Course ID	Course Name	Course Outcome
ARCH 101	**Design I - Elements of Design**	Students will apply subractive process as a design methodology Students will be able to apply graphic principles/standards and conventions used in 2D/3D architectural design. Students will be able to use design tools and equipment of the profession. Students will complete three-dimensional drawings and physical models. Upon completion of this course, 70% of students will pass a test with a grade of C or better. Visit and synthesize actual site, program and concept to produce small buildings for a specific location.
ARCH 102	**Design II - Architectural Design**	Students will be able to apply the design process to create small building design(s). Students will develop a repetitive tensile structure that achieves a static stability, using light thread and small wood sticks.
ARCH 121 (VOC)	**CADD and Digital Design Media Level I**	Students will be able to utilize common software for word processing for basic report/specification writing. Students will produce architectural or engineering CADD drawings to the appropriate scale using industry standard conventions
ARCH 122	**Architectural Presentations**	Students will incorporate invisible grid form layout in a presentation board, Students will prepare architectural presentations utilizing multi-part views and physical models
ARCH 141 (VOC)	**Design Drawing and Communication**	Students will be able to perform the various drawing standards and conventions used in architecture. Students will execute orthographic and 3D drawing projections Students will use basic architectural nomenclature related to the design of structures.
ARCH 142	**Architectural Materials and Specifications**	Students will be able to describe the relationship of the various construction trades in their application of construction specifications.

		Students will be able to identify the primary CSI divisions by name and correlated number Students will construct both full- and scale-models of construction assemblies. Students will demonstrate an understanding of basic materials and methods of construction Students will identify key elements of contract documents
ARCH 145	**Building and Zoning Codes**	students will be able to determine occupancy type and occupant load requirements for a specific building design Students will be able to determine the applicable current building and zoning code titles/editions for any given location. Students will be able to follow typical government procedures in obtaining zoning approval and building permits of simulated building project. Students will be able to use basic zoning and building code requirements with other design criteria in non-complex architectural design and construction documents.
ARCH 146	**Architectural Drawings and Fabrications**	Students will apply appropriate architectural standards to produce construction drawings. Students will apply quality control procedures to produce architectural working drawings Students will be able to produce a simple set of working drawings of a light-frame building of "Type V" construction suitable for building department "Plan-check" submittal.
ARCH 147 (VOC)	**Architectural CAD and BIM**	Students will be able to use architectural software for building virtual models for design and Design Development drawings. Students will successfully plot 2D and 3D projections of virtual building model according to industry standards.
ARCH 201	**Design III - Environmental Design**	Students will be able to apply the environmental design process and procedure beyond the scope of a single building.

		Students will develop a response to a site analysis
ARCH 202	**Design IV - Advanced Project**	Students will be able to synthesize preliminary design alternatives into one well-presented final architectural design solution Students will demonstrate architectural design research techniques Students will present and evaluate the pros and cons of particular architectural design alternative solution.
ARCH 221	**Architectural Illustration**	Students will be able to solve graphic design problems in shade, shadow, and view composition Students will prepare perspective illustrations as they relate to the architectural and interior design professions.
ARCH 222 (VOC)	**Advanced Digital Design, Illustration and Animation**	Students will be able to create animated walk-through and fly-through "movies" of building interior and exteriors. Students will be able to use rendering/animation software for architectural (and interior)3-D model making Students will set camera-specific views of the virtual model or scene
ARCH 247 (VOC)	**Architectural CAD Working Drawings**	Students will be able to use common and architectural software for detailed 3-D computer-simulated models (both interior and exterior). Students will create design development and working drawing sets reflecting refined job skills in architectural CAD.
ARCH 250	**World Architecture I**	Students will be able to analyze the influence of vernacular construction techniques and materials in the architectural development of ancient and classic civilizations. Students will be able to compare the architecture of ancient and classic civilizations. Students will identify the major architectural works of ancient and classic civilizations.
ARCH 251	**World Architecture II**	Students will be able to describe the impact of the Industrial Revolution on architectural design and theory.

		Students will be able to identify the major architectural works from the Renaissance . Students will summarize in their own words contemporary reviews of architecture using appropriate vocabulary.
ARCH 290	**Architectural Work Experience**	Architecture Work Experience Students will have good work habits Architecture Work Experience Students will have strong technical skills
INSP 17	**Legal Aspects of Construction**	1. Research and delineate applicable licensing requirements, construction business organizations, legal terminology and legal responsibilities Evaluate and follow legal contract documents and construction documents for bidding, construction administration, contract modifications Explain contractual legal relationships among owner, architect contractor and sub-contractors Identify applicable codes, standards and procedures for building permits, material and labor payments, mechanic's lien, inspections and occupancy permits for the completion of a building's construction Identify the function and purpose of construction drawings, specifications, addenda, shop drawings and change orders Students will be able to describe the function and inter-relationship among the various legal documents used in the construction of a building (include contract, conditions, drawings and specifications). Students will be able to list the state requirements for licensing as a contractor
INSP 67	**Reading Construction Drawings**	Students will be able to utilize construction drawings to interpret communication of symbols. Students will recognize the significance of construction drawings and their accuracy of content as "contract drawings"
INSP 70	**Elements of Construction**	Students will apply a CPM scheduling technique to a simple construction project. Students will be able to describe the process of a building construction project from planning, design, contracting, construction to facility management.

