



UTAH SYSTEM OF  
HIGHER EDUCATION

# MEMORANDUM

TAB D

August 19, 2022

## Program Alignment

The Utah Board of Higher Education Strategic Plan includes a tactic to facilitate coordination among technical education programs to align program structure and course content to support transfer. This initiative is represented in a strategy to facilitate completion through the development of stackable credentials to support student transfer among institutions.

### Information

Technical education programs have general broad alignment across technical education institutions, particularly those regulated through licensure or programmatic accreditations, which make up about half of the programs offered. Currently, program and course names, lengths, and objectives in the same occupational areas including regulated programs differ between institutions.

Degree granting institutions develop articulation agreements with each technical college, for each program area separately. Agreements define coursework that is transferable between the two institutions. Given that technical education programs may change on an annual basis in response to industry feedback provided through established occupational advisory committees, the work required to develop and maintain these agreements is significant.

By aligning programs across technical education institutions, articulation agreements developed by degree granting institutions will apply broadly to all technical college students who have completed the aligned programs and courses. For example, Salt Lake Community College (SLCC) has internal articulations between technical college and academic programs. When technical education programs and courses are aligned across the system, these agreements will not only apply to SLCC students, but to any technical education student who has completed that program or course in the state.

Through this effort, degree-granting institutions will be better positioned to develop broad articulation agreements that benefit all technical college students who progress educationally, regardless of the institution they choose to attend.

### Benefits

Students who receive credit for coursework already completed save time and tuition dollars. Reducing the duplication of completed courses helps students to progress more quickly to graduation. Reducing time to

completion reduces the odds of education being interrupted by life circumstances and increases graduation rates. This is particularly important to nontraditional students and underrepresented populations.

### **Expectations**

- The Utah System of Higher Education (USHE) Commissioner's Office coordinates and provides guidance and assistance on the alignment initiative.
- Institutions must implement aligned programs within two years unless reasonable exceptions are granted by the Board of Higher Education Technical Education Committee.
- The alignment initiative will follow program and course guidelines, including:
  - required participation of USHE institutions that offer technical education programs
  - alignment of program title, length in clock-hours and credit hours, description, and objectives
  - alignment of course numbers, titles, length in clock-hours and credit hours, descriptions, and objectives
  - a core of required courses representing foundational knowledge and skills comprised of at least 70% of the total program length
  - potential broad selection of elective courses representing regional employment needs comprised of no more than 30% of the total program length
- Programs offered by single institutions are submitted to the Office of the Commissioner to be included in the program inventory.
- Electives can be added to the program at any time during the year and should be reported to the committee and Office of the Commissioner annually. Program committees consider whether to include electives in program requirements.

### **Faculty Program Committees**

- Faculty Program Committees are made up of one faculty representative for each program offered by an institution. The roster is updated annually.
- Faculty Program Committees will be convened, and new members oriented at the beginning of each fiscal year.
- Program committees will be made up of only one full-time faculty subject matter expert per program, per technical education institution in which the program is offered.
- Faculty are encouraged to send a faculty substitute if they are unable to attend a meeting.
- In cases where a full-time faculty member is not available, a program director may represent the program.
- Effort should be made to accommodate the schedules of as many attendees as possible.
- Committees should meet as often as needed to achieve the timeline goals identified below and at least once per year after alignment is achieved.
- While video conferencing is possible and acceptable, workgroup members are encouraged to maximize engagement and understanding of program and course content.

- Faculty should get supervisor approval and follow institutional procedures to get substitute faculty, if necessary to provide instructional coverage during their absence.
- Institutions will cover the cost to host, travel to, and/or participate in committee meetings.
- A simple majority of participating institutions will constitute agreement.
- Data will be used to inform decisions and changes to programs and courses.
- Institutions are required to implement agreed-upon courses and programs.

### **Process**

- The Office of the Commissioner compiles and submits program committee proposals and modifications of proposals to instructional officers for review and recommendations.
- Instructional designers from participating institutions review program and course descriptions and objectives. Recommended changes are reviewed by faculty.
- The UBHE Technical Education Committee verifies proposals meet the intent of the initiative.
- Institutions may request the USHE Curriculum Committee and UBHE Technical Education Committee grant a waiver of alignment requirements with justification. The committee may approve variations of alignment.
- Proposals are submitted to the UBHE as an information item on the consent calendar.
- Program approval and modification requirements will be defined in USHE policy.

### **Timeline**

FY22: For all programs with a regulatory body, state or national licensure, or with a third-party accreditation agency, the UBHE directed the alignment of program titles, lengths in clock-hours and credit-hours, descriptions, and objectives; and align required course numbers, titles, lengths in clock-hours and credit-hours, descriptions, and objectives. Programs are encouraged to identify and implement electives where necessary, as part of the program. Program titles, lengths in clock-hours and credit-hours, descriptions, and objectives for all other programs should also be aligned.

FY23: For all programs which have a regulatory body, state or national licensure, or generally have a third-party accreditation agency, committees are expected to complete implementation of FY22 alignment activities, including identification and implementation of electives, where necessary. For all other programs, alignment of required course numbers, titles, lengths in clock-hours and credit-hours, descriptions, and objectives should be achieved with the identification and implementation of elective courses where necessary.

FY24: Complete the implementation of FY23 alignment activities.

### **Progress Report**

Committee members are asked to review this document, the progress report, and single institution and aligned program proposals prior to the meeting. An overview of the initiative progress will be presented to the committee and single institution and aligned program proposals will be presented for discussion.

**Commissioner's Recommendation**

The Commissioner recommends the committee forward single institution and aligned programs to the Committee of the Whole as an information item.





# Utah System of Higher Education

Esthetician

FY2023 / 16 Credits (600 Clock-Hours)

<b>Esthetician</b>			
Institutions: Davis			
<i>Certificate of Program Completion (Catalog Year: 2023, 16 Credits/600 Clock-Hours Required, CIP: 12.0409)</i>			
<b>Core (16 Credits/600 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Foundations	1	30
PREF XXXX	Basic Theory I	4	120
PREF XXXX	Basic Theory II	4	120
PREF XXXX	Basic Clinical I	3	135
PREF XXXX	Basic Clinical II	3	135
PREF XXXX	Basic Clinical III	1	60
<b>Non-Required Electives (0 Credits/0 Clock-Hours Required)</b>			
<b>Davis Technical College</b>			
PREF XXXX	Esthetics Clinical Practice I	0	9
PREF XXXX	Esthetics Clinical Practice II	0	27
PREF XXXX	Esthetics Clinical Practice III	1	60
PREF XXXX	Lash Extension Course	0	15
PREF XXXX	Advanced Waxing	0	15



## Utah System of Higher Education

Esthetician

FY2023 / 16 Credits (600 Clock-Hours)

### PROGRAM DESCRIPTION

The Esthetician program prepares students to enter the world of skin care, and natural nail care by teaching the required skills for success in a competitive industry. Students will develop communication skills, professional behavior, and the core skills of working in or building a spa business. Students will work with spa guests in a modern, well-equipped spa and will perform these skills with the newest techniques, products, and equipment in the industry. At the end of the program, students will be qualified to take the Basic Utah State Esthetician Licensing Exams.

#### Objectives:

- Demonstrate esthetic skills such as: communication skills, professional behavior, facials, manicures, and pedicures, skin care massage, chemical peels, microcurrent facials, hair removal, makeup, body treatments
- Explain general sciences related to Esthetics such as: anatomy, infection control, skin structure, skin diseases and disorders, chemistry, and electricity
- Demonstrate spa processes and etiquette with proper sanitation procedures necessary for the health and safety of spa guests and self
- Perform esthetic services on manikins and spa guests
- Communicate effectively with spa guests and colleagues
- Demonstrate communication skills through electronic, verbal, and written formats
- Prepare for the state board licensure exam

### COURSE DESCRIPTIONS

#### Foundations

**1 Credit/30 Clock-Hours**

This course prepares students to enter the world of skin care, and natural nail care, by teaching the required skills for success in a competitive industry.

#### Objectives:

- Demonstrate communication skills and professional behavior
- Develop the core skills of working in or building a spa business

#### Basic Theory I

**4 Credits/120 Clock-Hours**

This course introduces the basic procedures of skin care. This includes an understanding of the basic structure, composition of the skin, and maintenance of healthy skin. Students will demonstrate and explain theory and practical application procedures associated with the basic needs of the skin.

#### Objectives:

- Identify the factors that influence aging of the skin
- Recognize which skin disorders can be treated in the spa and which should be referred to a physician
- Demonstrate proper set-up, cleaning, and disinfection during treatments
- Perform various types of basic esthetic services
- Demonstrate and explain basic theory, practical application, and procedures associated with basic skin care
- Demonstrate and learn practical applications while working on course related content
- Students will demonstrate competency through assignments, testing, and practical application

**Basic Theory II****4 Credits/120 Clock-Hours**

This course introduces advanced topics, treatments, and nutritional effects of the skin. This includes basic hands-on techniques. Students will demonstrate and explain theory and practical application procedures associated with the basic needs of the skin.

## Objectives:

- Demonstrate essential business skills
- Communicate effectively with spa guests
- Comprehend the importance of meeting industry standards of quality, professionalism, efficiency, sanitation, and safety in preparation for entering the esthetician industry
- Demonstrate and explain basic theory, practical application, and procedures associated with basic skin care
- Demonstrate and learn practical applications while working on course related content
- Students will demonstrate competency through assignments, testing, and practical application

**Basic Clinical I****3 Credits/135 Clock-Hours**

This course applies the principles and practices learned in the Basic Theory I and II. Students will begin to provide spa services in a clinical setting. Students will provide a variety of services on spa guests and models.

## Objectives:

- Demonstrate spa processes and etiquette
- Communicate effectively with spa guests and colleagues
- Demonstrate sanitation procedures
- Safety and preparation for entering the esthetic industry

**Basic Clinical II****3 Credits/135 Clock-Hours**

This course applies the principles and practices learned in the Basic Theory I and II. Students will perform a variety of services on spa guests. This course will help prepare students for client work and building a clientele.

## Objectives:

- Demonstrate spa processes and etiquette
- Communicate effectively with spa guests and colleagues
- Demonstrate sanitation procedures
- Safety and preparation for entering the Esthetic industry
- Continue practical application and procedures on spa guests

**Basic Clinical III****1 Credits/60 Clock-Hours**

This course applies the principles and practices learned in the Basic Theory I and II. Students will perform a variety of services on guests in a spa-like setting.

## Objectives:

- Demonstrate spa processes and etiquette
- Communicate effectively with spa guests and colleagues
- Demonstrate sanitation procedures
- Safety and preparation for entering the Esthetic industry
- Continue practical application and procedures on spa guests



## **NON-REQUIRED ELECTIVE COURSE DESCRIPTIONS**

### **Davis Technical College**

#### **Esthetics Clinical Practice I**

**0 Credits/9 Clock-Hours**

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In the esthetician clinicals, you will apply the principles and practices learned in the Esthetician I and II courses as you perform a variety of services on clients in the cosmetology salon. The clinical will help prepare you to pass the State of Utah licensure exams.

##### Objectives:

- Demonstrate practical interviewing, retailing, and marketing skills
- Demonstrate spa processes and etiquette
- Communicate effectively with spa guests and colleagues
- Demonstrate proper sanitation procedures
- Demonstrate safety and prepare to enter the Esthetic industry
- Continue practical application and procedures on spa guests

#### **Esthetics Clinical Practice II**

**0 Credits/27 Clock-Hours**

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In the esthetician clinicals, you will apply the principles and practices learned in the Esthetician I and II courses as you perform a variety of services on clients in the cosmetology salon. The clinical will help prepare you to pass the State of Utah licensure exams.

##### Objectives:

- Demonstrate practical interviewing, retailing, and marketing skills
- Demonstrate spa processes and etiquette
- Communicate effectively with spa guests and colleagues
- Demonstrate proper sanitation procedures
- Demonstrate safety and prepare to enter the Esthetic industry
- Continue practical application and procedures on spa guests

#### **Esthetics Clinical Practice III**

**1 Credits/60 Clock-Hours**

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In the esthetician clinicals, you will apply the principles and practices learned in the Esthetician I and II courses as you perform a variety of services on clients in the cosmetology salon. The clinical will help prepare you to pass the State of Utah licensure exams.

##### Objectives:

- Demonstrate practical interviewing, retailing, and marketing skills
- Demonstrate spa processes and etiquette
- Communicate effectively with spa guests and colleagues
- Demonstrate proper sanitation procedures
- Demonstrate safety and prepare to enter the Esthetic industry
- Continue practical application and procedures on spa guests

#### **Lash Extension Course**

**0 Credits/15 Clock-Hours**

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This course prepares students to apply semi-permanent lashes.

##### Objectives:

- Demonstrate proper sanitation for lash extension application
- Demonstrate proper lash extension application
- Demonstrate proper removal of lash extensions
- Demonstrate proper fill of lash extension application

**Advanced Waxing****0 Credits/15 Clock-Hours**

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In this course, you will learn to apply principles and practices learned in Basic Esthetics I, II, & III and Master Esthetics I, II, & III.

**Objectives:**

- Continue to build on basic waxing techniques
- Demonstrate proper sanitation for hair removal
- Demonstrate proper application of waxing techniques
- Demonstrate proper removal of waxing techniques



# Utah System of Higher Education

## Injection Molding

FY2023 / 20 Credits (600 Clock-Hours)

<b>Injection Molding</b>			
Institutions: Davis			
<i>Certificate of Program Completion (Catalog Year: 2023, 20 Credits/600 Clock-Hours Required, CIP: 15.0607)</i>			
<b>Core (17 Credits/510 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
INJM 1000	Basic Injection Molding Machine Operations	2	60
MATH 0900	Computational Math	1	30
INJM 1011	Practical Injection Molding	2	60
INJM 1022	Injection Molding Changeovers	2	60
INJM 1103	Standardized Process Tests	2	60
INJM 1111	Process Development and Decoupled Molding	2	60
INJM 1130	Basic Automation for Injection Molding	1	30
INJM 1040	Injection Molding Auxiliary Equipment	1	30
INJM 1123	Injected Molded Part Problems and Solutions	1	30
WKSK 1400	Workplace Success	2	60
WKSK 1500	Job Seeking Skills	1	30
<b>Electives (3 Credits/90 Clock-Hours)</b>			
INJM 1030	Economics of Injection Molding Operations	1	30
INJM 1050	Hot Runner Molding Solutions	1	30
INJM 2910	Injection Molding Externship	2	90
INJM 1135	Introduction to 3D Printing	2	60
INJM 1151	Injection Molding Student Project	1	30
INJM 1250	Fluid Power Hydraulics	2	60
INJM 2000	Advanced Process Development	2	60
IAMT 2025	Industrial Robotics	3	90



## Utah System of Higher Education

Injection Molding

FY2023 / 20 Credits (600 Clock-Hours)

### PROGRAM DESCRIPTION

The Injection Molding program prepares students for a fun, rewarding, and high-paying career as an injection molding process technician in a growing industry. Currently there are dozens of Utah companies that employ technicians to mold parts used in products ranging from lifesaving medical devices to cars and electronics.

Students will work hands-on with highly trained and skilled instructors on state-of the-art equipment. As part of that training, students will safely setup, operate, and maintain injection molding machines and auxiliary equipment; perform injection molding changeovers; and collaborate with the product development team to improve processes. Students will receive training in operating and programming robotics. During the program, students will prepare capital equipment justifications, to support profitable purchases, and calculate cost estimate used to secure future business. After completing the program, students will work with one of our placement specialists to find employment that utilizes these newly gained skills.

Objectives:

- Practice safety skills in injection molding.
- Start-up, operate, and maintain injection molding machines and auxiliary equipment.
- Perform injection molding changeovers using current written methods, and analyze those methods using Single Minute Exchange of Dies (SMED) to improve changeover processes and documentation
- Prepare capital equipment justifications and cost estimate bids.
- Setup and operate injection molding automation--including servo robots and sprue pickers
- Create robot programs for new operations
- Employ scientific molding principals to develop and improve low variation molding processes
- Demonstrate part defect troubleshooting
- Practice preventative maintenance for injection molding

### COURSE DESCRIPTIONS

#### Basic Injection Molding Machine Operations

**2 Credit/60 Clock-Hours**

Basic Injection Molding Machine Operations explores how to operate an injection molding machine in a production environment including defect identification, and concepts of quality manufacturing. During this course, you will examine general safety, as well as safety that is specific in an injection molding environment. You will also de-gate and count parts, as well as document running conditions and production numbers while operating a molding cell.

Objectives:

- Identify and properly utilize Personal Protective Equipment (PPE)
- Explain and demonstrated Lock-Out, Tag-Out procedures
- Identify the major components of and injection molding machine
- Describe the function of the major components of an injection molding machine
- Explain and demonstrate the basic injection molding cycle
- Use molding machine controls to operate a molding machine
- Identify basic part defects and list reasons why defects are a problem for molders and customers
- Perform basic part measurement using calipers and a scale
- Explain and perform visual inspection of injection molded parts
- Use quality documents to record critical quality metrics

- Describe mold changing steps and create basic tool change instructions
- Discuss the importance of process setup sheets and production documentation
- Use a process setup sheet to verify the settings of a molding machine and auxiliaries
- Record key data during machine operation on production documents

### **Computational Math**

**1 Credit/30 Clock-Hours**

Computational Math examines the application of the correct mathematical operation to solve practical problems. During your time in this course, you will use whole numbers, fractions, decimals, and percentages to solve practical problems. You are also introduced to the basics of measurement, geometry, averages, probability, patterns and simple equations.

Objectives:

- Recognize number sense, including rounding and comparing numbers
- Add, subtract, multiply and divide whole numbers and decimals
- Calculate percentages
- Use formulas to find perimeter and area
- Convert measurements

### **Practical Injection Molding**

**2 Credits/60 Clock-Hours**

Practical Injection Molding explores basic principles of hydraulics and electro-mechanical actuators on molding machine clamp and injection units. Throughout this course, you will study the structure of a mold, including two plate, three plate, and hot runner molds. You will also identify mold parts by disassembling and reassembling a mold. You will examine polymer types and material properties. In addition, you will compare and contrast the differences in amorphous and crystalline materials. You will also verify and change common machine control settings on a molding machine.

