Office of Engineering Outreach Programs

SEED

SEED SYMPOSIUM: FALL 2021

Project Course Presentation Schedule

Morning Session

Stata Center, Room 155

9TH Grade and 12th Grade		
Presentation Times	**Group Name**	**Student Names**
11:00 – 11:09 AM	Sharp Shooters	*Daniel Simmons, Farai Sundai, Kidest (Kiki) Sileshi, and Liam Sarpy*
11:09 – 11:18 AM	The Straw Hats	*Damien Joly, Jeremia Rosario, Darwin Emmanuel Ortez Cabrera*
11:18 – 11:27 AM	The Ballers	*Abdul Alamatu, Malachi Sonderreger, Steven Miall*
11:27 – 11:45 AM	**9th Grade Toy Demos**	
11:45 – 11:55 AM	Cheapr	*Lucy Batres, Shayon Mountain, Elisha Alexandre, Michael Tinjaca-Cepeda*

Stata Center, Room 141

10th Grade & 11th Grade		
Presentation Times	**Group Name**	**Student Names**

11:00 – 11:09 AM	Rock, Paper, Scissors	*Aranna Dimalanta, Milani Pomare, Krystal Gentle*
11:09 – 11:18 AM	Word Guessing Game	*Wesley Ekes, Semir Seid, Kevin Sackey*
11:18 – 11:27 AM	Astrology Quiz App	*Genesis Gonzalez, Emelia Ferreria, Anais Pite*
11:27 – 11:36 AM	Unit Converter	*Sara, Djulicia Barros, Tarsonn, Jean-Baptiste, Neissa Jean*
11:36 – 11:45 AM	Speed Typing Game	*Ryan Mac, Juan Estrada, Wilbert Mendez*

Afternoon Sessions

Stata Center, Room 155

12th Grade & 9th Grade		
Presentation Times	**Group Name**	**Student Names**
1:00 – 1:09 PM	The Real Game of Life	*Syann Sorm, Nasima Gafoor, Billy Joaquin, Tamara Nicholls*
1:09 – 1:18 PM	Commuter Rail of the Future	*Irene Papadopoulos, Wilson Vo, Yonas Aschale, Audre Wells*
1:18 – 1:27 PM	Discord of Harmony	*Jurianny Guerrero, Theo Cornin, Carine Badawi, Karen Garcia*
1:27 – 1:36 PM	Breathe Easy	*Zoe Price, Camille Lopez, Rosy Guzman, Liala Jama*

1:36 – 1:45 PM	Green Spaces in School	*Niko Tolentino, Kaliab Tale, Alyah Morales, Olivia Orlik*

Stata Center, Room 141

10th & 11th Grade		
Presentation Times	**Group Name**	**Student Names**
1:00 – 1:09 PM	Uber Dataset	*Aaron Kennedy, Eman Abdurezak, Isabel Elias, Jennifer Gil, Rinna Lopez*
1:09 – 1:18 PM	The Story of COVID-19 Tweets Dataset	*Ariana Monroig, Darlyn Velario, Junxiang Lin, Justin Sai*
1:18 – 1:27 PM	Heart Disease Prediction Dataset	*David Santana, Jiajia Zhang, Perla Perez*
1:27 – 1:36 PM	Height and Weight in the UFC Dataset	*Ayman Blanco, Tatiana Boothe, Derrick Hobson, Armany Brandao*
1:36 – 1:45 PM	Premier League Dataset	*Youssef Souayah, Kelvin Aguilar, Andrew Liu, Samantha Serna Pemberth*
1:45 – 1:54 PM	Health Insurance Dataset	*Victor Latin, Rehema Shaban*

Project Course Descriptions

Stata Center, Room 155

9TH GRADE: MECHANICAL ENGINEERING

Instructor: Cheetiri Smith, Teaching Assistant: Manasi Vaidiya

In this course, students will explore the field of mechanical engineering to gain exposure to the many areas in which mechanical engineers can work through lectures, a panel discussion with industry professionals, assignments, and a final design and fabrication project. Students will work in small groups as design teams to ideate, prototype, and build a toy using materials provided by the class. Additionally, students will explore specific areas within mechanical engineering and identify a mechanical engineering career that is relevant to personal interests.

Presentations

11:00 AM – "Sharp Shooters"

Daniel Simmons, Farai Sundai, Kidest (Kiki) Sileshi, and Liam Sarpy

The goal of our toy is to shoot a rubber band at fast speeds and have it safe enough to play with it. The toy can be used in different play styles and shouldn't be limited to one thing. The toy should be used in an appropriate way and shouldn't be used in a negative way, or it may cause an injury so using the suit is recommended.

11:09 AM – "The Straw Hats"

Damien Joly, Jeremia Rosario, Darwin Emmanuel Ortez Cabrera

The classical Angry Birds game in real LIFE! Build structures to protect your piggies using the various blocks provided. When you've prepared your structure, grab your slingshot, and use the various types of birds

we've made to shoot the piggies down. Fun Fact: The Slingshot was created in inspiration of Usopp's slingshot from the anime *One Piece* in reference to our team name. If you don't feel like playing alone then bring a friend! Use the blocks to build your own separate structures, roll the dice to decide how many times each player gets to shoot at their opponent.

