**Academic Program Review: Self-Study**

***Instructions:*** *The following pages will guide your submission of your academic program review self-study. Please type your responses directly into the document. The completed self-study instrument and all attachments must be submitted to the Academic Program Review Coordinator and your Academic Dean by September 9.*

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| **Program Under Review** |
| Degree(s): Fire science AAS |
| Certificate(s): Driver Operator, Fire Officer I, Firefighter Operations, Wildland Firefighter 1. |
| Contact Information for lead on Self-Study:  Name: Amy Brooks  Campus: SPC and SMC  Phone: 520-494-5507  Email: amy.brooks@centralaz.edu |

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| **I. Program Description, Vision and Outcomes** |
| 1. What is the description of the program as stated in the current CAC catalog: The Fire Science Technology AAS Degree offers advanced training for professional firefighters, including practical firefighting, hazardous materials, related operations, history and theory and fire service management. |
| 1. Does your program have a mission and/or a vision statement? If it does, please write them below and indicate where they appear. No |
| 1. Describe how the program’s description, mission and/or vision aligns with the College’s Mission and Vision:   **CAC Vision and Mission Statements:**  **Vision:**  Central Arizona’s premier choice in education and career excellence.  **Mission:**  Central Arizona College serves as a TRUE Learning community by empowering our students and staff to succeed.  *Teaching. Reaching. Understanding. Empowering. Learning.* |

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| **II. Program Enrollment and Graduation Trends** |
| 1. Summarize the program enrollment data for the past 5 years in the chart below:  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Degree/Certificate | 2017-18 | 2016-17 | 2015-16 | 2014-15 | 2013-14 | | Degree | 143 | 108 | 105 | 92 | 120 | | Certificate | 33 | 5 | 7 | 29 | 4 | |
| 1. Discuss and explain the factors influencing the enrollment trends: I believe the economy has a lot to do with the enrollment trends. The fire science program is an expensive program, so it is strongly influenced by the economy. |
| 1. How has the program typically recruited students and marketed the program: We generally get several students from our EMT program. We also visit high schools and CAVIT to promote the program. |
| 1. Summarize the program graduation rate trends for the past 5 years in the chart below:  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Degree/Certificate | 2017-18 | 2016-17 | 2015-16 | 2014-15 | 2013-14 | | Degree | 7 | 5 | 1 | 9 | 5 | | Certificates | 0 | 0 | 1 | 5 | 1 | |
| 1. How many program enrollees or graduates studied at an in-state baccalaureate level institution during the past 5 years? Put the data in the table below.  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Degree/Certificate | 2017-18 | 2016-17 | 2015-16 | 2014-15 | 2013-14 | | Degree-UNK |  |  |  |  |  | | Certificate-UNK |  |  |  |  |  | |
| 1. Discuss and explain the graduation trends. What efforts has the program made to help students achieve completion? We strongly encourage our students to continue their education. The hiring trend in the fire service is to give hiring preference to college graduates. |
| 1. Provide a summary of this section. Indicate trends observed in the data, identify areas of strengths, and areas for improvement. We have not collected any data regarding our students going to a 4 year in-state college. That will be one of our areas of improvement. One of our areas of strength is helping our students obtain a full time job by preparing them for a career and supporting them as needed after they complete the program. |

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| **III. Program Curriculum:** *Submit a completed Curriculum Comparison Chart along with the self-study, comparing the CAC program curriculum to three similar programs, for each Degree and Certificate discussed in this self-study. Ideally compare to other Arizona programs, and out of state if necessary. Use the charts to answer the following questions.* |
| 1. Certificate(s): After reviewing the Curriculum Comparison Chart of the other institutions for the certificate(s), is insight given into courses that could be added, combined or deleted? |
| 1. Degree (s): After reviewing the Curriculum Comparison Chart of the other institutions for the degree(s), is insight given into courses that could be added, combined or deleted? I like the addition of an HR or business course. I would have to find a current class that could be replaced, however. |
| 1. When the Curriculum Review for each degree and certificate comes due, are there any course descriptions, articulation, additions, revisions or deletions anticipated? Yes, the computer classes will be deleted. |

