

Academic Department Review

Academic Years: 2020-2025



Department: STEM

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Process of Department Review at Luna Community College

Purpose

Department review at Luna Community College (LCC) offers each academic department a structured process to reflect on its strengths, to address areas for improvement, and to advance strategic goals by examining its programs of study. At LCC, a department is the larger academic area, like STEM, that includes all faculty and resources available. A program of study is a specific course of study within that department that leads to a degree or certificate, such as Computer Science (Associate of Applied Science) or General Science (Certificate).

Departments can offer one or several programs, depending on their focus. Aligned with LCC's strategic priorities, the department review process supports academic excellence by enabling each department to evaluate its effectiveness across programs, to plan for the future, and to demonstrate accountability. The process also fosters meaningful discussion and engagement around departmental activities and outcomes, helping to organize information in a way that is clear, accessible, and useful for decision-making.

The objectives for department review are:

1. Guide the future direction and priorities for program offerings at Luna Community College.
2. Assure institutional quality to students, faculty, parents, alumni, and other stakeholders.
3. Identify areas for improvement and expansion.
4. Encourage goal setting within academic programs and engagement activities.
5. Identify the most effective usage of existing resources and generation of new resources.
6. Fulfill standards for comprehensive institutional accreditation.

The following sections are included to provide a comprehensive review of each department:

I. Department Strategy and Direction

This section provides a high-level overview of the department's mission, goals, emerging trends, peer comparisons, and strategic challenges.

II. Student Information and Academic Quality

This section evaluates the quality of student academic experiences, including enrollment trends, learning outcomes, faculty support, and student achievement.

III. Academic Production and Workforce Training

This section examines the department's productivity in preparing students for transfer, employment, and scholarly or creative contribution, including interdisciplinary collaboration and field relevance.

IV. Human, Physical, and Financial Resources

This section assesses the department's capacity to sustain and enhance its programs through staffing, funding, facilities, and external engagement.

V. Report Summary

This final section provides a concise, narrative reflection on the department's performance, key actions taken, and future plans.

Instructions

The review and subsequent reporting addresses five major areas: (1) department strategy and direction; (2) student success and academic quality; (3) academic production and workforce training; (4) human, physical, and financial resources; and (5) a concluding summary of performance and future plans. This report is prepared by academic directors and should be reflective, evidence-informed, and helpful to each department, those included in their programs, and the institution as a whole.

While departments are encouraged to respond to the included prompts, the report does not need to follow a strict question-and-answer format. Alternative organizational approaches are welcome if they better serve the department's purpose. Charts, graphs, and tables should be included when they enhance the clarity and impact of the narrative. Logical page breaks should be used for clarity and the Table of Contents should reflect updates to page numbering.

Common data sets for departments

Data will be provided to departments in May after completion of each spring semester. This data will include all available program completion information; however, because graduation data is not reported until mid-June, that information is not included in the common data set. Academic directors should also rely on their programs' graduation/completion records for this data set. To assist with compiling this report, the following data has been provided to each academic department:

- Common data set from the LCC ERP/SIS Administrator and/or Registrar
- Course Learning Outcome and Assessment (CLOA) data provided by the LCC Assessment Committee - these are informed in part by course evaluations provided by the LCC Distance Learning Coordinator.

Submission Timelines

Reports will be compiled during the last two weeks of May each year, with the final report due to the Vice President of Instruction and Student Services prior to May 30 every 3 years. Annually, departments will be expected to complete interim reporting based on reflection of progress toward goals to assist in comprehensive reporting (template is provided). This timeline and current reporting method will be refined as needed to ensure the most effective department and programmatic review process.

I. Department Strategy and Direction

Purpose: This section provides a comprehensive overview of the department's purpose and direction, including its mission, vision, strategic goals, and major challenges. It invites departments to reflect on how their work aligns with Luna Community College's broader priorities and community needs. Additionally, this section encourages analysis of emerging trends in the discipline, opportunities for innovation, and comparisons with peer institutions to identify areas of strength and improvement.

A. Mission and Vision

Summarize the department's mission and vision, explaining how they support student success and align with institutional goals.

- The mission of the Luna Community College STEM Department is to provide students with essential skills, including communication, quantitative reasoning, critical thinking, information and digital literacy, and personal and social responsibility to best ensure students' success in earning advanced degrees or in their careers.
- The department's vision is to promote the role of science, technology, engineering, and mathematics in the communities we serve.
- This mission and vision support student success, community needs, and the college's strategic priorities by offering clear and consistent opportunities that meet or exceed expectations.
- This mission and vision have and will continue to be discussed among department members through regular meetings held during the academic year .

B. Goals and Assessment

List the department's key goals and explain how progress is measured, tracked, and used to support program improvement.

- The department has established the following strategic goals:
 - Goal 1: to increase enrollment in STEM programs offered at Luna Community College. This will be done by recruitment in the department.
 - Goal 2: to increase community participation in non academic-events and programs provided by students and faculty at Luna Community College.
- For each goal, progress is assessed using the following measures (qualitative and/or quantitative):

- Measures for this area require combining quantitative and qualitative methods to track attendance (headcount), engagement (social media metrics), and overall satisfaction response rate from surveys or social media metrics).
- Quantitative annual assessment of programmatic enrollment.
- Quantitative information regarding community participation in events; qualitative information regarding participants' assessment of the event or program.
- Qualitative information regarding participant's completion of the event or program from course evaluations.
- The department uses assessment results to inform:
 - Program or curriculum changes by annual review to align with current curriculum that is up to date in the state or federal curriculum.
 - Resource requests by evaluation of assessment results in regards to technology and resource allocation Measures are done by using a combination of quantitative metrics like cost benefit analysis (CBA) and/or return on investment (ROI), and qualitative assessments like risk analysis and project specific needs identification.
 - Strategic planning decisions by identifying successes and challenges to best inform the upcoming year's schedule of events.

