trait hopelessness levels impacts their participation in home and/or hospital rehabilitation programs.

Creating a Biomechanics Laboratory at Dordt College – Juan Benitez, Adam Van Hal (Faculty Sponsor: Kayt Frisch)

This poster encompasses a summer research about alternative technologies that can be used for biomechanics analysis. It focuses on the use of the Xbox Kinect as a motion capture system and the design of a Steward platform that would fulfill Dordt's need of a force plate to measure ground reaction forces.

Identification of Novel Loci using Genome-wide Association and Mixture Modeling of Twenty-three Red Blood Cell

Fatty Acids in the Framingham Heart Study – Jenna Veenstra, Karen Fischer (Faculty Sponsor: Nathan Tintle)

This poster shows the work that we have done over the past year evaluating twenty-three red blood cell fatty acids (RBC-FAs), and subsequently identifying and modeling the single nucleotide polymorphisms associated with the fatty acids from data collected in the Framingham Heart Study. Using genome-wide association techniques, we located novel loci for some of the essential RBC FA's. Currently we are evaluating the performance of a recently published and powerful mixture modelling approach to improve biological interpretation.

MRSA "Staph" Infection: What Population at Dordt have MRSA? Are nursing students and athletes at greater risk? –

Carolyne Muthoni, Kelsey De Jong, Samantha Dunn, Michaela Eppinga, Kaitlyn Oostra (Faculty Sponsor: Robbin Eppinga)

Staphylococcus Aureus or "Staph" is bacteria found on the human skin and nose. About 30% of people live with the bacteria, but exhibit no symptoms. Methicillin-resistant Staphylococcus aureus (MRSA) is a Staph that is resistant to commonly prescribed antibiotics. In this project, 100 random samples from 100 Dordt students will be studied and analyzed for the presence of MRSA and staphylococcus aureus or the absence of both. Results from the samples will be presented during the IDEAFEST, but no personal data will be revealed.

A Study on the Impact of a Novel Introductory Statistics Curriculum on Student Understanding of and Attitudes Towards Statistics – Yonatan Ashenafi, Jake Clark (Faculty Sponsor: Nathan Tintle)

A novel introductory statistics curriculum focusing on the use of simulation and randomization-techniques is growing in popularity, and is now being used at a number of institutions around the country. While preliminary evidence at a few institutions has shown improved student conceptual understanding and attitudes towards statistics using this curriculum, we are interested in understanding how well these assessment results transfer to other institutions and instructors. Pre-course and post-course surveys were done at a variety of institutions around the country. Surveys asked questions that measured student's attitudes towards statistics using six attitude variables. It also measured student's understanding of statistical. A variety of statistical analyses were conducted on the data to evaluate the similarity of findings at these new institutions. We found that, generally speaking, improvements in student understanding and attitudes towards statistics occurred at other institutions using the novel curriculum.

Creating Inquiry-Based Lab Experiences for First Year Chemistry Students – Hannah Van Maanen (Faculty Sponsor: Carl Fictorie)

Two general chemistry courses were revised to involve more active thinking on the part of the students. In the fall of 2013, as part of the science education methods course, three secondary education students conducted a study in the first general chemistry course at Dordt College. They looked for patterns that could tell us what type of introductory lecture – theory only, procedure only, or procedure and theory – was the most beneficial for the students' performance and attitude in the lab. Through quizzes that tested the students' understanding, it was found that students learn best in a laboratory when they receive a lecture in theory only. However, through surveys, it was also found that students are not always aware of how they learn best. In light of the results, a project was conducted in which the lab manuals of both general chemistry courses were updated in three different ways: (1) a pre-lab quiz is now required, (2) more laboratories are inquiry-based, and (3) purpose of each laboratory is explicitly mentioned. Through these steps, we hope the students will understand the concepts learned in the laboratory, and as a result, be more actively involved in their learning.

The Genetics of Intermediate Wheatgrass: Using RNA-seq to Discover Gene Expression and Function in a Perennial Forage Grass – Nathan Hekman, Mark Huitsing, Nathan Ryder (Faculty Sponsor: Nathan Tintle)

Intermediate wheatgrass is a perennial plant with similarities to bread wheat and with many potential ecological and economic benefits. Using RNA-seq, the first genetic information available for this species, we hope to identify and annotate genes as well as quantify gene expression. We examine methods such as de novo transcriptome assembly and mapping the data to alternative genomes and comprehensive protein databases.

Slavery – Nicole Tubergen (Faculty Sponsor: Abby Foreman)

This poster explores the roots of slavery, and its implications for today. Slavery is an injustice that has been around since the Old Testament. Sadly it is an injustice that is still thriving. This poster will also discuss the Christian perspective of slavery, and how Christians should respond to slavery.