Objectives:

- Describe basic principles of hydraulics and electro-mechanical actuators on molding machine clamp and injection units
- Explain how an injection molding machine control is used to control velocities, pressures, and positions
- Describe the function of the plasticizing screw and identify its different sections
- Recognize the structure of a mold, including two plate, three plate, and hot runner molds.
- Identify parts of a mold through disassembly and reassembly of a mold
- Discuss polymer types and material properties, including the difference in amorphous and crystalline materials
- Identify, verify, and change common machine control settings on a molding machine
- Identify the transfer position in a process and explain why it is important

### **Injection Molding Changeovers**

**2 Credits/60 Clock-Hours**

Students in this course will learn basic procedures to safely and quickly change over a molding cell from one product to another. Students will learn to document the changeover process and improve the speed and accuracy of an injection molding changeover using the SMED improvement process (Single Minute Exchange of Dies). Students will also learn to apply these principles in current and future workplaces.

Objectives:

- List key safety personal protection equipment (PPE) when performing a tool change
- Use Microsoft Office to create professional tool change instruction and setup sheets

- Describe how to safely and effectively change resin in a molding machine from one material to another
- Describe lot traceability for injection molding materials
- List common materials that will cause safety issues if a bridge material is not used
- Explain why a purging compound can reduce overall costs
- Explain how to estimate the weight of a tool and how to select correct clamps and screws for a mold
- Explain why a torque wrench should be used to tighten mold clamp bolts
- Show how to connect the machine ejector plate to the tool ejector plate
- Show how to load mold settings on the molding machine controller for a tool change.
- List the steps in the SMED changeover reduction process
- Demonstrate how to use SMED principals to improve tool changes

### **Standardized Process Tests**

**2 Credits/60 Clock-Hours**

Students in this course will learn about helpful machine processing tests that facilitate scientific molding in order to pick repeatable injection times. Students will learn how to perform these tests on several machines with several different molds and will also learn how to apply the results of the tests to pick optimal fill time ranges. The process tests include static and dynamic check rings tests, load sensitivity, effective viscosity study, pressure loss study, fill time study, part weight study, screw and barrel study, and melt temperature study.

Objectives:

- Explain the standardized process tests that can be used to select optimal ranges for fill time settings
- Describe conditions required to create a “fill only” process
- Describe effects of changing the transfer position
- Demonstrate:
  - Establishing a “fill only” process
  - Estimation of clamp force requirements
  - Gate seal study
  - Check ring studies
  - Load sensitivity study
  - In-mold rheology study
  - Fill pressure study
  - Pressure loss study
  - Fill time study
  - Cavity imbalance study
  - Injection speed linearity study
- Identify fill times that will result in poor injection repeatability.

### **Process Development and Decoupled Molding**

**2 Credits/60 Clock-Hours**

Students in this course will learn what scientific molding, or Decoupled Molding (SM), is and how to use the principles to create robust injection molding processes. Students will learn to master skills in processing tools including setting all required molding machine and auxiliary equipment settings. Students will learn to optimize the processes to minimize cycle time and maximum product quality. Students will also learn transfer tools between different injection molding machines and become familiar with the FMEA (Failure Mode and Effects Analysis) and its application in developing robust molding processes.

Objectives:

- Describe:
  - Plastic temperature, flow rate, pressure gradient, and cooling rate
  - Applications that benefit from parallel motion
- Explain the following:
  - Use of FMEA (Failure Modes and Effect Analysis) analysis to create key process controls
  - Use of designed experiments to refine molding processes
  - Setting parameters on different machines to create identical plastic processing conditions
- Identify key parameters where process alarms are useful
- Identify key process conditions that must be documented
- Demonstrate the following:
  - Process development using the systematic approach
  - Scientific molding processes
  - Process refinement
  - Documentation of processes
  - Creation of machine independent, universal setup sheets
  - Saving and backup of machine settings files
  - Transferring a process and mold to another molding machine
  - Reduction in setup time

**Basic Automation for Injection Molding**

**1 Credit/30 Clock-Hours**

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Students in this course will learn to perform basic setup and operation of sprue pickers and injection molding takeout robots. Students will learn the basics of the robot interface plug, dummy plugs, and how to work safely around robots. Students will learn how to setup a sprue picker for operation with a two-plate mold and a three-plate mold. Students will participate in activities that will help them understand how a robot or sprue picker can save money and improve quality. Students will learn how to use a reject chute or reversing conveyor.

Objectives:

- Describe:
  - Differences between a sprue pickers and a three axis takeout robots
  - Importance of safety guarding
- Identify:
  - Reduction or increase of cycle time with the use of a takeout robot
- Demonstrate:
  - Verification of robot safety interlocks
  - Manual and automatic robot operation
  - Robot teaching
  - Sprue picker setup
  - End of arm tooling changeover
  - Setup of vacuum gripper settings
  - Setup of mechanical gripper position verification
- Explain:
  - Operation of the robot-IMM electrical interface plug
  - How a robot can be used to prevent loss of part orientation
  - Differences between teaching data and robot programs

## **Injection Molding Auxiliary Equipment**

**1 Credit/30 Clock-Hours**

Students in this course will learn about common auxiliary equipment found in molding cells including granulators, dryers, mold temperature controllers, sprue pickers, chillers, cooling towers, hot runner controls, hopper loaders and hydraulic core units. Students will learn the main functions of each of these machines and how they add value to the molding process. Students will also learn to operate the auxiliary equipment in the molding lab by performing changeovers and learning to set parameters on the equipment.

### **Objectives:**

- Explain:
  - Dryer moisture removal method
  - Mold temperature controller methods of heating and cooling process water
  - Process cooling using chillers and cooling towers
  - Volumetric feeder operation
  - Gravimetric blender operation
  - Auxiliary hydraulic core unit function
- Demonstrate:
  - Prepare, use, and changeover a resin dryer
  - Correct use of a moisture analyzer
    - Cleaning, setup and maintenance of hopper loaders and vacuum resin conveying systems
    - Process Cooling and Heating
    - Proper use of hot runner controllers.
    - Safe operation of a granulator.
    - Cleaning and changeover of a granulator.
    - Measurement and hand blending of virgin resin and colorants.
    - Connection, setup, start and stop of mold temperature controllers.
    - The function of color meters, gloss meters, and tensile testing equipment.
    - Safe removal of stuck sprues using sprue pulling plyers.
    - Starting and stopping of a sprue picker.
- Describe the difference between an open and closed fluid process.
- Identify applications to volumetric and gravimetric blenders.
- Identify sprue pickers, takeout robots, conveyors, and tote indexing equipment.

## **Injected Molded Part Problems and Solutions**

**1 Credits/30 Clock-Hours**

Injection Molded Part Problems and Solutions examines the common defects found in injection molded parts. During this course, you will explore the causes of common defects like, burn marks, cracking, flash, jetting, short shots, sink marks, splay, dimensions issues, voids, warp and weld lines. At the end of this course, you will propose, test, and implement process and tooling solutions to eliminate defects when faced with different defects in an existing process.

### **Objectives:**

- Describe and identify common injection molding defects
- Identify the key molding parameters that cause specific molding defects
- Demonstrate methods used to solve the following defects:
  - Flash
  - Short Shots
  - Sinks
  - Dimensional Problems



- Warping
- Demonstrate the use of cause-and-effect diagrams and analysis to identify the cause of common molding defects
- Explain how to eliminate defects and prevent reoccurrence

### **Workplace Success**

**2 Credits/60 Clock-Hours**

Workplace Success is designed to help students develop essential work habits and attitudes as well as human-relation skills needed to maintain gainful and satisfying employment. Topics include common challenges faced in the workplace, such as presenting yourself professionally, developing a professional work ethic, developing interpersonal skills, navigating office politics successfully, and planning and managing your career.

Objectives:

- Demonstrate a positive attitude and set and accomplish personal and career goals
- Manage time, stress, organization, and finances
- Explain conflict resolution, negotiation, and communication in the workplace
- Display a strong work ethic and illustrate accountability
- Perform work within a group effectively and discuss the value of negotiation and compromise
- Describe the basics of public speaking and presenting a professional demeanor
- Implement career goals and take active control of professional life

### **Job Seeking Skills**

**1 Credit/30 Clock-Hours**

Job Seeking Skills explores how to prepare and successfully apply to potential career opportunities. During this course, you will be presented with essential job-seeking skills needed to find gainful employment.

Objectives:

- Create a professional resume, cover letter and reference sheet
- Utilize online tools successfully to create an e-portfolio
- Expand and develop networking skills
- Utilize online resources effectively to find job openings
- Demonstrate the ability to fill out job applications in a professional manner
- Perform successfully in a job interview
- Demonstrate appropriate follow-up procedures

### **ELECTIVES (11 Credits/330 Clock-Hours Required)**

#### **Economics of Injection Molding Operations**

**1 Credit/30 Clock-Hours**

Students in this course will learn the major factors the effect a molding operations profitability. Students learn key factors that impact the total cost of a molded part and learn to use key measurables to estimate the total cost of molding. Students will also learn to identify, implement, and measure the results of both capital free and capital-based improvements to a molding operation.

Objectives:

- Explain cycle time, part design, material, and molded part quality effect an operations ability to make money
- Explain key principles of molding profitability to hypothetical employees
- Use a Pareto Chart to identify the most beneficial improvements
- Identify capital improvements to increase profitability
- Estimate product mold cost

- Justify capital improvements
- Measure improvements from capital implementations
- Identify and implement capital free improvements to increase profitability
- Demonstrate and improve tool change skills

### **Hot Runner Molding Solutions**

**1 Credit/30 Clock-Hours**

Students in this course will learn the details of how hot runners' systems function, how they add value to the molding process, and what potential pitfalls come with hot runner systems. Students will learn about hot runner controllers, cables, and wiring. Hot runner system return on investment will be discussed for manifold systems, valve gate systems, and hot sprue bushings.

Objectives:

- Explain:
  - Thermocouple temperature measurement
  - Thermocouple positioning effects on temperature accuracy
  - Differences between a thermal gate and a valve gated hot tip
  - Gate vestige effect on the performance of molded parts
  - Hot runner systems reduction or elimination of wasted plastic
- Describe:
  - Benefits of hot runner molds over cold runner molds
  - Limitations of hot runner molds in comparison to cold runner molds
  - Gate stringing
  - Advantages of gate placement with hot runner molds
  - Sequential valve gating
- Demonstrate:
  - Startup and Shutdown procedures for a hot runner system
  - Color change process for a hot runner system
  - Calculation of material savings as a result of using a hot runner system
- Identify major components of hot runner systems
- List materials that can be problematic when using hot runners

### **Injection Molding Externship**

**2 Credits/90 Clock-Hours**

The Injection Molding externship experience helps you transition from a student into a professional role by allowing you to demonstrate the knowledge, skills and professional attributes learned in the program while working in a professional setting. This experience takes place under the supervision of a qualified site supervisor and includes skill practice and evaluation. Faculty members periodically visit the externship site to evaluate your progress and performance. All program course work must be completed prior to enrolling in this course.

Objectives:

- Demonstrate professional and appropriate work habits
- Utilize appropriate Personal Protective Equipment (PPE)
- Demonstrate tool and mold change procedures
- Demonstrate injection molding processes

### **Introduction to 3D Printing**

**2 Credits/60 Clock-Hours**

In this course students will learn how to be "makers" by using various types of 3D modeling software and imaging equipment, printing actual physical objects that they have designed and modeled themselves.

Objectives:

- Explain how technology shifts throughout history have made 3D printing possible
- Demonstrate the proper setup of a 3d printer
- Explain how to use the principles of Design Thinking and demonstrate design process documentation
- Navigate CAD software
- Explain how the designer's role has evolved over time and how it is likely to change as we move toward mass customization
- Be able to troubleshoot problems with 3d printing and 3d printers
- Successfully 3d print a student rendered design

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### **Injection Molding Student Project**

**1 Credits/30 Clock-Hours**

The Injection Molding Student Project course offers an opportunity to complete a project that is defined by you and your instructor to improve skills in a particular area. You will select the project from an issue that needs to be solved in the lab, the student's employer, or another business seeking help to solve an injection molding problem. Example projects include mold tryouts for prototype tooling, SMED tool change improvements, cycle time optimization, installation of cavity pressure transducers, etc. However, you may only select a project that can be completed in the lab, not at a remote location.

Objectives:

- Develop a project objective
- Create a plan to complete the student project including specific metrics for completion
- Develop a list of required tools, components, and materials required to complete the project
- Complete the project successfully by meeting the established metrics for completion

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### **Fluid Power Hydraulics**

**2 Credits/60 Clock-Hours**

This course is a real world, hands-on approach to learning hydraulic principles and circuitry. Topics include force and energy transmission, identifying American National Standards Institute (ANSI) and International Organization

for Standardization (ISO) hydraulic symbols and understanding how to read and draw the hydraulic schematics. In addition, students will use schematics to construct hydraulic circuits, hydraulic components construction, operation and symbols including prime movers, reservoirs, pumps, gauges, directional control valves, cylinders, motors, and filters.

Objectives:

- Identify hydraulic ANSI and ISO symbols
- Identify different types of cylinders, pumps, and motors
- Explain the difference between controls and actuators
- Install, troubleshoot, and repair hydraulic systems
- Identify the use of force, pressure, and area in a hydraulic system
- Identify GPM, volume, and rod speed in a hydraulic system

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### **Advanced Process Development**

**2 Credits/60 Clock-Hours**

Students in the course will be shown how to use in cavity pressure transducers and control systems to detect part defects, optimize processes, perform gate seal studies, and to create cavity pressure controller velocity to pressure switchover processes. Students will be shown what transducers are available and how they can be implemented in a mold. Students will be shown how to use and RJG

eDART to measure and control processes, operate a reject chute, and transfer a process from one press to another.

Objectives:

- List common types of in cavity sensors
- Explain the use of in cavity sensors to detect general part defects
- Describe
  - Applications of in cavity sensors
  - Pros and cons between direct and indirect sensors
  - Modifications required to install in cavity sensors
  - Applications for in cavity temperature and pressure sensors
  - Optimal sensor locations for both monitoring and control
  - Use of cavity pressure sensors to determine gate seal
  - Balancing of hot runner molds with cavity sensor controls
  - Benefits of using cavity data to match processes
  - Use of in cavity pressure sensors for gate seal determination
- Demonstrate:
  - Use of in cavity sensors to aid in the development of molding processes
  - Operation of data acquisition systems to monitor cavity and auxiliary sensors
  - Use of a baseline or template to compare processes
  - Development of processes that use cavity pressure for V to P switchover
  - Transfer of a processes between presses
- Determine feasibility of process matching between presses
  - Difference between strain gauge and piezo electric transducers

## **Industrial Robotics**

**3 Credits/90 Clock-Hours**

In this course, students will practice basic sensing and locomotion principles as they control a robotic arm. The students will learn about the different types of robots that are available for industrial and servicing applications that will be used for selected activities from manual robot control to computer program mode. Robot maintenance and servicing activities provide skills for Maintenance Technicians and Engineers. Emphasis is placed with hands on activities using FANUC's R-30i A and R-30i B controllers with classroom M10ia, M1ia, and LR Mate industrial robots. Emphasis is also placed with hands on activities using ABB's S4 and IRC 5 controllers and classroom IRB 140 industrial robots. Certification for FANUC and ABB are available upon completion of course.

Objectives:

- Power up and Jog the Robot
- Recover from common program and robot faults
- Execute production operations
- Create, modify, and execute a material handling program
- Create and execute MACROs
- Monitor, force, and simulate input and output signals
- Backup and restore individual programs and files



**Utah System of Higher Education**  
 Manufacturing Technology  
 FY2023 / 13 Credits (390 Clock-Hours)

<b>Manufacturing Technology</b>			
Institutions: Davis			
<i>Certificate of Program Completion (Catalog Year: 2023, 13 Credits/390 Clock-Hours Required, CIP: 15.0613)</i>			
<b>Core (12 Credits/400 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
MANT 1010	Introduction to Manufacturing	3	90
MACH 1051	Blueprint Reading	1	30
MANT 1110	Composites for Manufacturing	1	30
IAMT 1201	Automation Maintenance Basics	2	60
MANT 1301	Welding for Manufacturing	2	60
INJM 1000	Basic Injection Molding Machine Operations	2	60
MANT 1600	Machining for Manufacturing	2	60



## Utah System of Higher Education

Manufacturing Technology

FY2023 / 13 Credits (390 Clock-Hours)

### PROGRAM DESCRIPTION

The Manufacturing Technology program prepares students for high-tech manufacturing careers. In addition to learning how to produce industrial products, students will get hands-on experience in automation, robotics, composite materials technology, plastic injection molding, and welding. Graduates will have foundational skills required for entry-level employment or may continue their education to specialize in any of the instructional areas.

#### Objectives:

Students will practice through hands-on experience, instructional videos, information sheets, and competency tests. Upon completion of this program or a given certificate, students will have received specialized training in manufacturing technology. Students will learn and apply the following while enrolled in the Manufacturing Technology program:

- Demonstrate basic safety practices used in any manufacturing facility
- Read and use common measuring tools used in manufacturing
- Practice safe and proper use of basic hand and power tools
- Complete a variety of introductory manufacturing assignments using blueprints
- Recognize and work within multiple technology industries

### COURSE DESCRIPTIONS

#### **Introduction to Manufacturing**

**3 Credits/90 Clock-Hours**

Introduction to Manufacturing explores common manufacturing processes and how they work together, including automation, machining, composites, and welding. During this course, you will become familiar with measuring tools, hand tools, power tools, and blueprints that are currently used in the various industries through hands-on labs. You will be required to demonstrate personal and machine safety as you complete a variety of activities.