C. Emerging Opportunities

Identify major trends or opportunities in the field that affect the department and describe how you are responding or planning to respond.

- Notable trends or changes in the field include:
 - Science, technology, engineering, and mathematics are increasingly popular undergraduate programs. Faculty recognize multiple factors have led to this increased popularity.
 - Vocational and technical educational opportunities often provide students the knowledge and skills needed for entry-level positions. Certificates and degrees offered by the STEM department at Luna Community College enhance and further that knowledge.
 - Large research institutions may have access to equipment and resources that a small, rural community college may not.
- These trends may create opportunities for:
 - Increased collaboration with Luna Community College's non-degree offerings, in CTE and Workforce Development.
 - New partnerships with local businesses and organizations that work directly with science, technology, engineering, and mathematics. These partnerships may be with other institutions, businesses, and civic and community groups.

- One articulation agreement exists at present, regarding a Forestry course and its transferability to New Mexico Highlands University's degree program in Forestry. This articulation agreement was finalized during the Spring 2025 semester.
- Continued assessment of Luna Community College's offerings in science, technology, engineering, and mathematics, to ensure students are provided the most useful and robust educational experience possible.
- The department is exploring or implementing the following strategies in response:
 - Explore new partnerships with community businesses, other four year institutions, and organizations during the 2025-2026 year to better understand the needs of the community.
 - Work with other departments on campus to ensure LCC's course offerings in science, technology, engineering, and mathematics best serve our students in various programs.

D. Benchmark Peers

Compare the department's programs with similar programs at peer institutions and reflect on areas of strength and growth. Peer comparisons should be based on factors relevant to the department's context—such as size, mission, student demographics, region, or delivery format. Identify 2–3 peer programs you consider aligned and briefly explain the selection criteria. Use these comparisons to highlight strengths, areas for improvement, and what makes the program distinctive.

- Peer institutions or programs used for comparison include:
 - Mesalands Community College/multiple programs. Mesalands Community College offers associates and associates of science degrees in a variety of programs, including geology, paleontology, pre-engineering, equine and beef science, as well as two degrees related to business office technology.
 - Central New Mexico Community College/multiple programs. Central New Mexico Community College offers associates and associates of science degrees in a variety of programs, including engineering, geology, mathematical sciences, as well as degrees related to Chemistry
- Compared to its peers, the STEM department at Luna Community College excels in providing students educational experiences that align with their educational and career goals. While other peer institutions offer multiple certificates and, for some, associates degrees. Luna's STEM department supports all of our programs.
- Some peer institutions offer unique and distinct degrees—the technology and engineering program at ENMU is one example.

- The STEM Department at Luna Community College has experienced few changes in its offerings. Students' preference for online courses during the pandemic and Calf Canyon/Hermit's Peak fires created new challenges, as delivery of in-person laboratory work became complicated.

E. Key Challenges

Identify significant internal or external challenges, how the department is addressing them, and what support is needed to overcome them.

- The STEM Department at Luna Community College continues to face challenges in staffing and enrollment. Increased activity by faculty as well as admissions and recruitment staff is ongoing.
- The STEM Department at Luna Community College has faced few challenges regarding space or equipment. Two programs, Video Game Design and Development and Fire Science, remain under development. Space and some resources have been dedicated to both of these emerging programs to expand their growth and success.
- The STEM Department at Luna Community College has faced challenges in securing full time and adjunct faculty.
- The STEM Department has faced new challenges in fostering an inclusive environment.
- To meet and overcome these challenges, the STEM Department at Luna Community College will take the following actions during the 2025-2026 academic year:
 - Facilitate at least two co-curricular events for the Luna Community College community each semester, to compliment students' learning and experience with science, technology, engineering, and mathematics.
 - Facilitate at least one event held at Luna Community College that is open to the public, to raise awareness in the community about the value and impact of science, technology, engineering, and math.
- To meet these goals, the STEM Department at Luna Community College needs the support of its colleagues, the campus community, and stakeholders from the regions we serve.

II. Student Information and Academic Quality

Purpose: This section evaluates the quality and effectiveness of the academic experience for students, including enrollment patterns, assessment practices, faculty development, and post-completion outcomes across programs within the department. This section also identifies professional development opportunities for faculty. Note: Strategies supporting student career readiness should be described in Section III.F.

A. Enrollment Trends

Please provide enrollment data for each academic program offered in the department. If the department includes multiple programs, report data for each distinct degree or certificate program. See Figure 1 for annual rates.

