Administration of Justice
Program Completion/Learning Outcomes:
1. Be academically prepared to obtain an entry-level or mid-level position within the Criminal Justice System.
2. Apply critical thinking to research, evaluate, analyze, and synthesize criminal justice information.
3. Demonstrate the skills and knowledge necessary to take and pass local, state, and federal law enforcement entry level examination or career advancement examinations.
4. Appropriately apply the hands-on and technological skills necessary to succeed in the field of criminal justice.
5. Demonstrate excellent communication skills (oral and/or written) that need to be demonstrated in these carried professions.
6. Demonstrate professional and ethical responsibility in their decisions.

Art/Humanities
Program Completion/Learning Outcomes:
1. Identify the integral subjects that comprise the Humanities (philosophy, religion, history, literature, art and music).
2. Define and discuss the characteristics of human culture and the rise and fall of civilizations through history.
3. Discuss the arc of humanity’s attempt to understand and explain itself and the cosmos through intellectual history, from the ancient through contemporary worlds.
4. Connect the commonalities and distinguish the differences between divinely revealed religion, human philosophical constructs and science.
5. Explain the connection between the trends and events of history with those of the visual, literary and performing arts.
6. Relate the study of humanities to the development of the skills necessary to create responsible and useful civic participation in the political life of contemporary society.

Appliance Service Technology
Program Completion/Learning Outcomes:
1. Be able to diagnose a system problem, determine what type of test equipment to use and make an estimate of what will have to be done to complete the repair.
2. Demonstrate problem solving techniques used in troubleshooting to determine whether you have an electrical or mechanical failure and how to isolate the cause.
3. Using written or oral service directions that are used in the appliance field be able to demonstrate mechanical knowledge by diagnosing the failure, and locating and replacing the proper component.
4. Be able to locate service materials electronically to diagnose an electrical problem using a schematic diagram and sequence chart.
5. Be able to demonstrate the skills and knowledge necessary to take and pass the federal EPA exam required for employment in the Appliance field.
6. Be prepared for entry level employment in the appliance field by passing an industry employment test (NCEEE) and obtaining a job in that field.

Art/Fine Arts
Program Completion/Learning Outcomes:
1. Choose appropriate tools and materials for specific needs.
2. Demonstrate safe practices in various two-and three-dimensional media and studios.
3. Demonstrate problem-solving techniques in the process of design and execution.
4. Present, explain and justify their conceptual design solutions in a professional manner.
5. Critique the solutions of others in a positive, constructive manner.
6. Devise their own strategies for solving visual construction problems.
7. Identify and discuss artwork and styles from a wide range of historic eras and geographic locations.
8. Identify and discuss specific artists whose work they respond positively to, and how these works contribute to this positive response.
**Art/Graphic Communications**

Program Completion/Learning Outcomes:
1. Choose appropriate tools and materials, including hardware, software and media, for specific needs.
2. Use software and hardware in an appropriate and efficient manner.
3. Demonstrate problem-solving techniques, both on the computer and in the process of design and execution.
4. Present, explain and justify their conceptual design solutions in a professional manner.
5. Critique the solutions of others in a positive, constructive manner.
6. Devise their own strategies for solving visual construction problems.
7. Explain the applications of computer-aided art and design for industry uses.

**Biological Science**

Program Completion/Learning Outcomes:
1. Be able to distinguish a scientific hypothesis from a nonscientific idea.
2. Be aware of the chemical nature of life and apply chemical principles to everyday concepts such as diet and health.
3. Be able to find common ground between the functions of their own bodies and the functions of other life forms on Earth.
4. Be able to use a microscope so they can see that the living world is full of life forms (such as cells and bacteria) that are too small for them to see with their unaided eyes.
5. Be able to describe a few different ways that humans or other living organisms maintain internal homeostasis.
6. Be able to describe the basic relationship between DNA, proteins, and the transmission and evolution of hereditary traits.

**Automotive Technology**

Program Completion/Learning Outcomes:
1. Be prepared to enter the automotive repair field at the apprentice level or higher.
2. Have the skills to properly use hand tools, diagnostic equipment, repair manuals and maintenance equipment.
3. Obtain the vocabulary and knowledge to effectively explain the systems and components to customers and other technicians.
4. Apply their training and skills to successfully confirm, diagnose and properly repair failed systems to factory standards.
5. Have the ability to pass the standard ASE (automotive service excellence) tests, also be prepared or have received licensing including the California licensing.