#### Objectives:

- Demonstrate basic safety practices used in any manufacturing facility
- Use shop math to solve manufacturing related problems
- Read and use common measuring tools used in manufacturing
- Practice safe and proper use of basic hand and power tools
- Describe the basic operation of Lathes and Milling machines
- Become familiar with each industry and how they work together

#### **Blueprint Reading**

**1 Credit/30 Clock-Hours**

Blueprint reading for machinists will familiarize students with how to read and interpret mechanical blueprints. Topics covered in this course include the alphabet of lines, interpreting title block data, reading dimensions, tolerances, and surface finish, and interpreting multiple-view drawings, with sectional, auxiliary and projected views.

#### Objectives:

- Identify line, lettering, sketching, dimensioning, and title standards used in drafting
- Identify symbols and views used on blueprints
- Calculate missing dimensions on a drawing

- Identify information necessary for production on a drawing
- Define terminology and processes related to manufacturing drawings
- Describe the function of drawings used in manufacturing
- Demonstrate the proper use of linework as they pertain to drawings specifically created for the machining industry
- From a three-dimensional part, determine the various views associated with that part
- Demonstrate how to apply and read dimensioning elements associated with machined parts
- Determine the differences between the American National Standards Institute (ANSI) and the International Standards Organization (ISO)

### **Composites for Manufacturing**

**1 Credit/30 Clock-Hours**

Composite Basics introduces the basic materials, tools, vocabulary, and safety practices used in the composites industry. Throughout this course, you will examine various composite materials, chemicals, tools, and the procedures and processes of fabrication. You will also practice proper shop etiquette and cleaning.

Objectives:

- Identify the various businesses that employ composite technicians
- Describe the different composite applications within the industry
- Explain the role composites play in today's marketplace
- Identify the various fabric types incorporated in laminations and describe how the different fabrics interact
- Compare several resin systems and identify the parameters necessary to use each resin system
- Describe epoxy resin systems
- Demonstrate the ability to incorporate general shop safety practices
- Identify shop areas and processing equipment by name
- Explain Safety Data Sheets

### **Automation Maintenance Basics**

**2 Credits/60 Clock-Hours**

Maintenance Basics introduces the basic concepts and terminology used in Automation and Robotics. Throughout this course, you will study basic electrical, Electrical Motor Controls, Programmable Logic Controllers (PLC), HVAC, Pneumatics, Hydraulics, Robotics and Troubleshooting skills.

Objectives:

- Identify maintenance principles including safety and service and repair of electrical systems.
- Discuss electronics and PLCs, HVAC systems
- Describe mechanical systems, robotic systems, and fluid power systems of automation maintenance aspects

### **Welding for Manufacturing**

**2 Credits/60 Clock-Hours**

Welding for Manufacturing includes the basic knowledge of Gas Metal Arc Welding (GMAW) and Shielded Metal Arc Welding (SMAW). During this course, you will study welding safety; protection, accident prevention, and troubleshooting. You will practice set-up, operation of equipment, positions, executions, and the workmanship needed for a basic weld.

Objectives:

- Describe oxyfuel cutting process terms
- Demonstrate proper equipment setup, usage, cleaning, and break-down

- Discuss and conduct safety inspections of equipment and accessories
- List and describe oxyfuel cutting equipment
- Perform setup, lighting, and use of oxyfuel cutting equipment
- Demonstrate various cutting techniques including straight cuts, beveling, and gouging on various base metals
- Name key terms for GMAW
- Make GMAW-S (Short Circuit) Fillet Welds the 2F position
- Make GMAW-S (Short Circuit) Groove Welds in the 2G position
- Make GMAW-S (Short Circuit) V Groove Welds in the 2G position
- List key terms for SMAW
- Perform Fillet welds on mild carbon steel with E7018 welding
- Perform Groove welds in the Flat (1G) and horizontal (2G) with 7018

### **Basic Injection Molding Machine Operations**

**2 Credits/60 Clock-Hours**

Basic Injection Molding Machine Operations explores how to operate an injection molding machine in a production environment including defect identification, and concepts of quality manufacturing. During this course, you will examine general safety, as well as safety that is specific in an injection molding environment. You will also de-gate and count parts, as well as document running conditions and production numbers while operating a molding cell.

#### Objectives:

- Identify and properly utilize Personal Protective Equipment (PPE)
- Explain and demonstrated Lock-Out, Tag-Out procedures
- Identify the major components of and injection molding machine
- Describe the function of the major components of an injection molding machine
- Explain and demonstrate the basic injection molding cycle
- Use molding machine controls to operate a molding machine
- Identify basic part defects and list reasons why defects are a problem for molders and customers
- Perform basic part measurement using calipers and a scale
- Explain and perform visual inspection of injection molded parts
- Use quality documents to record critical quality metrics
- Describe mold changing steps and create basic tool change instructions
- Discuss the importance of process setup sheets and production documentation
- Use a process setup sheet to verify the settings of a molding machine and auxiliaries
- Record key data during machine operation on production documents

### **Machining for Manufacturing**

**2 Credits/60 Clock-Hours**

CNC Machining for Manufacturing will cover the basic procedures to run a CNC mill and Lathes encountered in the machine shop. During this course, you will study topics including instruction in machine startup, loading programs, setting tool offsets, work offsets and basic G code programming. We will also cover basic Programming using a CAM program topic will include basic part creation and programming.

#### Objectives:

- Use G code programming to create parts
- Create basic tool path using CAM software
- Identify safe practices and clean up procedures in a machine shop



- Demonstrate accurate use and reading of steel rules, micrometers, and calipers to inspect parts while in the machine.
- Demonstrate proper feeds and speeds
- Design parts using CAD software
- Identify proper milling and turning cutters and their application
- Perform basic turning and milling operations



**Utah System of Higher Education**  
Digital Marketing & Analytics  
FY2023 / 20 Credits (600 Clock-Hours)

<b>Digital Marketing &amp; Analytics</b>			
Institutions: Mountainland			
<i>Certificate of Program Completion (Catalog Year: 2023, 20 Credits/600 Clock-Hours Required, CIP: 52.1404)</i>			
<b>Core (20 Credits/600 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
DGMA 0101	Introduction to Marketing	2	60
DGMA 0111	Marketing Design	2	60
DGMA 0102	Content Marketing & Marketing Analytics	4	120
DGMA 0103	Email Marketing	2	60
DGMA 0104	Search Engine Optimization	2	60
DGMA 0105	Digital Advertising	3	90
DGMA 0106	Social Media Marketing	3	90
DGMA 0107	Advanced Digital Marketing	2	60



## Utah System of Higher Education

Digital Marketing & Analytics  
FY2023 / 20 Credits (600 Clock-Hours)

### PROGRAM DESCRIPTION

In the Digital Marketing and Analytics program, students will learn the fundamental principles of marketing, strategy, and best practices. Students will learn the day-to-day tasks of the modern digital marketer from lectures, guest speakers, presentations, and hands-on application. Through instruction and hands-on practice, students will learn and test their skills in Search Engine Optimization, Search Engine Marketing, Digital Advertising, Social Media Marketing, Content Marketing, and Email Marketing.

#### Objectives:

- Demonstrate a working knowledge of the fundamentals of digital marketing and marketing analytics
- Define key digital marketing and analytics terms and definitions
- Assess marketing data using industry tools and best practices
- Create strategic digital marketing plans following industry suggested best practices
- Implement a digital marketing strategy in a business
- Complete industry certifications to show competencies in each digital marketing vertical

### COURSE DESCRIPTIONS

#### Introduction to Marketing

**2 Credit/60 Clock-Hours**

The Introduction to Marketing course is designed to help students become proficient in the fundamentals and best practices of marketing. The course will cover key digital marketing terms, marketing research, buyer personas, positioning, buyer behaviors, brand management, product management, and pricing. Through lecture, guest speakers, presentations, and hands-on application, students will become proficient in the skills needed to be a modern-day digital marketer.

#### Objectives:

- Demonstrate fundamental marketing skills needed to pursue an education in digital marketing
- Display an understanding of marketing key terms and definitions
- Assess marketing strategies through industry case studies
- Implement marketing best practices and strategies through hands-on business applications
- Present marketing plans based on industry best practices

#### Marketing Design

**2 Credit/60 Clock-Hours**

The Marketing Design course will help students become familiar with graphic design concepts and platforms. The course will cover marketing design principles, design best practices, and popular graphic design platforms. Students will learn marketing design through lectures, guest speakers, presentations, and hands-on applications.

#### Objectives:

- Demonstrate knowledge of graphic design key terminology and definitions
- Explain why marketing design principles are an important part of a company's marketing strategy
- Display an understanding of how design affects businesses marketing efforts
- Break down the differences between good and bad marketing content
- Create marketing content on today's most popular platforms

#### Content Marketing & Marketing Analytics

**4 Credits/120 Clock-Hours**

The Content Marketing & Marketing Analytics course is designed to help students become proficient in content marketing, web design, and marketing analytics using today's leading platforms. The course will cover content marketing best practices, content marketing strategy, creating marketing content, website design, website building, website management, tracking marketing analytics, and measuring and reporting on marketing efforts. Students will learn through lectures, guest speakers, presentations, and hands-on applications the best practices and strategies of content marketing.

**Objectives:**

- Explain why content marketing is an important part of a company's overall marketing strategy
- Demonstrate knowledge of content marketing key terminology and definitions
- Analyze when and how to use content marketing to optimize a customer buyer's journey
- Execute content marketing best practices and strategies through content creation
- Demonstrate proficiency in using content marketing platforms and tools
- Build content promotion strategies for businesses
- Create and manage a personal website or portfolio
- Analyze marketing data to make informed future business decisions
- Demonstrate proficiency in using leading marketing analytics tools

**Email Marketing**

**2 Credits/60 Clock-Hours**

The Email Marketing & Customer Relationship Management course is designed to help students become proficient in email marketing, using today's leading platforms. The course will cover email marketing best practices, email marketing strategy, creating emails, lead generation, creating landing pages, tracking email marketing analytics, and email marketing automation. Students will learn through lectures, guest speakers, presentations, and hands-on applications the best practices and strategies of email marketing.

**Objectives:**

- Explain why email marketing is an important part of a company's overall marketing strategy
- Demonstrate knowledge of email marketing key terminology and definitions
- Analyze when and how to use email marketing to maximize their customer experience and drive more website visits, leads and sales
- Execute email marketing best practices and strategies through hands-on projects
- Create a variety of different email marketing content
- Demonstrate proficiency in using email marketing tools and platforms
- Execute and design email marketing automation workflows for contact management

**Search Engine Optimization**

**2 Credits/60 Clock-Hours**

The Search Engine Optimization course is designed to help students become proficient in SEO using today's leading platforms. The course will cover search engine optimization best practices, on-site SEO, off-site SEO, technical SEO, SEO audits, and today's leading SEO tools. Students will learn through lectures, guest speakers, presentations, and hands-on applications the best practices and strategies of SEO.

**Objectives:**

- Explain why search engine optimization is an essential part of a company's overall marketing strategy
- Demonstrate knowledge of search engine optimization key terminology and definitions
- Analyze when and how to use search engine optimization to increase website rankings
- Execute search engine optimization best practices and strategies through hands-on projects
- Manage on-site, off-site, and technical search engine optimization on their personal website/portfolio

- Perform and present website audits for businesses
- Demonstrate proficiency in using search engine marketing tools

### **Digital Advertising**

**3 Credits/90 Clock-Hours**

The Digital Advertising course is designed to help students become proficient in Search Engine Marketing using today's leading platforms. The course will cover digital advertising best practices, bidding strategies, search ads, display ads, video ads, digital ads optimization analyzing ad performance, and current leading digital advertising platforms. Students will learn through lectures, guest speakers, presentations, and hands-on applications the best practices and strategies of Digital Advertising.

#### **Objectives:**

- Explain why digital advertising is an important part of a company's overall marketing strategy
- Demonstrate knowledge of digital advertising key terminology and definitions
- Analyze when and how to use digital advertising to drive website traffic, leads, and sales
- Execute digital advertising best practices and strategies through hands-on projects
- Create digital ads on current leading advertising platforms
- Break down digital advertising results and key metrics for improving results
- Demonstrate proficiency in using digital advertising tools

### **Social Media Marketing**

**3 Credits/90 Clock-Hours**

The Social Media Marketing course is designed to help students become proficient in organic and paid social media marketing on today's leading platforms. This course will cover social media branding, social media strategy, social media management, paid social media marketing, influencer marketing, social media tools, and social media analytics. Students will learn through lectures and hands-on training the best practices and strategies of social media marketing.

#### **Objectives:**

- Explain why social media marketing is an important part of a company's overall marketing strategy
- Demonstrate knowledge of social media marketing key terminology and definitions.
- Analyze when and how to use social media marketing to maximize return on investment
- Execute social media marketing best practices for today's most popular platforms
- Demonstrate proficiency in using social media marketing platforms and tools
- Create and optimize social media ad campaigns
- Break down and report on social media analytics

### **Advanced Digital Marketing**

**2 Credits/60 Clock-Hours**

The Advanced Digital Marketing course is designed to help students become proficient in advanced digital marketing tactics, best practices, and strategies. The course will cover advanced marketing strategies for content marketing, email marketing, search engine optimization, conversion rate optimization, digital advertising, social media marketing, or marketing analytics. Students will learn through lectures, presentations, and hands-on training these advanced marketing skills.

#### **Objectives:**

- Demonstrate knowledge of advanced digital marketing skills needed for the jobs of today
- Research and present new digital marketing tools, skills, or best practices
- Implement ways to stay up-to-date in chosen digital marketing specialty
- Create a digital marketing resume with the skills and knowledge learned in the program
- Complete mock interviews for specific digital marketing jobs



**Utah System of Higher Education**  
Limited X-Ray Technician  
FY2023 / 10 Credits (345 Clock-Hours)

<b>Limited X-Ray Technician</b>			
Institutions: Mountainland			
<i>Certificate of Program Completion (Catalog Year: 2023, 10 Credits/345 Clock-Hours Required, CIP:51.0911)</i>			
<b>Core (10 Credits/345 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
LMRT 1020	Radiographic Procedures and Patient Care	4	120
LMRT 1030	Radiographic Core	3	90
LMRT 1065	Limited X-Ray Technician Clinicals	3	135



## Utah System of Higher Education

Limited X-Ray Technician

FY2023 / 10 Credits (345 Clock-Hours)

### PROGRAM DESCRIPTION

In this program, students will be instructed in the classroom and laboratory settings to learn on-the-job skills of being an x-ray tech, and then apply that knowledge in a clinical setting. Students will learn the anatomy of the human body, the types of joints, and how to position their patients for the specific exam. Students will learn how to provide exceptional patient care to those they come in contact with. Students will also learn how x-rays are produced, the behind the scene processes that all x-ray images go through, and the post processing digital techniques. The experience students will gain at their clinical sites will put them on the path to a successful career as a Limited X-ray Technologist.

#### Objectives:

- Demonstrate x-ray procedures from the top of the skull down to the lower extremities
- Provide and perform exceptional patient care to their patients, patient families, and coworkers
- Explain how the x-ray tube works, the physics behind the electrical energy and x-rays, and how x-rays are produced
- Describe the digital imaging techniques, post processing techniques, and the technical factors that are used for each exam
- Perform 135 hours of on the job training hours throughout the course of the program

### COURSE DESCRIPTIONS

#### **LMRT Procedures and Patient Care**

**4 Credits/120 Clock-Hours**

This course is designed to provide students with the knowledge and skills to take x-ray images of the chest, upper and lower limb, shoulder girdle, spine, skull, and podiatry exams. During this course students will practice taking x-rays, identifying anatomy and topical landmarks, and how to position the patient and the x-ray tube for each exam. Students will practice using post processing techniques when completing the entire process of start to finish when taking an x-ray.

#### Objectives:

- Demonstrate their anatomy and landmark knowledge of the chest, upper and lower limb, shoulder girdle, spine, skull
- Simulate the routine and special positions and projections for the chest, upper and lower limb, shoulder girdle, spine, skull, and podiatry procedures in both the lecture and lab settings
- Explain patient care procedures to be able to care for patients and their individual needs
- Use medical terminology for body positions and imaging projections
- Identify the safety protocols for each x-ray exam

#### **LMRT Radiographic Core**

**3 Credits/90 Clock-Hours**

This course is designed to teach students about x-ray imaging and exposure techniques, radiation protection, radiobiology, and radiographic physics. Students will learn how to use digital imaging techniques and post processing techniques in both the lab and in the classroom. This course will assist students in understanding the core methods of radiography.

#### Objectives:

- Describe the properties and characteristics of x-rays
- Describe the equipment and components of an x-ray room
- Demonstrate patient protection techniques to decrease the radiobiological risks
- Demonstrate digital imaging and post processing techniques

- Describe radiation physics and x-ray production circuits
- Use the key features in the digital image process and in post processing

**LMRT Clinicals I****3 Credits/135 Clock-Hours**

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This course is designed for students to take their knowledge of what they learned in the classroom and laboratory and apply it to their clinical site. Students will position patients, use proper radiation protection techniques, and take x-rays under the supervision of the x-ray department staff. Students will learn the job of an X-ray technologist through real world experiences.

