

COURSE SLO ASSESSMENT 4-YEAR TIMELINE

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
El Camino: Course SLOs (IND) - Automation, Robotics, and Manufacturing (ETEC, MTEC, MTT)	2012-13 (Fall 2012)	ECC: MTEC 70	Basic Robotics	SLO #2 Programming & Debugging	The student will be able to compose logical instructions such as basic navigation and maneuvers for a robot to follow, debug and compile instruction codes onto the robot's micro-controller, and test and run the functional prototype robot.
	2012-13 (Spring 2013)	ECC: ETEC 16B	Computer Integrated Manufacturing II	SLO #1 Robotic Arm: Palletize	Students will program a robot arm to palletize parts.
	2013-14 (Fall 2013)	ECC: ETEC 10	Principles of Engineering Technology	SLO #1 Careers	Students will research engineering and engineering technology careers and create a report.
	2013-14 (Fall 2013)	ECC: ETEC 16A	Computer Integrated Manufacturing I	SLO #1 Solid Modeling	Students will measure and solid model a provided assembly.
	2013-14 (Fall 2013)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #1 Programming a Robot	Students will correctly program a robot to travel 5 feet turn 180 degrees and return to the start point.
	2013-14 (Spring 2014)	ECC: ETEC 10	Principles of Engineering Technology	SLO #2 Marble Sorter	Students will build an automated marble sorter.
	2013-14 (Spring 2014)	ECC: ETEC 10B	Principles of Engineering Technology II	SLO #2 Optimized Bridge	Students will build an optimized bridge using West Point Bridge simulation software.
	2013-14 (Spring 2014)	ECC: ETEC 14	Electronics for Engineering Technologists	SLO #2 Logic Circuit	Using discrete TTL or CMOS Logic Gates to design, construct, and demonstrate a logic circuit which displays the students Birth Date using three toggle switches, various logic gates, and a single seven segment common anode LED display.
	2013-14 (Spring 2014)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #4 JK Flip Flop	Given a JK Flip Flop, identify what the output will be for all possible states of J and K.
	2013-14 (Spring 2014)	ECC: MTEC 75B	Integrated Robotic and Automated Technologies II	SLO #1 Programming a Robot	Students will correctly program a robot to travel a total of 10 feet. Within the travel the robot will reach maximum velocity by smoothly accelerating and deaccelerating.
	2013-14 (Spring 2014)	ECC: MTT 10B	Computer Numerical Control Programming	SLO #1 Inputting a Program	Student will input a program in to a Computer Numerical Control (CNC) machine.
	2014-15 (Fall 2014)	ECC: ETEC 10A	Principles of Engineering Technology I	SLO #2 Six Simple Machines	Student will build the SMET project demonstrating the six simple machines.
	2014-15 (Fall 2014)	ECC: ETEC 12	Introduction to Engineering Design	SLO #2 Two and Three-Dimensional Models	Given a simple set of design constraints, the student shall be able utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models.
	2014-15 (Fall 2014)	ECC: ETEC 12A	Introduction to Engineering Design I	SLO #2 Missing Orthographic Views	Given an incomplete set of orthographic views of a simple machined part, the student shall be able to complete the given views and to construct the missing views.
	2014-15 (Fall 2014)	ECC: ETEC 14A	Electronics for Engineering Technologists I	SLO #2 Karnaugh Map	Given a 4 bit (16 items) binary truth table, generate a Karnaugh Map to find a simplified solution.
2014-15 (Fall 2014)	ECC: ETEC 16A	Computer Integrated	SLO #2 CNC Mill: Initials	Students will program a CNC mill to engrave their initials in a block	

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2014-15 (Fall 2014)	ECC: ETEC 16A	Manufacturing I	SLO #2 CNC Mill: Initials	of wood.
	2014-15 (Fall 2014)	ECC: ETEC 18	Engineering Design and Development	SLO #1 Engineering Notebook	The student will use the United States Patent office Protocol, Engineering Notebook, for compiling design data, testing results, dates, signatures, page format, and Mechanical Drawings.
	2014-15 (Fall 2014)	ECC: ETEC 18A	Engineering Design and Development I	SLO #2 Research Methodology & Technology	After carefully defining a technical problem, the student will use both research methodology and technology to choose, build, validate and justify an engineering solution to a design challenge.
	2014-15 (Fall 2014)	ECC: MTEC 70	Basic Robotics	SLO #1 Robot Types & Components	The student will be able to define 'robot', distinguish between the different types of robots, identify the purposes of robots and identify the electronic and mechanical components of a robot. Students will also be able to interpret the different number systems used by robots and convert numerical data between ASCII, binary, decimal and hexadecimal numbers.
	2014-15 (Fall 2014)	ECC: MTT 101	Introduction to Conventional and CNC Machining	SLO #2 Blue Prints	Given a Blue Print, student will use all manufacturing equipment available to manufacture the project on the Blue Print to noted specifications.
	2014-15 (Fall 2014)	ECC: MTT 105	Conventional and CNC Milling	SLO #1 Squaring the Block	Given a rough-cut aluminum block, square the block using a milling machine, cutters and measurement tools.
	2014-15 (Fall 2014)	ECC: MTT 107	Advanced Manufacturing Processes	SLO #3 Grinding and Cutting Machinery	Using proper safety procedures and precautions, students will be able to set up and operate surface grinders, cylindrical grinders, coordinate measuring machines, optical comparators, sinkers, wire electrical discharge machines, and abrasive water jet machines to produce assigned work within the tolerances specified on engineering drawings.
	2014-15 (Fall 2014)	ECC: MTT 10A	Introduction to CAD/CAM	SLO #1 High Speed Steel End Mill	Student will calculate the correct rotations per minute (RPM) for a high speed steel end mill using the correct cutting speed and end mill diameter.
	2014-15 (Fall 2014)	ECC: MTT 10J	Numerical Control Graphics Programming	SLO #1 Geometric Elements	Student will create geometric elements such as points, lines, and circles.
	2014-15 (Spring 2015)	ECC: ETEC 10B	Principles of Engineering Technology II	SLO #3 Bridge Construction & Testing	Students will build a bridge from popsicle sticks and load test their design to failure.
	2014-15 (Spring 2015)	ECC: ETEC 12B	Introduction to Engineering Design II	SLO #2 Design Project	Upon completion of the course, the student shall be able to take a design project from problem statement to final production drawings.
	2014-15 (Spring 2015)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #2 Base 10 Conversion	Given a negative two's complement binary number, convert this to a base 10 number.
	2014-15 (Spring 2015)	ECC: ETEC 16B	Computer Integrated Manufacturing II	SLO #2 Robotic Arm: Tool Frame	Students will program a tool frame (tool coordinates) for a robot arm.
	2014-15 (Spring 2015)	ECC: ETEC 18B	Engineering Design and Development II	SLO #2 Project Tracking	The student will employ industrial scheduling techniques to demonstrate project tracking.
	2014-15 (Spring 2015)	ECC: MTT 10J	Numerical Control Graphics Programming	SLO #2 File Manipulation	Students will be able to utilize computer operating systems to manipulate files, convert geometry from CAD databases to