**Business/Management and Supervision/Real Estate**

Program Completion/Learning Outcomes:
1. Be academically prepared to obtain an entry-level position in business.
2. Use critical thinking to research, analyze and synthesize information to solve common business problems.
3. Demonstrate strong oral and written skills necessary to effectively collaborate and communicate from a global perspective with diverse groups of people.
4. Apply business communication skills (written and/or oral) by appropriately using terminology and the business language.
5. Demonstrate knowledge of the technological skills required to succeed in the modern office and/or business environments.

**Behavioral Sciences (Anthropology, Psychology, Sociology)**

At the completion of the Los Medanos College general education programs the student will:
1. Understand connections among disciplines and apply interdisciplinary approaches to problem solving.
2. Think critically and creatively.
3. Possess a worldview informed by diverse social, multicultural and global perspectives.
Chemistry
Program Completion/Learning Outcomes:
1. Applied scientific methodology, in all its explicit steps, to either:
   • solve a complex problem posed in the classroom, or
   • complete a significant laboratory analysis, or
   • carry out an extensive study at one of LMC’s field stations.
2. Solved problems concerning the atomic and molecular structure of matter, using the periodic table plus quantum mechanics as the organizing and predictive models for this analysis.
3. Solved stoichiometric problems, including those complicated by the presence of limiting reagents.
4. Correctly predicted the products of standard inorganic, organic, biochemical, or nuclear reactions.
5. Applied the principles of thermodynamics and kinetics to solve problems:
6. Involving energy and entropy changes characteristic of chemical and physical reactions
   • concerning rates and mechanisms of chemical reactions
   • involving the principles of equilibrium
7. Demonstrated an understanding of electromagnetic radiation (i.e., light energy) and its interactions with matter, by carrying out spectroscopic analyses of atoms and compounds.
8. Conducted laboratory or field analyses using modern, professional technologies, selected from colorimetric, titrimetric, gravimetric, electrochemical, spectrometric, and chromatographic equipment and instruments.
9. Engaged in at least one hands-on research or restoration activity at a field site of LMC or a community partner, in order to utilize the distinct opportunity provided by having the California Delta in our backyard, and to appreciate the effort needed to act as good stewards of our local watersheds.

Computer Science
Program Completion/Learning Outcomes:
1. Apply their knowledge of general computer hardware and software concepts to the description, configuration and operation of modern microcomputers.
2. Demonstrate a professional level of technological proficiency with a broad array of computer applications software.
3. Demonstrate the ability to configure a new microcomputer, install operating systems software, and install and configure an array of applications software.
4. Use techniques and skills learned in the program to diagnose, troubleshoot and repair a variety of common microcomputers.
5. Communicate (oral and/or writing) effectively with other Computer personnel, in a multitude of technical environments.
6. Demonstrate the ability to analyze problems, and develop effective solutions.
7. Apply their knowledge of systems analysis and design to the analysis of requirements for developing computerized systems, and develop action plans for implementing a solution, utilizing an appropriate programming environment.
8. Be technologically proficient to obtain entry-level or mid-level positions and pass certification exams in the Information Technology industry.

Drama
Program Completion/Learning Outcomes:
1. To analyze, dissect, and critically evaluate a script or theatrical event or film with working knowledge of its historical, cultural, and societal origins and contexts.
2. To use strongly developed physical, vocal, and emotional foundations to build a personalized acting process for approaching a text or character in order to effectively communicate on stage or in film.
3. To understand how and be able to write, produce, direct, manage, promote, and star in a theatrical event or film.
4. To be academically and fundamentally prepared to enter the entertainment industry or transfer to a 4-year theatre or film program with an advanced standing.

