**CTE MQ Equivalency**

**General Education Equivalency Examples**

**Need for Equivalency**

Education Code §§ 87359 and 87360 establish that individuals who do not possess the minimum qualifications for service may be hired as faculty members if they possess “qualifications that are at least equivalent to the minimum qualifications.” The Disciplines List, a Board of Governors’ adopted list of minimum qualifications for hiring faculty, uses the term “equivalency” to describe processes to support this regulation. CTE disciplines in particular have a greater need to consider equivalency: industry has well-qualified employees who may potential instructors but who have not earned an Associates degree. Most often when equivalency is considered, it is for the major preparation within a field or discipline. This document is intended to assist equivalency and hiring committees evaluate equivalency to the general education component of an associate’s degree.

**Purpose of General Education**

The general education component of a degree is expected to produce a citizen who can interact effectively with the world around them based on critical thinking and reasoning, sound oral and written communication, an applied understanding of other peoples and cultures, and applied experiences with science and its impact on people. For potential faculty members, general education preparation should also influence a person’s approach to teaching and ability to recognize how their discipline interacts with all others and communicate that to students. This crosswalk is intended to help equivalency committees understand the potential for satisfaction of general education elements of a degree through experiential learning, while also helping potential candidates prepare the evidence necessary to demonstrate achievement of general education outcomes through means other than traditional classroom instruction.

**Purpose of General Education Equivalency Examples**

Equivalency committees of an academic senate are generally responsible for the evaluation of a faculty candidate’s qualifications when questions arise regarding minimum qualifications. These same committees are also responsible for making recommendations on approving or rejecting requests for equivalency. Often, for disciplines where the minimum qualification is an associates degree and six years of experience, faculty candidates will have significant discipline experience but lack the more formal academic credentials. This situation is particularly problematic in many career technical education (CTE) disciplines. The purpose of the GE equivalency examples are to provide local equivalency committees with a user-friendly tool when reviewing CTE faculty portfolios for equivalency. It also serves as a framework for human resources to demonstrate compliance with accreditation standards regarding qualifications of faculty. The GE equivalency examples facilitate finding the link between industry-specific artifacts (tangible evidence of competencies) and the competencies associated with each of the four General Education Areas of Title 5, Chapter 6, Subchapter 1, Article 6, 55063.

Faculty have developed GE equivaleny examples for many CTE disciplines. Examples that are not discipline-specific are also available. Equivalency committees are encouraged to use the examples in concert with robust conversations with local CTE Faculty experts.

**General Education and Major Preparation Requirements for an Associate’s Degree**

In a traditional Associate or Arts or Associate of Science degree, a student must complete a minimum of 60 semester (90 quarter) units. Of the total units, at least 18 semester (27 quarter) units of general education coursework is required in addition to meeting competency requirements in written expression and mathematics and at least 18 semester (27 quarter) units of major preparation (Title 5 §55063). The eighteen units of general education is expected in the follow areas (Title 5 &55063 (b)(1)):

* A. Natural Sciences (minimum 3 units)
* B. Social and Behavioral Sciences (minimum 3 units)
* C. Humanities (minimum 3 units)
* D.1. Language and Rationality: English Composition (minimum 3 units)
* D.2. Language and Rationality: Communication and Analytical Thinking (min. 3 units)
* Three additional units taken in any area
* Ethnic Studies must be addressed (See guidance for Areas B & C) (Title 5 §55063 (b)(2))

**Competencies: Written Expression and Mathematics**

Written Expression: competence in written expression shall be demonstrated by obtaining a satisfactory grade in an English course at the level of the course typically known as Freshman Composition. Satisfactory completion of an English course at the level of Freshman Composition shall satisfy both this competency requirement and the Area D.1. Language and Rationality: English Composition coursework requirement (Title 5 §55063).

Mathematics: competence in mathematics shall be demonstrated by obtaining a satisfactory grade in a mathematics course at the level of the course typically known as Intermediate Algebra (either Intermediate Algebra or another mathematics course at the same level, with the same rigor and with Elementary Algebra as a prerequisite, approved locally). Satisfactory completion of a mathematics course at the level of Intermediate Algebra shall satisfy both this competency requirement and the Area D.2 Language and Rationality: Comunication and Analytical Thinking coursework (Title 5 §55063).