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2014-15 (Spring 2015)	ECC: MTT 10J	Numerical Control Graphics Programming	SLO #2 File Manipulation	numerical control part geometry, and obtain listings and graphic plots.
	2014-15 (Spring 2015)	ECC: MTT 40	Machine Shop Calculations	SLO #2 Screw Threading	The student will be able to compute and perform screw threading operations to include 60 degree thread formulas, acme thread formulas and calculations of the parts of a screw thread to industry standard tolerances.
	2015-16 (Fall 2015)	ECC: ETEC 10	Principles of Engineering Technology	SLO #3 Six Simple Machines	Student will build the SMET project demonstrating the six simple machines.
	2015-16 (Fall 2015)	ECC: ETEC 10A	Principles of Engineering Technology I	SLO #3 Mousetrap Car	Student will build a mousetrap-powered car.
	2015-16 (Fall 2015)	ECC: ETEC 12	Introduction to Engineering Design	SLO #3 Design Project	Upon completion of the course, the student shall be able to take a design project from problem statement to final production drawings.
	2015-16 (Fall 2015)	ECC: ETEC 12A	Introduction to Engineering Design I	SLO #3 Making Revisions	Given an incorrect design package and a list of needed revisions, the student shall be able to correctly and effectively incorporate the revisions into the drawings and models.
	2015-16 (Fall 2015)	ECC: ETEC 14A	Electronics for Engineering Technologists I	SLO #3 Unsigned Binary Conversion	Given an unsigned binary number, convert this number to base 10.
	2015-16 (Fall 2015)	ECC: ETEC 16A	Computer Integrated Manufacturing I	SLO #3 MasterCam Toolpath	Student will create a toolpath using MasterCam from a given solid model.
	2015-16 (Fall 2015)	ECC: ETEC 18A	Engineering Design and Development I	SLO #3 Design Project	The student will employ the use of technologies and knowledge learned, in this and previous ETECH courses, to construct and test their design project.
	2015-16 (Fall 2015)	ECC: MTEC 70	Basic Robotics	SLO #2 Programming & Debugging	The student will be able to compose logical instructions such as basic navigation and maneuvers for a robot to follow, debug and compile instruction codes onto the robot's micro-controller, and test and run the functional prototype robot.
	2015-16 (Fall 2015)	ECC: MTT 101	Introduction to Conventional and CNC Machining	SLO #1 Measuring and Recording Dimensions	Given a ground steel block of known and verified dimensions, measure and record the three dimensions of the block using a micrometer to a precision of .001 inches.
	2015-16 (Fall 2015)	ECC: MTT 103	Conventional and CNC Turning	SLO #2 CNC Lathe Programs	Read, de-bug and edit CNC lathe word address programs and enter Manual Data Input (MDI) CNC word address lathe programs to produce work within the tolerances on engineering drawings.
	2015-16 (Fall 2015)	ECC: MTT 105	Conventional and CNC Milling	SLO #2 Power Machines	Using proper safety procedures and precautions, students will be able to set up and operate vertical and horizontal milling machines, rotary tables, indexing and dividing heads, and vertical milling machines to produce assigned work within the tolerances specified on engineering drawings.
	2015-16 (Fall 2015)	ECC: MTT 107	Advanced Manufacturing Processes	SLO #2 Measuring & Inspection	Students will be able to select and use cylindrical squares, precision height gauges, vernier bevel protractors, gauge blocks and sine bars to inspect assigned work within the tolerances specified on engineering drawings.