11:18 AM – "The Ballers"

Abdul Alamatu, Malachi Sonderreger, Steven Miall

Our project is three minigames in a box. There is a box, and inside there are three games you can play, basketball, football, and wall ball. The basketball minigame will have a hoop to shoot in, and a ball too. Football is where there is a field goal post and it comes with a football. And the last one is wall ball, where a ball comes with the box, and you can bounce it off the box for fun.

11:27 AM – 9th Grade Toy Demonstrations

12TH GRADE: ENGINEERING DESIGN

Instructor(s): Andres Velarde, Teaching Assistant(s): Prem Sagar, Xamier Ferran

The purpose of *Engineering & Design for Problem Solving* is to introduce students to design-thinking frameworks that will enable them to transform new ideas into tangible or actionable solutions for real-world problems. This course will serve as part of a **Capstone Project** where students will combine the substantive knowledge they have gained from previous SEED Academy courses (e.g. MatSE, CivE, CS, EE, MechE, BioE, etc.) with fundamental design practices to develop a compelling solution for *problems that exist within cities*. Students are strongly encouraged to identify and tackle issues that have significance in their own lives or communities. As a starting point, this class will explore aspects of *City Science* currently being investigated by researchers at the MIT Media Lab. Namely, students may seek inspiration from focus areas such as: (1) Places for Life/Work; (2) Urban Modelling, Simulation & Prediction; or (3) Mobility on Demand. Examples of problem areas may include: affordable housing, sustainable buildings, city agriculture, food waste, education, social equity, etc. Over the course of the semester, instruction will serve

five main learning objectives -- presented in logical order and culminating with an end-of-semester symposium. In brief, these learning objectives pertain to:

1. Finding the Problem & the People
2. Ideation, Refinement, & Letting Go
3. Prototyping & Iteration
4. Branding & Image
5. Storytelling & Public Narrative

Presentations

11:45AM EST -"Cheapr"

Lucy Batres, Shayon Mountain, Elisha Alexandre, Michael Tinjaca-Cepeda

Students are developing a mobile app to help people from low-income households make the most of food supplies in their area. The proposed functionality of the application includes: store and foodbank locators, recipe algorithms, and nutrition information about various sources of food in their neighborhood or community.

1:09PM EST -"The Game of Life"

Syann Sorm, Nasima Gafoor, Billy Joaquin, Tamara Nicholls

Students are designing an interactive table-top board game that enables players to understand and empathize with the implications and impacts of systemic racism and socio-economic disparity in American society. Inspired by *The Game of Life*, this new board game recreates the lived experiences of marginalized people rather than those of the privileged.

1:18PM EST -"The Commuter Rail of the Future"

Irene Papadopoulos, Wilson Vo, Yonas Aschale, Audre Wells

Students are rethinking the design of Boston's commuter rail. They are exploring the principles of magnetic levitation and propulsion to create a futuristic locomotion solution. In addition, they are thinking of ways to improve the quality and accessibility of train stations for those underprivileged commuters who most rely on public transportation.

1:27PM EST -"Breathe Easy”

Jurianny Guerrero, Theo Cornin, Carine Badawi, Karen Garcia

Students are building an online community of mental health professionals to help people manage and maintain their mental health. Like Discord or Slack (online communication platforms), their website also allows people to support each other by sharing their own stories on mental health. Most importantly, this website seeks to give people who struggle with mental health a voice and validation.

1:36PM EST -"TheraFuzzies”

Zoe Price, Camille Lopez, Rosy Guzman, Liala Jama

Students are designing plush toys that are programmed to guide through various diaphragmatic breathing exercises and other forms of stress-relieving mediation. The proposed toys will also interface with a phone application to help people facilitate and track their own personal mediation routines.

1:45PM – “Green Spaces in School”

Niko Tolentino, Kaliab Tale, Alyah Morales, Olivia Orlik

Students are designing an interactive greenspace and learning environment for deployment in school environments/buildings. In addition to being a greenhouse, the space is also designed to employ state-of-the-art controlled growth equipment (automated watering, lighting, soil pH, etc.) to enable students to grow their own gardens and learn about flora from all over the world.

Office of Engineering Outreach Programs

SEED

Stata Center, Room 141

10TH GRADE: COMPUTER SCIENCE

Instructor(s): Mirna Gouda, Teaching Assistant(s): Shulammite Lim, Joy Domingo-Kameenui

The SEED Computer Science project course introduces code and computer programming in Python to any beginner. No background in Computer Science or programming is needed. Code and programming are central to so many fields beyond computer science. We will cover important basics of programming in Python including control flow, variables, functions, dictionaries, logic, decomposition, good programming style, whole-program structure, debugging, and performance. Python is a huge language with many advanced features, this course does not cover all of Python's features. The course teaches the important core features, and students are able to solve real programming problems with just this course.