**Objectives:**

- Use proper radiation protection techniques during each x-ray exam
- Execute x-ray imaging exams from start to finish under the direction of the x-ray department staff
- Select technical factors to produce quality diagnostic images with the mindset of ALARA
- Provide patient-centered care for all patients regardless of age, gender, disability, special needs, ethnicity, or culture
- Pass off X-ray competencies for the chest, upper and lower limb, shoulder girdle, spine, skull





# Utah System of Higher Education

## Radiography Technology

FY2023 / 42 Credits (1600 Clock-Hours)

<b>Radiography Technology</b>			
Institutions: Mountainland			
<i>Certificate of Program Completion (Catalog Year: 2023, 42 Credits/1600 Clock-Hours Required, CIP: 51.0911)</i>			
<b>Core (22 Credits/720 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
BLSH 1000	AHA Basic Life Support for Healthcare Providers	0	5
RADT 1020	Rad. Anatomy & Procedures	3	90
RADT 1030	Radiographic Imaging and Exposure Techniques	3	90
RADT 1050	Patient Care	1	30
RADT 1070	Rad. Clinicals I	6	270
RADT 1110	Radiology Physics	1	30
RADT 1120	Rad. Anatomy & Procedures II	3	90
RADT 1130	Radiographic Imaging II	2	60
RADT 1060	Rad Protection and Radiobiology	1	30
RADT 1170	Rad. Clinicals II	6	270
RADT 2010	Rad. And Pediatric Pathology	1	30
RADT 2020	Rad. Anatomy & Procedures III	2	60
RADT 2030	Alternate Modality and Sectional Anatomy	2	60
RADT 2070	Rad. Clinicals III	6	270
RADT 2150	Registry Review (online)	3	90
RADT 2170	Rad. Clinicals IV	2	125



## Utah System of Higher Education

Radiography Technology

FY2023 / 42 Credits (1600 Clock-Hours)

### PROGRAM DESCRIPTION

In this program, students will be instructed in the classroom and laboratory settings to learn on-the-job skills of being an x-ray tech, and then apply that knowledge in a clinical setting. You will have the opportunity to gain experience in a variety of healthcare settings including -but not limited to- hospitals, urgent care, and family practice clinics. The experience you will gain at your clinical sites will put you on the path to a successful career as a Radiographic Technologist.

#### Objectives:

- Demonstrate x-ray procedures from skull down to the lower extremity
- Perform exceptional patient care
- Explain how the x-ray tube works, the physics behind it, and how x-rays are produced
- Perform 935 on the job training hours throughout the course of the program

### COURSE DESCRIPTIONS

#### **AHA Basic Life Support for Healthcare Providers**

**0 Credits/5 Clock-Hours**

The Basic Life Support (BLS) Course for Health Care Providers is designed to provide professionals with the necessary skills to keep people alive until they can be brought to a hospital or be treated with more advanced lifesaving measures.

This course covers: adult and pediatric CPR, two-rescuer scenarios and use of the bag-valve masks, foreign-body airway obstruction, automated external defibrillation, special resuscitation situations, stroke and cardiac arrest, and other cardiopulmonary emergencies.

#### Objectives:

- Recognize several life-threatening emergencies
- Correctly perform CPR
- Correctly use an AED
- Relieve choking in a safe, timely and effective manner

#### **Rad. Anatomy & Procedures**

**3 Credits/90 Clock-Hours**

This course is designed to provide students with the knowledge and skills to take x-ray images of the chest, abdomen, upper limb, and shoulder. During this course students will practice taking x-rays, identifying anatomy and topical landmarks, and how to position the patient and the x-ray tube for each exam. Students will practice using post processing techniques when completing the entire process of start to finish when taking an x-ray.

#### Objectives:

- Demonstrate their anatomy and landmark knowledge of the chest, abdomen, upper limb, humerus, shoulder girdle
- Simulate the routine and special positions and projections for the chest, abdomen, upper limb, and shoulder procedures in both the lecture and lab settings
- Describe skeletal trauma and fracture terminology related to the chest, abdomen, upper limb, and shoulder girdle

#### **Radiographic Imaging and Exposure Techniques**

**3 Credits/90 Clock-Hours**

This course is designed to introduce and teach students about x-ray imaging and exposure techniques. In this course, students will understand how x-rays are produced, the components of an x-ray tube, what the core techniques are, and how they produce a visible image. Students will also learn the basics of digital imaging and how to use the post processing techniques properly.

Objectives:

- Describe the components of an x-ray tube, beam and how x-rays are produced
- Explain the properties and characteristics of x-rays
- Identify the different types of image receptors and explain their proper use
- Use the key features in the digital image process and in post processing

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**Patient Care****1 Credit/30 Clock-Hours**

This course is designed to provide students with the knowledge and skills that are necessary to perform exceptional care while working with patients in their clinical and job setting. Students will learn how to properly transfer patients, perform correct sterile techniques, communicate effectively, and use preventative measures for infectious diseases.

Objectives:

- List what the radiography technologist's role is and what standards they are expected to abide by
- Maintain a professional attitude toward various patient populations with an ability to meet their individual needs including those of diverse ethnicity, religion, disability, gender, age, and sexual orientation
- Use safety precautions and proper infection control procedures
- Assess the patient's needs and demonstrate proper transportation techniques to the patient if needed
- Describe sterile techniques that they will use during procedures in and out of surgery

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**Rad. Clinicals I****6 Credits/270 Clock-Hours**

This course is designed for students to take their knowledge of what they learned in the classroom and laboratory and apply it to their clinical sites. Students will position patients, use proper radiation protection techniques, and take x-rays under the supervision of the x-ray department staff. Students will learn the job of an X-ray technologist through real world experiences.

Objectives:

- Use proper radiation protection techniques during each x-ray exam
- Execute x-ray imaging exams from start to finish under the direction of the x-ray department staff
- Select technical factors to produce quality diagnostic images with the mindset of ALARA
- Pass off their X-ray Competencies for Chest, Abdomen, Upper Limb, and Shoulder Girdle

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**Radiology Physics****1 Credits/30 Clock-Hours**

This course is designed to teach students about the physics of x-ray production. Students will learn about the characteristics of an x-ray beam, how it is created, and how they travel. Students will learn the different ways that X-ray photons interact with matter and how it can affect atoms and cells. Students will also learn how electrical circuits work and the different types of circuits used in the x-ray process.

Objectives:

- Explain the difference between AC and DC circuits
- Identify and describe each part of the x-ray circuit and what it does
- Demonstrate the creation process of the x-ray beam and how it travels through the x-ray tube
- Describe the different ways that x-rays photons can interact with matter and the cause

**Rad. Anatomy & Procedures II****3 Credits/90 Clock-Hours**

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This course is designed to provide students with the knowledge and skills to take x-ray images of the lower extremities, spine, pelvis, and ribs along with practicing the exams from the semester before. During this course students will practice taking x-rays, identifying anatomy and topical landmarks, and how to position the patient and the x-ray tube for each exam. Students will practice using post processing techniques when completing the entire process of start to finish when taking an x-ray.

## Objectives:

- Demonstrate their anatomy and landmark knowledge of the lower extremities, spine, pelvis, and ribs
- Describe skeletal trauma and fracture terminology related to the lower extremities, spine, pelvis, and ribs
- Explain the routine and special positions and projections for the lower extremities, spine, pelvis, and ribs procedures in the lab setting

**Radiographic Imaging II****2 Credits/60 Clock-Hours**

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This course is designed to build upon the student's knowledge of imaging and exposure and enhance their skills as a student tech. Students will build upon their knowledge of how x-rays are created and manipulated with certain exposure values. Students will gain a better understanding of exposure techniques, digital imaging processes, automatic exposure control, and other post processing techniques. Students will practice these techniques during labs and will enhance their imaging skills.

## Objectives:

- Explain scatter radiation and the purpose of grids
- Describe the process of using AEC along with manual techniques and how it benefits their patient
- Demonstrate proficiency in the different imaging techniques and manipulation of techniques increase during time spent in the lab
- Use the specific formulas associated with image quality to make their images better

**Rad Protection and Radiobiology****1 Credits/30 Clock-Hours**

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This course is designed to teach students about radiation protection methods and the effects that can happen from radiation exposure. Students will learn about beam filtration, beam restrictors, and patient consideration. Students will learn about the ALARA principles and the importance of time, distance, and shielding. Students will learn about dosimeters and how they monitor radiation levels. Students will also learn about the biological effects of radiation and how they can affect the body.

## Objectives:

- Explain the ALARA principle and its relationship to time, distance, and shielding
- Identify the biological effects that can happen due to radiation
- Explain the difference between short- and long-term somatic effects
- Describe the methods of filtration, beam restriction, and patient consideration
- Demonstrate proper radiation protection techniques

**Rad. Clinicals II****6 Credits/270 Clock-Hours**

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This course is designed for students to take their knowledge of what they have learned and are currently learning in the classroom and laboratory and apply it to their clinical sites. Students will position patients, use proper radiation protection techniques, and take x-rays under the supervision of the x-ray department

staff. Students will also participate in other imaging exams, like fluoroscopy, surgery c-arm exams, and dexta scans. Students will learn the job of an X-ray technologist through real world experiences.

Objectives:

- Use proper radiation protection techniques during each x-ray exam
- Execute x-ray imaging exams from start to finish under the direction of the x-ray department staff
- Select technical factors to produce quality diagnostic images with the mindset of ALARA
- Pass off their X-ray Competencies for lower extremities, spine, pelvis, and ribs

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### **Rad. And Pediatric Pathology**

**1 Credits/30 Clock-Hours**

This course is designed to teach students about the different pathology cases they may see during their clinicals. Students will learn how to help pediatric patients through their entire x-ray or imaging exam. Students will be able to identify different pathologies they will see on their imaging rotations.

Objectives:

- Describe techniques to help their pediatric patients through their exam
- Demonstrate their knowledge of different pathology cases
- Identify different pediatric and adult pathologies they may see in clinicals and what they learn in class

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### **Rad. Anatomy & Procedures III**

**2 Credits/60 Clock-Hours**

This course is designed to provide students with the knowledge and skills to take x-ray images of the upper and lower GI tract, urinary tract and biliary tract along with the skull, sinus, facial bones, and trauma x-ray views. During this course, students will practice taking x-rays, identifying anatomy and topical landmarks, and using the x-ray tube with correct post processing techniques.

Objectives:

- Demonstrate their anatomy and landmark knowledge of the upper and lower GI tract, urinary tract and biliary tract along with the Skull, Sinus, Facial Bones, and trauma x-ray views
- Explain the routine and special positions and projections for the Skull, Sinus, Facial Bones procedures in the lab setting
- Describe skeletal trauma and fracture terminology related to the Skull, Sinus, and Facial Bones

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### **Alternate Modality and Sectional Anatomy**

**2 Credits/60 Clock-Hours**

This course is designed to teach students about the different imaging modalities in the field of radiology and to give students a base understanding of cross section anatomy. Students will be taught by imaging professionals who have specialized in a certain modality. Students will be able to gain more information about what they want to do in the future. Students will also be able to identify different sections of cross-sectional anatomy.

Objectives:

- Explain the difference between each imaging modality
- Describe sectional anatomy terms
- Identify different cross sections of the body

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### **Rad. Clinicals III**

**6 Credits/270 Clock-Hours**

This course is designed for students to take their knowledge of what they have learned and are currently learning in the classroom and laboratory and apply it to their clinical sites. Students will position patients, use proper radiation protection techniques, and take x-rays under the supervision of the x-ray department

staff. Students will also participate in other imaging exams, like fluoroscopy, surgery c-arm exams, and dexta scans. Students will learn the job of an X-ray technologist through real world experiences.

Objectives:

- Use proper radiation protection techniques during each x-ray exam
- Execute x-ray imaging exams from start to finish under the direction of the x-ray department staff
- Select technical factors to produce quality diagnostic images with the mindset of ALARA
- Pass off their Imaging Competencies for upper and lower GI tract, urinary tract and biliary tract along with the skull, sinus, facial bones, and trauma x-ray views

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**Registry Review (online)****3 Credits/90 Clock-Hours**

This course is designed to assist students in studying for their ARRT national board exams that they will take at the end of the program. This course will provide students with the resources, help aids, and practice exams they need to study for their national boards.

Objectives:

- Demonstrate their knowledge of the program based on their practice board exams
- Describe the format of the ARRT board exam
- Explain the main principles of radiography technology
- Demonstrate their knowledge of patient protection, patient positioning, and patient care

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**Rad. Clinicals IV****2 Credits/125 Clock-Hours**

This course is designed for students to take their knowledge of what they have learned and are currently learning in the classroom and laboratory and apply it to their clinical sites. Students will position patients, use proper radiation protection techniques, and take x-rays under the supervision of the x-ray department staff. Students will also participate in other imaging exams, like fluoroscopy, surgery c-arm exams, and dexta scans. Students will learn the job of an X-ray technologist through real world experiences.

Objectives:

- Use proper radiation protection techniques during each x-ray exam
- Execute x-ray imaging exams from start to finish under the direction of the x-ray department staff
- Select technical factors to produce quality diagnostic images with the mindset of ALARA
- Pass off their Imaging Competencies for all exams they have learned throughout the program



**Utah System of Higher Education**  
Sterile Processing Technician  
FY2023 / 24 Credits (900 Clock-Hours)

<b>Sterile Processing Technician</b>			
Institutions: Mountainland			
<i>Certificate of Program Completion (Catalog Year: 2023, 24 Credits/900 Clock-Hours Required, CIP: 51.1012)</i>			
<b>Core (25 Credits/900 Clock-Hours)</b>		<b>Credits</b>	<b>Credit Hours</b>
CSTE 1010	Intro to Sterile Processing and Decontamination	3	100
CSTE 1110	Preparation & Packaging	3	90
CSTE 1210	Sterilization & Disinfection	4	120
CSTE 1310	Storage & Distribution, QA, and Equipment	3	90
CSTE 0450	Externship	11	500



## Utah System of Higher Education

Sterile Processing Technician  
FY2023 / 24 Credits (900 Clock-Hours)

### PROGRAM DESCRIPTION

The beginning of a successful surgery begins with clean and sterile surgical instruments. As a Sterile Processing Technician, you will be an essential team member of the operating room and healthcare team. You will be responsible for the cleanliness, decontamination, inspecting and assembly of surgical instruments, packaging, and sterilization of all surgical instruments. As you pay close attention to details regarding instruments you will have to be an effective verbal and written communicator with the OR staff to make procedures a success. Sterile Processing Technicians have a strong understanding of decontamination and infection control to ensure their work protects patients and healthcare members from infections and diseases.

After completing this course, students will be prepared to take the Certified Registered Central Service Technician (CRCST) exam offered by the Healthcare Sterile Processing Association (HSPA). This program is based on the HSPA certification, CRCST.

#### Objectives:

- Identify the different instrumentation used in daily surgical procedures (scissors, forceps, clamps, retractors)
- Assemble surgical instrument trays and instruments designated for other departments (ED, Labor & Delivery, ICU, Cardiac Unit, Research)
- Demonstrate how to package single or paired instruments in paper/plastic pouches for sterilization. This packaging method is commonly known as the Peel Pack method
- Demonstrate the different processes of sterilization methods such as high-temperature and low
- Receive certification through the American Heart Association for Basic Life Support for the Healthcare Provider and First Aid
- Be able to apply safe practices regarding PPE, bloodborne pathogens, and distinguish between different levels of disinfection (High, Intermediate, Low)

### COURSE DESCRIPTIONS

#### Intro to Sterile Processing and Decontamination

**3 Credit/100 Clock-Hours**

Sterile processing technicians play an important role to ensure patient safety, infection prevention, and providing clean, sterile instruments on a regular basis for surgical procedures. Numerous processes and lab activities will help enhance the understanding of surgical instruments going from dirty, to clean, to becoming sterile, also known as One-Way-Flow. Each area in sterile processing is a building block of achieving sterile instrumentation for surgeries.

The decontamination of surgical instruments is an integral part of a sterile technician's job. Review and practice of standard operating procedures for bloodborne pathogens, standard precautions, decontamination of surgical instruments from the OR, and decontaminated to an acceptable level. Introduction of OSHA approved PPE and how to don and doff PPE will be practiced in the lab, along with other hands-on activities to practice in the lab. These activities will help reinforce the step-by-step processes the students must understand and follow through with the current standards and guidelines for decontamination in sterile processing.

#### Objectives:

- Explain the importance of the Sterile Processing Department, with an emphasis on the service provided and role of CS in quality patient care
- Identify the various elements used in medical terminology including prefixes, roots, and suffixes



- Discuss how medical terminology can refer to the human anatomy, disease processes, surgical instruments, and surgical procedures to assist the OR when specific items are needed for surgeries
- Review the structure, function, activities, and role of cells, tissues, and organs in the body and identify common surgical procedures that involve each system
- Identify pathogenic microorganisms such as bacteria, viruses, fungi and parasites, and how to prevent the spread of each pathogenic microorganism
- Recognize the differences between federal and state laws/regulations versus voluntary standards and guidelines
- Identify the need and use for thermal disinfection for infection prevention, the hazards of bloodborne pathogens
- Describe Point-of-use preparation and safety guidelines for transporting contaminated items from the OR to the decontamination area
- Discuss the purpose and set up of the decontamination sink areas including the importance of OSHA approved PPE
- The role of detergents/enzymatic cleaners, three levels of disinfection, and the steps in the pre-cleaning process

### **Preparation & Packaging**

**3 Credit/90 Clock-Hours**

Identification of surgical instruments, their function and each specialty they're used for (e.g., ortho, neuro, spine, etc.), testing methods used for specific instruments such as but not limited to laparoscopic sheath testing, scissor sharpness, tip protections and inspection for wear and tear of each instrument. Students will practice simultaneous wrapping methods, the most commonly used in the OR's, and learn to identify sterilizing methods for each instrument set. Recognize the difference and become familiar with chemical indicators, tamper-evident seals, rigid container system and list of contents with instructions on how to assemble the instrument sets for the OR.

#### Objectives:

- Explain the function, accurate, and neat, methodology for assembling instrument sets
- Recognize the areas of each instrument for inspection of debris and functionality
- Explain sterilization and the two most commonly used methods
- Identify the sterilization method and the use of chemical indicators, tamper-evident seals and packaging material for sterilization
- Understand and become familiar with count sheets or "recipes," a list of contents and details originated by the OR staff on how to assemble each instrument set
- Practice simultaneous wrapping, the most commonly used in the OR
- Demonstrate how to use "peel packs" to package single instruments when needed
- Label instrument sets for each packaging methods (rigid containers, wrapping, peel packs)
- Provide an overview of reusable and disposable packaging materials and packaging concepts including closure methods and selection factors

### **Sterilization & Disinfection**

**4 Credit/120 Clock-Hours**

High temperature and low temperature sterilization methods are the two methods of sterilization used in sterile processing. Discussion of daily testing procedures for each sterilization method, performance monitoring such as physical, biological, and chemical. Knowledge of which endospore is used for each sterilization method is crucial in order to assure sterility of surgical instruments. Record keeping and monitoring of each sterilization cycle will be practiced in the lab, as well as loading a sterilizer cart correctly.