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2015-16 (Fall 2015)	ECC: MTT 10A	Introduction to CAD/CAM	SLO #2 2-D Computer Drafting	Students will be able to identify, differentiate between and use computer drafting system hardware, components, software systems and operating systems to create points, lines circles, dimensions and notes in two dimensions.
	2015-16 (Fall 2015)	ECC: MTT 10K	3D Numerical Control Graphics Programming	SLO #1 Creating a 3D Solid Model	Student will correctly create a 3D solid model in CAD software and practice roughing the 3D surface using CAM software.
	2015-16 (Fall 2015)	ECC: MTT 10K	3D Numerical Control Graphics Programming	SLO #2 4th and 5th Axis Positioning	The student will be able to describe and demonstrate appropriate 3D editing operations, and use 4th and 5th axis positioning and simultaneous rotary axis machining operations on 3D process models.
	2015-16 (Fall 2015)	ECC: MTT 2	Manufacturing Print Reading	SLO #2 Multi-View Orthographic Drawings	Demonstrate basic understanding or Multi-View Orthographic drawings, including part visualization and interpretation and the mechanics of: dimensioning, tolerancing and drawing.
	2015-16 (Spring 2016)	ECC: ETEC 10B	Principles of Engineering Technology II	SLO #1 Marble Sorter	Students will build an automated marble sorter.
	2015-16 (Spring 2016)	ECC: ETEC 12B	Introduction to Engineering Design II	SLO #3 Design Process	Upon completion of the course, the student shall be able to describe the steps of the design process and give examples of documents appropriate for each step.
	2015-16 (Spring 2016)	ECC: ETEC 14	Electronics for Engineering Technologists	SLO #3 Karnaugh Map	Given a 4 bit (16 items) binary truth table, generate a Karnaugh Map to find a simplified solution.
	2015-16 (Spring 2016)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #3 Asynchronous	Counter Design and build a basic 4-bit Asynchronous Counter.
	2015-16 (Spring 2016)	ECC: ETEC 16	Computer Integrated Manufacturing	SLO #2 Robotic Arm: Palletize	Students will program a robot arm to palletize parts.
	2015-16 (Spring 2016)	ECC: ETEC 16	Computer Integrated Manufacturing	SLO #3 CNC Mill: Initials	Students will program a CNC mill to engrave their initials in a block of wood.
	2015-16 (Spring 2016)	ECC: ETEC 16B	Computer Integrated Manufacturing II	SLO #3 Robotic Arm: User Frame	Students will program a user frame (workpiece coordinates) for a robot arm.
	2015-16 (Spring 2016)	ECC: ETEC 18B	Engineering Design and Development II	SLO #3 Tech Review Presentation	The student will make a formal presentation to defend their research, design criteria, prototype, applications, and conclusions to a technical review panel.
	2015-16 (Spring 2016)	ECC: MTT 10J	Numerical Control Graphics Programming	SLO #3 Tool Motion Routines	Students will be able to create, manipulate and edit tool motion routines including: turning, boring, drilling, profiling, pocket roughing and turning, using interactive graphic techniques.
	2015-16 (Spring 2016)	ECC: MTT 40	Machine Shop Calculations	SLO #1 HSS Setting the Speed	Student will calculate the correct feed per minute for a high speed steel (HSS) end mill using the correct feed per tooth (CL), rotations per minute (RPM), and number of teeth.
	2015-16 (Spring 2016)	ECC: MTT 40	Machine Shop Calculations	SLO #3 Geometric Figures	The student will be able to sketch geometric figures to include perpendicular bisectors, parallel and tangent lines and use trigonometric principles to solve problems that include similar triangles, isosceles triangles, right triangles and polygons.

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2016-17 (Fall 2016)	ECC: ETEC 10	Principles of Engineering Technology	SLO #1 Careers	Students will research engineering and engineering technology careers and create a report.
	2016-17 (Fall 2016)	ECC: ETEC 10A	Principles of Engineering Technology I	SLO #1 Careers	Students will research engineering and engineering technology careers and create a report.
	2016-17 (Fall 2016)	ECC: ETEC 12	Introduction to Engineering Design	SLO #1 Missing Orthographic Views	Given an incomplete set of orthographic views of a simple machined part, the student shall be able to complete the given views and to construct the missing views.
	2016-17 (Fall 2016)	ECC: ETEC 12A	Introduction to Engineering Design I	SLO #1 Two and Three-Dimensional Models	Given a simple set of design constraints, the student shall be able to utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models.
	2016-17 (Fall 2016)	ECC: ETEC 14A	Electronics for Engineering Technologists I	SLO #1 Logic Circuit	Using discrete TTL or CMOS Logic Gates to design, construct, and demonstrate a logic circuit which displays the students Birth Date using three toggle switches, various logic gates, and a single seven segment common anode LED display.
	2016-17 (Fall 2016)	ECC: ETEC 15A	Aerospace Engineering I	SLO #1 Scale Model Aircraft Wing	Students will design, build and test a scale model aircraft wing.
	2016-17 (Fall 2016)	ECC: ETEC 16A	Computer Integrated Manufacturing I	SLO #1 Solid Modeling	Students will measure and solid model a provided assembly.
	2016-17 (Fall 2016)	ECC: ETEC 18A	Engineering Design and Development I	SLO #1 Engineering Notebook	Students will develop and maintain an engineering notebook. This legal document contains all the information that is relevant to its purpose of original design. It includes contact information, correspondence, telephone logs, sketches and drawings, reference citations, collected data, and a chronological listing of the events dates and time, connected to the journal's purpose. Documentation is a vital part of engineering. In the case of liability suits, good documentation has kept many engineering firms out of court because it proved there was no wrong doing on their part.
	2016-17 (Fall 2016)	ECC: MTEC 70	Basic Robotics	SLO #3 Robot Build Final Project	By the end of the course, the student will be able to build or assemble a prototype robot, build electronic circuits and attach electronic devices (e.g., light-emitting diodes, piezospeaker) to the micro-controller, and equip the robot with DC motors or servo motors.
	2016-17 (Fall 2016)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #2 Motors & Motion	The student will be able to use the concepts of torque, inertia, pressure, and force to design appropriate gear and drive trains for robotic systems as well as modify simple Servo Motors to obtain a determined objective.
	2016-17 (Fall 2016)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #3 Embedded Electronic Devices	Students will be able to compare and contrast electrical motor configurations, transducers, sensors, PWM (Pulse Width Modulation), and associated electronics imbedded devices to build robotic systems in accordance with industry standard schematics and diagrams.
	2016-17 (Fall 2016)	ECC: MTT 101	Introduction to	SLO #3 Orthographic	The student will be able to solve shop math problems and interpret