Presentations

11:00 AM EST -"Rock, Paper, Scissors"

Aranna Dimalanta, Milani Pomare, Krystal Gentle

The game Rock, Paper, Scissors is a hand game that is usually played with two people. Using python, we created a computer version where the user plays against the computer.

11:09AM EST -"Word Guessing Game"

Welsey Ekes, Semir Seid, Kevin Sackey

This is a text-based python version of the Hangman game. When the user plays our game, the computer first selects a secret word at random from a list built into the program and the user has to guess!

11:18AM EST -"Astrology Quiz App"

Genesis Gonzalez, Emelia Ferreira, Anais Pite

This is a game that analyses your astrology personality based on your answers to a quiz.

11:27AM EST -"Unit Converter"

Sara Sabry, Djulicia Barros, Tarsonn Jean-Baptiste, Neissa Jean
Conversion of various quantities between unit systems is a very common engineering task. In this python project, we created a program that does unit conversion for the user.

11:36AM EST -"Speed Typing Game"
Ryan Mac, Juan Estrada, Wilbert Mendez
Have you played a typing speed game? It's a very useful game to track your typing speed and improve it with regular practice. We were able to build your own typing speed game in Python.

11TH GRADE: DATA VISUALIZATION
Instructor(s): Ira Ceka, Teaching Assistant(s): Matt Boyd, Gianfranco Yee
The goal of this course is to provide students with experience in Data Visualization using Python. This course will expose students to critical Python concepts, such as variables, functions, for and while loops, list comprehension, and dictionaries. Students will employ data visualization techniques through introductory methods such as bar charts, histograms, scatter plots, and more intermediate concepts like heatmaps and word clouds. Students will gain familiarity with Python packages and libraries such as Pandas, Matplotlib, and Seaborn. After 6 weeks of interactive instruction, students will be presented with various datasets and will formulate groups for a final group project. They will study these datasets and employ the proper techniques to answer analytical questions regarding data trends.

Presentations
11:00AM EST -"Uber Dataset"
Aaron Kennedy, Eman Abdurezak, Isabel Elias, Jennifer Gil, Rinna Lopez
Visualizing number and location of Uber trips in New York City.

11:09AM EST -"COVID Tweets"
Ariana Monroig, Darlyn Velario, Junxiang Lin, Justin Sai
Visualizing sentiment, number of tweets over time, language distribution.

11:18 AM EST -"Heart Disease Dataset”
David Santana, Jiajia Zhang, Perla Perez
Visualizing correlation between different physical statistics.

11:27 AM EST -"UFC Dataset”
Ayman Blanco, Tatiana Boothe, Derrick Hobson, Armany Brandao
Visualizing correlation between different player attributes.

11:36 AM EST -"Premier League Dataset”
Youssef Souayah, Kelvin Aguilar, Andrew Liu, Samantha Serna-Pemberth
Visualizing game statistics.

11:45 AM EST -"Insurance Dataset”
Victor Latin, Rehema Shaban
Visualizing correlation between stats like BMI and costs.

Academic Mentoring Seminar (AMS) Courses Fall 2021

9TH GRADE

Instructor: Brittany King

The 9th grade AMS is a skills-based course designed with a student-focused lens, inspiring and encouraging 21st-century students to thrive in all aspects of their schooling and beyond. Learners will discuss helpful ways to navigate challenging obstacles, such as life in a pandemic and while also embracing both social and personal experiences with a Growth mindset. In each class, students will have an opportunity to convey the concepts learned in the previous class in class discussions, written assignments, and through reflecting, listening, and speaking. Specifically, students will learn about intrinsic motivation, stereotypes, leadership, and goal setting.

10TH GRADE

Instructor: Jacqueline Zimoch

The goal of 10th grade AMS is to equip students with the academic and soft skills they need for success in 10th grade and beyond. In the fall semester students will explore the following topics: stress management, academic preparation for the Honors and AP curriculum, STEM career exploration, growth mindset and self-advocacy, and resume writing. Note that a list of learning goals is detailed further below. 10th Grade AMS scholars will tackle half of these topics during the fall semester and the remaining half during the spring semester. Written homework for this course will be no more than 30 minutes per week and should be submitted through Google Classroom.

11TH GRADE

Instructo: Chris Brunner

This course is a seminar designed to guide grade 11 students through the beginning stages of the college admissions process. Through a combination of personal reflection, leaderstyle development, and planning, students will learn about the college admissions process, set goals for their own admissions timeline, and

familiarize themselves with the many tools, resources, and guides that will help their own admissions experience. Students will also learn how to apply these skills to apply for a summer enrichment program.

12TH GRADE

Instructor: Prerna Subramanian

The AMS course for 12th graders will focus on the skills necessary for success in the college search & application process. Topics over the 8-week course will cover college selection, understanding the scope of various admissions processes, writing a personal statement & supplemental essay, financial aid, letters of recommendation, and the college interview process. Students are strongly encouraged to apply assigned homework to real-life college applications and its process. Applying to college can be a stressful journey, but remember we are all in this together!