Geneseo High School- Course Proposal

State Course Code: 13055A001

Name of Course: **CNC 1**

Targeted Grade Level/s and Students: **11th and 12th students in the new CNC Career Pathway.**

Is this course an elective? **Yes.**

Rationale for the new course: **The new CNC 1 course will be an integral part of the new CNC Career Pathway. This course will add specific knowledge and skills in the area of computer aided machining utilizing our 5 current CNC machines at Geneseo High School. The class will prepare students with the skills needed for direct hire into the workforce at local employers that produce a wide range of products utilizing CNC manufacturing technology. The class will take place during the third year of the CNC Pathway and lead to direct placement in the Workplace Experience Program.**

Description of Course: **This course will introduce students to introductory skills on CNC machines. Topics include 3D modeling, tooling selection and identification, 2D tool path generation, post processing, g-code, fixturing of material, cycle times, and CNC startup and shutdown procedures. Students will progress through varied projects on several different types of CNC machines to gain a better understanding of computer aided manufacturing across many different materials. The class will be offered first semester and be blocked for two consecutive class periods.**

Unit Names: **3D Modeling, An Introduction to Computer Numeric Controls, Tool Selection and Identification, 2D Tool Path Generation, Post Processing, G-Code, Fixturing, Cycle Times,CNC Operation.**

Main Course Concepts/Skills/Topics to be taught:
CNC machine operation will be taught through the combination of hands-on lab activities, lessons in Computer Aided Design, and lessons in material sciences. By the end of the class, students will be able to operate multiple CNC machines and manufacture products in multiple different materials.

Any estimated costs: All costs will be figured into the existing CTE Budget utilizing zero based budgeting on a per student/project portfolio basis.

Geneseo High School- Course Proposal

State Course Code: 13055A002

Name of Course: **CNC 2**

Targeted Grade Level/s and Students: **11th and 12th students in the new CNC Career Pathway.**

Is this course an elective? **Yes.**

Rationale for the new course:
The new CNC s course will be an integral part of the new CNC Career Pathway. This course will add upon the knowledge learned in CNC 1 at Geneseo High School. The class will prepare students with the skills needed for direct hire into the workforce at local employers that produce a wide range of products utilizing CNC manufacturing technology. The class will take place during the third year of the CNC Pathway and lead to direct placement in the Workplace Experience Program. The class will be offered second semester and be blocked for two consecutive class periods.

Description of Course:
This course will develop advanced skills on CNC machines. Topics include 3D modeling, advanced tooling selection and identification , post processing, 3D tool path generation and terminology, advanced fixturing for multi-sided machining process, and student developed projects. Students will progress through varied projects on several different types of CNC machines to gain a better understanding of computer aided manufacturing across many different materials.

Unit Names:
3D Modeling, 3D Tool Paths and Terminology, Tool Selection and Identification for 3D Tool Paths, Tool Path Generation, Post Processing, G-Code, Fixturing for Multi-Sided Machining Processes, Tool Changes, Advanced CNC Operation.

Main Course Concepts/Skills/Topics to be taught:
CNC machine operation will be taught through the combination of hands-on lab activities, lessons in Computer Aided Design, and lessons in material sciences. By the end of the class, students will be able to operate multiple CNC machines and manufacture products in multiple different materials. Students will be able to demonstrate the ability to develop 3D tool paths and create complex finished products on CNC Machines requiring multiple tool changes along with multi-sided processes.

Any estimated costs: **All costs will be figured into the existing CTE Budget utilizing zero based budgeting on a per student/project portfolio basis.**

Geneseo High School- Course Proposal

State Course Code: 01004A001

Name of Course: **"College Prep English 12" - (Transitional English 12)**

Targeted Grade Level/s and Students: **12th grade students with the goal of providing students the requisite skills for "day one" success in college courses. Students who are interested in going to college but are not quite ready to take on a college level dual credit or AP level English Course.**

Is this course an elective? **- This course is an option for 12th graders and will count towards one of their 4 years of English requirements towards high school graduation.**

Rationale for the new course: **Currently seniors have the option of taking AP English, Dual Credit English, or English 12. This new course is more rigorous than English 12 but not a college level course. This gives students who are interested in taking a college preparatory course an option. Those students who receive a "C" or higher in this course can automatically enroll into a college level introductory writing course upon graduation without having to test into one.**

Description of Course: **This is a senior level English course that draws on students' interests and provides choice to help prepare students for college and/or career readiness. It builds on students' experiential and academic knowledge by integrating reading, critical thinking and analysis, writing, and student and career related skills in order to enhance students' success in future college-level courses and career pathways. The course focuses on growth over the entire course through scaffolding, gradual increase of depth and rigor, and the opportunity to receive feedback, reflect, and revise work multiple times.**

Unit Names: **TBD**

Main Course Concepts/Skills/Topics to be taught:

- Students can apply and adjust active reading strategies to texts of similar rigor and structure as those they would likely encounter in a college or career setting
- Students can identify the audience, purpose, and context of any given writing task.
- Students can summarize a text.
- Students can choose writing processes based on audience, purpose, and task.
- Students can expand passive (recognition) and active (expressive) academic and career-related vocabularies.
- Students can analyze and interpret texts.
- Students can demonstrate how to incorporate and document relevant information from a variety of reliable print, digital, and other media.
- Students can understand credibility and reliability of evidence in texts while reading.
- Students can engage with evidence while writing.
- Students can construct and monitor an adaptive plan of action to structure their learning process using reading, writing, or critical thinking skills
- Students can reflect upon collected and original thoughts in order to strengthen their reading, writing, and critical thinking processes
- Students can transfer reading, writing, and critical thinking processes purposefully to authentic contexts beyond the English language arts classroom.