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2016-17 (Fall 2016)	ECC: MTT 101	Conventional and CNC Machining	Projections	orthographic projection engineering drawings that incorporate geometric dimensioning and tolerancing to produce assigned work within the tolerances specified on engineering drawings.
	2016-17 (Fall 2016)	ECC: MTT 105	Conventional and CNC Milling	SLO #3 Soft Jaws Project	Students will be able to read, de-bug and edit CNC vertical milling machine word address programs and to enter Manual Data Input (MDI) CNC word address milling machine programs to produce vise soft jaws for holding work to produce parts within the tolerances specified on engineering drawings.
	2016-17 (Fall 2016)	ECC: MTT 10A	Introduction to CAD/CAM	SLO #3 CNC Machined Objects	Students will be able to input, edit, print and plot a CNC program and create toolpaths for two-axis CNC machines to create objects within specified tolerances.
	2016-17 (Fall 2016)	ECC: MTT 2	Manufacturing Print Reading	SLO #1 Orthographic Orientation	Student will correctly sketch a part in orthographic orientation.
	2016-17 (Fall 2016)	ECC: MTT 2	Manufacturing Print Reading	SLO #3 Total Position Tolerance	Gain a basic understanding of GD&T (Geometric Dimensioning and Tolerancing) practices. Presented with a Feature Control Frame, students will calculate total positional tolerance of a hole utilizing Maximum Material Condition, Least Material Condition and Regardless of Feature Size Modifiers.
	2016-17 (Fall 2016)	ECC: MTT 46	Basic Machine Tool Operation	SLO #1 HSS Setting the Milling Machine	Student will calculate the correct rotations per minute (rpm) for a high speed steel end mill using the correct cutting speed and end mill diameter. Then the student will demonstrate setting the speed of the milling machine.
	2016-17 (Fall 2016)	ECC: MTT 46	Basic Machine Tool Operation	SLO #2 Micrometers & Measuring	The student will be able to use and read micrometers, vernier measuring tools, semi-precision and precision measuring tools to measure and produce projects within the tolerances specified by engineering requirements.
	2016-17 (Fall 2016)	ECC: MTT 46	Basic Machine Tool Operation	SLO #3 Power Machines	Using proper safety procedures and precautions, students will be able to set up and operate drilling machines, engine lathes, vertical and horizontal milling machines, and grinding machines to produce projects within the tolerances specified by engineering requirements.
	2016-17 (Spring 2017)	ECC: ETEC 14	Electronics for Engineering Technologists	SLO #4 Base 10 Conversion	Given a negative two's complement binary number, convert this to a base 10 number.
	2016-17 (Spring 2017)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #1 Logic Equivalencies	Students will be able to use NAND and NOR Gates to configure and test logic equivalencies of: NOT, AND, OR, Exclusive OR and Exclusive NOR logic functions.
	2016-17 (Spring 2017)	ECC: MTEC 75B	Integrated Robotic and Automated Technologies II	SLO #2 Interface Circuits	The student will be able to build simple interface circuits capable of driving electromechanical devices such as motors, solenoids, and relays in accordance with industry standard manufacturing processes.
	2016-17 (Spring 2017)	ECC: MTEC 75B	Integrated Robotic and Automated Technologies II	SLO #3 Programming and Troubleshooting	The student will be able to program robotic systems to perform operational tasks using programming languages such as PBASIC and

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2016-17 (Spring 2017)	ECC: MTEC 75B	Integrated Robotic and Automated Technologies II	SLO #3 Programming and Troubleshooting	diagnose hardware and software errors in robotic systems.
	2017-18 (Fall 2017)	ECC: ETEC 14A	Electronics for Engineering Technologists I	SLO #4 Series Circuit Resistance & Current	Given a series circuit with several resistors, calculate the total resistance; and given a voltage across this series circuit, calculate the current.
	2017-18 (Spring 2018)	ECC: ETEC 10B	Principles of Engineering Technology II	SLO #2 Optimized Bridge	Students will build an optimized bridge using West Point Bridge simulation software.
	2017-18 (Spring 2018)	ECC: ETEC 12B	Introduction to Engineering Design II	SLO #1 Two and Three-Dimensional Models	Given a simple design problem statement and set of design constraints, the student shall be able utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models
	2017-18 (Spring 2018)	ECC: ETEC 14	Electronics for Engineering Technologists	SLO #1 Logic Equivalencies	Students will be able to use NAND and NOR Gates to configure and test logic equivalencies of: NOT, AND, OR, Exclusive OR and Exclusive NOR logic functions.
	2017-18 (Spring 2018)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #2 Base 10 Conversion	Given a negative two's complement binary number, convert this to a base 10 number.
	2017-18 (Spring 2018)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #4 JK Flip Flop	Given a JK Flip Flop, identify what the output will be for all possible states of J and K.
	2017-18 (Spring 2018)	ECC: ETEC 15B	Aerospace Engineering II	SLO #1 Aerospace Construction Materials	Students will perform destructive tests on aerospace construction materials.
	2017-18 (Spring 2018)	ECC: ETEC 16	Computer Integrated Manufacturing	SLO #1 Solid Modeling	Students will measure and solid model a provided assembly.
	2017-18 (Spring 2018)	ECC: ETEC 16B	Computer Integrated Manufacturing II	SLO #1 Robotic Arm: Palletize	Students will program a robot arm to palletize parts.
	2017-18 (Spring 2018)	ECC: ETEC 18B	Engineering Design and Development II	SLO #1 Redefining & Justifying Alternative Solutions	The students will be able to conduct preliminary patent searches to determine the originality of their alternative choices.
	2017-18 (Spring 2018)	ECC: MTT 103	Conventional and CNC Turning	SLO #1 Lathe Dimension	Students will turn a part on the lathe to a given drawing dimension to an accuracy of +/- .001 inches.
	2017-18 (Spring 2018)	ECC: MTT 103	Conventional and CNC Turning	SLO #3 Shop Math	Solve shop math problems that include speeds and feeds, trigonometry, tapers, threads, engineering drawing interpretation and calculations relating to machine tools.
	2017-18 (Spring 2018)	ECC: MTT 16	General Metals	SLO #1 HSS Cutting Speed and Mill Diameter	Student will calculate the correct rotations per minute (rpm) for a high speed steel end mill using the correct cutting speed and end mill diameter.
	2017-18 (Spring 2018)	ECC: MTT 16	General Metals	SLO #2 Tool Selection & Use	Using proper safety procedures and precautions, students will be able to select correct metal working hand tools, measure and layout, utilizing semi-precision and precision measuring tools, and produce projects or exercises within the tolerances specified on engineering drawings.
	2017-18 (Spring 2018)	ECC: MTT 40	Machine Shop Calculations	SLO #2 Screw Threading	The student will be able to compute and perform screw threading