**GE Equivalency Examples**

**Area A Natural Sciences**

Courses in the natural sciences are those which examine the physical universe, its life forms, and its natural phenomena. To satisfy the general education requirement in natural sciences, a course shall be designed to help the student develop an appreciation and understanding of the scientific method, and encourage an understanding of the relationships between science and other human activities (Title 5 §55063 (b)(1)(A)). This category would include introductory or integrative courses in astronomy, biology, chemistry, general physical science, geology, meteorology, oceanography, physical geography, physical anthropology, physics and other scientific disciplines.

**Purpose for Including One Course (3 units) in Natural Sciences for General Education**

* For students to develop the ability to examine the physical universe, its life forms, and its natural phenomena
* For students to develop an appreciation of, understanding of, and ability to apply the scientific method
* For students to develop the ability to understand the relationship between science and other human activities

**Examples of C-ID approved courses included in Area A Natural Sciences**This list of courses may help equivalency committees understand the scope and content of the single course that is needed to meet the Area A requirement of an Associate’s degree.

AG-AS 104 Intro to Animal Science

ANTH 110 Intro to Biological Anthropology

BIOL 140 Organismal Biology

BIOL 190 Cell and Molecular Biology

CHEM 100 Chemistry and Society

CHEM 102 Intro to Organic and Biochemistry

CHEM 101 Intro to Chemistry

CHEM/PHYS 140 Survey of Chem. & Physics

GEOG 130 Introduction to Weather and Climate

GEOL 120 Earth Science

GEOL 121 Earth Science with Lab

GEOL 130 Environmental Geology

GEOL 100 Physical Geology

GEOL 100L Physical Geology with Lab

GEOL 200 Geology of California

PHYS 105 Algebra/Trigonometry-Based Physics

**Evidence and Artifacts**

A candidate’s information should be validated. Examples of validations may be an employer statement of experience or performance, external certifications or licensing, published papers or work products, industry recognized credentials, exam scores, or more.

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|  | **Examples of Evidence Establishing Competency to GE Area A** |
| General Equivalency Considerations | * Artifact or work product documenting understanding and knowledge of our environment as it relates to specific sector, industry, or civic skills
* Artifact or work product documenting a defined purpose, constructed hypothesis/theory/idea, testing of the hypothesis, data collection, data analysis, development of conclusions, and communication of results as it relates to sector, industry, or civic-specific skills
* Artifact or work product demonstrating a sector, industry, or civic-based mechanical diagnosis and provision of solutions
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| Discipline-Specific Examples: **Aviation** | * A certified recreational, private, or commercial pilot must understand and apply principles of weather theory, weather behavior, and weather hazards
* A certified recreational, private, or commercial must understand and apply Newton’s Basic Laws of Motion and Bernoulli’s Principle
* A certified recreational, private, or commercial pilot must interpret weather services, weather briefings, weather reports, forecasts, charts and multifunction weather displays

Ref: FAR 61.185(2) The aeronautical knowledge areas for a recreational, private, and commercial pilot certificate applicable to the aircraft industry for which flight instructor privileges are sought. |
| Discipline-Specific Examples: **Automotive Technician** | * A licensed automotive technician must apply the scientific method to interpret service manuals, understand the theory of the systems being diagnosed, develop an initial hypothesis based on customer input, follow testing and diagnostic procedures to isolate and repair system defects, and verify the repair resolved the system defect.
* An ASE G1 licensed automotive technician must understand principles of fluid dynamics and hydrolics, composition of friction materials, and automotive electrical systems.
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| Discipline-Specific Examples: **Barbering, Cosmetology** | * A licensed barber, cosmetologist, or esthetician must understand the interaction of specific chemicals with other chemicals and with human skin, hair, and nails.
* A licensed barber, cosmetologist, or esthetician must understand basic biologic principles as they relate to hair and skin.
* A licensed barber, cosmetologist, or esthetician must perform an analysis process before any application of product. Particular services require product formulations, predisipositions testing, and strand testing prior to application.
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| Discipline-Specific Examples: **EMT** | * A licensed EMT must understand the anatomy and physiology of the human body and apply appropriate medical responses to restore or maintain functions necessary for life.
* NOTE: While the EMT discipline requires only an AA and 6 years of experience, national standards require additional elements.
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| Discipline-Specific Examples: **Welding** | An AWS-certified welder with experience with multiple weld types and metals applies knowledge of metallurgy, chemical properties, and effect of temperature on chemical composition. |
| Discipline-Specific Examples: **Agricultural Production** | * A livestock manager applies animal science and nutritional concepts to feeds and feeding to manage nutritional program for livestock, breeding, and reproduction.
* A farm or ranch manager applies plant and soil science and chemical concepts for crop production, plant production, pesticide and fertilizer management, soil management.
 |
| Discipline-Specific Examples: **Culinary Arts/Food Production** | A chef understands and applies chemical concepts while understanding bacteria and preventing disease, developing recipes (chemical properties), and cooking (thermal properties) |
| Discipline-Specific Examples: **Mortuary Science** | * Certified organ procurement includes training as enucleator, tissue retrieval, and additional applied knowledge similar to biology or human anatomy and physiology.
* Embalmer license or pathologist assistant both meet Area A based on field training and licensure requirements
 |
| Discipline-Specific Examples: **Fashion and Related Technologies** | * Textile developers and fashion designers must undertand the effects of chemicals on different textiles
* Textile developers and fashion designers utilize knowledge of chemistry in designing fabrics, designing and evaluating textile composition, and comparing textile properties
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**GE Equivalency Examples**