The difference between disinfectants and the disinfection process will be discussed in great detail. Knowledge of these differences will ensure the student can recognize the three levels of disinfection; high, intermediate and low. Use of high-level disinfectants require OSHA approved PPE, while intermediate and low require minimal level of PPE to work with them. Activities on how to read different types of disinfectants, their intended use, contact times and which pathogens, if any, do they advertise to kill within the required contact time. The Chain of Infection will also be discussed in class and students will become familiar with each link and how to break in the infection process.

Objectives:

- Define the term Immediate Use Steam Sterilization and review the industry standards and procedures for use
- Describe point-of-use processing and heat-sensitive medical devices
- Discuss the advantage of steam sterilization, types and anatomy of different steam sterilizers, the sterilization cycles, conditions necessary for an effective process, and the indicators
- Recognize daily testing procedures for each sterilization method
- Understand how to document and read performance monitors for each sterilization method
- Explain the requirements and parameters of the low-temperature sterilization methods
- Understand the three levels of disinfectants and what they're used for
- Practice reading various types of disinfectants to learn how to read the instructions for use correctly
- Practice wearing PPE for lab activities which will require working with disinfectants
- Discuss the Chain of Infection and how it relates to everyday life
- Identify and break each link in the Chain of Infection

### **Storage & Distribution, QA, and Equipment**

**3 Credit/90 Clock-Hours**

Sterile storage is where the instruments are stored after the sterilization process has been completed. Items will be picked for scheduled surgical procedures and be used in the OR on a patient. Items in sterile storage must have gone through the decontamination process, assembly and packaging process, and then the sterilization process.

Distribution refers to the process of distributing sterile single use or reusable items to the OR and other areas within the hospital or facility. Sterile single use or sterile reusable items can be stored in the Sterile Storage area and picked by sterile processing personnel as the OR and/or other departments have requested. Par levels and other required processes of sterile item replenishment will be discussed in class.

Quality Assurance is the daily testing of each sterilization method, high level disinfection process, decontamination and thermal disinfection process. Daily tests are performed and results are recorded for quality assurance and auditing purposes. Learning the record keeping processes, especially with daily testing of each sterilization method, will be practiced in the lab alongside the sterilization lab activities.

Various items of equipment are used with the OR and throughout the hospital or facility. Equipment items can include: morphine drips, epidural pumps, feeding pumps, other pain management devices, etc. These equipment items are usually picked up by the sterile processing departments and disinfected using low level disinfectants. Not every hospital or facility will require sterile processing staff to complete these tasks; Distribution technicians will assume the duties in such cases and perform the necessary disinfection procedures.

Objectives:

- Discuss sterile storage and transport considerations, concerns, and guidelines

- Explain the importance of monitoring work areas and processes and recordkeeping for quality control
- Describe common quality assurance programs and procedures in the Sterile Processing department
- Explain the basics of failure mode and effects analysis and root cause analysis
- Identify the importance of inventory management and the role of Sterile Processing technicians
- Describe common inventory replenishment systems and the cycle of consumable items
- Provide an overview of the use of information management systems in Central Service Departments including features of instrument and equipment tracking systems
- Explain the importance of safety and risk management in the Central Service department including education and reporting procedures
- Review three common workplace hazards: fire, hazardous substances, and bloodborne pathogens

### **Externship**

**11 Credits/500 Clock-Hours**

Externship is arranged by the program coordinator with participating hospitals and facilities to accommodate students to work in the sterile processing departments. Students will be able to put their skills learned in the classroom and lab to use in the field. The externship may be paid if the student gains employment, as well as unpaid, if the student chooses to work in the hospital or facility on a volunteer only basis. Students will submit the hours worked and in what area (decontamination, assembly, sterilization, sterile storage, QA) to their instructor for verification of proper externship work and hours. Once the student reaches 400 externship hours, they're eligible to sit for the HSPA CRCST exam. When the student has completed 450 hours, they will have completed the program in its entirety.

#### Objectives:

- Apply the knowledge learned in the classroom to real world situations
- Demonstrate the hands-on skills mastered in the lab to the Sterile Processing departments in hospitals or facilities (Ambulatory Surgery Centers, Dental Clinics, Plastic Surgery Centers)



# Utah System of Higher Education

Truck Driver, Heavy

FY2023 / 5 Credits (160 Clock-Hours)

<b>Truck Driver, Heavy</b>			
Institutions: Mountainland			
<i>Certificate of Program Completion (Catalog Year: 2023,5 Credits/160 Clock-Hours Required, CIP: 49.9999)</i>			
<b>Core (5 Credits/160 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
TDHV 1010	Safety & Operational Techniques	2	60
TDHV 1020	On-Road Dump Trucks	1	30
TDHV 1030	Off-Road Dump Trucks	1	30
TDHV 1040	Hands on Practice	1	40



## Utah System of Higher Education

Truck Driver, Heavy

FY2023 / 5 Credits (160 Clock-Hours)

### PROGRAM DESCRIPTION

Heavy truck drivers transport goods and equipment from one location to another, often for the construction industry. They must follow all applicable traffic laws, including securing cargo for transport, using ropes, blocks, chains, or covers. They inspect their trailers before and after the trip and record any defects they find. Keep their trucks and associated equipment clean and in good working order and operate safely in often dangerous construction areas.

Objectives:

- Describe and perform safety procedures when working with heavy equipment
- Identify and perform prestart activities for heavy equipment machinery
- Identify and check specialized control systems found on on-road and off-road dump trucks

### COURSE DESCRIPTIONS

#### **Safety & Operational Techniques**

**2 Credit/60 Clock-Hours**

This course covers safety procedures for working with on-road and off-road trucks. Emphasis is placed on safe operation practices.

Objectives:

- Describe safety procedures when working with heavy equipment
- Identify safeguards used in highway construction work zones
- Describe the dangers of working around excavation areas with heavy equipment

#### **On-Road Dump Trucks**

**1 Credit/30 Clock-Hours**

This course covers techniques and procedures for working with on-road dump trucks. Emphasis is placed on safe operation practices.

Objectives:

- Identify types of on-road dump trucks
- Identify and check control instruments and control systems
- Perform preventive maintenance procedures

#### **Off-Road Dump Trucks**

**1 Credit/30 Clock-Hours**

This course covers techniques and procedures for working with off-road dump trucks. Emphasis is placed on safe operation practices.

Objectives:

- Identify different types of on-road dump trucks
- Identify and check control instruments and control systems
- Perform preventive maintenance procedures

#### **Hands on Practice**

**1 Credit/40 Clock-Hours**

This course covers techniques and procedures for working with on-road and off-road trucks. Emphasis is placed on safe operation practices.

Objectives:

- Perform basic prestart activities

- Perform basic safety measures associated with operating heavy equipment
- Start, operate, and shut down various types of heavy equipment



## Utah System of Higher Education

Clinical Lab Assistant

FY2023 / 9 Credits (365 Clock-Hours)

<b>Clinical Lab Assistant</b>			
Institutions: Salt Lake			
<i>Certificate of Program Completion (Catalog Year: 2023, 9 Credits/365 Clock-Hours Required, CIP: 51.0802)</i>			
<b>Core (9 Credits/365 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
KAOS 0170	Computer Concepts	1	30
KMOA 0111	Medical Terminology	2	70
KCLA 0010	Intro to Healthcare	1	50
KCLA 0020	Admin Healthcare Procedures	1	45
KCLA 0030	Basic Healthcare Procedures	1	50
KCLA 0040	Clinical Lab Procedures I	3	105
KWRK 0515	Job Seeking Skills	0	15
<b>Non-Required Electives (0 Credits/0 Clock-Hours Required)</b>			
KCLA 0050	Clinical Lab Externship	1	64



## Utah System of Higher Education

Clinical Lab Assistant

FY2023 / 9 Credits (365 Clock-Hours)

### PROGRAM DESCRIPTION

The Clinical Lab Assistant Program, a Competency Based Education training program, will provide students with the necessary knowledge and skills to competently perform the duties of a medical laboratory assistant. Clinical Lab Assistants are trained to work in doctors' offices, hospital laboratories and other outpatient labs as an integral member of the allied health care delivery team.

The curriculum will allow the students to gain competency in cognitive, psychomotor and affective competencies. The program will be offered in a flexible open entry / open exit format.

Instruction will be achieved with a combination of online, classroom, laboratory, and clinical activities

Upon successful completion of the coursework at a satisfactory rate of 80% or better and receipt of all necessary documentation the student will receive the Certificate of Achievement.

#### Objectives:

- Demonstrate ability to use a computer and utilize computer programs to complete basic tasks
- Demonstrate ability to manage files and folder
- Define and use medical terminology, basic word structure, and body organization
- Define and use medical terminology suffixes and prefixes
- Define and use medical terminology for medical specialties and body systems
- Define the history of medicine, the role of the clinical lab assistant, medical specialties, credentialing and personal attributes of health care personnel
- Define and use legal and ethical standards in health care
- Demonstrate principles of HIPAA regulations
- Demonstrate knowledge of patient communication and cultural diversity in health care
- Demonstrate reception, general office duties, appointment scheduling and written communication in a health care setting
- Create patient records and demonstrate correct filing
- Perform appointment scheduling, patient registration and medical record maintenance electronically
- Apply CDC and OSHA guidelines for personal safety and asepsis while performing aseptic and sterilization techniques and procedures
- Obtain accurate vital signs using correct procedures
- Demonstrate first aid techniques and Healthcare Provider level CPR as defined by the American Heart Association
- Define anatomy of venous structures and successfully perform technically correct and safe venipuncture using vacutainer, butterfly and syringe techniques and correctly process the specimen
- Define and demonstrate basic concepts of clinical lab procedures, safety and proper use of the microscope
- Define and demonstrate CLIA waived testing in hematology and serology
- Define and demonstrate laboratory testing in microbiology and urinalysis
- Find job leads and connections
- Create resume and cover letter
- Complete job application and follow-up
- Perform well in a job interview



## **COURSE DESCRIPTIONS**

### **Computer Concepts**

**1 Credit/30 Clock-Hours**

In this course, you will learn about basic computer concepts that will help you succeed in your program of study. This course is the foundation course for all programs. The skills you learn in this course will be used through all your courses you take. As you progress through this course, you will be completing a series of activities that will build your computer knowledge and skills. Your knowledge and skills will add up to become a competency.

#### Objectives:

- Use the basic features of a learning management system to complete course work
  - Demonstrate how to successfully login and log off of Canvas
  - Demonstrate how to find a course
  - Show how to navigate through a course
  - Demonstrate how to submit assignments
  - Complete assessments
  - Demonstrate how to check grades
- Explain the parts of a computer and functionality of the hardware components.
  - Describe the purpose of the basic hardware parts of a computer
  - Describe the functionality of computer components
- Demonstrate a basic ability to use a computer running either a Windows or Apple operating system
  - Demonstrate how to turn on the computer and login to the computer
  - Use basic desktop elements to complete tasks
  - Demonstrate file management skills
  - Demonstrate how to log off and shut down the computer
- Use Microsoft Word to generate documents
  - Start Microsoft Word and choose a blank document
  - Create and format a document using the tools on the Ribbon
  - Save a document using the Backstage view
- Use a search engine to find information on the Internet
  - Differentiate between a search engine and browser
  - Identify relevant keywords to perform an Internet search
  - Use Internet search criteria to build web search queries
  - Determine if the website is a credible source
  - Explain malware and the kinds of damage it can cause to a computer

### **Medical Terminology**

**2 Credits/70 Clock-Hours**

This course will introduce you to the skills necessary to interpret and understand medical terminology, in order to be successful in the pursuit of health occupation careers. This is accomplished by utilizing a method of study that not only instructs the students in building medical terms but also gives the student immediate application in utilizing the medical term. By knowing this you will recognize and understand this new language that will be essential as you begin a career in the healthcare environment!

#### Objectives:

- Define and use medical terminology basic word structure and body organization
- Define and use medical terminology suffixes and prefixes
- Define and use medical terminology for medical specialties and body systems

**Intro to Healthcare****1 Credit/50 Clock-Hours**

In this course, you will get an overview of the various healthcare professions and roles in the healthcare environment, introduction to the legal and ethical issues within the healthcare setting, professional behavior, basic principles of communication and the impact of ethnic cultures in healthcare.

**Objectives:**

- Describe foundational information related to the medical field
- Explain the reasons professionalism and work ethics are important in the medical field
- Apply ethical standards in healthcare
- Apply legal expectations in healthcare
- Demonstrate the principles of HIPAA regulations by completing the HIPAA certification
- Demonstrate communication skills within a healthcare setting

**Admin Healthcare Procedures****1 Credit/45 Clock-Hours**

Provides training in proficient medical office communication, front office administrative skills, and the fundamentals of beginning and tracking a patient record using both paper and electronic medical record (EMR) software.

**Objectives:**

- Demonstrate written communication in a healthcare setting
- Apply proper telephone techniques in a healthcare setting
- Apply proper patient reception and appointment scheduling techniques in a healthcare setting
- Apply daily operations in a healthcare setting
- Demonstrate how to properly create and maintain electronic medical records
- Apply meaningful use strategies to meet quality improvement outcome initiatives

**Basic Healthcare Procedures****1 Credit/50 Clock-Hours**

Provides guidelines to learn about and apply standards of CDC and OSHA in regard to personal safety, asepsis, standard precautions and handling of biohazard wastes. Provides fundamental understanding and skills to obtain vital signs, basic first aid and healthcare provider level CPR.

**Objectives:**

- Explain the transmission of disease
- Differentiate aspects of medical asepsis and sterilization
- Perform aseptic techniques and sterilization procedures
- Apply CDC and OSHA guidelines for personal safety
- Obtain accurate vital signs using correct procedures
- Demonstrate first aid techniques
- Demonstrate Healthcare Provider level CPR as defined by the American Heart Association

**Clinical Lab Procedures I****3 Credits/105 Clock-Hours**

Provides understanding of phlebotomy theory and skill performance; and of basic concepts, safety and procedures of the clinical lab. Learn proper handling and performance of CLIA waived hematology/serology labs and proper specimen handling and performance of microbiology and urinalysis testing.

**Objectives:**

- Differentiate the anatomy of venous structures essential in phlebotomy
- Recognize legal aspects of phlebotomy

- Distinguish equipment and supplies used to obtain blood samples
- Successfully perform technically correct and safe venipuncture using vacutainer butterfly, and syringe techniques
- Process laboratory specimens using proper techniques
- Utilize basic concepts of clinical lab procedures
- Practice clinical laboratory safety procedures
- Demonstrate proper use of laboratory equipment
- Discuss CLIA waived testing in hematology and serology
- Demonstrate CLIA waived testing in hematology and serology
- Discuss laboratory testing in microbiology
- Demonstrate laboratory testing in microbiology
- Discuss laboratory testing of urine samples
- Demonstrate laboratory testing of urine samples

### **Job Seeking Skills**

**0 Credits/15 Clock-Hours**

This course will prepare you to succeed, as we explore a variety of tools and strategies, to make your transition to employment as smooth as possible. Proper preparation is often as important as the skills you have already acquired. The process of obtaining employment is often discouraging and grueling. The Job Seeking Skills course will cover many aspects of job searching, including; summarizing your skills, searching for job leads in unconventional ways, filling out applications, writing a resume and cover letter, interview etiquette, and lastly, a follow up letter.

#### Objectives:

- The student will be able to identify and explain personal employment direction and qualifications.
- The student will be able to complete the job application process.
- The student will be able to search for employment in their area of study and explain how social media will impact a job search.
- The student will be able to successfully complete a 20-minute mock interview.

### **Non-Required Electives (0 Credits/0 Clock-Hours Required)**

#### **Clinical Lab Externship**

**1 Credit/64 Clock-Hours**

This stand-alone course is not a required part of the Clinical Lab Assistant program but can provide an opportunity for students that have completed that program to demonstrate and practice their laboratory skills learned in the classroom in a clinical setting with the oversight of the clinical supervisor. This allows the student to obtain real-world laboratory experience that will enhance their knowledge and skills, and allow them to obtain the required laboratory hours needed for a national certification exam for this vocation. This is an unpaid practicum experience that is an extension of your classroom training and will include tuition to SLCC SAT.

#### Objectives:

- Apply knowledge related to Clinical Laboratory procedures, processes, and environment
- Perform Clinical Laboratory procedures safely and accurately
- Demonstrate professional behaviors in the healthcare setting



**Utah System of Higher Education**  
 Medical Office Administration  
 FY2023 / 21 Credits (795 Clock-Hours)

<b>Medical Office Administration</b>			
<b>Institutions: Salt Lake Community College</b>			
<i>Certificate of Program Completion (Catalog Year: 2023, Required Credits/Clock-Hours: 21 Credits/795 Clock-Hours)</i>			
<b>Core (21 Credits/795 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
KAOS 0170	Computer Concepts	1	30
KAOS 0500	Word Basics	1	40
KAOS 0400	Business Writing	2	70
KAOS 0600	Spreadsheets I	1	40
KMOA 0111	Medical Terminology	2	70
KMOA 0145	Anatomy & Physiology	1	50
KMOA 0120	Medical Law & Ethics	2	60
KMOA 0130	Psychology for Healthcare	1	30
KMOA 0155	Medical Office Procedures I	2	60
KMOA 0170	Medical Office Procedures II	2	60
KMOA 0180	Medical Office Procedures III	2	60
KMOA 0101	First Aid/CPR	0	10
KAOS 0300	Customer Relations	1	40
KWRK 0515	Job Seeking Skills	0	15
KMOA 0211	Med Office Externship	3	160
<b>TOTALS</b>		<b>21</b>	<b>795</b>



## Utah System of Higher Education

Medical Office Administration

FY2023 / 21 Credits (795 Clock-Hours)

### PROGRAM DESCRIPTION

The Medical Office Administration Program, a Competency Based Education training program, will provide students with the necessary knowledge and skills to competently perform the duties of administrative medical office staff as defined by local and national standards. Medical Office Administration employees are trained primarily to work in doctors' offices and other ambulatory care clinics as an integral member of the allied health care delivery team helping with administrative tasks including business functions, medical records, patient intake, billing and insurance and other front office tasks.