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2017-18 (Spring 2018)	ECC: MTT 40	Machine Shop Calculations	SLO #2 Screw Threading	operations to include 60 degree thread formulas, acme thread formulas and calculations of the parts of a screw thread to industry standard tolerances.
	2018-19 (Fall 2018)	ECC: ETEC 10	Principles of Engineering Technology	SLO #2 Marble Sorter	Students will build an automated marble sorter.
	2018-19 (Fall 2018)	ECC: ETEC 10A	Principles of Engineering Technology I	SLO #2 Six Simple Machines	Student will build the SMET project demonstrating the six simple machines.
	2018-19 (Fall 2018)	ECC: ETEC 12	Introduction to Engineering Design	SLO #2 Two and Three-Dimensional Models	Given a simple set of design constraints, the student shall be able to utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models.
	2018-19 (Fall 2018)	ECC: ETEC 12A	Introduction to Engineering Design I	SLO #2 Missing Orthographic Views	Given an incomplete set of orthographic views of a simple machined part, the student shall be able to complete the given views and to construct the missing views.
	2018-19 (Fall 2018)	ECC: ETEC 14A	Electronics for Engineering Technologists I	SLO #1 Logic Circuit	Using discrete TTL or CMOS Logic Gates to design, construct, and demonstrate a logic circuit which displays the students Birth Date using three toggle switches, various logic gates, and a single seven segment common anode LED display.
	2018-19 (Fall 2018)	ECC: ETEC 15A	Aerospace Engineering I	SLO #2 Propulsion Systems Analysis	Students will conduct propulsion systems analysis based on data obtained through calculations and computer simulations.
	2018-19 (Fall 2018)	ECC: ETEC 16A	Computer Integrated Manufacturing I	SLO #2 CNC Mill: Initials	Students will program a CNC mill to engrave their initials in a block of wood.
	2018-19 (Fall 2018)	ECC: ETEC 18A	Engineering Design and Development I	SLO #2 Research Methodology & Technology	After carefully defining a technical problem, the student will use both research methodology and technology to choose, build, validate and justify an engineering solution to a design challenge.
	2018-19 (Fall 2018)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #1 Programming a Robot	Students will correctly program a robot to travel 5 feet turn 180 degrees and return to the start point.
	2018-19 (Fall 2018)	ECC: MTT 101	Introduction to Conventional and CNC Machining	SLO #1 Measuring and Recording Dimensions	Given a ground steel block of known and verified dimensions, measure and record the three dimensions of the block using a micrometer to a precision of .001 inches.
	2018-19 (Fall 2018)	ECC: MTT 101	Introduction to Conventional and CNC Machining	SLO #2 Blue Prints	Given a Blue Print, student will use all manufacturing equipment available to manufacture the project on the Blue Print to noted specifications.
	2018-19 (Fall 2018)	ECC: MTT 105	Conventional and CNC Milling	SLO #1 Squaring the Block	Given a rough-cut aluminum block, square the block using a milling machine, cutters and measurement tools.
	2018-19 (Fall 2018)	ECC: MTT 107	Advanced Manufacturing Processes	SLO #1 Pros and Cons of Cuttings	Record the benefits and downsides of the following processes: Waterjet cutting, EDM wire cutting, Plasma cutting and Laser cutting.
	2018-19 (Fall 2018)	ECC: MTT 107	Advanced Manufacturing Processes	SLO #3 Grinding and Cutting Machinery	Using proper safety procedures and precautions, students will be able to set up and operate surface grinders, cylindrical grinders, coordinate measuring machines, optical comparators, sinkers, wire electrical discharge machines, and abrasive water jet machines to produce assigned work within the tolerances specified on

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2018-19 (Fall 2018)	ECC: MTT 107	Advanced Manufacturing Processes	SLO #3 Grinding and Cutting Machinery	engineering drawings.
	2018-19 (Fall 2018)	ECC: MTT 10J	Numerical Control Graphics Programming	SLO #1 Geometric Elements	Student will create geometric elements such as points, lines, and circles.
	2018-19 (Fall 2018)	ECC: MTT 2	Manufacturing Print Reading	SLO #1 Orthographic Orientation	Student will correctly sketch a part in orthographic orientation.
	2018-19 (Spring 2019)	ECC: ETEC 10B	Principles of Engineering Technology II	SLO #3 Bridge Construction & Testing	Students will build a bridge from popsicle sticks and load test their design to failure.
	2018-19 (Spring 2019)	ECC: ETEC 12B	Introduction to Engineering Design II	SLO #2 Design Project	Upon completion of the course, the student shall be able to take a design project from problem statement to final production drawings.
	2018-19 (Spring 2019)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #3 Asynchronous Counter	Design and build a basic 4-bit Asynchronous Counter.
	2018-19 (Spring 2019)	ECC: ETEC 15B	Aerospace Engineering II	SLO #2 Intelligent Robotic Vehicles	Students will construct and demonstrate intelligent robotic vehicles incorporating mechanical, electronic and computer based systems.
	2018-19 (Spring 2019)	ECC: ETEC 16	Computer Integrated Manufacturing	SLO #2 Robotic Arm: Palletize	Students will program a robot arm to palletize parts.
	2018-19 (Spring 2019)	ECC: ETEC 16B	Computer Integrated Manufacturing II	SLO #2 Robotic Arm: Tool Frame	Students will program a tool frame (tool coordinates) for a robot arm.
	2018-19 (Spring 2019)	ECC: ETEC 18	Engineering Design and Development	SLO #1 Engineering Notebook	The student will use the United States Patent office Protocol, Engineering Notebook, for compiling design data, testing results, dates, signatures, page format, and Mechanical Drawings.
	2018-19 (Spring 2019)	ECC: ETEC 18	Engineering Design and Development	SLO #2 Research Methodology & Technology	After carefully defining a technical problem, the student will use both research methodology and technology to choose, build, validate and justify an engineering solution to a design challenge
	2018-19 (Spring 2019)	ECC: ETEC 18B	Engineering Design and Development II	SLO #2 Project Tracking	The student will employ industrial scheduling techniques to demonstrate project tracking.
	2018-19 (Spring 2019)	ECC: MTT 10K	3D Numerical Control Graphics Programming	SLO #1 Creating a 3D Solid Model	Student will correctly create a 3D solid model in CAD software and practice roughing the 3D surface using CAM software.
	2018-19 (Spring 2019)	ECC: MTT 10K	3D Numerical Control Graphics Programming	SLO #2 4th and 5th Axis Positioning	The student will be able to describe and demonstrate appropriate 3D editing operations, and use 4th and 5th axis positioning and simultaneous rotary axis machining operations on 3D process models.
	2018-19 (Spring 2019)	ECC: MTT 16	General Metals	SLO #3 Casting, Welding & Cutting	Using proper safety procedures and precautions, students will be able to operate foundry equipment to produce aluminum castings and to operate welding equipment to braze, weld and cut materials to produce projects within tolerances specified on engineering drawings.
	2019-20 (Fall 2019)	ECC: ETEC 10	Principles of Engineering Technology	SLO #3 Six Simple Machines	Student will build the SMET project demonstrating the six simple machines.
	2019-20 (Fall 2019)	ECC: ETEC 10A	Principles of Engineering	SLO #3 Mousetrap Car	Student will build a mousetrap-powered car.