**Area B Social and Behavioral Sciences**

Courses in the social and behavioral sciences are those which focus on people as members of society. To satisfy the general education requirement in social and behavioral sciences, a course shall be designed to develop an awareness of the method of inquiry used by the social and behavioral sciences. It shall be designed to stimulate critical thinking about the ways people act and have acted in response to their societies and should promote appreciation of how societies and social subgroups operate (Title 5 §55063 (b)(1)(B)). This category would include introductory or integrative survey courses in cultural anthropology, cultural geography, economics, history, political science, psychology, sociology and related disciplines.

**Purpose for Including One Course (3 units) in Social and Behavioral Sciences for General Education**

* For students to develop an awareness of the methods of inquiry used by the social and behavioral sciences.
* To stimulate students’ critical thinking about ways people act or have acted in response to their societies
* To promote students’ appreciation of how societies and social subgroups operate
* To develop or promote a students’ understanding and appreciation of ethnic groups (Title 5 §55063 (b)(2) requires a course in Ethnic Studies. It is most likely met through the course/experience/ability counted in Area B or Area C)

**Examples of C-ID courses included in Area B Social and Behavioral Sciences**This list of courses may help equivalency committees understand the scope and content of the single course that is needed to meet the Area A requirement of an Associate’s degree.

ANTH 150 Introduction to Archaeology

ANTH 120 Introduction to Cultural Anthropology

ECON 201 Principles of Microeconomics

ECON 202 Principles of Macroeconomics

GEOG 120 Introduction to Human Geography

HIST 150 World History to 1500

HIST 160 World History since 1500

HIST 130 United States History to 1877

HIST 170 Western Civilization I

HIST 180 Western Civilization II

HIST 140 United States History since 1865

POLS 110 Intro to American Government and

 Politics

POLS 130 Intro to Comparative Government

 and Politics

POLS 150 Introduction to Political Science

POLS 120 Intro to Political Theory and Thought

POLS 140 Introduction to International Relations

PSY 120 Introduction to Abnormal Psychology

PSY 130 Introduction to Human Sexuality

PSY 115 Psychology of Personal and Social

 Adjustment

PSY 180 Introduction to Lifespan Psychology

PSY 110 Introductory Psychology

SOCI 140 Introduction to Gender

SOCI 160 Introduction to Crime

SOCI 110 Introduction to Sociology

SOCI 130 Introduction to Marriage and Family

SOCI 150 Introduction to Race and Ethnicity

SOCI 115 Social Problems

**Evidence and Artifacts**

Examples of validations may be an employer statement of experience or performance, external certifications or licensing, published papers or work products, industry recognized credentials, exam scores, or more.