The Medical Office Administration program will be offered in a flexible open entry / open exit format. They will be trained in administrative areas of medical office along with CPR and First Aid, anatomy, physiology and medical terminology. The curriculum will allow the students to gain competency in cognitive, psychomotor and affective competencies.

Instruction will be achieved with a combination of online, classroom and clinical activities that will include experience in a healthcare facility. Students must demonstrate proficiency by passing all courses and competencies required in the program before being placed in a clinical site for the externship. Students complete a 160-hour unpaid clinical externship at a health care facility contracted with the college. Students are required to provide the externship coordinator of the Applied Technology division of the School of Applied Technology and Professional Development, evidence of completion of these hours and satisfactory performance signed by the clinical administrative supervisor.

Upon successful completion of the coursework and externship at a satisfactory rate of 80% or better and receipt of all necessary documentation the student will receive the Certificate of Completion.

#### Objectives:

- Demonstrate ability to use a computer and utilize computer programs to complete basic tasks
- Demonstrate ability to manage files and folder
- Define and use medical terminology basic word structure and body organization
- Define and use medical terminology suffixes and prefixes
- Define and use medical terminology for medical specialties and body systems
- Define legal and ethical responsibilities in healthcare
- Define privacy practices and HIPAA regulations in the medical setting
- Define legal terms
- Define the developmental stages related to psychology and patient communication
- Interpret the impact of cultural differences in healthcare
- Define and use medical terms used in psychiatry
- Define anatomy and physiology in relation to planes, cavities, regions, directions and systems
- Define anatomy, physiology, pathologies and associated treatment in relation to the integumentary system, skeletal system, muscular system, and nervous system
- Define anatomy, physiology, pathologies, and associated treatment in relation to the endocrine system, cardiovascular system, lymphatic system, and digestive system.
- Define anatomy, physiology, pathologies and associated treatment in relation to the respiratory system, urinary system and reproductive system
- Define the history of medicine, the role of the medical assistant, medical specialties, credentialing and personal attributes of health care personnel

- Apply proper telephone techniques, patient reception, appointment scheduling techniques and daily operations in a healthcare setting
- Create professional written communications
- Prepare patient records on paper and electronically including correct use of health information management
- Perform financial office procedures related to health care environment on paper and electronically
- Define medical office management
- Apply healthcare insurance types, utilization, and guidelines
- Utilize diagnostic coding systems
- Utilize procedural coding systems
- Demonstrate first aid techniques
- Demonstrate Healthcare Provider level CPR as defined by the American Heart Association
- Find job leads and connections
- Create resume and cover letter
- Complete job application and follow-up
- Perform well in a job interview

## **COURSE DESCRIPTIONS**

### **Computer Concepts**

**1 Credit/30 Clock-Hours**

In this course, you will learn about basic computer concepts that will help you succeed in your program of study. This course is the foundation course for all programs. The skills you learn in this course will be used through all your courses you take. As you progress through this course, you will be completing a series of activities that will build your computer knowledge and skills. Your knowledge and skills will add up to become a competency.

#### **Objectives:**

- Use the basic features of a learning management system to complete course work.
  - Demonstrate how to successfully login and logoff of Canvas
  - Demonstrate how to find a course
  - Show how to navigate through a course
  - Demonstrate how to submit assignment
  - Complete assessments
  - Demonstrate how to check grades
- Explain the parts of a computer and functionality of the hardware components
  - Describe the purpose of the basic hardware parts of a computer
  - Describe the functionality of computer components
- Demonstrate a basic ability to use a computer running either a Windows or Apple operating system
  - Demonstrate how to turn on the computer and login to the computer
  - Use basic desktop elements to complete tasks
  - Demonstrate file management skills
  - Demonstrate how to log off and shut down the computer
- Use Microsoft Word to generate document
  - Start Microsoft Word and choose a blank document
  - Create and format a document using the tools on the Ribbon
  - Save a document using the Backstage view
- Use a search engine to find information on the Internet
  - Differentiate between a search engine and browser

- Identify relevant keywords to perform an Internet search
- Use Internet search criteria to build web search queries
- Determine if the website is a credible source
- Explain malware and the kinds of damage it can cause to a computer

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### **Word Basics**

**1 Credit/40 Clock-Hours**

Course will introduce student to the basic functions and uses of MS Word software application, including the formatting and editing of documents, as well as features such as tables, styles, and mail merge. Prepares students with elements required for MOS exam.

Objectives:

- Demonstrate the use of the college LMS
- Demonstrate how to open, close, create, save, rename, and print MS Word documents
- Demonstrate how to use clipboard for cutting, copying and pasting functions
- Demonstrate how to format and edit text, tables, paragraphs, and pages
- Demonstrate how to add themes, styles, and templates to a document
- Demonstrate how to manage headers, footers, sections, and mail merge
- Demonstrate how to use macros
- Demonstrate how to use mail merge

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### **Business Writing**

**2 Credits/70 Clock-Hours**

Course presents elements of business writing, including grammar and proofreading review. Student will develop various business communication documents, including memos, email, and resumes.

Course presents elements of business writing, including grammar and proofreading review. Student will develop various business communication documents, including memos, email, and resumes.

Objectives:

- Navigate and use the school LMS
- Demonstrate the correct use of English grammar
- Identify common grammar errors
- Proofread a document for errors
- Create a variety of business documents, including emails, memos, and letters in proper format
- Develop a complete, ready-to-go resume, cover letter, and thank you note

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### **Spreadsheets I**

**1 Credit/40 Clock-Hours**

Course covers basic applications of Excel software. Coverage includes formatting and modifying cells and worksheets, use of simple functions, and creation of charts.

Objectives:

- Demonstrate the use of the college LMS
- Demonstrate how to open, close, create, save and rename, and print MS Excel workbooks
- Demonstrate how to use the clipboard for cutting, copying and pasting functions
- Demonstrate how to format text and cells
- Demonstrate how to enter simple functions
- Demonstrate how to create charts to display data
- Demonstrate how to organize data into tables

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### **Medical Terminology**

**2 Credits/70 Clock-Hours**

This course will introduce you to the skills necessary to interpret and understand medical terminology, in order to be successful in the pursuit of health occupation careers. This is accomplished by utilizing a method of study that not only instructs the students in building medical terms but also gives the student immediate application in utilizing the medical term. By knowing this you will recognize and understand this new language that will be essential as you begin a career in the healthcare environment!

Objectives:

- Define and use medical terminology basic word structure and body organization
- Define and use medical terminology suffixes and prefixes
- Define and use medical terminology for medical specialties and body systems

### **Anatomy & Physiology**

**1 Credit/50 Clock-Hours**

Anatomy and physiology is the study of the structure and function of the human body. This course includes a review of all organ systems and includes disease processes and diagnostic treatment. It is important for a future healthcare professional to have a basic understanding of the structure of the body which is the anatomy portion. It is equally important to understand how each of the body systems functions by itself as well as working in collaboration with the other body systems.

Objectives:

- Interpret anatomy and physiology in relation to planes, cavities, regions, directions and systems
- Interpret basic anatomy, physiology, and pathologies as it relates to
  - Integumentary system
  - Skeletal system
  - Muscular system
  - Nervous system
  - Endocrine system
  - Cardiovascular system
  - Lymphatic system
  - Digestive system
  - Respiratory system
  - Urinary system
  - Reproductive system

### **Medical Law & Ethics**

**2 Credits/60 Clock-Hours**

This course provides the student exposure to the legal and ethical issues that impact the healthcare setting.

Objectives:

- Recognize the meaning and use of legal terminology
- Apply legal expectations in healthcare
- Apply ethical standards in healthcare
- Demonstrate the principles of HIPAA regulations by completing the certification

### **Psychology for Healthcare**

**1 Credit/30 Clock-Hours**

In this course, you will get an overview of the basic principles of communication and the impact of ethnic cultures in healthcare.

Objectives:

- Demonstrate communication skills within a healthcare setting



- Demonstrate cultural competence
- Define basic terms and conditions in psychiatry

### **Medical Office Procedures I**

**2 Credits/60 Clock-Hours**

This course is designed to teach foundational information for those entering the healthcare field and the basic skills needed to perform clerical functions efficiently in a medical office setting.

Objectives:

- Describe foundational information related to the medical field
- Explain the reasons professionalism and work ethics are important in the medical field
- Demonstrate written communication in a healthcare setting
- Apply proper telephone techniques in a healthcare setting
- Apply proper patient reception and appointment scheduling techniques in a healthcare setting
- Apply daily operations in a healthcare setting
- Demonstrate how to properly create and maintain paper medical records
- Demonstrate how to properly create and maintain electronic medical records
- Apply meaningful use strategies to meet quality improvement outcome initiatives
- Demonstrate the principles of OSHA regulations by completing the OSHA certifications
- Describe Medication uses, names, classifications, and risks
- Explain the role of government agencies and regulation of medications
- Interpret medical documentation related to prescribed medications
- Describe various elements used when delivering patient education

### **Medical Office Procedures II**

**2 Credits/60 Clock-Hours**

This course is designed to instruct the medical assistant student in the basic skills necessary to perform bookkeeping and financial functions in a medical setting.

Objectives:

- Perform financial office procedures related to health care environment on paper and electronically
- Define medical office management

### **Medical Office Procedures III**

**2 Credits/60 Clock-Hours**

This course is designed to instruct the medical office administration student in the basic skills necessary to perform proper insurance, coding and billing procedures.

Objectives:

- Utilize diagnostic coding systems
- Utilize procedural coding systems
- Define healthcare insurance types, utilization, and guidelines
- Utilize health insurance claims

### **First Aid/CPR**

**0 Credits/10 Clock-Hours**

With the completion of this class, the student will understand the importance of knowing what to do in a timely manner during and shortly after a medical emergency. Students will learn basics to control bleeding, perform CPR, and monitor a patient until advanced help arrives.

Objectives:

- Demonstrate first aid techniques

- Demonstrate Healthcare Provider level CPR as defined by the American Heart Association

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**Customer Relations****1 Credits/40 Clock-Hours**

This course will provide training in professional customer relationship skills, including time management, customer interaction skills, managing difficult customers, and stress management.

Objectives:

- Navigate and use the school LMS.
- Demonstrate exceptional customer service skills.
- Explain workplace skills as a customer service representative.
- Describe the importance of ethics in customer relations.
- Demonstrate professionalism as a customer service representative.
- Evaluate a given customer service dilemma or problem and apply a solution.
- Apply customer service communication using voicemail
- Explain techniques for stress management

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**Job Seeking Skills****0 Credits/15 Clock-Hours**

This course will prepare you to succeed, as we explore a variety of tools and strategies, to make your transition to employment as smooth as possible. Proper preparation is often as important as the skills you have already acquired. The process of obtaining employment is often discouraging and grueling. The Job Seeking Skills course will cover many aspects of job searching, including; summarizing your skills, searching for job leads in unconventional ways, filling out applications, writing a resume and cover letter, interview etiquette, and lastly, a follow up letter.

Objectives:

- Identify and explain personal employment direction and qualifications
- Complete the job application process
- Search for employment in their area of study and explain how social media will impact a job search
- Successfully complete a 20-minute mock interview

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**Medical Office Externship****3 Credit/160 Clock-Hours**

This course allows the medical office administration student the opportunity to demonstrate their administrative skills in a health care setting. This non-paid externship takes place in a working medical office or clinic under the supervision of a licensed physician.

Objectives:

- Apply knowledge related to Medical Office Administration procedures, processes, and environment
- Perform Medical Office Administration procedures safely and accurately
- Demonstrate professional behaviors in the healthcare setting



**Utah System of Higher Education**  
Advanced Energy Transportation  
FY2023 / 8 Credits (240 Clock-Hours)

<b>Advanced Energy Transportation</b>				
Institutions: Uintah Basin				
<i>Certificate of Program Completion (Catalog Year: 2023, 8 Credits/240 Clock-Hours Required, CIP: 49.0205)</i>				
<b>Core (15 Credits/540 Clock-Hours)</b>			<b>Credits</b>	<b>Clock-Hours</b>
TDRV 5010	Energy Transportation Practicum		8	240



## Utah System of Higher Education

Advanced Energy Transportation  
FY2023 / 8 Credits (240 Clock-Hours)

### PROGRAM DESCRIPTION

The Advanced Energy Transportation certificate program will teach students how to safely transport live loads, identify different types of long combination vehicles (LCV) and the coupling and uncoupling process of LCV. The student will experience the loading and unloading process on simulated and or live production sites and will be introduced to the basic principles and processes of buying oil. Students will receive training to test for the required hazmat endorsement.

#### Objectives:

- Explain the safety requirements of transporting live loads
- Obtain the HM-126 Hazmat certification
- Discuss the concerns associated with H<sub>2</sub>S/4 Gas Meter Awareness
- Explain the concepts associated with SCBA Awareness
- Discuss the strategies of buying oil/grinding
- Demonstrate LCV coupling and uncoupling
- Long Combination Vehicle Training
- Demonstrate proper loading and unloading techniques
- Perform safe driving practices

### COURSE DESCRIPTIONS

#### Energy Transportation Practicum

**8 Credit/240 Clock-Hours**

This course will teach students how to safely transport live loads, identify different types of long combination vehicles (LCV) and the coupling and uncoupling process of LCV. The student will experience the loading and unloading process on simulated and or live production sites and will be introduced to the basic principles and processes of buying oil. Students will receive training to test for the required hazmat endorsement.

#### Objectives:

- Explain the safety requirements of transporting live loads
- Obtain the HM-126 Hazmat certification
- Discuss the concerns associated with H<sub>2</sub>S/4 Gas Meter Awareness
- Explain the concepts associated with SCBA Awareness
- Discuss the strategies of buying oil/grinding
- Demonstrate LCV coupling and uncoupling
- Long Combination Vehicle Training
- Demonstrate proper loading and unloading techniques
- Perform safe driving practices



# Utah System of Higher Education

Introduction to Pumping

FY2023 / 1 Credit (50 Clock-Hours)

<b>Introduction to Pumping</b>			
Institutions: Uintah Basin			
<i>Certificate of Program Completion (Catalog Year: 2023, 1 Credit/50 Clock-Hours Required, CIP:15.0703)</i>			
<b>Core (15 Credits/540 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
SAFT 1001	Basic Safety	0	12
PETT 1001	Introduction to Pumping	1	38



# Utah System of Higher Education

Introduction to Pumping  
FY2023 / 1 Credit (50 Clock-Hours)

## PROGRAM DESCRIPTION

The Introduction to Pumping program prepares students for work in the oil and gas industry.

Objectives:

- Obtain OSHA 10 certification
- Identify basic H2S training that will prepare them to complete tasks on location
- Explain the history of the oil and gas industry
- Describe the equipment used on location
- Define the duties needed to safely perform the required task on an oil and gas well location
- Explain the concepts for an introductory pumper be successful

## COURSE DESCRIPTIONS

### Basic Safety

**0 Credit/12 Clock-Hours**

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This course will guide the students through the OSHA 10 certification and basic H2S training.

Objectives:

- Obtain OSHA 10 certification
- Explain H2S safety protocols

### Introduction to Pumping

**1 Credits/38 Clock-Hours**

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In this course, students receive training in the history and equipment on oil and gas locations. Learn to safely perform required task on equipment at oil and gas location.

Objectives:

- Discuss the history of oil and gas industry
- Identify basic equipment of oil and gas well location
- Safely practice basic required tasks on location



# Utah System of Higher Education

Tower Technician

FY2023 / 3 Credits (90 Clock-Hours)

<b>Tower Technician</b>			
Institutions: Uintah Basin			
<i>Certificate of Program Completion (Catalog Year: 2023, 3 Credits/ 90 Clock-Hours Required, CIP: 15.0305)</i>			
<b>Core (3 Credits/90 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Tower Technician Practicum	3	90



# Utah System of Higher Education

Tower Technician

FY2023 / 3 Credits (90 Clock-Hours)

## PROGRAM DESCRIPTION

The Tower Technician program will train students for entry level positions as tower technicians. Entry level tower technicians safely perform work on telecommunication sites under direct supervision. As a tower technician you need to be comfortable working with heights and being outside in various weather conditions. Students will obtain certifications in climbing, safety and fall protection.

Objectives:

- Receive training for necessary certifications
- Demonstrate knowledge of compounding/grounding, microwave, and cellular basics
- Practice and master climbing and rescue techniques

## COURSE DESCRIPTIONS

### Tower Technician Practicum

**3 Credit/90 Clock-Hours**

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Learn tower installation, maintenance, and repair. Apply application codes and safety standards

Objectives:

- Certify in standards, safety, and hand signals of a crane spotter/signal person
- Certify in RF awareness
- Certify in use of Capstan hoist
- Certify in first aid/CPR
- Certify in OSHA 10
- Rescue victim on tower to certify as authorized climber/rescuer
- Climb 100' tower to certify as confident climber
- Certify in proper rigging techniques and perform competent lift
- Certify as manlift operator
- Certify as forklift operator
- Demonstrate knowledge of compound/grounding basics
- Demonstrate knowledge of microwave basics
- Demonstrate knowledge of cellular basics
- Draft marketable resume, model quality communication, and perform elevator pitch
- Attend career day and interview for job openings





**Utah System of Higher Education**  
Advanced Emergency Medical Technician  
FY2023 / 6 Credits (186 Clock-Hours)

<b>Advanced Emergency Medical Technician</b>			
Institutions: Davis, Dixie, Mountainland, Salt Lake, Southwest			
<i>Certificate of Program Completion (Catalog Year: 2023, 3 Credits/186 Clock-Hours Required, CIP: 51.0904)</i>			
<b>Core (6 Credits/186 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Advanced Emergency Medical Technician	6	186



## Utah System of Higher Education

Advanced Emergency Medical Technician

FY2023 / 6 Credits (186 Clock-Hours)

### Program Description

Advanced Emergency Medical Technicians provide basic and limited advanced emergency medical care and transportation of critical and emergent patients who access the emergency medical system (EMS). Advanced Emergency Medical Technicians (AEMTs) possess the fundamental knowledge and skills necessary to provide patient care and transportation. Advanced Emergency Medical Technicians function as part of a comprehensive EMS response, under medical oversight. Advanced Emergency Medical Technicians perform interventions with the basic and advanced equipment typically found on an ambulance. Advanced Emergency Medical Technicians function as a link between the scene and the emergency health care system.

