



Eng 010

MISSION COLLEGE CTE ARTICULATION AGREEMENT OVERVIEW AND BENEFITS

This **Articulation Agreement** is between **MISSION COLLEGE** and **MILPITAS High School/Adult School/ROP**. It affirms the commitment that each has with respect to program articulation.

Mission College and Milpitas High School/Adult School/ROP staff, representing their respective educational programs, have met, analyzed, and compared the content and exit competencies of their course of instruction. They have agreed that the Milpitas High School/Adult School/ROP classes articulate with Mission College's curriculum.

The attached Articulation Agreement shall be placed into effect on this date. **This agreement will remain in effect until June 2020.**

Benefits to the Students:

- Provides incentives for students to continue their education.
- Allows students to receive college credit and/or advanced placement through effort and achievement at the secondary schools, reducing duplication of effort and time, thus lowering costs.
- Provides students with assessment, placement, orientation and counseling services to ease the transition from secondary school to the college.
- Enhances job opportunities by helping students quickly acquire specific marketable job skills.

Benefits to Faculty:

- Secondary school instructors gain first-hand information about community college programs and services.
- Community college faculty gain information about secondary school programs and capabilities.
- Helps faculty understand how their courses fit into the overall Program of Study/Career Pathway.
- Connects faculty to their role as workforce development leaders within their community, assisting them to counsel students in Programs of Study/Career Pathways.

Benefits to Secondary Schools/Mission College:

- Supports matriculation by preparing students for an identified Program of Study/Career Pathway.
- Goal oriented, better prepared students increase retention.
- Provides the opportunity for the college to focus on higher-end courses within the Pathway.

Benefit to the Community and Industry:

- Allows industry and community opportunities for direct input into the curriculum.
- Improves communication with other educational entities and prospective employers.
- Provides employees with relevant competencies for career applications.



ARTICULATION AGREEMENT COURSE OVERVIEW PAGE

MISSION COLLEGE

CTE Articulation Form

School Year: 2018-2020

College	Mission College	HS/Adult School/ROP	Milpitas High School
Course Name/#	ENGR 010 Introduction to Engineering	Course Name/#	3 Courses -Introduction to Engineering/ Engineering Exploration/ Engineering Focus-Green Urban Design
Program	Engineering	Program	Engineering and Technology Academy
Units	4.0 (3 for lecture, 1 for lab)	Hours	5.0 Per Semester x6 Total of 30 Units
Textbooks/ Software	Text: "Studying Engineering: A Road Map to a Rewarding Career" plus many online articles Software: MS Office Field Trips (3)	Textbooks/ Software	Textbooks: Current Design and Problem Solving in Technology Engineering Fundamentals (copyright 2014 for grade levels 9-12) Energy, Power, and Transportation Technology(copyright 2012 for grade levels 9-12) Software: Autocad 2014, Autocad Architecture,Google SketchUp. Google Docs/ Dimension Elite 3D Printer/UPrint Plus 3D printer

Mission College Course Description:	HS/Adult School/ROP Course Description
<p>This course exposes students to the field of engineering and presents the skills necessary to succeed as engineers.</p> <p>The different branches of engineering and the nature of engineering work are explored.</p> <p>Design engineering and evaluation are addressed through multiple team-based design projects and engineering problem-solving topics.</p> <p>Communication skills for technical presentations and reports are developed through practical engineering scenarios.</p> <p>Guest speakers from local engineering firms and tours to local companies are included.</p>	<p>This course utilizes the Engineering design process to develop the core skills necessary for an engineering career. Integration of current technology continually infused into course. The different branches of engineering and the nature of engineering work are explored.</p> <p>Documentation of the engineering process is executed with the Engineering Design Brief template which includes research, design, construction of prototype, testing and project summary. Electronic engineering portfolios to compile work.</p> <p>Project Management, leadership roles, teamwork and accountability are integrated into all projects to meet 21 century engineering skills.</p> <p>Professional mentors are provided to provide students real world knowledge on industry requirements. Visits and tours to local technology companies included.</p>



ARTICULATION AGREEMENT COURSE COMPARISON PAGE

School: Milpitas High Course: Introduction to Engineering/Engineering Exploration/ Green Urban Design