- Total headcount in each program over the past three academic years (attach tables or charts if available):

Computer Science (Cybersecurity Certificate)

- Year 1 (2020-2021): 2
- Year 2 (2021-2022): 1
- Year 3 (2022-2023): 1
- Year 4 (2023-2024): 2
- Year 5 (2024-2025): 0

Computer Science (Computer Application Specialist Certificate)

- Year 1 (2020-2021): 0
- Year 2 (2021-2022): 0
- Year 3 (2022-2023): 2
- Year 4 (2023-2024): 1
- Year 5 (2024-2025): 6

Computer Science (Associate of Applied Science)

- Year 1 (2020-2021): 23
- Year 2 (2021-2022): 21
- Year 3 (2022-2023): 25
- Year 4 (2023-2024): 20
- Year 5 (2024-2025): 24

Engineering (Associate of Science)

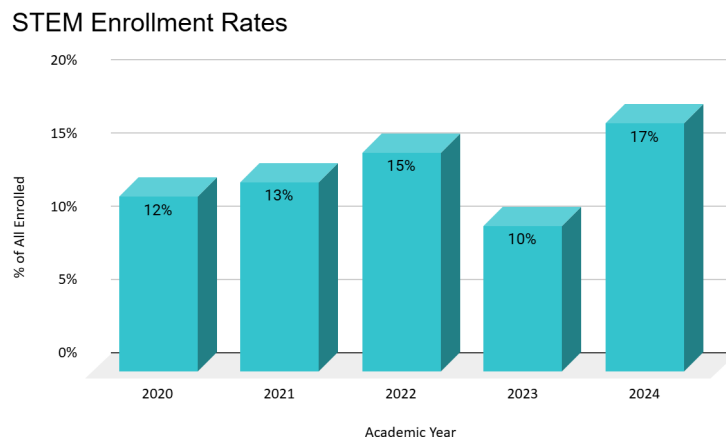
- Year 1 (2020-2021): 11
- Year 2 (2021-2022): 19
- Year 3 (2022-2023): 22
- Year 4 (2023-2024): 12
- Year 5 (2024-2025): 19

General Science (Associate of Science)

- Year 1 (2020-2021): 26
- Year 2 (2021-2022): 31
- Year 3 (2022-2023): 22
- Year 4 (2023-2024): 19

- Year 5 (2024-2025): 19
- Mathematics (Associate of Science)**
- Year 1 (2020-2021): 9
 - Year 2 (2021-2022): 6
 - Year 3 (2022-2023): 4
 - Year 4 (2023-2024): 3
 - Year 5 (2024-2025): 4
- Video Game Design and Development (Certificate)**
- Year 1 (2020-2021): 0
 - Year 2 (2021-2022): 0
 - Year 3 (2022-2023): 0
 - Year 4 (2023-2024): 0
 - Year 5 (2024-2025): 0
- Fire Science (Associate of Applied Science)**
- Year 1 (2020-2021): 1
 - Year 2 (2021-2022): 0
 - Year 3 (2022-2023): 4
 - Year 4 (2023-2024): 2
 - Year 5 (2024-2025): 2

Figure 1. Enrollment Rates



- Based on this data, the STEM Department recommends continuing to offer its existing programs, as well as to focus efforts on programmatic development and finalization of in Fire Science and Video Game Design and Development program offerings.
- The STEM Department anticipates enrollment changes over the next 1–3 years, including increased enrollment in the Computer Science program, General Science, Mathematics, Pre-Engineering, Video Game Design and Development.

B. Significant Initiatives

Highlight recent or ongoing initiatives aimed at improving academic quality, equity, or student support.

- The department has implemented the following major initiatives in the past 2–3 years to improve academic quality, equity, or student support across programs:
- Initiative 1: development of an Associate of Applied Science in Fire Science.
 - In response to devastating wildfires in the region experienced by Luna Community College, the College has sought to establish educational experiences related to preventing, fighting, and recovering from wildfires. These efforts have created the Wildfire Resiliency Training Center (WRTC), established in 2024. Its Director facilitates non-credit community education opportunities and continues to collaborate with members of the STEM Department on the development of an Associate in Applied Science program. Which can lead our non-credit students at the WRTC to a credit bearing degree.
 - The STEM Department anticipates that the academic program under development will be well received by the local and regional community.
- Initiative 2: development of a certificate program in Video Game Design and Development.
 - Video gaming and eSports are growing industries. To best prepare students for employment in this field, the STEM Department continues to support the development of a certificate program in Video Game Design and Development. Under the direction of the computer science faculty, the STEM Department has continued to pursue the development of this certificate program. A brief market analysis of similar programs, and of potential employers for earners of this proposed certificate, was conducted in July 2025.
 - The STEM Department anticipates this certificate program will see immediate enrollment, we anticipate stacking this credential with other STEM related degrees.
- The STEM Department will track the effectiveness of both of these initiatives using course success rates, retention rates, graduation rates, and student feedback.

C. Learning Objectives and Assessment

Summarize the program's student learning objectives and how outcomes are assessed and used across all programs.

Appendix A includes the most recent Program Curriculum Maps. Appendix B includes the most recent Program-Level Outcome Assessment (PLOA) reports for each program.

The department includes an assessment for the following programs:

- ASSOCIATE OF SCIENCE
 - General Science
 - Pre-Engineering
 - Mathematics
- ASSOCIATE OF APPLIED SCIENCE
 - Computer Information Systems Technology (Formerly known as Computer Science).
 - Fire Science
- CERTIFICATES
 - Computer Information Specialist (Formerly known as Computer Application Specialist)
 - Cybersecurity
 - Video Game Design and Development
- Program 1: Computer Information Systems Technology (AAS)
 - Graduates will summarize and interpret the history and evolution of computer systems and social issues involving computers.
 - Graduates will analyze and interpret data when developing programs using C++ and Java.
 - Graduates will maintain and differentiate between different operating systems.
 - Graduates will communicate effectively, engage in lifelong learning, and function on teams.
 - Graduates will distinguish between the hardware and software of a computer system.
 - Graduates will identify various applications as well as their functions.
 - Graduates will maintain and implement small home and office networks.
 - Graduates will use the techniques and skills for professional practice.
 - Graduates will understand professional and ethical responsibility.
 - Graduates will have knowledge of contemporary issues.

- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations

- Students will be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a real or simulated setting. Students may be required to write research papers or essays on various topics related to computer science. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.

- Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty work in collaboration with student support services to ensure students have access to the support they need in order to be successful.

- One example of curricular improvement in computer science is continued development of a certificate program in Video Game Design and Development.

- Program 2: Computer Information Specialist Certificate
 - Graduates will summarize and interpret the history and evolution of computer systems and social issues involving computers.
 - Graduates will analyze and interpret data when developing programs using C++ and Java.
 - Graduates will maintain and differentiate between different operating systems.
 - Graduates will communicate effectively, engage in lifelong learning, and function on teams.
 - Graduates will distinguish between the hardware and software of a computer system.
 - Graduates will identify various applications as well as their functions.
 - Graduates will maintain and implement small home and office networks.
 - Graduates will use the techniques and skills for professional practice.

- Graduates will understand professional and ethical responsibility.
- Graduates will have knowledge of contemporary issues.
- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations
- Students may be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a real or simulated setting. Students may be required to write research papers or essays on various topics related to computer science. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.
- Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty work in collaboration with student support services to ensure students have access to the support they need in order to be successful.
- One example of curricular improvement in computer science is continued development of a certificate program in Cybersecurity.
- Program 3: Cybersecurity Certificate
 - Graduates will summarize and interpret the history and evolution of computer systems and social issues involving computers.
 - Graduates will analyze and interpret data when developing programs using C++ and Java.
 - Graduates will maintain and differentiate between different operating systems.
 - Graduates will communicate effectively, engage in lifelong learning, and function on teams.
 - Graduates will distinguish between the hardware and software of a computer system.
 - Graduates will identify various applications as well as their functions.

- Graduates will maintain and implement small home and office networks.
 - Graduates will use the techniques and skills for professional practice.
 - Graduates will understand professional and ethical responsibility.
 - Graduates will have knowledge of contemporary issues.
- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations
 - Students may be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a real or simulated setting. Students may be required to write research papers or essays on various topics related to computer science. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.
 - Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty work in collaboration with student support services to ensure students have access to the support they need in order to be successful.
 - One example of curricular improvement in computer science is continued development of a certificate program in Computer Information Specialist.
- Program 4: Engineering AS
 - Graduates will possess a solid foundation of knowledge in core engineering disciplines, including mathematics, physics, chemistry, and computer science, providing them with a strong basis for further studies in engineering.
 - Graduates will develop strong problem-solving and critical-thinking skills, applying analytical reasoning and innovative approaches to solve complex engineering problems and design challenges.

- Graduates will develop a strong foundation in mathematics, including calculus, linear algebra, and differential equations, essential for solving engineering problems and modeling real-world situations.
- Graduates will gain a comprehensive understanding of physics and chemistry principles, applying them to analyze and solve engineering problems related to mechanics, electromagnetism, thermodynamics, and material properties.
- Graduates will develop strong problem-solving and critical-thinking skills, applying logical reasoning and analytical abilities to tackle complex engineering challenges and design innovative solutions.
- Graduates will demonstrate effective technical communication skills, both orally and in writing, to present engineering ideas, designs, and reports clearly and professionally.
- Graduates will work collaboratively in teams, demonstrating the ability to communicate, cooperate, and contribute effectively to achieve shared engineering objectives.
- Graduates will understand the ethical responsibilities of engineers, adhering to professional codes of conduct, and recognizing the social and environmental impact of engineering solutions.
- Graduates will utilize engineering software and simulation tools to analyze and evaluate complex engineering systems, making informed decisions based on data and simulations.
- Graduates will learn project management principles and practices, developing skills to plan, organize, and execute engineering projects efficiently, considering budget, resources, and timelines.

- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations

- Students may be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a real or simulated engineering setting. Students may be required to write research papers or essays on various topics related to engineering. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.

- Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community

College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty work in collaboration with student support services to ensure students have access to the support they need in order to be successful.

- One example of a recent instructional or curricular improvement based on assessment results was the addition of 3D printers in the Technology Building, as faculty recognized students desired experience with that technology. These are used in a variety of courses in pre-engineering.

- Program 5: General Science AS

- Graduates will describe the process of scientific inquiry.
- Graduates will solve problems scientifically.
- Graduates will communicate scientific information.
- Graduates will apply quantitative analysis to scientific problems.
- Graduates will apply scientific thinking to real world problems.

- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations

- Students may be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a real or simulated scientific research setting. Students may be required to write research papers or essays on various topics related to topics and research in science. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.

- Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty work in collaboration with student support services to ensure students have access to the support they need in order to be successful.

- One example of recent instructional or curricular improvements based on assessment results is the ongoing consideration of new technology to supplement students' learning experiences.