Child Development
Program Completion/Learning Outcomes:
1. Obtain, maintain, and advance in permit licensure and/or prepare for upper division transfer through appropriate academic preparation.
2. Apply critical thinking to research, observe, assess, evaluate, analyze, and synthesize early learning and child development information.
3. Utilize effective written and verbal communication techniques to ensure optimum communication with children, families, and professional colleagues.
4. Select, develop, and/or use educational equipment, curriculum, assessments, materials, technology, and environments that are culturally relevant and developmentally appropriate.
5. Demonstrate the skills and knowledge necessary to obtain employment or advancement in early care and education careers.
**Electrical/Instrumentation Technology**

*Program Completion/Learning Outcomes:*

1. Gain entry-level or mid-level employment in the electrical or instrumentation field. (ISLO #1)
2. Troubleshoot, analyze, operate, repair, and install electrical systems equipment. (ISLO #2)
3. Communicate the technical status of equipment in writing and verbally; be able to work and communicate with teams. (ISLO #3)
4. Safely use electrical or instrumentation test equipment. (ISLO #4)
5. Demonstrate the operational concepts of equipment and technology used in the electrical or instrumentation field. (ISLO #4)
6. Demonstrate the skills and knowledge necessary to take and pass certification exams for career advancement in electrical or instrumentation fields (ISLO #5)

**Engineering**

*Program Completion/Learning Outcomes:*

1. Apply knowledge of math, science, and engineering to identify, formulate, and solve engineering problems.
2. Design and perform experiments, as well as to analyze and interpret data.
3. Design a system, component, or process to meet desired needs.
4. Demonstrate professional ethical responsibility.
5. Communicate effectively and perform on multi-disciplinary teams.
6. Judge the effects of engineering projects on society and the environment.
7. Engage in life-long learning and explain contemporary issues.
8. Use the techniques, skills, and modern engineering tools necessary for engineering practice.

**English (Transfer)**

*Program Completion/Learning Outcomes:*

1. Read independently for a variety of purposes in college-level materials
2. Read using a critical thinking, problem-solving approach
3. Respond coherently to text in critical, creative and personal ways
4. Write logical, coherent, developed academic essays
5. Use writing independently as a tool for learning and communicating
6. Engage in writing as a recursive process
7. Observe, monitor and evaluate strengths and weaknesses, then apply feedback to improve skills and learning
8. Use college resources to expand learning effectiveness.

**English (Developmental)**

*Program Completion/Learning Outcomes:*

1. Read independently for a variety of purposes in college-level materials.
2. Read using a critical thinking, problem-solving approach.
3. Respond coherently to text in critical, creative and personal ways.
4. Write logical, coherent, developed academic essays.
5. Observe, monitor and evaluate strengths and weaknesses, then apply feedback to improve skills and learning.
6. Use college resources to increase learning effectiveness.

**English-as-a-Second Language**

*Program Completion/Learning Outcomes:*

Learners will acquire skills that integrate academic literacy, acculturation, and vocational/professional skills. These courses prepare the non-native speaker for transfer, professional and/or personal development based on the integrated program outcomes as follows:

1. As a learner, students will be able to:
   - Observe, monitor and (self)peer evaluate strengths and weaknesses, and use feedback to improve learning
   - Independently use college resources to expand learning effectiveness
   - Establish an educational/vocational goal
2. As a speaker/listener, students will be able to:
   - Listen effectively in a variety of academic, personal and vocational situations
   - Produce consistently comprehensible spoken English for a variety of academic, personal and vocational purposes
3. As a reader, students will be able to:
   - Read independently for a variety of purposes
   - Engage in reading using a critical-thinking approach, emphasizing comprehension and study skills
   - Respond fluently to text in critical, creative and personal ways
   - Apply what is learned in readings to practical life skills
   - Value reading for academic, vocational and personal development
   - Apply the information gained through reading to understand self and others
4. As a writer, students will be able to:
   - See value in writing and appreciate language in multiple settings
   - Use writing independently as a tool for learning and communicating
   - Engage in writing as a recursive process
   - Use a standard academic essay format, maintaining structure, focus and syntax when writing about academic and vocational themes
Environmental Sciences
Program Completion/Learning Outcomes:
1. Apply the scientific method to the environmental sciences via a critical review of pertinent scientific literature, laboratory exercises, field studies, problem sets, and classroom discussions and analysis.
2. Demonstrate comprehension and application of the principles, techniques, methods, practices, skills, and ethics of modern environmental science professionals including (but not limited to):
   - Cycles in mass and energy transfer (e.g. Krebs cycle, hydrologic cycle, nutrient cycles, life cycles, food webs); illustrating that people and nature are intimately interconnected.
   - Natural resource sustainability, preservation, and conservation; why we must learn to sustain our environmental resources.
   - Ecological complexity and biodiversity; how human beings affect the environment of the entire planet.
   - Population growth and human interaction with their environment; why rapid human population growth is a fundamental global environmental issue.
   - Environmental racism and environmental justice; why urban environments need special attention.
   - Weather and climate; why solutions to environmental problems involve making value judgments based on scientific knowledge.
3. Demonstrate critical thinking regarding environmental problems via the design, implementation, and analysis of laboratory experiments, field studies, classroom debates, field journals, notebooks, topical research papers and presentations that teach students how to think through environmental issues so that they can arrive at their own decisions.
4. Engage in hands-on learning experiences via the design of practical and economical laboratory and field studies to gain marketable skills sets and a realistic view of career opportunities within the discipline.
5. Compare and contrast the traditional single discipline approach to scientific inquiry to the interdisciplinary approach of environmental problem solving spanning the entire spectrum of relationships between people and the environment.
6. Articulate and disseminate appreciation of and for the San Francisco Bay-Delta Watershed: its past, present, and future within the context other California environs.
7. Trace the origin and fate of the consumptive (e.g., food, fiber, water, mineral, and energy) natural resources that we use in California with specific attention on the San Francisco Bay-Delta region.
8. Differentiate between science and technology by recognizing that technology is not science, but the application of scientific knowledge and that science and technology interact promoting new developments in each other.