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2019-20 (Fall 2019)	ECC: ETEC 10A	Technology I	SLO #3 Mousetrap Car	Student will build a mousetrap-powered car.
	2019-20 (Fall 2019)	ECC: ETEC 12	Introduction to Engineering Design	SLO #3 Design Project	Upon completion of the course, the student shall be able to take a design project from problem statement to final production drawings.
	2019-20 (Fall 2019)	ECC: ETEC 12A	Introduction to Engineering Design I	SLO #3 Making Revisions	Given an incorrect design package and a list of needed revisions, the student shall be able to correctly and effectively incorporate the revisions into the drawings and models.
	2019-20 (Fall 2019)	ECC: ETEC 14A	Electronics for Engineering Technologists I	SLO #2 Karnaugh Map	Given a 4 bit (16 items) binary truth table, generate a Karnaugh Map to find a simplified solution.
	2019-20 (Fall 2019)	ECC: ETEC 15	Aerospace Engineering	SLO #1 Scale Model Aircraft Wing	Students will design, build and test a scale model aircraft wing.
	2019-20 (Fall 2019)	ECC: ETEC 15	Aerospace Engineering	SLO #2 Aerospace Construction Materials	Students will perform destructive tests on aerospace construction materials.
	2019-20 (Fall 2019)	ECC: ETEC 16A	Computer Integrated Manufacturing I	SLO #3 MasterCam Toolpath	Student will create a toolpath using MasterCam from a given solid model.
	2019-20 (Fall 2019)	ECC: ETEC 18A	Engineering Design and Development I	SLO #3 Design Project	The student will employ the use of technologies and knowledge learned, in this and previous ETECH courses, to construct and test their design project.
	2019-20 (Fall 2019)	ECC: MTEC 70	Basic Robotics	SLO #1 Robot Types & Components	The student will be able to define 'robot', distinguish between the different types of robots, identify the purposes of robots and identify the electronic and mechanical components of a robot. Students will also be able to interpret the different number systems used by robots and convert numerical data between ASCII, binary, decimal and hexadecimal numbers.
	2019-20 (Fall 2019)	ECC: MTEC 70	Basic Robotics	SLO #2 Programming & Debugging	The student will be able to compose logical instructions such as basic navigation and maneuvers for a robot to follow, debug and compile instruction codes onto the robot's micro-controller, and test and run the functional prototype robot.
	2019-20 (Fall 2019)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #1 Programming a Robot	Students will correctly program a robot to travel 5 feet turn 180 degrees and return to the start point.
	2019-20 (Fall 2019)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #2 Motors & Motion	The student will be able to use the concepts of torque, inertia, pressure, and force to design appropriate gear and drive trains for robotic systems as well as modify simple Servo Motors to obtain a determined objective.
	2019-20 (Fall 2019)	ECC: MTT 103	Conventional and CNC Turning	SLO #2 CNC Lathe Programs	Read, de-bug and edit CNC lathe word address programs and enter Manual Data Input (MDI) CNC word address lathe programs to produce work within the tolerances on engineering drawings.
	2019-20 (Fall 2019)	ECC: MTT 105	Conventional and CNC Milling	SLO #2 Power Machines	Using proper safety procedures and precautions, students will be able to set up and operate vertical and horizontal milling machines, rotary tables, indexing and dividing heads, and vertical milling machines to produce assigned work within the tolerances specified