- Program 6: Mathematics AS

- Graduates will possess a comprehensive understanding of fundamental mathematical concepts, including algebra, calculus, geometry, statistics, and discrete mathematics.
- Graduates will develop strong problem-solving and critical-thinking skills, applying mathematical reasoning and analytical abilities to solve complex mathematical problems and real-world applications.
- Graduates will be able to use mathematical models to represent and solve practical problems in various fields, applying mathematical techniques and tools to analyze and interpret data.
- Graduates will effectively communicate mathematical ideas, concepts, and solutions through written, verbal, and visual representations, demonstrating clarity, coherence, and precision in their mathematical communication.
- Graduates will possess the ability to reason and make informed decisions based on numerical and quantitative information, evaluating data, identifying patterns, and drawing meaningful conclusions.
- Graduates will effectively use mathematical software and technology, such as graphing calculators, mathematical modeling software, spreadsheets, and statistical software, to enhance problem solving, data analysis, and mathematical visualization.
- Graduates will understand the concepts of mathematical proof and be able to construct and evaluate mathematical arguments, demonstrating logical reasoning and a solid foundation in mathematical rigor.
- Mathematical Applications: Graduates will apply mathematical concepts and techniques to solve realworld problems in diverse areas, such as science, engineering, economics, finance, and social sciences, demonstrating the relevance and applicability of mathematics in practical contexts.
- Collaborative and Cooperative Learning: Graduates will collaborate effectively with peers, engaging in cooperative learning activities, group projects, and mathematical discussions, demonstrating the ability to work collaboratively to solve mathematical problems.
- Graduates will engage in lifelong learning in mathematics, recognizing the dynamic nature of the discipline and the need to continually update their knowledge and skills, pursuing further

education, professional development, and staying current with advancements and trends in mathematics and its applications.

- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations
 - Students may be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a mathematics setting. Students may be required to write research papers or essays on various topics related to mathematics. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.
 - Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty work in collaboration with student support services to ensure students have access to the support they need in order to be successful.
 - One example of recent instructional or curricular improvements based on assessment results is faculty's review of course texts and resources provided to students.
- Program 7: Video Game Design and Development (Certificate)
 - Graduates will summarize and interpret the history and evolution of computer systems and social issues involving computers.
 - Graduates will analyze and interpret data when developing programs using C++ and Java.
 - Graduates will maintain and differentiate between different operating systems.
 - Graduates will communicate effectively, engage in lifelong learning, and function on teams.
 - Graduates will distinguish between the hardware and software of a computer system.

- Graduates will Identify various applications as well as their functions.
 - Graduates will maintain and implement small home and office networks.
 - Graduates will use the techniques and skills for professional practice.
 - Graduates will understand professional and ethical responsibility.
 - Graduates will have a knowledge of contemporary issues
- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations
 - Students may be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a video game design and development setting. Students may be required to write research papers or essays on various topics related to video game design and development. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.
 - Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty work in collaboration with student support services to ensure students have access to the support they need in order to be successful.
 - One example of curricular improvement is continued development of a certificate program in Cybersecurity, which could also lead students in obtaining an associates degree.
- Program 8: Fire Science (AAS)
 - Graduates will illustrate the history of the fire service; describe the components and development of the fire and emergency services; recognize careers in fire and emergency services.
 - Graduates will identify various classifications of building construction; understand theoretical concepts of how fire impacts major types of building construction.

- Graduates will identify laws, codes, ordinances, and regulations as they relate to fire prevention; understand code enforcement as it impacts life and property loss.
 - Graduates will identify the fundamental theories of fire behavior and combustion; differentiate the various types of extinguishment agents.
 - Graduates will identify and describe various types and uses of fire protection systems; describe the basic elements of a public water supply system as it relates to fire protection.
 - Graduates will identify and explain the 16 life safety initiatives; understand the concepts of risk management and mitigation as it pertains to emergency services.
- These objectives are aligned with:
 - x Institutional learning outcomes
 - x General education outcomes
 - x Industry or transfer expectations
 - Students may be assessed through written exams that test their knowledge and understanding of the course material. Observational exams may involve assessing students' practical skills and abilities in a professional firefighting setting. Students may be required to write research papers or essays on various topics related to fire science. These papers allow students to demonstrate their understanding of key concepts and their ability to critically analyze and discuss relevant issues.
 - Assessment results are used to inform curriculum changes, student support services, and program planning through close tracking of student success during and at the end of each semester. Faculty work in collaboration with Luna Community College's office of institutional data to assess and review student evaluations, student achievement, and other metrics. From this continuous review, faculty's work in collaboration with student support services to ensure students have access to the support they need in order to be successful.
 - One example of curricular improvement in fire science is continued development of an associate of applied science program in Fire Science. The WRTC at Luna Community College is a non-credit program that can lead students to the credit program in Fire Science.

D. Faculty Training and Professional Development

Summarize how the department supports ongoing professional development and training for faculty to ensure instructional quality, equity, and student success.

- The STEM Department at Luna Community College supports the ongoing professional development and training for faculty, to ensure the quality, equity, and success of each degree and credential-granting program. Individual faculty sought professional development opportunities at conferences both in person and online.
- Department-wide professional development activities included regular departmental meetings, at which a variety of issues in education and curricula delivery were discussed.
 - Topics covered: AI; classroom management; online facilitation of curricula; assessment of institutional facilities and resources.
 - STEM Department faculty attended and participated in regular departmental meetings to address these issues.
- Faculty will benefit from additional training regarding online student assessment, pedagogy related to digital media and asynchronous course delivery, and the development of activities that create opportunities for the campus community to engage with STEM fields.
- Some STEM Department faculty have requested to participate in conferences, including the New Mexico Higher Education conference in 2024 as well as events of advocacy related to science, technology, engineering, and mathematics. STEM faculty regularly attended institutional training and meetings related to implementation of new administrative systems on campus, development of new positions and review of candidates, and other opportunities for professional growth.
- Going forward, the STEM Department will support its faculty through providing professional development opportunities throughout the academic year.