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| **IV. Program Outcomes and Assessment** |
| 1. What are the Program Learning Outcomes (PLOs) for the program degree or certificate as currently indicated in ACRES:   **Degree**- 1. (Evaluation Level) Recognize, evaluate and identify the chemical and physical properties of hazardous materials. (FSC129)  2. (Analysis Level) Analyze and explain processes used when dealing with hazardous materials. (FSC129)  3. (Evaluation Level) Assess and solve problems concerning fire prevention techniques, procedures, regulations, code enforcement and occupancy survey. (FSC108)  4. (Evaluation Level) Describe and evaluate the characteristics and behavior of fire and extinguishing agents and apply to case scenarios. (FSC140)  5. (Analysis Level) Analyze and describe fire suppression organization, basic fire fighting tactics and public relations as affected by fire suppression. (FSC140)  6. (Evaluation Level) Describe, analyze, implement, evaluate and justify the methods of attacking, controlling and extinguishing various types of fires. (FSC140)  7. (Analysis Level) Describe and analyze the roles/responsibilities of the Incident Commander in managing various types of major emergencies. (FSC204)  8. (Analysis Level) Analyze the methods used for ensuring firefighter safety in various case scenarios.  9. (Evaluation Level) Evaluate the reactions of various types of construction to fire and heat. (FSC208)  10. (Analysis Level) Analyze the theory of fire behavior, phases of fire, types of fire behavior and methods of fire control. (FSC140)  11. (Application Level) Describe and demonstrate the types, functions and maintenance of fire apparatus. (FSC140 and FSC117)  12. (Application Level) Explain and demonstrate the tactical operations applied to a structural fire and the importance of early salvage. (FSC140)  13. (Analysis Level) Analyze and demonstrate pounds per square inch, gallons per minute, friction loss, nozzle pressure and engine pressure as they relate to fire hydraulics and solve various hydraulic problems. (FSC118)  14. (Evaluation Level) Demonstrate ability to evaluate the situation and disentangle a patient from a wrecked automobile using extrication tools. (FSC238)  15. (Application Level) Demonstrate patient care, immobilization and stabilization skills according to local EMT protocols and the U.S. Department of Transportation Basic EMT curriculum. (FSC238)  16. (Analysis Level) Describe and analyze the responsibilities of personnel operating on the fire ground related to firefighter safety. (FSC208)  17. (Evaluation Level) Describe, demonstrate and critique the methods of attacking, controlling and extinguishing various types of fires. (FSC204)  18. (Comprehension Level) Describe local and interagency relationships in the Arizona Wildland Firefighting system and their roles for Wildland Fire suppression. (FSC180)  19. (Comprehension Level) Describe maintenance, safety and efficient use of Wildland Fire suppression personal protective equipment. (FSC180)  20. (Knowledge Level) Identify and define common Wildland Fire terms. (FSC180)  21. (Comprehension Level) Identify and discuss early traditions and the history of the fire service. (FSC106)  22. (Comprehension Level) Describe the role and functions of public and private fire protection organizations. (FSC106)  23. (Comprehension Level) Describe the entrance requirements and career opportunities for firefighters.(FSC106)  **Driver Operator Certificate-**  1. (Analysis Level) Analyze the duties and responsibilities of the fire apparatus driver operator.  2. (Evaluation Level) Explain the importance of apparatus maintenance procedures, inspection procedures and documentation and critique case studies.  3. (Application Level) Safely maneuver and position fire apparatus.  4. (Analysis Level) Analyze the types and uses of pumps, nozzles, valves and appliances to prepare for operations.  5. (Analysis Level) Calculate the flow pressure involving fire pumps, nozzles, valves, appliances and foam distribution for a variety of fire conditions.  6. (Application Level) Safely conduct fire pump operations during emergency and non emergency incidents.  7. (Evaluation Level) Explain the evolution of fire apparatus and evaluate the pumper classifications currently in use in the fire service.  8. (Evaluation Level) Analyze and critique driving procedures for safely driving fire apparatus and identify common causes of accidents and strategize how to avoid hazards and prevent driver error.  9. (Analysis Level) Analyze the roles and responsibilities of an emergency vehicle operator.  10. (Evaluation Level) Examine types of serial apparatus, including their functions and methods of operation and determine which ones to use in various firefighting situations.  **Fire Officer I Certificate-**  1. (Analysis Level) Identify, explain and analyze the roles and responsibilities of the Fire Officer I.  2. (Evaluation Level) Evaluate the transition from firefighter to Fire Officer, including skills, knowledge and experience.  3. (Comprehension Level) Explain the process for executing routine officer level tasks and identify evaluation processes.  4. (Analysis Level) Analyze the components of resource management and task related assignments.  5. (Analysis Level) Examine case studies and assess integrity and ethical behavior in the fire service.  6. (Evaluation Level) Evaluate labor-management relationships within fire departments and the role of the fire officer.  7. (Analysis Level) Analyze training and coaching responsibilities of fire officers that promote safe and effective experiences and demonstrate effective techniques.  