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2019-20 (Fall 2019)	ECC: MTT 105	Conventional and CNC Milling	SLO #2 Power Machines	on engineering drawings.
	2019-20 (Fall 2019)	ECC: MTT 107	Advanced Manufacturing Processes	SLO #2 Measuring & Inspection	Students will be able to select and use cylindrical squares, precision height gauges, vernier bevel protractors, gauge blocks and sine bars to inspect assigned work within the tolerances specified on engineering drawings.
	2019-20 (Fall 2019)	ECC: MTT 10A	Introduction to CAD/CAM	SLO #1 High Speed Steel End Mill	Student will calculate the correct rotations per minute (RPM) for a high speed steel end mill using the correct cutting speed and end mill diameter.
	2019-20 (Fall 2019)	ECC: MTT 10A	Introduction to CAD/CAM	SLO #2 2-D Computer Drafting	Students will be able to identify, differentiate between and use computer drafting system hardware, components, software systems and operating systems to create points, lines circles, dimensions and notes in two dimensions.
	2019-20 (Fall 2019)	ECC: MTT 10J	Numerical Control Graphics Programming	SLO #2 File Manipulation	Students will be able to utilize computer operating systems to manipulate files, convert geometry from CAD databases to numerical control part geometry, and obtain listings and graphic plots.
	2019-20 (Fall 2019)	ECC: MTT 2	Manufacturing Print Reading	SLO #2 Multi-View Orthographic Drawings	Demonstrate basic understanding or Multi-View Orthographic drawings, including part visualization and interpretation and the mechanics of: dimensioning, tolerancing and drawing.
	2019-20 (Fall 2019)	ECC: MTT 46	Basic Machine Tool Operation	SLO #1 HSS Setting the Milling Machine	Student will calculate the correct rotations per minute (rpm) for a high speed steel end mill using the correct cutting speed and end mill diameter. Then the student will demonstrate setting the speed of the milling machine.
	2019-20 (Fall 2019)	ECC: MTT 46	Basic Machine Tool Operation	SLO #2 Micrometers & Measuring	The student will be able to use and read micrometers, vernier measuring tools, semi-precision and precision measuring tools to measure and produce projects within the tolerances specified by engineering requirements.
	2019-20 (Fall 2019)	ECC: MTT 46	Basic Machine Tool Operation	SLO #3 Power Machines	Using proper safety procedures and precautions, students will be able to set up and operate drilling machines, engine lathes, vertical and horizontal milling machines, and grinding machines to produce projects within the tolerances specified by engineering requirements.
	2019-20 (Spring 2020)	ECC: ETEC 10B	Principles of Engineering Technology II	SLO #1 Marble Sorter	Students will build an automated marble sorter.
	2019-20 (Spring 2020)	ECC: ETEC 12B	Introduction to Engineering Design II	SLO #3 Design Process	Upon completion of the course, the student shall be able to describe the steps of the design process and give examples of documents appropriate for each step.
	2019-20 (Spring 2020)	ECC: ETEC 14	Electronics for Engineering Technologists	SLO #2 Logic Circuit	Using discrete TTL or CMOS Logic Gates to design, construct, and demonstrate a logic circuit which displays the students Birth Date using three toggle switches, various logic gates, and a single seven segment common anode LED display.

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2019-20 (Spring 2020)	ECC: ETEC 14	Electronics for Engineering Technologists	SLO #3 Karnaugh Map	Given a 4 bit (16 items) binary truth table, generate a Karnaugh Map to find a simplified solution.
	2019-20 (Spring 2020)	ECC: ETEC 14B	Electronics for Engineering Technologists II	SLO #4 JK Flip Flop	Given a JK Flip Flop, identify what the output will be for all possible states of J and K.
	2019-20 (Spring 2020)	ECC: ETEC 15	Aerospace Engineering	SLO #3 Positive and Negative Gravity Forces	Students will conduct, measure and evaluate positive and negative gravity forces.
	2019-20 (Spring 2020)	ECC: ETEC 15B	Aerospace Engineering II	SLO #3 Positive and Negative Gravity Forces	Students will conduct, measure and evaluate positive and negative gravity forces.
	2019-20 (Spring 2020)	ECC: ETEC 16	Computer Integrated Manufacturing	SLO #3 CNC Mill: Initials	Students will program a CNC mill to engrave their initials in a block of wood.
	2019-20 (Spring 2020)	ECC: ETEC 16B	Computer Integrated Manufacturing II	SLO #3 Robotic Arm: User Frame	Students will program a user frame (workpiece coordinates) for a robot arm.
	2019-20 (Spring 2020)	ECC: ETEC 18	Engineering Design and Development	SLO #3 Tech Review Presentation	The student will make a formal presentation to defend their research, design criteria, prototype, applications, and conclusions to a technical review panel.
	2019-20 (Spring 2020)	ECC: ETEC 18B	Engineering Design and Development II	SLO #3 Tech Review Presentation	The student will make a formal presentation to defend their research, design criteria, prototype, applications, and conclusions to a technical review panel.
	2019-20 (Spring 2020)	ECC: MTEC 75B	Integrated Robotic and Automated Technologies II	SLO #1 Programming a Robot	Students will correctly program a robot to travel a total of 10 feet. Within the travel the robot will reach maximum velocity by smoothly accelerating and deaccelerating.
	2019-20 (Spring 2020)	ECC: MTEC 75B	Integrated Robotic and Automated Technologies II	SLO #2 Interface Circuits	The student will be able to build simple interface circuits capable of driving electromechanical devices such as motors, solenoids, and relays in accordance with industry standard manufacturing processes.
	2019-20 (Spring 2020)	ECC: MTEC 75B	Integrated Robotic and Automated Technologies II	SLO #3 Programming and Troubleshooting	The student will be able to program robotic systems to perform operational tasks using programming languages such as PBASIC and diagnose hardware and software errors in robotic systems.
	2019-20 (Spring 2020)	ECC: MTT 103	Conventional and CNC Turning	SLO #1 Lathe Dimension	Students will turn a part on the lathe to a given drawing dimension to an accuracy of +/- .001 inches.
	2019-20 (Spring 2020)	ECC: MTT 10B	Computer Numerical Control Programming	SLO #1 Inputting a Program	Student will input a program in to a Computer Numerical Control (CNC) machine.
	2019-20 (Spring 2020)	ECC: MTT 10B	Computer Numerical Control Programming	SLO #2 Write, Edit and Input Programs	Students will be able to write and alter word address programs for three-axis milling machines and input and edit programs into a CNC machine using manual input keyboard or local input.
	2019-20 (Spring 2020)	ECC: MTT 10B	Computer Numerical Control Programming	SLO #3 Programming Routines & Loops	Students will be able to write word address programs using routines, loops and macro subroutines as well as perform simple contouring operations on a CNC lathe.
	2019-20 (Spring 2020)	ECC: MTT 10J	Numerical Control Graphics Programming	SLO #3 Tool Motion Routines	Students will be able to create, manipulate and edit tool motion routines including: turning, boring, drilling, profiling, pocket roughing and turning, using interactive graphic techniques.