INSP 71	**Construction Estimating**	Students will prepare a construction bid using plans for a simple building. Students will solve basic problems in construction estimation.
INSP 87	**Fundamentals of Construction Inspection**	Document and report results of construction field inspections according to established guidelines. Identify building codes and construction standards applicable for a particular building type and location. Identify improper wood framing field practices and defective field connections of steel framing. Recommend proper procedures to correct construction field defects. Students will be able to identify building codes and construction standards applicable for a particular building type and location. Students will be able to verify structural elements in accordance to approved construction drawings and code requirements of a light frame construction. Verify structural elements in accordance to approved construction drawings and code requirements of a light frame construction.
EDT 89	**Engineering Design Technology Work Experience**	Employers of EDT Work Experience Students will rate the technical skills of their students as above average. Employers of EDT Work Experience Students will rate the work habits of their students as above average. Students will demonstrate competency using skills developed in the IDE, EDT or MFG programs by developing and completing a project according to industry partner and/ or faculty advisor
IDE 110	**Design Foundation - Visual Literacy**	Students will be able to analyze existing products through rendering. Students will be able to sketch an existing product with material textures included. Students will be able to use rapid visualization techniques to sketch multiple variations of proscribed designs within defined parameters.
IDE 120	**Introduction to CAD**	Students will develop a portfolio of industry standard drawings in CAD. Students will be able to create CAD drawings and prototypes using given specifications. Students will be able to evaluate software for effectiveness in drawing appropriate scales on drawings.

IDE 130	**Shop Processes**	Students will accurately produce specified 3D physical prototype objects using hand and power tools. Students will demonstrate fabrication skills. Students will translate CAD plans into hand-built physical parts.
IDE 150	**Design Foundations**	Students will be able to analyze designs and manufacturing parameters for existing products. Students will be able to develop concept sketches and presentations. Students will be able to explain design criteria for existing products.
IDE 160	**Intermediate CAD**	Students will be able to create 3D models and the necessary views for production. Students will be able to develop drawings using parametric solid modeling technology. Students will be able to graphically represent technical designs, using accepted standard practices.
IDE 170	**Introduction to Prototyping**	Students will be able to construct proof of concept, presentation and prototype models from concept sketches and CAD models. Students will be able to construct prototype models using common prototyping methods and technologies. Students will be able to evaluate structural and aesthetic merits of design proposals and compare with other approaches to the same problem. Students will be able to use rapid prototyping technologies to create models and molds from digital CAD files.
IDE 210	**Advanced Media**	Students will be able to evaluate design proposals in the context of design history. Students will be able to graphically represent a product concept Students will be able to explain and justify design concepts and rationale.
IDE 220	**Advanced CAD**	Student will be able to apply CAD surface modeling techniques to develop mold designs and prototypes . Students will be able to convert surfaces through spline and surface integrity analysis.
IDE 230	**Introduction to Mechanical Principles**	Students will be able to design CAD based mechanical devices that demonstrate a common mechanical principle Students will be able to evaluate off-the-shelf components and devices in terms of their mechanical purpose and match component and device specifications with design requirements.

		Students will be able to integrate existing components and devices into mechanical design solutions.
IDE 250	**Product Design and Viability**	Create cost benefit analyses of common vs. sustainable materials processes for product manufacturing. Design or re-design a prototype for a product according to manufacturing constraints Generate most efficient bill of materials (BOM) or assembly based on assembly time studies, machine and tooling capacity, and yield of various manufacturing processes.
IDE 270	**Manufacturing Processes and Materials**	students will be able to analyze and propose manufacturing approaches based on project aesthetic, structural, and manufacturing requirements. Students will be able to design parts or assemblies appropriate to a particular manufacturing process and associated material Students will be able to propose prototyping scenarios to create visual study and/ or functional prototype models that closely represent the actual production and design intent.
EDT 16	**Basic CAD and Computer Applications**	After instruction and demonstration, students will create a Titleblock that will be inserted into future drawing projects. EDT 16 students will demostrate and understand how to plot/print CADD projects to scale.
EDT 18	**Engineering CAD Applications**	EDT 18 students will demonstrate parametric solid modeling skills by developing a complete portfolio at the end of the semester. EDT 18 students will develop 2D and 3D CAD skills required to gain entry level employment.
EDT 24	**Engineering CAD 3-D Solids and Surfaces**	EDT 24 students will create and generate 2D prints from 3-D parametric solid models and complete a 3D (mated) assembly model. Students correctly use Solid works software at an intermediate level Students will develop detailed 2D views from a 3D parmetric model with dimensions to fully describe the part/model.
MFG 10 (VOC)	**Mathematics and Blueprint Reading for Manufacturing**	Students will be able to read a blueprint

		Students will correctly identify key elements on blueprints
MFG 11 (VOC)	**Mfg Processes I**	Analyze and calculate machine settings for cutting screw threads. Demonstrate the ability to setup a conventional lathe to machine a steel part.
MFG 12 (VOC)	**Mfg Processes II**	Analyze and demonstrate ability to heat-treat alloy steels correctly Demonstrate ability to perform basic mill set up and operation.
MFG 38 (VOC)	**MasterCAM I**	Students will create two-dimensional product designs and machine them effectively Students will evaluate methods of transferring data from CAD/CAM computers to machine tool computers
MFG 38B	**Advanced MasterCAM**	Students will create 2D and 3D tool paths for various industry-representative parts and then machine them effectively using CNC mills and/ or lathes Students will develop functional CAD/CAM multi-axis machining concepts and how they relate to industry.
MFG 85 (VOC)	**Manual CNC Operations**	Student will transmit DNC (electronic transfer) code to CNC machines Student will develop G-code for computerized numerical control input from manual methods.