Barriers to Young Adults Receiving Influenza Vaccinations – Dakota Bremser, Brittany Clausen, Raeann De Rouse, Emily Rhoda (Faculty Sponsor: Pam Hulstein)

We wanted to determine barriers young adults experience that prevent or impede their decision to receive an annual influenza vaccination. The six most common barriers our research determined to obstruct students from acquiring the annual influenza vaccine were: availability of the vaccine; transportation to a site; the cost of the vaccine; location of immunization clinics; education and knowledge of the vaccine; and religious beliefs. Recommendations to this population would be to comply with the recommendations as listed by the Center for Disease Control and receive an annual vaccination since they are at an increased risk of exposure to the influenza virus while living on a college campus.

Interpreted Versus Translated Information Related to Health Outcomes – Jess Terhaar, Alexa Altena, Rachel Van Kempen, Hanna Wagenaar (Faculty Sponsor: Pam Hulstein)

Few studies have examined the relationships between language barriers and healthcare outcomes. This project examined if interpreted or translated information is more effective in determining health and recovery within the first two weeks following a healthcare visit. This project used qualitative and quantitative research articles and personal professional interviews, which in combination provided evidence to support education for the non-English speaking population in relation to healthcare recovery. Face-to-face interpreters are the preferred resource when non-English speaking patients require translation services. However the research did not fully support the premise that face-to-face interpretation correlates with improved patient outcomes.

A Dyadic View of Partner Violence to Study Mental Health in the Ukraine and the U.S. – Karen Fischer, Jake Clark
(Faculty Sponsor: Nathan Tintle)

Most previous explorations of risk factors for intimate partner violence in heterosexual couples tend to focus on risk factors for either male or female partners separately. In this analysis, we consider the entire dyad and develop corresponding linear statistical models which investigate risk factors and cross-national epidemiology of partner violence in the US and Ukraine as assessed by the Composite International Diagnostic Instrument (CIDI).

Characterizing Mechanisms of Cancer Metastasis – Brandon Vander Stoep, Nate Gerdes (Faculty Sponsor: Robbin Eppinga)

Cancer, a genetic disease that is characterized by the uncontrollable growth of cells, is a leading cause of death around the world. Cancer's devastating effects are often linked to its ability to spread (metastasize) to other areas of the body, making removal and treatment difficult. Through research, we established protocols that can be used to track tumor cells in in-vitro assays. Future studies can use these protocols to identify factors in the tumor micro-environment that may be responsible for unwanted metastasis. Understanding these mechanisms can lead researchers to new ways of targeting and eliminating the spread of cancer.

Identifying Proteins that Interact with Neuronal Motor Protein Myosin Va – Shannon Vander Berg (Faculty Sponsor: Robbin Eppinga)

The motor protein Myosin Va has been shown to carry intracellular packages throughout brain cells, and mutations in this protein lead to mental deficiencies and package-trafficking defects. We have performed a screen to look for proteins that interact with Myosin Va so that we can gain insight into how this motor carries so many types of packages, and to better understand diseases that result from the dysfunction of this motor complex. We will present the candidate genes that we have pulled out of the screen and will discuss possible mechanisms of how they interact functionally with Myosin Va toward proper brain health.

Bacterial Growth in Raw Milk vs. Pasteurized Milk – Ellen Westover, Sara Beeler, Rachel Blom, Miyu Kawasaki (Faculty Sponsor: Robbin Eppinga)

Raw (unpasteurized) milk is illegal to sell for human consumption in many states because of health concerns. We will be culturing raw milk, pasteurized milk, and ultra pasteurized milk and comparing bacterial growth between the three. We plan to make a serial dilution of the milk to first find a good dilution for colony growth. We then plan to compare colony morphologies (both number and type) to see how much more bacteria, if any, is present in the raw milk.

The Time is Now – Amanda Donnell, Abigael Olson, Ben DeVries, Kristyn Mensonides, Lillie Koerner, Lynelle De Bruin, Nathaniel Dyett, Rachelle Marcus, Renee Ewald, Ross Van Gaalen, Selena Rinehart, Troy Davelaar (Faculty Sponsor: Robert Taylor)

The Sustainability Committee has been taking action to launch an initiative that would make sustainability a campus-wide action rather than a dream. This presentation will focus on past projects and future plans towards integrating a sustainability mindset into the student body.

Effects of High Heels on Ground Reaction Forces and Knee Angles – John Van Weelden, Sophie Bonnema (Faculty Sponsor: Kayt Frisch)

In today's culture, shoes serve two distinct purposes: protection and decoration. In order to meet various needs and functions, there are a wide range of designs. Since some types of shoes, such as high heels, apparently make walking difficult, we studied ground reaction forces (GRFs) and knee angles of high heels and compared them with those of the control, which is barefoot. The study allowed us to understand possible reasons why high heels make walking difficult and could potentially be harmful for the joints.