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2019-20 (Spring 2020)	ECC: MTT 10K	3D Numerical Control Graphics Programming	SLO #3 Surfacing	The student will be able to construct appropriate profile geometry on which to base 3D surfaces, recognize what surface type would be required, and practice roughing of 3D surfaces.
	2019-20 (Spring 2020)	ECC: MTT 40	Machine Shop Calculations	SLO #1 HSS Setting the Speed	Student will calculate the correct feed per minute for a high speed steel (HSS) end mill using the correct feed per tooth (CL), rotations per minute (RPM), and number of teeth.
	2019-20 (Spring 2020)	ECC: MTT 40	Machine Shop Calculations	SLO #3 Geometric Figures	The student will be able to sketch geometric figures to include perpendicular bisectors, parallel and tangent lines and use trigonometric principles to solve problems that include similar triangles, isosceles triangles, right triangles and polygons.
	2020-21 (Fall 2020)	ECC: ETEC 10	Principles of Engineering Technology	SLO #1 Careers	Students will research engineering and engineering technology careers and create a report.
	2020-21 (Fall 2020)	ECC: ETEC 10A	Principles of Engineering Technology I	SLO #1 Careers	Students will research engineering and engineering technology careers and create a report.
	2020-21 (Fall 2020)	ECC: ETEC 12	Introduction to Engineering Design	SLO #1 Missing Orthographic Views	Given an incomplete set of orthographic views of a simple machined part, the student shall be able to complete the given views and to construct the missing views.
	2020-21 (Fall 2020)	ECC: ETEC 12A	Introduction to Engineering Design I	SLO #1 Two and Three-Dimensional Models	Given a simple set of design constraints, the student shall be able utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models.
	2020-21 (Fall 2020)	ECC: ETEC 14A	Electronics for Engineering Technologists I	SLO #3 Unsigned Binary Conversion	Given an unsigned binary number, convert this number to base 10.
	2020-21 (Fall 2020)	ECC: ETEC 15A	Aerospace Engineering I	SLO #1 Scale Model Aircraft Wing	Students will design, build and test a scale model aircraft wing.
	2020-21 (Fall 2020)	ECC: ETEC 16A	Computer Integrated Manufacturing I	SLO #1 Solid Modeling	Students will measure and solid model a provided assembly.
	2020-21 (Fall 2020)	ECC: ETEC 18A	Engineering Design and Development I	SLO #1 Engineering Notebook	Students will develop and maintain an engineering notebook. This legal document contains all the information that is relevant to its purpose of original design. It includes contact information, correspondence, telephone logs, sketches and drawings, reference citations, collected data, and a chronological listing of the events dates and time, connected to the journal's purpose. Documentation is a vital part of engineering. In the case of liability suits, good documentation has kept many engineering firms out of court because it proved there was no wrong doing on their part.
	2020-21 (Fall 2020)	ECC: MTEC 70	Basic Robotics	SLO #3 Robot Build Final Project	By the end of the course, the student will be able to build or assemble a prototype robot, build electronic circuits and attach electronic devices (e.g., light-emitting diodes, piezospeaker) to the micro-controller, and equip the robot with DC motors or servo motors.
	2020-21 (Fall 2020)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #3 Embedded Electronic Devices	Students will be able to compare and contrast electrical motor configurations, transducers, sensors, PWM (Pulse Width

Unit Name	Course SLO Assessment Cycle	Course ID	Course Name	Course SLO Title	Course SLO Statement
	2020-21 (Fall 2020)	ECC: MTEC 75A	Integrated Robotic and Automated Technologies I	SLO #3 Embedded Electronic Devices	Modulation), and associated electronics imbedded devices to build robotic systems in accordance with industry standard schematics and diagrams.
	2020-21 (Fall 2020)	ECC: MTT 101	Introduction to Conventional and CNC Machining	SLO #3 Orthographic Projections	The student will be able to solve shop math problems and interpret orthographic projection engineering drawings that incorporate geometric dimensioning and tolerancing to produce assigned work within the tolerances specified on engineering drawings.
	2020-21 (Fall 2020)	ECC: MTT 105	Conventional and CNC Milling	SLO #3 Soft Jaws Project	Students will be able to read, de-bug and edit CNC vertical milling machine word address programs and to enter Manual Data Input (MDI) CNC word address milling machine programs to produce vise soft jaws for holding work to produce parts within the tolerances specified on engineering drawings.
	2020-21 (Fall 2020)	ECC: MTT 107	Advanced Manufacturing Processes	SLO #3 Grinding and Cutting Machinery	Using proper safety procedures and precautions, students will be able to set up and operate surface grinders, cylindrical grinders, coordinate measuring machines, optical comparators, sinkers, wire electrical discharge machines, and abrasive water jet machines to produce assigned work within the tolerances specified on engineering drawings.
	2020-21 (Fall 2020)	ECC: MTT 10A	Introduction to CAD/CAM	SLO #3 CNC Machined Objects	Students will be able to input, edit, print and plot a CNC program and create toolpaths for two-axis CNC machines to create objects within specified tolerances.
	2020-21 (Fall 2020)	ECC: MTT 2	Manufacturing Print Reading	SLO #3 Total Position Tolerance	Gain a basic understanding of GD&T (Geometric Dimensioning and Tolerancing) practices. Presented with a Feature Control Frame, students will calculate total positional tolerance of a hole utilizing Maximum Material Condition, Least Material Condition and Regardless of Feature Size Modifiers.
	2020-21 (Spring 2021)	ECC: ETEC 15	Aerospace Engineering	SLO #4 Intelligent Robotic Vehicles	Students will construct and demonstrate intelligent robotic vehicles incorporating mechanical, electronic and computer based systems.