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|  | **Examples of Evidence Establishing Competency to GE Area B** |
| General Equivalency Considerations | * Artifact or work product documenting awareness in social or institutional ethics, macro or micro economics, or local politics as it relates to sector, industry, or civic-specific skills
* Artifact or work product documenting active involvement in community advocacy organizations as it relates to sector, industry, or civic-specific skills
* Artifact or work product demonstrating completion or delivery of trainings related to sexual harassment, diversity, and cultural competency, keeping in mind the depth of knowledge and experience needed for equivalency to a course.
* Experience as a manager requires navigating social and institutional rules and ethics, understanding the impact of culture on employees’ personal beliefs and behaviors
* Elected officials have navigated politics, are aware of current and historical social problems, and understand human psychology/motivation as it relates to social issues present in elections
 |
| Discipline-Specific Examples: **Automotive Technician** | * ASE certification in area C1 Automobile Service Consultant Certification Test requires an ability to understand and communicate with diverse customers with diverse needs. Technicians must utilize knowledge of social groups to interact constructively, communicate effectively, and to manage customer and internal relations.
* A self-employed technician or business owner must apply microeconomic and macroeconomic concepts to predict and respond to market forces on consumer spending
 |
| Discipline-Specific Examples: **Barbering, Cosmetology** | * Licensed barbers, cosmetologists, and estheticians must apply an understanding of diverse cultures to interact with and appropriately meet the hair, skin, and nail needs of a diverse clientele.
 |
| Discipline-Specific Examples: **Culinary Arts/Food Production** | * A chef or culinary artist works within varied ethnic foods and understands and applies an understanding of foods and culture as well as historical food trends
* A chef or culinary artist must apply knowledge of global cultures and religions to interact positively with customers, prepare appropriate foods, and satisfy customer needs
 |
| Discipline-Specific Examples: **Mortuary Science** | * A practitioner with Celebrant Training (Insight Institute), Association of Death Education certification, or certified funeral service practioners all must apply knowledge of cultures, religions, and social customs to meet customer needs
 |
| Discipline-Specific Examples: **Fashion and Related Technologies** | * A fashioner designer or costume designer must apply knowledge of cultures and religions to create appropriate ethnic costumes and fashions
* A fashion designer applies knowledge of textile/fabric evolution as well as the influence of fashion throughout history and within politics
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**GE Equivalency Examples**

**Area C Humanities**

Courses in the humanities are those which study the cultural activities and artistic expressions of human beings. To satisfy the general education requirement in the humanities, a course shall be designed to help the student develop an awareness of the ways in which people throughout the ages and in different cultures have responded to themselves and the world around them in artistic and cultural creation and help the student develop aesthetic understanding and an ability to make value judgments (Title 5 §55063 (b)(1)(C)). Such courses could include introductory or integrative courses in the arts, foreign languages, literature, philosophy, and religion.

**Purpose for Including One Course (3 units) in Humanities for General Education**

* For students to develop an awareness of the way in which people throughout the ages and in different cultures have responded to themselves and the world around them in artistic and cultural creations.
* For students to develop or demonstrate aesthetic understanding and an ability to make value judgements.
* To promote a students’ understanding and appreciation of ethnic groups (Title 5 §55063 (b)(2) requires a course in Ethnic Studies. It is most likely met through the course/experience/ability counted in Area B or Area C)

**Examples of courses included in Area C Humanities**

This list of courses may help equivalency committees understand the scope and content of the single course that is needed to meet the Area A requirement of an Associate’s degree.

ARTH 110 Survey of Western Art from

 Prehistory through the Middle Ages

ARTH 120 Survey of Western Art from

 Renaissance to Contemporary

ARTH 150 Survey of Modern Art

ARTH 100 Understanding Art

ARTH 130 Survey of Asian Art

ENGL 160 Survey of British Literature I

ENGL 120 Introduction to Literature

ENGL 135 Survey of American Lit 2

ENGL 165 Survey of British Literature 2

ENGL 180 Children’s Literature

ENGL 130 Survey of American Literature 1

ENGL 145 Survey of World Literature 2

ENGL 140 Survey of World Literature 1

PHIL 130 History of Ancient Philosophy

PHIL 140 History of Modern Philosophy

PHIL 100 Introduction to Philosophy

SPAN 110 Elementary Spanish II

SPAN 220 Spanish for Heritage Speakers I

SPAN 100 Elementary Spanish I

THTR 112 Theatre Appreciation

THTR 111 Introduction to Theatre

**Evidence and Artifacts**

Examples of validations may be an employer statement of experience or performance, external certifications or licensing, published papers or work products, industry recognized credentials, exam scores, or more.