8. (Synthesis Level) Develop and demonstrate effective discipline techniques for unacceptable behavior based on fire service policy and employee assistance programs.  9. (Synthesis Level) Develop methods of resolving community needs and abilities to initiate actions to address citizen's concerns.  10. (Synthesis Level) Prepare a fire service program budget.  11. (Evaluation Level) Evaluate the Fire Officer I role within the incident management system.  12. (Evaluation Level) Evaluate the role of the Fire Officer I during fire prevention inspections and fire investigations.  **Firefighter Operations Certificate-**  1. (Evaluation Level) Evaluate the characteristics of fire behavior and extinguishing agents. (FSC140)  2. (Analysis Level) Examine the theory of fire behavior, phases of fire and compare methods of fire control. (FSC140)  3. (Application Level) Demonstrate the methods of attacking, controlling and extinguishing various types of fires. (FSC140)  4. (Application Level) Predict the impacts of public relations that will influence the strategies of fire suppression and property conservation. (FSC140)  5. (Analysis Level) Analyze the policies and procedures that govern the practical application of modern firefighting and common terminology at the local and National levels. (FSC106)  6. (Evaluation Level) Critique the resource deployment practices of fire suppression organizations, basic fire fighting tactics and strategies. (FSC106)  7. (Synthesis Level) Categorize fire service resources, equipment and apparatus to determine their functions on an emergency incident. (FSC140)  8. (Evaluation Level) Explain and critique the components of fire prevention including code enforcement, public information, and public and private fire protection systems. (FSC106)  9. (Analysis Level) Analyze the environmental factors of Wildland Fire that affect the start and spread of wildfire. (FSC180)  10. (Application Level) Explain and demonstrate the maintenance, safety and efficient use of wildland fire suppression personal protective equipment. (FSC180)  11. (Analysis Level) Analyze the application of common wildland fire terms. (FSC180)  12. (Application Level) Demonstrate the ability to extricate and immobilize a patient from an automobile using extrication tools. (FSC140)  **Wildland Firefighter I Certificate-**  1. (Evaluation Level) Compare and contrast the impact of the combustion process and fuel characteristics on wildland fires to evaluate the strategies for controlling the fire.  2. (Analysis Level) Categorize the relationship of topography, weather, time of day and fuels to determine their effects on fire behavior and fire suppression strategies.  3. (Evaluation Level) Assess the requirements of initial attack, the direction of basic tactical operations and the application of resources while using common terminology.  4. (Analysis Level) Analyze the Lookouts, Communications, Escape Routes, and Safety Zones (LCES) system and how LCES relates to Standard Firefighting Orders.  5. (Synthesis Level) Design an action plan that will influence, guide and direct assigned personnel to accomplish objectives and desired outcomes in a rapidly changing, high-risk environment.  6. (Synthesis Level) Design an action plan that identifies various types of strategies required to properly size up a fire situation where portable pumps, equipment and hose lays will be employed.  7. (Evaluation Level) Evaluate and explain the standard target description techniques for directing pilots and indicators of effective water and retardant drops.  8. (Evaluation Level) Evaluate and prioritize the principles of incident management using the concepts of command staff and general staff functions.  9. (Analysis Level) Analyze the application of business management strategies involving timekeeping, cooperative agreements, accident/claims investigations, procurement and equipment time recording.  10. (Application Level) Employ the standard requirements for fire reporting, record keeping and complete Arizona Wildland Fire reports. |
| 1. Are the outcomes from your program determined or influenced by any external organization, agency, or accreditor? If so, please explain. Are there any available accreditations which the program does not have, but maybenefit from seeking? No, the classes that are state certified are accredited by IFSAC. |
| 3.  **Assessment report for Programs with PLOs**  If student achievement for one or more of Program Learning Outcomes (PLOs) during the last academic year were assessed, list the PLOs, each PLOs alignment with a CLSO, the assessment method (e.g. external exam for certification or licensure, internship, portfolio, capstone course assessment), and any improvements enacted in response to the results.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **PLO** | **CSLO** | **Assessment Method** | **Assessment Results** | **Will there be any**  **improvements made to the curriculum based on the assessment results?** | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |
| 1. Discuss how the program supports current or future needs for the job market in Pinal County, the state of Arizona, and/or the United States. The FSC program provides state certified firefighters to the Arizona job market. |
| 1. For degree programs, identify any specific in-state baccalaureate programs into which this program is particularly suited for transfer. This degree will help if the student is transferring into fire baccalaureate program. |
| 1. Indicate if there are any articulation agreements in place for degree graduates. None |
| 1. Discuss how the program gets feedback on its program and curriculum from external sources, suchas advisory boards, employers, articulation task forces, accreditors, etc. Advisory boards and employers give feedback regarding the FSC program. |