Any estimated costs: **Minimal- PD and Curriculum writing costs for teacher.**

Geneseo High School- New Course Proposal

State Course Code: : 19151A000

Name of Course: **Introduction to Education and Teaching**

Targeted Grade Level/s and Students: **12th Grade**

Is this course an elective? **Yes**

Rationale for the new course:

- **To identify, train, and nurture high school students interested in a teaching career;**
- **To create a high school curricular experience designed to foster student interest, understanding, and appreciation of the teaching profession;**
- **To recruit more teachers to the teaching profession;**
- **To create a pipeline of Geneseo graduates to be hired as teachers in the same district in which they attended upon college graduation**

Description of Course:

This course is designed as an overview of the foundations of the teaching profession, including the basic values, structure, organization, and programming of teaching. Students will gain knowledge of a variety of educational theories and will observe professionals in the classroom setting.

Unit Names:

- **You**
- **Your Students**
- **Your Classroom**
- **Your Community**
- **Your Profession**

Main Course Concepts/Skills/Topics to be taught:

- **Understanding the Profession**
- **Learning About Students**
- **Building Content Knowledge**
- **Engaging in Responsive Planning**
- **Implementing Instruction**
- **Using Assessments and Data**
- **Engaging in Reflective Practice**

Field Experiences:

Students will be provided continuous on-site field experiences where they will visit classrooms in our district, meet with a mentor teacher, and be able to apply knowledge they have learned in their course first-hand.

Any estimated costs: **Approximately $6,500 dollars to purchase the Educators Rising Curriculum**

Geneseo High School- Course Proposal
2023-2024 School Year

Name of Course: **Project Lead The Way- Introduction to Engineering Design**

Targeted Grade Level: **Sophomore Students**

Is this course an elective?: **Yes. Will count towards science credit or elective.**

Rationale for the new course: **Looking at our Xello data, we have many students who attend GHS who are interested in pursuing a career in engineering. This will allow us to start a new pathway for students who are interested in this profession. This is an introductory course that will allow us to start that pathway progression for students.**

Description of Course: **Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3-D modeling software, and use an engineering notebook to document their work.**

Four Units:

Unit 1 Design and Problem Solving
Unit 2 Assembly Design
Unit 3 Thoughtful Product Design
Unit 4 Making Things Move

Main Course Concepts/Skills/Topics:

- **CAD and Drafting Experience**
  - **Create and/or modify 3D solid computer models of complex parts**
  - **Create 3D solid computer models of part assemblies**
  - **Create technical CAD drawings of complex parts and assemblies from 3D solid models**
  - **Animate a 3D solid CAD assembly model to accurately simulate mechanical motion**
  - **Create hand drawn isometric sketches**
  - **Identify errors and omission in technical sketches and drawings**

- **Design Process Experience**
  - **Design a mechanical product/system to solve a problem using an engineering design process**
  - **Document in detail the engineering design process used to create a mechanical solution to a problem**
  - **Develop user-driven, specific and measurable design requirements to specify a successful design or problem solution • Create a detailed and comprehensive design brief**
  - **Brainstorm/recommend improvements to a mechanical consumer product based on reverse engineering**
  - **Design, develop and implement a testing protocol to test at least one aspect of an engineering solution or design**
  - **Produce a technical presentation to communicate a solution to a mechanical problem or product design**
  - **Work collaboratively on a design team to design a solution to a problem**

- **Computational and Analytical Skills**
  - **Use a spreadsheet application to find a trend line (mathematical model) to represent data and interpret the model within the context of the data using grade appropriate mathematics**
  - **Use appropriate techniques to optimize a design or problem solution**
  - **Collect and analyze data to make predictions and inform engineering decisions**
  - **Perform precision measurement using common engineering tools**
  - **Use material properties to help identify an unknown material**
  - **Choose and justify material choice for a design or solution**
  - **Determine a mathematical equation that describes a relationship between two quantities and use it to define parametric relationships in CAD**
  - **Describe a mechanical system with respect to its structure, behavior and function**
  - **Optimize the structure and/or function of a mechanical system**
  - **Identify frictional forces in a mechanism and revise the design to reduce friction to improve function and/ or efficiency**
  - **Use computer, mathematical and physical representations to model behaviors of a mechanical system or process and communicate thinking. Describe the purpose and limitations of each model.**
  - **Design an electromechanical system to control motion and automate a device**
  - **Use Hooke's Law to determine the behavior of a spring**

- **Professional Skills**
  - **Team Collaboration**
  - **Project Management**
  - **Problem-Solving**
  - **Communication Skills- Presentation and technical writing**
  - **Ethical Practice**
  - **Global Perspective**