### Objectives:

Upon program completion, students will be able to:

- Demonstrate fundamental skills and knowledge of the following areas: the EMS system, the safety/well-being of the AEMT, and the medical, legal, and ethical issues to the provision of emergency care
- Integrate complex knowledge of the anatomy and physiology of the airway, respiratory, and circulatory systems to the practice of EMS
- Use foundational anatomical and medical terms and abbreviations in written and oral communication with colleagues and other health care professionals
- Apply comprehensive knowledge of the pathophysiology of respiration and perfusion to patient assessment and management
- Apply fundamental knowledge of lifespan development to patient assessment and management
- Utilize the foundational principles of the role of EMS during public health emergencies
- Apply (to patient assessment and management) fundamental knowledge of the medications carried by AEMTs that may be administered to a patient during an emergency
- Apply knowledge (fundamental depth, foundational breadth) of anatomy and physiology to patient assessment and management in order to assure a patient airway, adequate mechanical ventilation, and respiration for patients of all ages
- Interpret scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management
- Provide basic and selected advanced emergency care and transportation based on assessment findings for an acutely ill patient
- Provide basic and selected advanced emergency care and transportation based on assessment findings for a patient in shock, respiratory failure or arrest, cardiac failure or arrest, and post-resuscitation management
- Provide basic and selected advanced emergency care and transportation based on assessment findings for an acutely injured patient
- Utilize principles of growth, development, aging, and assessment findings to provide basic and selected advanced emergency care and transportation for a patient with special needs
- Perform in accordance with operational roles and responsibilities to ensure patient, public, and personnel safety when responding to an emergency

### COURSE DESCRIPTIONS

**Advanced Emergency Medical Technician**

**6 Credits/186 Clock-Hours**

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Advanced Emergency Medical Technicians provide basic and limited advanced emergency medical care and transportation for critical and emergent patients who access the emergency medical system (EMS). Advanced Emergency Medical Technicians (AEMTs) possess the basic knowledge and skills necessary to provide patient care and transportation. Advanced Emergency Medical Technicians function as part of a comprehensive EMS response, under medical oversight. Advanced Emergency Medical Technicians perform interventions with the basic and advanced equipment typically found on an ambulance. The Advanced Emergency Medical Technician is a link from the scene to the emergency health care system. This course includes 6 hours of externship hours to be completed outside of the classroom time.

Objectives:

- Demonstrate fundamental skills and knowledge of the following areas: the EMS system, the safety/well-being of the AEMT, and the medical, legal, and ethical issues to the provision of emergency care
- Integrate complex knowledge of the anatomy and physiology of the airway, respiratory, and circulatory systems to the practice of EMS
- Use foundational anatomical and medical terms and abbreviations in written and oral communication with colleagues and other health care professionals
- Apply comprehensive knowledge of the pathophysiology of respiration and perfusion to patient assessment and management
- Apply fundamental knowledge of lifespan development to patient assessment and management
- Utilize the foundational principles of the role of EMS during public health emergencies
- Apply (to patient assessment and management) fundamental knowledge of the medications carried by AEMTs that may be administered to a patient during an emergency
- Apply knowledge (fundamental depth, foundational breadth) of anatomy and physiology to patient assessment and management in order to assure a patient airway, adequate mechanical ventilation, and respiration for patients of all ages
- Interpret scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management
- Provide basic and selected advanced emergency care and transportation based on assessment findings for an acutely ill patient
- Provide basic and selected advanced emergency care and transportation based on assessment findings for a patient in shock, respiratory failure or arrest, cardiac failure or arrest, and post-resuscitation management
- Provide basic and selected advanced emergency care and transportation based on assessment findings for an acutely injured patient
- Utilize principles of growth, development, aging, and assessment findings to provide basic and selected advanced emergency care and transportation for a patient with special needs
- Perform in accordance with operational roles and responsibilities to ensure patient, public, and personnel safety when responding to an emergency



**Utah System of Higher Education**  
Electrical Apprenticeship  
FY2023 / 24 Credits (720 Clock-Hours)

<b>Electrical Apprenticeship</b>			
Institutions: Bridgerland, Davis, Dixie, Mountainland, Ogden-Weber, Salt Lake, Southwest, Tooele, Uintah Basin, USU-Eastern			
<i>Certificate of Program Completion (Catalog Year: 2023, 24 Credits/720 Clock-Hours Required, CIP: 46.0302)</i>			
<b>Core (24 Credits/720 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Electrician Apprentice IA	3	90
PREF XXXX	Electrician Apprentice IB	3	90
PREF XXXX	Electrician Apprentice IIA	3	90
PREF XXXX	Electrician Apprentice IIB	3	90
PREF XXXX	Electrician Apprentice IIIA	3	90
PREF XXXX	Electrician Apprentice IIIB	3	90
PREF XXXX	Electrician Apprentice IVA	3	90
PREF XXXX	Electrician Apprentice IVB	3	90



## Utah System of Higher Education

Electrical Apprenticeship

FY2023 / 24 Credits (720 Clock-Hours)

### PROGRAM DESCRIPTION

The Electrical Apprenticeship program provides a solid understanding of the National Electrical Code (NEC), its layout, the requirements for different electrical systems, and the components of those systems. This program discusses the risks involved with electricity and electrical systems as well as the safety equipment and measures that are in place to protect electricians and the general public alike.

Objectives:

- Apply of the National Electrical Code (NEC)
- Navigate the National Electrical Code (NEC)
- Calculate the sizes of different electrical system parts
- Explain the application of A/C and D/C electrical theory
- Explain Electrical Safety procedures, processes, and equipment
- Wire electrical circuits per National Codes and safety regulations

### COURSE DESCRIPTIONS

#### Electrician Apprentice IA

**3 Credits / 90 Clock-Hours**

The Electrician Apprentice IA course establishes a solid foundation in electrical fundamentals and the study of basic electrical theory. This course addresses math applications as they relate to the electrical field. In this course, students will use the National Electrical Code (NEC) to apply code requirements to electrical systems. Students will learn and practice in the basics of conduit bending. Students will be introduced to electrical and jobsite hazards and workplace safety.

Objectives:

- Demonstrate a proficiency in general math skills with an emphasis on how they relate to the electrical field
- Identify electrical and jobsite hazards
- Explain workplace safety
- Apply Mathematical Principles to Conduit Bending
- Demonstrate a practical application of conduit bending
- Explain the Fundamentals of Electrical Theory
- Explain the Fundamentals of Electrical Circuitry
- Demonstrate the application of the National Electrical Code (NEC) Articles 090-240
- Demonstrate how to navigate the National Electrical Code (NEC) Articles 090-240

#### Electrician Apprentice IB

**3 Credits / 90 Clock-Hours**

The Electrician Apprentice IB course continues the study of electrical theory and its application within the electrical field. In this course, students will learn how devices and electrical systems work. Students will also explore lock out tag out, learn what makes a qualified person, and become more familiar with the National Electrical Code (NEC).

Objectives:

- Apply the fundamentals of electrical theory
- Apply the fundamentals of electrical circuitry
- Explain the definition of a qualified person
- Explain responsibilities and risks of qualified persons
- Demonstrate principles and procedures of lock out tag out.

- Demonstrate the application of the National Electrical Code (NEC) Articles 300-450
- Demonstrate how to navigate the National Electrical Code (NEC) Articles 300-450

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**Electrician Apprentice IIA****3 Credits / 90 Clock-Hours**

The Electrician Apprentice IIA course discusses single-phase and three-phase alternating current (AC) power systems, inductance, capacitance, reactance, power factor, and power correction. In this course, students will begin a more comprehensive analysis of National Electrical Code (NEC) requirements and calculations. They will explore the NEC requirements for wiring methods and installations of electrical systems as well as electrical safety in the use of energized equipment.

Objectives:

- Show proficiency in calculating properties of an AC circuit.
- Demonstrate proper use of hand tools and electrical equipment in practice live applications
- Demonstrate proficiency in applying and calculating the sizing of Branch circuits, feeders, services, and load calculations

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**Electrician Apprentice IIB****3 Credits / 90 Clock-Hours**

The Electrician Apprentice IIB course continues the comprehensive analysis of the National Electrical Code (NEC). In this course, students will evaluate the functions, uses, and calculations for direct current (DC) and alternating current (AC) motors, transformers, and other equipment. They will be instructed in electrical safety regarding Personal Protective Equipment (PPE) clothing requirements.

Objectives:

- Identify the types and voltages of transformers
- Calculate values related to transformers
- Apply the NEC with emphasis in codes regarding Motors, Transformers, and other electrical equipment
- Identify types, categories, and ratings of PPE clothing
- Show applications of types, categories, ratings of Personal Protective Equipment (PPE)

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**Electrician Apprentice IIIA****3 Credits / 90 Clock-Hours**

The Electrician Apprentice IIIA course discusses the roles of bonding and grounding in electrical systems per National Electrical Code (NEC) requirements. In this course, students will be shown the different parts, functions, and calculations for grounding and bonding. Students will explore the rules that apply to different electrical related boundaries set up by the National Fire Protection Agency (NFPA).

Objectives:

- Describe the NEC requirements regarding grounding and bonding
- Calculate sizes of grounding and bonding conductors
- Explain the various conductors and properties of grounding and bonding contained in an electrical system
- Explain NFPA rules to limit approach, restricted approach, and arc flash boundaries

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**Electrician Apprentice IIIB****3 Credits / 90 Clock-Hours**

The Electrician Apprentice IIIB course explores basic and complex electrical motor control systems and their respective fundamental concepts, diagrams, and applications. Students will examine the wiring and protecting of motors and motor circuits per National Electrical Code (NEC) requirements.

Objectives:

- Identify electrical symbols and diagrams pertaining to motors and motor control circuits
- Demonstrate how to wire a control circuit based on a diagram
- Identify various control devices
- Explain application of various control devices.
- Apply proper safety protocols around motor controls

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**Electrician Apprentice IVA****3 Credits / 90 Clock-Hours**

The Electrician Apprentice IVA course explores the basic skills necessary for becoming crew leader and managing electrical hazards. In this course, students will be instructed in special occupancies, special equipment, special conditions and communication systems and their respective National Electrical Code (NEC) requirements.

**Objectives:**

- Demonstrate the application of the National Electrical Code (NEC) Chapters 5-8
- Demonstrate how to navigate the National Electrical Code (NEC) Chapters 5-8
- Explain the costs related to safety
- Perform a hazard / risk assessment
- Explain Utah licensing requirements and rules

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**Electrician Apprentice IVB****3 Credits / 90 Clock-Hours**

The Electrician Apprentice IVB course, students will review all concepts from the previous years of electrical apprenticeship education. This course prepares individuals for the Utah State Journeyman qualifying examinations. Upon completion, students will demonstrate journeyman-level understanding of the electrical field as a whole.

**Objectives:**

- Apply knowledge of National Electrical Code (NEC) to pass a comprehensive review
- Apply knowledge of electrical theory to pass a comprehensive review
- Apply knowledge of safety to pass a comprehensive review



**Utah System of Higher Education**  
Emergency Medical Technician  
FY2023 / 6 Credits (186 Clock-Hours)

<b>Emergency Medical Technician</b>			
Institutions: Bridgerland, Davis, Dixie, Mountainland, Salt Lake, Snow, Southwest, USU-Eastern			
<i>Certificate of Program Completion (Catalog Year: 2023, 6 Credits/186 Clock-Hours Required, CIP: 51.0910)</i>			
<b>Core (6 Credits/186 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Emergency Medical Technician	6	186





## Utah System of Higher Education

Emergency Medical Technician

FY2023 / 6 Credits (186 Clock-Hours)

### PROGRAM DESCRIPTION

The Emergency Medical Technician program provides training for out-of-hospital emergency medical care and transportation of critical and emergent patients who access the emergency medical services (EMS) system. Emergency Medical Technicians (EMTs) have basic knowledge and skills necessary to stabilize and safely transport patients ranging from non-emergency and routine medical transports to life threatening emergencies. EMTs function as part of a comprehensive EMS response system, under medical oversight. EMTs perform interventions with the basic equipment typically found on an ambulance. EMTs are a critical link between the scene of an emergency and the health care system.

#### Objectives:

Upon program completion, students will be able to:

- Apply fundamental knowledge of the anatomy and function of all human systems to the practice of EMS
- Use foundational anatomical and medical terms and abbreviations in written and oral communication with colleagues and other health care professionals
- Apply fundamental knowledge of the pathophysiology of respiration and perfusion to patient assessment and management
- Apply fundamental knowledge of lifespan development to patient assessment and management
- Properly administer or assist in administering medications to a patient during an emergency
- Utilize fundamental knowledge of the EMS system, safety/well-being of the EMT, and medical/legal and ethical issues to the provision of emergency care
- Apply knowledge (fundamental depth, foundational breadth) of anatomy and physiology to patient assessment and management to assure a patent airway, adequate mechanical ventilation, and respiration for patients of all ages
- Interpret scene information and patient assessment findings (scene size-up, primary and secondary assessment, patient history, reassessment) to guide emergency management
- Provide basic emergency care and transportation based on assessment findings for an acutely ill patient
- Apply a fundamental knowledge of the causes, pathophysiology, and management of shock, respiratory failure or arrest, cardiac failure or arrest, and post-resuscitation management
- Provide basic emergency care and transportation based on assessment findings for an acutely injured patient
- Utilize principles of growth, development, aging and assessment findings to provide basic emergency care and transportation for a patient with special needs
- Perform in accordance with operational roles and responsibilities to ensure patient, public, and personnel safety when responding to an emergency

## **COURSE DESCRIPTIONS**

### **Emergency Medical Technician**

**6 Credits/186 Clock-Hours**

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The Emergency Medical Technician course provides training on out of hospital emergency medical care and transportation for critical and emergent patients who access the emergency medical services (EMS) system. Emergency Medical Technicians (EMTs) have basic knowledge and skills necessary to stabilize and safely transport patients ranging from non-emergency and routine medical transports to life threatening emergencies. EMTs function as part of a comprehensive EMS response system, under medical oversight. EMTs perform interventions with the basic equipment typically found on an ambulance. EMTs are a critical link between the scene of an emergency and the health care system. This course includes 6 hours of externship hours to be completed outside of the classroom time.

#### Objectives:

- Apply fundamental knowledge of the anatomy and function of all human systems to the practice of EMS
- Use foundational anatomical and medical terms and abbreviations in written and oral communication with colleagues and other health care professionals
- Apply fundamental knowledge of the pathophysiology of respiration and perfusion to patient assessment and management
- Apply fundamental knowledge of lifespan development to patient assessment and management
- Use simple knowledge of the principles of illness and injury prevention in emergency care
- Properly administer or assist in administering medications to a patient in an emergency
- Apply fundamental knowledge of the EMS system, safety/well-being of the EMT, and medical/legal and ethical issues to the provision of emergency care
- Apply knowledge (fundamental depth, foundational breadth) of anatomy and physiology to patient assessment and management to assure a patent airway, adequate mechanical ventilation, and respiration for patients of all ages
- Interpret scene information and patient assessment findings including scene size-up, primary and secondary assessment, patient history, and reassessment, to guide emergency management
- Provide basic emergency care and transportation based on assessment findings for an acutely ill patient
- Apply a fundamental knowledge of the causes, pathophysiology, and management of shock, respiratory failure or arrest, cardiac failure or arrest, and post-resuscitation management
- Provide basic emergency care and transportation based on assessment findings for an acutely injured patient
- Utilize principles of growth, development, aging and assessment findings to provide basic emergency care and transportation for a patient with special needs
- Perform in accordance with operational roles and responsibilities to ensure patient, public, and personnel safety when responding to an emergency



**Utah System of Higher Education**  
Fire and Rescue Services  
FY2023 / 20 Credits (600 Clock-Hours)

<b>Fire and Rescue Services</b>			
Institutions: Bridgerland			
<i>Certificate of Program Completion (Catalog Year: 2023, 20 Credits/600 Clock-Hours Required, CIP: 43.0203)</i>			
<b>Core (20 Credits/600 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Introduction to Fire	1	30
PREF XXXX	Firefighter	11	330
PREF XXXX	Advanced Firefighter	8	240



## Utah System of Higher Education

Fire and Rescue Services

FY2023 / 20 Credits (600 Clock-Hours)

### PROGRAM DESCRIPTION

The Fire and Rescue Services program prepares students for employment as firefighters. Highly skilled and trained firefighting professionals will instruct students through hands-on curriculum in structural firefighter skills, hazardous materials mitigation, and taking care of sick or injured patients. This program supports the mission to deliver competency-based, employer-guided careers, and hands-on technical education.

Fire and Rescue Services is accredited by the Utah Fire Service Standards and Training Council (UFSCC). Students who complete all coursework can certify and obtain certifications in: Hazardous Materials Awareness, Hazardous Materials Operations, Firefighter I, and Firefighter II.