Need For Policy Development In Home Birth Transfers – Hannah Ver Meer, Rachelle Marcus, Kyla Gross (Faculty Sponsor: Pam Hulstein)

According to the CDC, women choosing home birth rather than birth in a hospital setting has increased by 56% in the last decade. This purpose of this project was to discover current policy regarding transfer from the home to an acute care setting. Review of pertinent literature, interviews with experts and patients requiring transfers led to the identification of the need for additional research and policy improvement. This project led to the following practice recommendations: 1) Increase education and awareness of home birth, 2) Initiate transfer policies, and 3) Improve communication and collaboration among home birth and hospital staff.

EW! Go wash your hands – Jillian Yntema, Kacia Velduisen, Esther Kielstra, Kally Vellenga, Andrea Ver Meer (Faculty Sponsor: Robin Eppinga)

Through asking college students to wash their hands, we will be testing the effectiveness of hand washing techniques. We will be doing this by putting Glo Germ on participants hands prior to asking them to wash their hands. Then under a black light, we will see the presence of microbes and then rate it on a scale of 0-3.

What's Growing in Your Baby Food? – Quinlan Miller, Brett Huff, Caroline Reinders, Anna Vande Griend, Brett Beyer, Courtney Koopsen (Faculty Sponsor: Robbin Eppinga)

We'll be looking at bacterial growth in baby food left out for varying amounts of time. For this, we will use the same flavor (apple or blend) of baby food of two different types: conventional and organic. We will take a dilution of baby food for each time-frame and inoculate it onto a nutrient agar plate. We will then incubate the plates at 37 degrees Celsius for 24 hours and observe, record, and reflect on the data.

Measles Vaccination in School-Aged Children – Katelyn Lieuwen, Josh Peterson, Felicia Schaap, Haley Fligge (Faculty Sponsor: Pam Hulstein)

This presentation provides an overview of measles, the measles vaccination, and enforcement of vaccination policies. The aim of this project was to increase measles vaccination rates among school-aged children, specifically those in grades kindergarten through 6th grade. Various factors contribute to measles outbreaks such as transcontinental travel, clustering communities, and the granting of exemption from vaccination due to personal beliefs or values. It is imperative to educate the public on vaccination rates to prevent epidemic measles outbreaks and subsequent morbidity and mortality. This project also supports high vaccination rates in order to protect the population and prevent measles from becoming prevalent again.

Impact of the National School Lunch Program on Obesity and Waste – Candra Rens, Stacy Hoekstra, Ciarra Schmitt, Carleen Yntema (Faculty Sponsor: Pam Hulstein)

Purpose: Childhood obesity is a common topic of concern with the increasing prevalence seen today, especially in school-age children. The effect of the National School Lunch Program (NSLP) on obesity and food consumption/waste in school-age children was investigated. 1) Methods: Data collection via extensive review of literature and interviews. 2) Findings: First, there is not a clear defined correlation between obesity and the school lunch programs. Second, there is increased waste from the NSLP. 3) Conclusion: Adherence to the NSLP is beneficial for the health of children, but improvements are necessary to help decrease childhood obesity and food waste.

Do, Mi, So What? The Effects of Sight-Singing – Rachel De Boer (Faculty Sponsor: Pat Kornelis)

Can repeated exposure to sight-reading help students increase their ability to read intervals and rhythms more consistently? I designed an experiment that assessed and compared students' music reading abilities based on varied levels of exposure to sight-reading. I withheld sight-reading exercises from my Mixed Choir but included sight-reading exercises during warm-ups for Concert Choir. Additionally, I chose some students from Concert Choir at varying ability levels to sight-read during their private lessons. I randomly selected a number of students from each group to sight-read and graded them with a rubric that addressed their fluency and accuracy of tone and rhythm.

Mental Health Effects of the Chernobyl Nuclear Disaster in Ukraine – Matt Bolt, John Davelaar, Riley Schaap (Faculty Sponsor: Nathan Tintle)

The Chernobyl nuclear power plant disaster was one of the worst nuclear disasters in history. We use the only population based survey of mental health in Ukraine to evaluate population mental health impacts of this disaster by comparing individuals who lived near Chernobyl when the disaster occurred to other Ukrainians.

Exploring the Genetics of Fatty Acid Metabolism in the FADS Gene Complex – Mark Huitsing, John Kooyenga (Faculty Sponsor: Nathan Tintle)

The FADS (fatty-acid desaturase) gene complex is well known to be associated with a variety of fatty acid levels in humans. Recently, we confirmed this association in offspring cohort of the Framingham Heart Study, the longest running longitudinal study of cardiovascular phenotypes worldwide. We present results related to the single nucleotide variations within the FADS gene complex showing the strongest evidence of direct association with fatty acid levels.