III. Academic Production and Workforce Training

Purpose: This section evaluates the department's contributions to degree and certificate completion, workforce preparation, and creative or scholarly activities. "Production" is broadly defined to include degrees and certificates, workforce preparation, applied skills, research, and interdisciplinary or creative work. Departments are asked to reflect on their focus areas, alignment with external trends, impact, and contribution to workforce or academic ecosystems.

A. Major Academic Production and Workforce Training Areas

Describe the core outputs and training functions of the programs in the Department. These can be addressed after listing each of the programs.

- The department offers the following degrees, certificates, or technical training areas:
 - Associates of Applied Science in Computer Science
 - Associates of Applied Science in Fire Science
 - Associates of Science in General Science
 - Associates of Science in Mathematics
 - Associates of Science in Engineering
 - Certificate in Video Game Design and Development
 - Certificate in Computer Science Application Specialist
 - Certificate in Cybersecurity
- Students in the Engineering and General Science programs experience a capstone model of education, as their final semester includes a for-credit Capstone course. This course allows students to exhibit their skills and knowledge acquired in unique ways.

B. Emerging Themes and Alignments

Explain how the department is aligned with developments and changes in the discipline or industry across each program.

- The STEM field has seen the development of a number of new initiatives that affect course curricula and student learning. These include but are not limited to artificial intelligence, increased use of digital communication including social media, and researchers' abilities to self-promote and publish using online communication channels.
- Opportunities identified to expand academic or workforce relevance to address these developments include a new certificate in Video Game Design and Development, a new Associates of Applied Science in Fire Science, and new certificate in Cybersecurity.

C. Measurement and Comparison

Provide evidence of how the department evaluates its productivity. For disaggregated data on graduation, credential attainment, and post-completion outcomes, see Section III.F.

- The department tracks productivity using the following measures (check all that apply):
 - x Graduation counts
 - x Credential attainment
 - ☐ Licensure pass rates
 - ☐ Creative or research output
 - x Industry-validated skills or certifications
- Available comparison data or benchmarking sources include graduation and credential attainment data from similar institutions.
- Relative to peer departments, institutions, or programs, the programs in the STEM Department are strong in degree completion with small faculty-to-student ratios.
- Areas where the department is working to improve include improved co-curricular experiences for students enrolled in STEM programs.

D. Impact and Contribution

Reflect on the reach or influence of the department's output and how this is being assessed.

- Programs assess impact through the following indicators (check all that apply):
 - ☐ Alumni career outcomes
 - x Community or employer partnerships are measured by defining shared goals, tracking engagement metrics like participation and sentiment
 - ☐ Research dissemination or creative recognition
 - x Regional contributions or visibility can be measured by visual impact indices for physical presence.
- The STEM Department contributes to workforce needs, community engagement, or academic progress through providing unique and useful academic programs that lead to industry-recognized credentials applicable in a variety of employment opportunities across New Mexico, other states in the U.S.A., and abroad .
- Student feedback upon graduation has and continues to reflect favorably on the STEM Department and its faculty.

- Compared to peer departments, the department's reach or visibility is extensive. This will be measured by quantitative metrics such as social media engagement. This includes likes, shares, views, media mentions, and event attendance. Students from other programs enroll and are successful in courses offered by the STEM Department.

E. Interdisciplinary Nature

Describe how the department collaborates across fields or sectors to enhance learning or impact.

- Programs offered by the STEM Department integrate multiple disciplines. Curricula in Pre-Engineering and Computer Science courses draws on technology, mathematics, aesthetics, and other disciplines of knowledge. Curricula in Mathematics courses draw on students' understanding of math and its critical role in society; this application of curricular knowledge draws on students' knowledge and application of the social sciences.
- Internal (LCC) partnerships that support interdisciplinary learning and engagement are under development. These may include partnership between the CTE Department and STEM faculty.
- While individual faculty are engaged with external organizations that support the STEM in the communities served by Luna Community College, no formal partnerships exist between these and the STEM Department at this time.

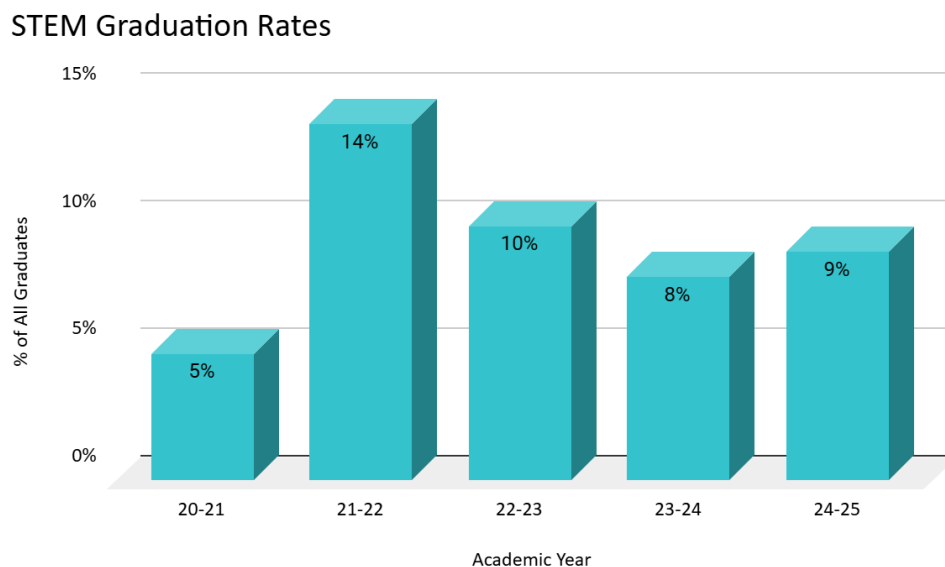
F. Completion and Student Outcomes

Summarize key student outcomes related to graduation, employment, and transfer, and describe how the department supports professional readiness.