Objectives:

- Suppress and mitigate fires
- Reduce the impacts of hazards on people, property, and the environment
- Recognize and treat medical emergencies
- Serve communities and citizens in need

### COURSE DESCRIPTIONS

#### Introduction to Fire

**1 Credit/30 Clock-Hours**

The introduction to fire course is an introduction to the complex, challenging, and unforgiving environments firefighters find themselves in every day. Safety is a primary concern throughout their entire career. The 16 Firefighter Life Safety Initiatives, which were created to ensure firefighters return home safely after every shift, will be covered. Students will exercise together and must pass a physical fitness test at the conclusion of this course.

Objectives:

- Explain fire service history
- Contrast between career versus volunteer positions
- Evaluate and apply concepts of risk management and mitigation

#### Firefighter

**11 Credits/330 Clock-Hours**

The Firefighter course begins your career as a professional firefighter! A sample of the hands-on skills include the following: placing ground ladders, pulling hose, cutting ventilation holes, searching for victims, handling car fires, as well as vehicle extrication and live fire evolutions. These nationally-accredited certifications are recognized outside of Utah with many of our graduates working in other states.

Objectives:

- Assess fire emergency
- Demonstrate proper deployment of hoses and connection to water supply
- Demonstrate effective fire suppression techniques
- Determine offensive or defensive fire attack
- Conduct, salvage, and overhaul.
- Complete NFIRS (National Fire Incident Reporting System)

**Advanced Firefighter****8 Credits/240 Clock-Hours**

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The Advanced Firefighter course builds upon the Firefighter class. This physically and mentally demanding class will challenge students to improve their skills beyond the minimum requirements of the State of Utah. In preparation for a career in firefighting, additional skills and knowledge are provided regarding firefighter survival, apparatus driving and pumping, operating thermal imaging cameras, and participation in life-like scenarios.

**Objectives:**

- Demonstrate the ability to perform state skills in a fast and efficient manner
- Demonstrate self-rescue techniques
- Demonstrate safe driving practices and the ability to conduct fire pump operations safely
- Complete evolutions and scenarios in a disciplined, stressful, realistic, and team-oriented environment
- Apply principles of personal responsibility and ownership of their performance as well as the performance of the team



**Utah System of Higher Education**  
Firefighter  
FY2023 / 12 Credits (360 Clock-Hours)

<b>Firefighter</b>			
Institutions: Davis			
<i>Certificate of Program Completion (Catalog Year: 2023, 12 Credits/360 Clock-Hours Required, CIP: 43.0203)</i>			
<b>Core (12 Credits/360 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Introduction to Fire	1	30
PREF XXXX	Firefighter	11	330



## Utah System of Higher Education

### Firefighter

FY2023 / 12 Credits (360 Clock-Hours)

#### PROGRAM DESCRIPTION

The Firefighter program provides adult students the opportunity to prepare for employment as firefighters. Highly skilled and trained firefighting professionals will instruct students through hands-on curriculum in structural firefighter skills, hazardous materials mitigation, and taking care of sick or injured patients. This program supports the Davis Technical College's mission to deliver competency-based, employer-guided careers, and hands-on technical education.

Firefighter is accredited by the Utah Fire Service Standards and Training Council (UFSCC). Students who complete all coursework can certify and obtain certifications in: Hazardous Materials Awareness, Hazardous Materials Operations, Firefighter I, and Firefighter II.

#### Objectives:

- Suppress and mitigate fires
- Reduce the impacts of hazards on people, property, and the environment
- Recognize and treat medical emergencies
- Serve communities and citizens in need

#### COURSE DESCRIPTIONS

##### Introduction to Fire

**1 Credit/30 Clock-Hours**

The Introduction to Fire course is an introduction to the complex, challenging, and unforgiving environments firefighters find themselves in every day. Safety is a primary concern throughout their entire career. The 16 Firefighter Life Safety Initiatives, which were created to ensure firefighters return home safely after every shift, will be covered. Students will exercise together and must pass a physical fitness test at the conclusion of this course.

#### Objectives:

- Explain fire service history
- Contrast between career versus volunteer positions
- Evaluate and apply concepts of risk management and mitigation

##### Firefighter

**11 Credits/330 Clock-Hours**

The firefighter course begins your career as a professional firefighter! A sample of the hands-on skills include the following: placing ground ladders, pulling hose, cutting ventilation holes, searching for victims, handling car fires, vehicle extrication, and live fire evolutions. These nationally-accredited certifications are recognized outside of Utah with many of our graduates working in other states.

#### Objectives:

- Identify a fire emergency
- Demonstrate proper deployment of hoses and connection to water supply
- Demonstrate effective fire suppression techniques
- Determine offensive or defensive fire attack
- Conduct, salvage, and overhaul
- Demonstrate how to use the NFIRS (National Fire Incident Reporting System)



# Utah System of Higher Education

Nursing Assistant

FY2023 / 3 Credits (114 Clock-Hours)

<b>Nursing Assistant</b>			
Institutions: Bridgerland, Davis, Dixie, Mountainland, Ogden-Weber, Salt Lake, Snow, Southwest, Tooele, Uintah Basin, USU-Eastern			
<i>Certificate of Program Completion (Catalog Year: 2023, 3 Credits/114 Clock-Hours Required, CIP: 51.3902)</i>			
<b>Core (3 Credits/114 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Nursing Assistant	3	114





## Utah System of Higher Education

Nursing Assistant

FY2023 / 3 Credits (114 Clock-Hours)

### PROGRAM DESCRIPTION

The Nursing Assistant program is designed for students to receive their certification by completing coursework in classroom and clinical settings.

Objectives:

- Explain activities of daily living and nursing assistant scope of practice
- Demonstrate correct recognizing and reporting, communication, infection control, safety, and residents' rights in the care setting
- Demonstrate proficiency in all skills required for state certification
- Perform nursing assistant skills in a healthcare setting

### COURSE DESCRIPTIONS

**Nursing Assistant**

**3 Credits/114 Clock-Hours**

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The Nursing Assistant course introduces students to basic nursing skills in a classroom and laboratory setting. This course includes 24 hours of clinical experience.

Objectives:

- Explain activities of daily living and nursing assistant scope of practice
- Describe how critical criteria such as recognizing and reporting, communication, infection control, safety, and residents' rights are applied in the care setting
- Demonstrate proficiency in all skills required for state certification
- Perform nursing assistant skills in a healthcare setting



**Utah System of Higher Education**  
 Plumbing Apprenticeship  
 FY2023 / 24 Credits (720 Clock-Hours)

<b>Plumbing Apprenticeship</b>			
Institutions: Bridgerland, Davis, Dixie, Mountainland, Ogden-Weber, Salt Lake, Southwest			
<i>Certificate of Program Completion (Catalog Year: 2023, 24 Credits/720 Clock-Hours Required, CIP:46.0503)</i>			
<b>Core (32 Credits/1140 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Plumbing IA	3	90
PREF XXXX	Plumbing IB	3	90
PREF XXXX	Plumbing IIA	3	90
PREF XXXX	Plumbing IIB	3	90
PREF XXXX	Plumbing IIIA	3	90
PREF XXXX	Plumbing IIIB	3	90
PREF XXXX	Plumbing IVA	3	90
PREF XXXX	Plumbing IVB	3	90



## Utah System of Higher Education

Plumbing Apprenticeship

FY2023 / 24 Credits (720 Clock-Hours)

### PROGRAM DESCRIPTION

The Plumbing Apprenticeship program satisfies the educational requirements to take the State Journeyman Plumber Exam. To complete the entire Apprentice Plumbing Program, an individual must be licensed through the State and work under the supervision of a licensed Journeyman Plumber. A basic assessment is required prior to enrolling. This program provides a solid understanding of the International Plumbing Code (IPC), its layout, and the requirements for different plumbing systems and parts of those systems. This program discusses the processes, parts, and risks involved with the various plumbing systems as well as the safety equipment and measures that are in place to protect plumbers and the public alike.

#### Objectives:

- Determine the application of the International Plumbing Code (IPC)
- Demonstrate how to navigate the International Plumbing Code (IPC)
- Calculate sizing of various piping, including natural gas, supply, and waste lines
- Demonstrate the application of the International Fuel Gas Code
- Demonstrate the application of the International Mechanical Code
- Demonstrate practical application of plumbing mathematics
- Apply critical and practical thinking skills necessary to pass the State Journeyman's Test

### COURSE DESCRIPTIONS

#### Plumbing IA

**3 Credits / 90 Clock-Hours**

The Plumbing IA course explores the secure and highly demanded profession of plumbing. The primary emphases include: the understanding and interpretation of the International Plumbing Code (IPC), blueprint reading, materials and requirements, practical mathematics required in plumbing, and other subject areas that are essential to the trade which are more conducive to the classroom setting than a work environment.

#### Objectives:

- Certify in First Aid Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillator (AED)
- Practice safety and the proper use of tools and leveling instruments
- Define hydraulics and pneumatics
- Interpret building and plumbing codes
- Apply basic mathematics toward measurements, angles, slopes, and other plumbing related problems
- Fabricate plumbing projects in a lab setting

#### Plumbing IB

**3 Credits / 90 Clock-Hours**

The Plumbing IB course introduces the fundamentals of plumbing theory for the apprentice plumbers and will cover the International Plumbing Code, related math, and craft skills.

#### Objectives:

- Identify fixtures, faucets and fixture fittings, water heaters, traps, interceptors and separators
- Develop basic skills needed to read drawings and produce piping sketches
- Apply mathematics related to plumbing and angles
- Implement the process of making watertight joints using heat and various filler metals

- Define machine and hand excavating with emphasis on safety
- Explain various types of pipe and fittings used in residential and light commercial plumbing systems
- Fabricate several piping projects in a lab situation

### **Plumbing IIA**

**3 Credits / 90 Clock-Hours**

The Plumbing IIA course introduces the fundamentals of plumbing theory for the apprentice plumbers and covers the International Plumbing Code (IPC), related math, and craft skills.

Objectives:

- Describe water supply and distribution, sanitary drainage, indirect/special waste, vents, traps, interceptors and separators, along with other basic fundamental plumbing components
- Identify the many different fixtures designed for residential and small commercial buildings
- Apply correct principles for designing Drainage, Waste, and Vent (DWV) and water supply systems that will provide long and satisfactory service
- Describe how to determine the size of water supply piping
- Define how to support and test both DWV and water supply systems
- Explain R317-4 onsite wastewater systems
- Fabricate several piping projects in a lab situation

### **Plumbing IIB**

**3 Credits / 90 Clock-Hours**

The Plumbing IIB course continues to explore the fundamentals of plumbing theory for the apprentice plumbers and covers the International Plumbing Code (IPC), related math, and craft skills.

Objectives:

- Explain storm drainage and special piping and storage systems
- Calculate grade, percent grade, drop and run, and offsets
- Cite proper construction and operation of private waste-disposal systems
- Identify the basic components, design considerations, and installation techniques of swimming pools, hot tubs, and spas
- Describe the components and materials used in lawn and garden irrigation systems
- Troubleshoot, recognize, and repair problems associated with plumbing systems
- Fabricate several piping projects in a lab situation

### **Plumbing IIIA**

**3 Credits / 90 Clock-Hours**

The Plumbing IIIA course continues to explore the fundamentals of plumbing theory for the apprentice plumbers and covers the International Plumbing Code (IPC), International Fuel Gas Code (IFGC) and International Mechanical Code (IMC), along with related math and craft skills.

Objectives:

- Identify materials detrimental to sewer systems
- Determine protection of pipes and plumbing system components
- Explain washroom and toilet room requirements
- Describe specialty plumbing fixtures
- Determine proper water heater, vents, and combustion air installation requirements as per the International Mechanical Code (IMC) and the International Fuel Gas Code (IFGC)
- Calculate combustion air, chimneys, and vent sizes
- Determine volume of Rectangular Solids, Cylinders

- Identify NPFA 13D residential fire sprinklers
- Fabricate several piping projects in a lab situation

### **Plumbing IIIB**

**3 Credits / 90 Clock-Hours**

The Plumbing IIIB course introduces the fundamental Plumbing theory for the Apprentice Plumbers and covers the International Plumbing Code (IPC), International Fuel Gas Code and International Mechanical Code, along with related math and craft skills.

Objectives:

- Calculate size of fuel piping and fuel-gas piping
- Describe vents and commercial/industrial application
- Describe indirect/special waste and commercial/industrial application
- Calculate size of water supply and distribution review and commercial/industrial applications.
- Identify special piping and storage systems
- Explain Utah Amendments and R617-4
- Fabricate several piping projects in a lab situation
- Calculate sizing of various water and drain piping systems

### **Plumbing IVA**

**3 Credits / 90 Clock-Hours**

The Plumbing IVA course reviews the International Plumbing Code (IPC), International Fuel Gas Code and International Mechanical Code, math, and other laws in preparation for taking the journeyman state test.

Objectives:

- Define all chapters of the International Plumbing Code
- Apply mathematics related to plumbing, angles, rolling offsets and pipe lengths
- Explain storm drainage and commercial/industrial application for sizing roof drains
- Explain International Mechanical Code for general, combustion air, boilers, and hydronics
- Discuss Utah Amendments to the Code
- Identify National Fire Protection Association (NFPA) 13D residential fire sprinklers
- Explain R317-4 onsite wastewater
- Fabricate several piping projects in a lab situation

### **Plumbing IVB**

**3 Credits / 90 Clock-Hours**

The Plumbing IVB course assists the apprentices in passing the state test and provides a foundation for success as a journeyman plumber. A variety of modules are available for the student to work from, with a focus on what each individual student needs in order to prepare for the test.

Objectives:

- Review International Plumbing Code (IPC) chapters
- Apply mathematics for plumbers and pipefitters
- Use International Fuel Gas Code for gas pipe installation and sizing
- Define traps and commercial applications
- Explain storm drainage and commercial/industrial applications
- Identify boilers, water heaters, and pressure vessels
- Perform applied trade formulas using different equations
- Calculate heat loss vs. radiator size
- Determine radiation sizing for total heat loss of a room

- Use Journeyman skills such as takeoff lists, leadership skills, communication, and basic business skills
- Fabricate several piping projects in a lab situation



**Utah System of Higher Education**  
Real Estate  
FY2023 / 4 Credits (120 Clock-Hours)

<b>Real Estate</b>			
Institutions: Bridgerland, Ogden-Weber			
<i>Certificate of Program Completion (Catalog Year: 2023, 4 Credits/120 Clock-Hours Required, CIP: 52.1501)</i>			
<b>Core (4 Credits/120 Clock-Hours)</b>		<b>Credits</b>	<b>Clock-Hours</b>
PREF XXXX	Pre-licensing	4	120
<b>Non-Required Electives (0 Credits/0 Clock-Hours)</b>			
<b>Ogden-Weber Technical College</b>			
PREF XXXX	Broker License	4	120



## Utah System of Higher Education

Real Estate

FY2023 / 4 Credits (120 Clock-Hours)

### PROGRAM DESCRIPTION

The Real Estate program is state approved and designed to prepare students to pass the licensing exams and earn a real estate license in the State of Utah. Utah law requires that students complete a 120-hour educational course before they take the Utah real estate licensing exam. Our Pre-Licensing course includes instruction and review tests to prepare students to take the Utah real estate sales agent exam.

Objectives:

- Define and describe real property, land, and real estate
- Distinguish between real and personal property
- Compute basic math skills including profit & loss, simple interest, proration, commissions, etc.
- Identify the approved forms and addenda a licensee may fill out and the circumstances under which each should be used.
- Define closing as it relates to a real estate transaction
- Differentiate between debits and credits
- Explain how it is determined where debits and credits go on the settlement statement.
- Explain the term "agency" and the different agency types
- Use the proper forms of agency including the relationship between agent, subagent, client, and customer.
- Compare and contrast the various types of ownership, and indicate situations when each would be appropriate or required.

### COURSE DESCRIPTIONS

**Pre-licensing**

**4 Credits/120 Clock-Hours**

The Real Estate course is state approved and designed to prepare students to pass the licensing exams and earn a real estate license in the State of Utah. Utah law requires that students complete a 120-hour educational course before they take the Utah real estate licensing exam. Our Pre-Licensing course includes instruction and review tests to prepare you to take the Utah real estate sales agent exam.

Objectives:

- Define and describe real property, land and real estate
- Distinguish between real and personal property
- Compute basic math skills including profit & loss, simple interest, proration, commissions, etc.
- Identify the approved forms and addenda a licensee may fill out and the circumstances under which each should be used
- Define closing as it relates to a real estate transaction
- Differentiate between debits and credits
- Explain how it is determined where debits and credits go on the settlement statement
- Explain the term "agency" and different agency types
- Use of the proper forms of agency including the relationship between agent, subagent, client and customer
- Compare and contrast the various types of ownership, and indicate situations when each would be appropriate or required

### NON-REQUIRED ELECTIVES



**Broker License****4 Credits/120 Clock-Hours**

The Broker License course satisfies the requirements to become a licensed State of Utah Broker. This course explores various modules designed to prepare for the State of Utah Broker licensing exam. This course focuses on the statutory licensing qualifications of honesty, integrity, truthfulness, reputation and competency. Students must have three years full-time, licensed, active real estate experience; or two years full-time, licensed, active, real estate experience and one-year full-time professional real estate experience, as well as accumulated a total of at least 60 documented experience points that comply with State of Utah requirements within the past five years preceding the date of enrollment into this course.

**Objectives:**

- Complete 30 hours of Utah Law including 3 hours testing
- Complete 45 hours of Broker Principles including 4 hours of testing
- Complete 45 hours of Broker Practices including 4 hours testing
- Define and describe real property, land and real estate, and distinguish between real and personal property
- Compute basic math skills including profit & loss, simple interest, proration, commissions, etc.
- Identify the approved forms and addenda a licensee may fill out and the circumstances under which each should be used
- Define closing as it relates to a real estate transaction
- Differentiate between debits and credits
- Explain how it is determined where debits and credits go on the settlement statement.
- Explain the term “agency” and the different agency types
- Use of the proper forms of agency including the relationship between agent, subagent, and client and customer
- Compare and contrast the various types of ownership, and indicate situations when each would be appropriate or required