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|  | **Examples of Evidence Establishing Competency to GE Area C** |
| General Equivalency Considerations | * Artifact or work product demonstrating experience working and living in other cultures and with other languages.
* Artifact or work product demonstrating an ability to understand and appreciate artistic and cultural creation.
* Work products that demonstate an understanding and application of culture and aesthetics.
* Active participation in theater production may serve as an artifact for Area C
* Bilingual certification
 |
| Discipline-Specific Examples: **Welding** | * Production of artwork within welding industry, including ornamental design
* Evidence of artistic pattern making or recreating historical artistic elements
* Cultural or ethnic metallurgy (ie. Sword making for different culture)
 |
| Discipline-Specific Examples: **Culinary Arts/Food Production** | * Chefs apply elements of art and aesthetics to prepare food attractively
* Chefs apply knowledge of varied spices, including those specific to ethnic groups, to achieve desired resutts, appealing to taste and smell artistically
 |
| Discipline-Specific Examples: **Barbering, Cosmetology** | * Licensed barber or cosmetologist has learned the history of their trade, including the evolution of styles
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**GE Equivalency Examples**

**Area D.1. Language and Rationality: English Composition**

**& Associate’s Degree Competency in Written Expression**

Courses in language and rationality are those which develop for the student the principles and applications of language toward logical thought, clear and precise expression and critical evaluation of communication in whatever symbol system the student uses (Title 5 §55063 (b)(1)(D)). Such courses shall include both expository and argumentative writing.

D.1. English Composition. Courses fulfilling the written composition requirement shall be designed to include both expository and argumentative writing.

* Students earning an Associate’s degree must demonstrate competence in written expression. Traditionally, this competence is demonstrated by obtaining a satisfactory grade in an English course at the level of the course typically known as Freshman Composition. Any other considerations must be equivalent.
* Satisfactory completion of an English course at the level of Freshman Composition shall satisfy both this competency requirement and the Area D.1. coursework requirement (Title 5 §55063).

**Purpose for Including English Competency and One Course (3 units) in Language and Rationality: English Composition for General Education**

* For students to develop the principles and applications of language toward logical thought, clear and precise written expression and critical evaluation of written communication in whatever symbol system the student uses.
* For students to develop expository and argumentative writing skills (English Composition)

**Course Needed to Satisfy Associate’s Degree Written Competency Requirement and Area D.1. Language and Rationality: English Composition**

ENGL 100 College Composition – This is an introductory course that offers instruction in expository and argumentative writing, appropriate and effective use of language, close reading, cogent thinking, research strategies, information literacy, and document. Students are expected to using critical reading and thinking strategies to write primarily expository and argumentative texts that respond to a variety of rhetorical situations and contexts and incorporate college-level research. The course includes a minimum of 6,000 words of formal writing (C-ID Descriptor for ENGL 100).

**Evidence and Artifacts**

Examples of validations may be an employer statement of experience or performance, external certifications or licensing, published papers or work products, industry recognized credentials, exam scores, or more.

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|  | **Examples of Evidence Establishing Competency to GE Area D.1.** |
| General Equivalency Considerations | * Artifact or work product demonstrating the ability to research a topic and compose a well-organized and grammatically correct document with appropriate integration and citation of external source information.
* Artifact or work product documenting involvement in the analysis of a work process including a main idea, supporting details, and a final conclusion as it relates to sector, industry, or civic-specific skills
* Artifact or work product documenting the investigation of a topic or issue including the collection of evidence as well as the supporting arguments of a final position as they relate to sector, industry, or civic-specific skills
* Publication of multiple peer-reviewed articles
 |
| Discipline-Specific Examples: **Aviation** | * A certified recreational, private, or commercial pilot must be fluent in English as the international language of aviation. Proficiency must be demonstrated in reading, writing, and speech.