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| **V. Program Specific Resources:**  *In this section please focus on program specific resource. You may, but do not have to, discuss resources available to the college at large such as Blackboard, the Learning Centers, Library, etc. However, if these resources are impacting your program in a positive or negative way which you would like to discuss, please do so.* |
| 1. Discussthe adequacy of the budgetary resources, human resources, technological resources, classrooms, labs and space, academic support for students (ie: learning center, library) and student support (ie: advising) available to the program over the past 5 years: This program is self-funded which makes it difficult to purchase needed equipment. Fire equipment is extremely expensive. The fire program needs a classroom/building out at the burn tower to adequately teach the students skills along with the lectures. |
| 1. What future goals does the program have? Will extra resources and funding be required to achieve it? The main goal is to become budget funded. I have applied for Perkins grants but have not yet been successful. |

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| **VI. Program Effectiveness for Graduates** |
| 1. Describe how you measure the success of degree and certificate program graduates. For example, are graduate surveys conducted? Are surveys given to employers to determine satisfaction with program graduate employees? Surveys are given to students, most are not returned. I mostly rely on the students contacting me directly. |
| 1. If a degree or certificate is designed to lead directly into the workforce, describe the success of students in obtaining a job in the field of study upon graduation. Please provide any qualitative or quantitative data you have: I do not have any data that supports this. |
| 1. If your program serves to prepare a student for external certification or licensure of any kind identify the certification or license and the percentage of program graduates who earn/achieve it. Put data in the table below.  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Licensure/Certification | 2017-18 | 2016-17 | 2015-16 | 2014-15 | 2013-14 | | Firefighter certification | 79% | 67% |  |  |  | | Hazmat certification | 53% | 57% |  |  |  | |

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| **VII. Program Continuous Quality Improvement** |
| 1. Discuss how the program has used operational planning goals to achieve quality improvement over the past 5 years: Our operational goals are to increase enrollment and passing rates. We have steadily increased both. We also have a goal of becoming budget funded, we are still working on that. |
| 1. Describe other ways the program has engaged in continuous quality improvement: We are always learning new concepts and training ideas. We collaborate with the state certification agency to ensure we are teaching the latest concepts. |

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| **VIII. Program Alignment with Institutional Strategic Goals:** |
| 1.Describe how the program has directly or indirectly is helping the College achieve its current strategic goals.  ***CAC Strategic Goals:***  **Student Success**  *Ensure student success through retention, persistence, completion, and transfer*  We strongly encourage our students to complete their degree and transfer to a university  **Access**  *Ensure all Pinal County residents and others have access to high quality innovative post-secondary opportunities*  We recruit from all of Pinal county  **Workforce**  *Ensure students acquire the skills necessary for job placement and that meet employer needs in Pinal County and Region*  We assure that each student is trained to the state requirement  **Community**  *Ensure Pinal County residents have access to lifelong learning and cultural enrichment*  We encourage lifelong learning at all levels  **Environment**  *Ensure a safe, sustainable environment that promotes learning, communication, diversity and satisfaction among students and employees*.  We create the best possible environment for our students to make them successful  **Stewardship**  *Ensure optimization of fiscal resources through a balanced budget to support the needs and expectations of students and the community*  We do the best we can for being self-funded  **Infrastructure**  *Ensure a physical and technological infrastructure that support changes in learning and working environment*  We have the best fire training tower in Pinal county and take pride in that |

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| **IX. Evaluation of Program Strengths, Viability and Areas for Improvement:** |
| 1. After completing the APR Self Study, identify areas of strength and areas for improvement in the program. Is the program still a viable program? Discuss the next steps for the program and possible Action Plan Ideas.   -We will need to align our vision, mission and goals to be closer to the college’s.  -We need to do a better job of collecting data at all levels.  -We need to re-think our certificate programs, are they viable?  -The FSC program has begun to grow and continues to become one of the best fire programs in the state. |