Fire Technology/Fire Academy
Program Completion/Learning Outcomes:
1. Be academically prepared to obtain an entry-level position as a firefighter in the Fire Service.
2. Apply critical thinking to research, evaluate, analyze and synthesize Fire Service information.
3. Demonstrate through written and oral communication skills a broad knowledge of fire history, fire chemistry and behavior, fire prevention and building construction as it applies to firefighting.
4. Appropriately apply the fire technology-based information attained in this degree for success in the Fire Service.
5. Apply the skills and knowledge from this degree towards potential advancement in the Fire Service.

Journalism
Program Completion/Learning Outcomes:
1. Be academically prepared to transfer to a journalism program at a four-year university or to obtain an entry-level job in journalism or a related field.
2. Demonstrate the knowledge, attitudes and skills necessary for careers in journalism and related fields.
3. Possess a portfolio of published work suitable for internship/job applications and interviews

Liberal Arts
Students completing one of the three Liberal Arts options will:
1. Read critically and communicate effectively as a writer and speaker.
2. Understand the connections among disciplines and apply interdisciplinary approaches to problem solving.
3. Think critically and creatively.
4. Consider the ethical implications inherent in knowledge, decision-making and action.
5. Possess a worldview informed by diverse social, multicultural and global perspectives.
Mathematics (Transfer)
Program Completion/Learning Outcomes:

1. Preparation and Mathematical Maturity: Be prepared for the mathematical reasoning required in upper division work in their major, including the ability to generalize mathematical concepts and comprehend increasing levels of mathematical abstraction.

2. Mathematical Literacy:
   Communicate using mathematics:
   a. Read with comprehension documents having mathematical content and participate cogently in discussions involving mathematics;
   b. Clearly articulate mathematical information accurately and effectively, using a form, structure and style that suit the purpose (including written and face-to-face presentation).

3. Problem-Solving Ability:
   a. Reason with and apply mathematical concepts, principles and methods to solve problems or analyze scenarios in real-world contexts relevant to their major;
   b. Use technology effectively to analyze situations and solve problems;
   c. Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results.

4. Modeling Ability:
   a. Construct and interpret mathematical models using numerical, graphical, symbolic and verbal representations with the help of technology where appropriate in order to draw conclusions or make predictions;
   b. Recognize and describe the limits of mathematical and statistical methods.

5. Effective Learning Skills:
   a. Independently acquire further mathematical knowledge without guidance, take responsibility for their own learning, and function effectively in different learning environments.
   b. Succeed in different learning environments, particularly in a group setting of working collaboratively with others.

Mathematics (Developmental)
Program Completion/Learning Outcomes:

1. Students will read, write, listen to, and speak mathematics with understanding.

2. Students will use mathematical reasoning to solve problems and a generalized problem solving process to work word problems.

3. Students will demonstrate the ability to use verbal, graphical, numerical, and symbolic representations of mathematical ideas to solve problems.