- The department tracks the following outcomes (include tables and graphs where relevant):
 - Graduation rates (5-year average): 9 %, See Figure 2.
 - Credential or degree attainment (annual average): 9 %
 - Other: _____
- Sources used to gather outcomes data include:
 - Institutional reporting
 - Graduation survey
 - Alumni or employer surveys
 - SENSE survey
 - National/state databases
 - Other: _____
- The department supports student readiness through:

- Supporting faculty and students' embedded professional skills, including communication, ethics, and applied technical skills.
 - The STEM department encourages students to seek opportunities for continued learning and growth through activities, such as original creative work, internships, externships, and research projects.
 - Student support, including advising and mentoring, review of portfolios and students' resumes.
 - Students are provided opportunities to visit sites related to STEM fields, including research facilities and other institutions.
 - One articulation agreement exists at present, regarding a Forestry course and its transferability to New Mexico Highlands University's degree program in Forestry. This articulation agreement was finalized during the Spring 2025 semester.
- Improvements needed in outcome tracking or professional preparation include increased training for full- and part-time faculty regarding course and programmatic learning outcomes, as well as systematic collection and evaluation of course and programmatic assessment data.

Figure 2. Graduation Rates



IV. Compliance and Human, Physical, and Financial Resources

Purpose: This section evaluates the capacity of the department in terms of personnel, facilities, funding, and external engagement. It considers diversity, staffing trends, fiscal sustainability, and the infrastructure needed to support quality learning experiences across programs. It also highlights the department's role in service and strategic planning.

A. Diversity of Faculty, Staff, and Students

Summarize the department's efforts to support a diverse, equitable, and inclusive environment.

- The STEM Department uses specific strategies to recruit and retain diverse faculty, staff, and students. One strategy used for recruiting is participating in recruiting events. These events can be local or at a regional event. A strategy used to retain students is providing a high-quality education. The students' positive first-year experience will determine the outcome and encourage the student to continue in his/her degree or certificate.
- The STEM Department embraces practices that promote equity and belonging, including close partnership between the STEM Department and the Humanities, CTE, and Workforce Departments.
- The STEM Department has partnerships with local and regional organizations that support inclusive excellence both within the department and the institution. These include annual partnership with GirlsCAN and other groups and organizations.

B. Five-Year Staffing

Reflect on faculty and staff changes over time and their effect on operations.

- Number of full-time and part-time faculty/staff over the past 5 years (include table):

Computer Science

- Year 1 (2020-2021): 1
- Year 2 (2021-2022): 1
- Year 3 (2022-2023): 1
- Year 4 (2023-2024): 1
- Year 5 (2024-2025): 1

Computer Science (Associates of Applied Science)

- Year 1 (2020-2021): 1
- Year 2 (2021-2022): 1
- Year 3 (2022-2023): 1

- Year 4 (2023-2024): 1
- Year 5 (2024-2025): 1

Engineering (Associates of Science)

- Year 1 (2020-2021): 3
- Year 2 (2021-2022): 3
- Year 3 (2022-2023): 3
- Year 4 (2023-2024): 3
- Year 5 (2024-2025): 3

General Science (Associates of Science)

- Year 1 (2020-2021): 2
- Year 2 (2021-2022): 2
- Year 3 (2022-2023): 2
- Year 4 (2023-2024): 2
- Year 5 (2024-2025): 2

Mathematics (Associates of Science)

- Year 1 (2020-2021): 3
- Year 2 (2021-2022): 3
- Year 3 (2022-2023): 3
- Year 4 (2023-2024): 3
- Year 5 (2024-2025): 3

Video Game Design and Development (Certificate)

- Year 1 (2020-2021): 1
- Year 2 (2021-2022): 1
- Year 3 (2022-2023): 1
- Year 4 (2023-2024): 1
- Year 5 (2024-2025): 1

Fire Science (Associates of Applied Science)

- Year 1 (2020-2021): 3
- Year 2 (2021-2022): 3
- Year 3 (2022-2023): 3
- Year 4 (2023-2024): 3
- Year 5 (2024-2025): 3

- In the STEM Department, some faculty have worked to serve students in multiple programs. One full time professor delivers mathematics courses that serve all programs as well as students enrolled in the mathematics degree. One full time professor is dedicated to pre-engineering and additional mathematics courses as needed. One general science professor delivers courses in physics and geology.

- The STEM Department has faced staffing challenges for chemistry and biology courses, as a longtime faculty teaching in those areas transferred to another position during the Spring 2025 semester. Adjunct faculty met instructional needs during the Spring and Summer 2025 semesters. Review of applicants for a full time position is ongoing.
- The Computer Science program continues to benefit from the efforts of one full time faculty; this individual continues to develop the Video Game Design and Development program. The Fire Science program remains under development in partnership with the Wildfire Resiliency Training Center. At this time we do not have a full time faculty member for this program. We consult or partner with them on our curriculum development but not that they take this on themselves..
- In July 2025, two full time faculty were asked to help with student advising due to that department being temporarily understaffed. The faculty were willing, and through collaboration with advising staff, students' needs were met.
- Aside from identifying and hiring a full time faculty to deliver biology and chemistry courses, the STEM Department needs additional staffing for Chemistry, Biology, CS, Mathematics, Pre-Engineering and Cybersecurity during the 2025-2026 academic year.