Mission College Course Content	High School District Course Content
A. Branches of Engineering	A. Engineering Fields Research Project (research of all engineering fields)
B. History of Engineering	B. Digital Literacy (certification test/course offered starting 2014-2015 school year)
C. Engineering Curriculum : a) Courses; b) Transfer requirements	C. Engineering Design Brief Introduction for Industry (Basics of Engineering Concepts)
D. School Resources for Student Success	D. Team Building skills for collaboration (Exercise to help students understand how individuals get to be different and learning to accept those differences as a positive asset.)
E. Success in College: a) Teaching Styles; b) Learning Styles	E. Personal Academic Goal Setting
F. Technical Software: a) reports and MS Word; b) Presentations and MS PowerPoint	F. Integration of Math (Units, Scale, Reading standard ruler and precision instruments accurately. Application of precision measurements)
G. Engineering Design: a) The Process; b) Design Solutions and Creativity	G. Google Docs/Tools Basics (document sharing, word process, spread sheets, graphic editing engineering)
H. Teamwork and Team Building	H. Autodesk (Autocad 2014) 2d Modeling and 3d Modeling for Engineering (certification test offered starting 2014-2015 school year)
I. Engineering Analysis: a) Estimation; b) Significant Digits; c) units and Dimensions	I. Engineering Portfolio (A digital collection of student's best engineering technical projects in digital format using Google Education Tools)
J. Engineering Project Management	J. Engineering Project Management
K. Engineering Problem Solving: a) The Process; b) Presenting Results	K. Engineering Prototype Design and Build with testing
L. Data Analysis: Using MS Excel;	L. Green Energy Technology for Engineering (research, reflection and application of Green Technologies in Industry)
M. Design Evaluation: a) Analysis and Testing; b) Computer Simulations and Validation	M. Green Urban Design for Engineering (research, reflection and application of Green Urban Design in Industry)
N. Engineering Ethics and Failures	N. Industry Mentoring Program (Students are matched with an industry professional in the engineering field that serves as a mentor on the requirements and skill required for an engineering career)
O. Engineering Design Projects	O. Engineering Ethics and Failures research and discussion

	P. Engineering Curriculum Planning- Courses needed and Transfer requirement
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ARTICULATION AGREEMENT COURSE COMPARISON PAGE

School: Milpitas High Course: Introduction to Engineering/Engineering Exploration/ Green Urban Design

Mission College Course Student Learning Outcomes	HS/Adult School/ROP Course Student Learning Outcomes
A. Explain the differences between the various branches of engineering	A. Explain the differences between the various branches of engineering
B. Examine the engineering profession and understand how to work effectively in an engineering environment to help with career evaluation and selection	B. Examine the engineering profession and understand how to work effectively in an engineering environment to help with career evaluation and selection
C. Explain how the engineering curriculum and transfer requirements can allow a smooth transfer to 4-year colleges	C. Adapt to new ideas and changing technologies. Are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals.
D. Successfully apply problem solving skills applicable to engineering problems	D. Effectively use the engineering design process to produce a creative design that satisfies the customer's requirements. Successfully apply problem solving skills applicable to engineering problems
E. Effectively use the engineering design process to produce a creative design that satisfies the customer's requirements	E. Effectively present technical solutions by means of presentations and written reports
F. Effectively present technical solutions by means of presentations and written reports	F. Work effectively in teams by engaging in group assignments and projects consisting of students with diverse backgrounds
G. Work effectively in teams by engaging in group assignments and projects consisting of students with diverse backgrounds	G. Design, construct, test, troubleshoot and execute various project prototype requirements.
H.	H. Research and identify what curriculum is necessary in order to graduate from high school, junior college and university with an engineering emphasis
I.	I. Understand, reflect and discuss the importance of ethics and failures in engineering and how it applies to industry



ARTICULATION AGREEMENT MEASUREMENT PAGE

School: Milpitas High Course: Introduction to Engineering/Engineering Exploration/ Green Urban Design

Measurement Method (industry certification or licensure)	Measurement Method (industry certification or licensure)
A.	Design Brief and Prototype Builds
B.	Performance Task Final (1 per semester)
C.	
D.	
E.	

Credit for the course listed will be granted if the following criteria are met:

- ☒ Stipulated grade of **B or better**
- ☒ Credit-by-Examination administered by () Secondary School () Mission College
- ☒ Demonstration/Portfolio
- ☐ Certification of specific competencies
- ☐ Other _____

Statewide Career Pathways associated with this articulation agreement:

Engineering and Architecture

**CTE ARTICULATION AGREEMENT****SIGNATURE PAGE****Mission College Instructor**Signature: Kate DisneyPrint Name: Kate DisneyDate: 5-23-18Phone: 650-906-3688Email: kdisney@sbccglobal.net**Mission College Department Faculty Chair**Signature: K DisneyPrint Name: (same as above)

Date: _____

Phone: _____

Email: _____

Mission College Instructional Dean/DesigneeSignature: Susan Schenck for Jeff Pallin

Print Name: _____

Date: _____

Phone: _____

Email: _____

HS/Adult School/ROP TeacherSignature: Jennifer Lowe-WeilerPrint Name: Jennifer Lowe-WeilerDate: 04/28/2018Phone: 408-635-2800 x 4032Email: jlowe@musd.org**HS/Adult School/ROP Principal/Designee**Signature: [Signature]Print Name: Francis RojasDate: 5/24/18Phone: 408-635-2800Email: frojas@musd.org**HS/Adult School/ROP Superintendent of Instruction/Designee**

Signature: _____

Print Name: Norma Rodriguez

Date: _____

Phone: 408-635-2600 x 6006Email: nrodriguez@musd.org**Please Attach Official Course Outlines/Syllabi/ Pertinent Documentation**