Ref: FAR 61.185(2) The aeronautical knowledge areas for a recreational, private, and commercial pilot certificate applicable to the aircraft industry for which flight instructor privileges are sought. |
| Discipline-Specific Examples: **Automotive Technology** | * A licensed automotive technician must effectively translate results of a vehicle diagnosis into written form to either the service advisor or customer in such a way that a layperson can understand the diagnosis and repair of the vehicle (English Composition).
* A licensed automotive technician must effectively research repair manuals, databases, and other sources to locate necessary information to understand problems and to propose and perform necessary repairs.
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| Discpline-Specific Examples: **Barber, Cosmetology** | A licensed barber, cosmetologist, or esthetician may research and write papers or articles for consideration within industry periodicals or websites. |

**GE Equivalency Examples**

**Area D.2. Language and Rationality: Communication and Analytical Thinking**

**& Associate’s Degree Competency in Mathematics**

Courses in language and rationality are those which develop for the student the principles and applications of language toward logical thought, clear and precise expression and critical evaluation of communication in whatever symbol system the student uses (Title 5 §55063 (b)(1)(D)). Such courses shall include Intermediate Algebra or another mathematics course at the same level, with the same rigor and with Elementary Algebra as a prerequisite.

D.2. Communication and Analytical Thinking. Courses fulfilling the communication and analytical thinking requirement include oral communication, mathematics, logic, statistics, computer languages and programming, and related disciplines.

* Students earning an Associate’s degree must demonstrate competence in mathematics. Traditionally, this competence is demonstrated by obtaining a satisfactory grade in a mathematics course at the level of the course typically known as Intermediate Algebra (either Intermediate Algebra or another mathematics course at the same level, with the same rigor and with Elementary Algebra as a prerequisite, approved locally). Any other considerations must be equivalent.
* Satisfactory completion of a mathematics course at the level of Intermediate Algebra shall satisfy both this competency requirement and the Area D.2. coursework requirement (Title 5 §55063).

**Purpose for Including One Course (3 units) in Language and Rationality for General Education**

* For students to demonstrate competence in mathematics at a level equivalent to intermediate algebra
* For students to develop oral communication and analytical thinking skills
* For students to develop skills interpreting and assessing data and statistics to draw conclusions.

**Examples of courses included in Area D.2. Language and Rationality**

MATH 110 Statistics

MATH 150 College Algebra for Liberal Arts

MATH 151 College Algebra for STEM (Science, Technology, Engineering, Mathematics)

**Evidence and Artifacts**

Examples of validations may be an employer statement of experience or performance, external certifications or licensing, published papers or work products, industry recognized credentials, exam scores, or more.

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|  | **Examples of Evidence Establishing Competency to GE Area D.2.** |
| General Equivalency Considerations | * Artifact or work product documenting logical thought in the identification of a work or civic challenge, development of specific solutions, implementation of solutions, and analysis of the outcomes and communication products of the project as they relate to sector, industry, or civic-specific skills
* Artifact or work product documenting the investigation of a topic or issue including the collection of evidence as well as the supporting arguments of a final position as they relate to sector, industry, or civic-specific skills
* Artifact or work product demonstrating mastery of oral communication skills as they relate to sector, industry, or civic-specific skills
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| Discipline-Specific Examples: **Aviation** | Ref: FAR 61.185(2) The aeronautical knowledge areas for a recreational, private, and commercial pilot certificate applicable to the aircraft industry for which flight instructor privileges are sought.* A certified flight instructor must receive instruction and complete an exam in the fundamentals of instruction which includes the learning process, elements of effective teaching, student evaluation and testing, course development, lesson planning, and classroom training techniques.
 |
| Discipline-Specific Examples: **Automotive Technology** | * A licensed auto technician must demonstrate the ability to decipher information from the customer in either oral or written form regarding their vehicle complaint and use of the information to diagnose the vehicle problem causing the customer’s concern and communication of findings either orally or in written form to the service advisor or customer.
* Every aspect of a licensed automotive technician’s job revolves around analytic thinking skills. Analytic thinking skills are used to confirm a customer’s concern, perform root cause diagnostic procedures, and verify the repair.
* A licensed automotive technician must use mathematical skills to manage and calculate ratios, measurements, comparisons, and specifications related to investigation of problems, development of appropriate repair solutions, and performance of repair. A licensed automotive technician may also use mathematical skills and reasoning to machine parts and tools to exact specification.
 |
| Discpline-Specific Examples: **Barber, Cosmetology** | * A licensed barber, cosmetologist, or esthetician must utilize mathematical skills and reasoning to calculate proper product ratios or quantities for application on customers.
 |