C. Ensuring Financial Viability

Evaluate how the department sustains its financial operations across its programs.

- In recent years, the STEM Department has sought external funding sources to support its delivery of quality student instruction; use of existing resources, materials, and facilities has and will continue to support quality instruction. The Director of the STEM Department recognizes that staffing has been and remains the Department's primary operating cost.
- During the 2024-2025 academic year, the STEM Department Director worked in collaboration with the Director of Information Technology to review and consider new educational technology, for acquisition by Luna Community College. These reviews included meetings with technology vendors and Luna Community College staff to determine best steps forward. We are still determining what best steps to take forward in this collaboration.
- The STEM Department Director has and continues to work in collaboration with the Luna Community College Director of Grants and Partnerships. The

Faculty and the Department Director will continue to advocate for increased representation and funding from state and local sources, including local and regional foundations dedicated to supporting STEM education.

D. Investments and Reallocation of Resources

Summarize plans to strengthen the department through targeted investments or reallocations.

- The STEM Department has no plans to invest in increased technology, curricula, or staffing at this time. Continued use of available resources will ensure students' educational experiences will be of the highest quality.

E. Facilities, Growth, and Adaptation

Assess the adequacy and functionality of the department's physical space and infrastructure.

- The STEM Department currently uses multiple offices and classrooms in the Technology Building, located on the Las Vegas campus. Chemistry instruction is delivered in a dedicated classroom, where supplies are also stored. Biology curricula is delivered in a dedicated production studio located in the Health Sciences Building on the Las Vegas campus. During the Spring 2025 semester, the Director of STEM and Humanities' office was moved from the Administration Building to the Humanities Building. However, it was determined that the Director's presence in STEM and Humanities' was necessary so the Director occupies space in both areas.
- No improvements or changes to these facilities are planned by the STEM Department at this time.

F. Program Viability

Explain how the department monitors program sustainability and makes strategic decisions.

- The Department Director, in collaboration with Luna Community College academic leadership, uses a variety of means to evaluate program health, including enrollment thresholds, labor market demand, and cost ratios.
- Programs within the STEM Department are evaluated and considered for redesign, dormancy, or sunseting, based on a number of factors, including curricular viability and graduates' employment prospects, faculty availability, and student demand.
- During the 2024-2025 academic year, two actions were taken based on these criteria: the affirmation that the Video Game Design and Development

program would continue to be developed by faculty. Increased admissions and recruitment activities during the 2025-2026 academic year is anticipated to increase enrollment in this program.

G. Engagement Activities

Describe how faculty and staff extend the department's presence through service and scholarship.

- Students and faculty continue to engage with professional and community organizations, including collaboration with arts organizations in the Las Vegas, New Mexico area. Arts organizations collaborate with STEM through STEAM initiatives, which integrate artistic creativity with scientific and technological education to develop well rounded skills. The former Department director currently serves in a leadership capacity with the Southwest Popular American Culture Association, a scholarly organization based in Albuquerque, New Mexico. The current interim director serves as a member of the New Mexico Geological Society (NMGS), Institutional Coordinator for the New Mexico Alliance for Minority Participation (NMAMP), and serves as one of the Lead Collaborators in the STEM Innovation Network in the Northeastern HUB Region in New Mexico.

H. Advisory Board(s)

Summarize the structure and contributions of any advisory board(s) supporting the department.

- Does the department have an advisory board?
☐ Yes ☒ No
- An advisory board would benefit the STEM Department at Luna Community College as it would encourage more extensive collaboration between Luna Community College faculty and the local community.

I. Compliance and Accuracy

This section verifies the accuracy of published materials and identifies any external approvals relevant to the department.

- Website and Catalog Accuracy
 - The Luna Community College Catalog was revised and published for the 2024-2025 academic year.
- Public-facing materials accurately reflect the STEM Department's offerings. These include the college website and current catalog.

- The Luna Community College website and Catalog have been revised in time for the 2025-2026 academic year.
- External Accreditation or Approvals: none.

V. Report Summary

Purpose: This section offers a concise narrative reflection on the department's recent performance, accomplishments, challenges, and future plans. It should highlight key accomplishments, challenges, changes in student performance or enrollment, actions taken, and planned next steps across programs. The summary helps provide institutional leadership with a high-level understanding of the department's progress and priorities.

Instructions:

- Summarize the department's performance over the most recent academic year (or review cycle).
- Include data-based reflections on enrollment, student success, program outcomes, or operations.
- Describe any major changes or interventions implemented during the period.
- Identify planned improvements or focus areas for the coming year(s).
- Refer to appendices or supporting documents as needed (e.g., assessment reports, plans, data tables).

The STEM Department experienced stable enrollment during the 2024–2025 academic year, with similar or increasing numbers of students admitted in multiple programs. Completion rates remained consistent with prior years, with a slight decrease due to both the COVID19 pandemic as well as the Calf Canyon/Hermit's Peak Fire.

In response to these enrollment trends, the department revised its advising model and success intervention process, enhancing faculty-student engagement and increasing academic support. In the weeks prior to the Fall 2025 semester, some faculty in the STEM Department served as academic advisors to incoming students, to ensure students were as supported as possible as they began their educational endeavor with Luna Community College.

Looking ahead, the STEM Department will focus on completion of the development of a new certificate program in Geospatial Technology, in collaboration with the New Mexico Highlands University (GAINS) program, as well as expansion and increased collaboration with the Wildfire Recovery Training Center, in which the new Associate of Applied Science in Fire Science is offered.