Risk Factors for Post-traumatic Stress Disorder in Ukraine – Renee Ewald, Leah Breon, Kim Kroeze (Faculty Sponsor: Nathan Tintle)

The country of Ukraine has had a long history of political and socio-economic turmoil, which continues to the present day. The rates of traumatic events among adults in Ukraine far outpace many other developed countries worldwide. We consider population-based risk factors for post-traumatic stress disorder in Ukraine.

Student Attitudes and Conceptual Understanding in Introductory Statistics – Dash De Groot, Nathan Rindels, Nathan Hekman (Faculty sponsor: Nathan Tintle)

More and more individuals around the country are utilizing simulation and randomization methods to teach introductory statistics students. While preliminary quantitative evidence suggests improved conceptual understanding and better student attitudes at a handful of institutions, we now explore whether these findings are true in a larger sample of institutions from around the country.

Ceramics – Tanner Brassier (Faculty Sponsor: Sara Alsum-Wassenaar)

I'd like to show a bit of my work with ceramics. I'll have some of my finished products available and a video of the creation process. I'd love to talk about any questions you may have about the process.

Exploring the Genetics of Fatty Acid Metabolism on Chromosome 2 – Jacob Hackbarth, Ben Korver (Faculty Sponsor: Nathan Tintle)

We recently identified new genes on chromosome 12 (e.g., LPCAT3) which showed strong evidence of association with fatty acid levels, though the biological process by which they operate is still unknown. We use the offspring cohort of the Framingham Heart Study, the longest running longitudinal study of cardiovascular phenotypes worldwide, to attempt to identify single nucleotide variations within the LPCAT3 gene, and surrounding DNA, showing the strongest evidence of direct association with fatty acid levels.

Does Exercise Participation Impact Depression Levels in Cardiac Rehabilitation Patients? – Abby VanderZwaag, Bernice Winter (Faculty Sponsor: Nathan Tintle)

Using a sample of over 500 cardiac rehabilitation patients from a large, regional hospital we assessed patients exercise levels, as well as a series of psychological health measures over the year after patients were admitted to the hospital. In this poster, we explore whether participation in regular exercise is predictive of changes in depression levels over time.

Exploring the Genetics of Fatty Acid Metabolism on Chromosomes 3 and 6 – Cobi Jones, Brandon Geels and Sam Wensink (Faculty Sponsor: Nathan Tintle)

The ELOVL2 (fatty-acid elongase; chromosome 6) gene is well known to be associated with a variety of fatty acid levels in humans. Recently, we confirmed this association in offspring cohort of the Framingham Heart Study, the longest running longitudinal study of cardiovascular phenotypes worldwide. We present results related to the single nucleotide variations within the ELOVL2 gene showing the strongest evidence of direct association with fatty acid levels. We also explore novel associations on chromosome 3 (in the PCOLCE2 gene).

Correlates of Subjective Health in Ukraine – Lucas VanderBerg, Russell Scharper, Derek Wagner (Faculty Sponsor: Nathan Tintle)

The country of Ukraine has experienced a long-history of political and socio-economic upheaval—problems that continue to the present day. As such, the offer physical and mental health of Ukrainians is far worse than many developed countries. We use the only population-representative, mental health dataset in a post-Soviet country to explore overall correlates of poor health in Ukraine.

Do Depression Levels Predict Exercise Participation in Cardiac Rehabilitation Patients? – Collin Middel, Andrew Top, Damon VanderMaten (Faculty Sponsor: Nathan Tintle)

Using a sample of over 500 cardiac rehabilitation patients from a large, regional hospital we assessed patients exercise levels, as well as a series of psychological health measures over the year after patients were admitted to the hospital. In this poster, we explore whether depression levels were predictive of changes in exercise participation over time.

Concrete Canoe – Stephanie Pausma, Nathaniel Dyett, Joe Gernant, Wade Vollink, Breanna Veltkamp, Adam Van Hal, Austin Van Vuren, Ryan Pasveer, Bryan Van Belle, Hyun Myeong Goo, Ryan Ruenholl, Kelli Johnston, David Davelaar, Connor Pennings, Tracy Bousema (Faculty Sponsor: Justin VanderWerff)

This year's canoe theme is TULIP Defender. The concrete canoe project is an excellent way of applying concepts learned in the classroom, as well as learning how to better work in group projects. The canoe team this year focused on finding better finishing techniques for the canoe as well as making the canoe more streamline.

The Concrete Canoe group will also make a presentation at 2:45