4. Students will recognize and apply math concepts in a variety of relevant settings and demonstrate the math skills and knowledge necessary to succeed in subsequent courses.

5. Students will demonstrate the characteristics of an effective learner.

Music
Program Completion/Learning Outcomes:

1. Understand and be able to apply the fundamentals of music theory, aural, and have a working knowledge of harmonic progression, musical forms and structures.

2. Have knowledge and understanding of the historical development of music, its historical periods, genres, instrumentation and composers, within their cultural context.

3. Have practical knowledge of performance practice in their particular ensemble performing styles.

4. Have proficiency of solo repertoire and technical studies in their major instrumental or vocal area of study.

5. Be competent with music technology in its various forms for composition, teaching, and professional pursuits.

6. Be able to work independently on varieties of musical problems by combining their capabilities in performance, aural, verbal and visual analysis, composition, repertoire, knowledge, and music history.

7. Have writing skills with the ability to independently utilize research tools and resources (library, internet, etc.)
Nursing

Vocational Nursing

Program Completion/Learning Outcomes:
1. Be academically prepared to take and pass the NCLEX-PN examination for licensure as a licensed vocational nurse (LVN).
2. Be academically prepared to secure an entry-level position as a licensed vocational nurse (LVN).
3. Demonstrate theoretical knowledge and application of technical skills to obtain an entry-level position as a licensed vocational nurse (LVN).
4. Apply critical thinking skills in the care of medical/surgical, maternity, pediatric, and/or psychiatric clients in various clinical settings.
5. Utilize therapeutic communication skills (oral and written) in a clinical setting that assist the client and family to cope with and resolve problems.
6. Determine the effects of nursing interventions on the status of clients cared for.

Registered Nursing

Program Completion/Learning Outcomes:
1. Be academically and clinically prepared to obtain employment as a neophyte registered nurse.
2. Apply the nursing process to research, evaluate, analyze, and synthesize information.
3. Utilize appropriate written and verbal communication techniques to ensure optimal communication with patients, family members, and other members of the healthcare team.
4. Implement nursing interventions utilizing current technology based upon scientific rationales.
5. Demonstrate skills and knowledge necessary to take and pass the National Council's Licensure Examination (NCLEX-RN).

Process Technology

Program Completion/Learning Outcomes:
1. Be academically and experientially prepared to obtain an entry-level position in the chemical, refining, oil and gas production, water, waste management, food, and related manufacturing industries.
2. Apply critical thinking to research, evaluate, analyze and synthesize information to solve problems related to process equipment, instruments, systems, and operations within the chemical, refining, oil and gas production, water, waste management, food, and related manufacturing industries.
3. Demonstrate excellent communications skills (oral and written) to ensure optimal communication with shift co-workers, first line supervisors, maintenance personnel, safety personnel, contractors, and other members of the manufacturing site team.
4. Demonstrate knowledge of the process technology and apply the technical skills necessary to operate complex process equipment and systems such as distillation, fired boiler, refrigeration, cooling tower, reactor, and similar unit operations.

Recording Arts

Program Completion/Learning Outcomes:
1. Be able to transfer to a 4-year recording industry program, with advanced standing.
2. Be qualified for entry-level positions in the field.
3. Be positioned to begin entrepreneurial freelance work.

Travel Marketing

Program Completion/Learning Outcomes:
1. Be academically prepared to obtain an entry-level or a mid-level position in the travel industry.
2. Demonstrate the skills and knowledge necessary to take and pass national travel industry certification exams for career advancement in the travel industry.
3. Apply critical thinking to research, evaluate, analyze and synthesize travel-related information.
4. Demonstrate excellent communication skills (oral and/or written) as well as excellent soft-skills in a sales and business environment.
5. Demonstrate knowledge of travel industry technology and apply the technological skills necessary to succeed in the travel industry.

Welding Technology

Program Completion/Learning Outcomes:
1. Be able to know and have an appreciation for the safety knowledge required in the welding trade.
2. Demonstrate the ability and theory to effectively solve problems encountered while welding or cutting as per job requirement.
3. Demonstrate step by step the procedure required to perform at the skill level dictated per job-fab standards.
4. Be able to understand the variables involved at the performance level stage as a welder.
5. Foster the importance of proper training and preparation for today's employment qualification requirements.
6. Be prepared to pass the required National Certification Exam, essential for employment as a welder.