2022-2023 Aerospace and Defense Industry Workplan

One of the largest industries found in the Cerro Coso Community College (CCCC) service area is aerospace and defense. According to Hamilton, Keough, Ratnatunga, and Wong (2015), aerospace and defense industry was listed in the top six industries of Kern County. Hamilton et al. stated that the aerospace and defense was ranked high because of its output, employment share, specialization, and growth. The three major aerospace and defense facilities served by CCCC are China Lake Naval Air Weapons Station (NAWS), Edwards Air Force Base (AFB), and Mojave Air and Space Port.

China Lake NAWS (China Lake)

According to the US Navy (2022), "China Lake provides and maintains land, facilities, and other assets that support the Navy's research, development, acquisition, testing, and evaluation (RDAT&E) of cutting-edge weapons systems for the warfighter" (para. 1). The Navy states that China Lake is the largest single landholding base. It represents 85% of the Navy's RDAT&E. China Lake is located to the north and east of the City of Ridgecrest. The base is over 1.1M acres with two ordinance ranges. The US Navy reported the following team classifications at China Lake: military personnel (2% @ 192 personnel), Department of Defense Civilians (71% @ 5,727 personnel), and contractors (27% @ 2,236 personnel). The occupation groups used at China Lake are scientist and engineer (S&E), business and program management, technician specialist, S&E technician, administrative support, and federal wage system. The base hires approximately 317 personnel on average per year.

Edwards AFB (Edwards)

Edwards is home to the Air Force Test Center, Air Force Test Pilot School, and NASA's Armstrong Flight Research Center. The base is in the southeast corner of Kern County. Edwards is the second largest Air Force base in the United States. According to the US Air Force (2022a), the population of Edwards is 11,457. Here is the population breakdown: active-duty Air Force personnel (2,207), Air Reserve and National Guard (37), civilian employees (4,302), contractors (2,265), associates and non-appropriated funds (NAF) (education) (229), private business (175), base exchange (138), and family members (2,104). US Air Force (2022b) reported the following civilian hot jobs at Edwards: computer scientist, budget analyst, IT specialist, computer engineer, recruitment and training manager, chief data officer, business and program managers, financial specialist, family advocacy treatment manager, police officer, training specialist, scheduler, engineer, aircraft maintenance, and electronics engineer.

Mojave Air and Space Port

The Mojave Air and Space Port is a 3,300-acre facility that includes an industrial park. According to Hamilton, Keough, Ratnatunga, and Wong (2015) there are more than 70 transportation companies located at the Mojave Air and Space Port. Some of the larger well-known organizations located at the airport and industrial park include The Spaceship Company, Masten Space Systems, Inc, Scaled Composites, LLC, Flight Test Associates, BAE Systems,

Interorbital Systems, Capsed Limited, Firestar Technologies, Cambium, Stratolaunch, Northrop Grumman, Nexgen Aircraft Corporation, Incotec, Whittinghill Aerospace, and PPG Aerospace.

Top Emergent and Core Competencies

In a recent meeting with the Department of Defense (US Air Force and US Navy) and China Lake Base Commander, several top emergent competencies and core competencies are noted. The following are the **top emergent competencies** for personnel working at the base:

- digital engineering,
- artificial intelligence/machine learning,
- embedded computing,
- model-based systems engineering (MBSE)/unified modeling language (UML),
- computer engineering/advanced software,
- CAMIO,
- engineering tools,
- modeling language,
- radio frequency (RF) engineering, and
- electrical engineering.

The **core competencies** are the following:

- systems engineering and integration,
- electronic warfare,
- weapons aerodynamic analysis,
- propulsion technologies,
- energetics processing,
- mission systems engineering,
- project management,
- flight test engineering,
- embedded software,
- weapons guidance and control systems, and
- cyber security.

Although many of these competencies were expressed by the US Navy, many of the same competencies apply to the Air Force.

Opportunities

The following is an outline of the opportunities available to address the aerospace and defense industry needs:

1. **Establish a Military and Aerospace Industry Workforce Coalition to include China Lake, Edwards, Mojave Air and Space Port, local K12 districts, and elected officials to meet monthly. (0-3 Months)**

- Develop a list of 15-20 people from the local high school districts, elected officials, China Lake, Edwards, and Mojave Air and Space Port.
- Determine the format of the monthly meetings.
- Send a calendar invite for the next 12 meetings.
- Develop a universal agenda and sign-in sheet for each meeting.
- Schedule the first meeting in the next 3 months.
- Determine the short- and long-term goals of the coalition during the first meeting.

2. Develop separate proposals for China Lake, Edwards, and Mojave Air and Space Port to assist each location with outreach, recruitment, community education, professional development, academic programs, apprenticeships, and K12 education. (0-3 Months)

- Complete the proposal that includes short- and long-term goals for China Lake based upon the meeting held on May 26, 2022.
- Schedule a meeting to meet with Edwards and Mojave Air and Space Port to review partnership opportunities, needs, and opportunities from growth.
- Complete a proposal that includes short- and long-term goals for Edwards and Mojave Air and Space Port.
- Review proposals with China Lake, Edwards, and Mojave Air and Space Port and make revisions accordingly.

3. Develop and submit an application for a bachelor's degree program that is universal to the aerospace and defense industry. (6 Months to 1 Year)

- Meet with academia to determine degree title, courses, and curriculum.
- Review degree title, courses, and curriculum with China Lake, Edwards, and Mojave Air and Space Port.
- Complete bachelor's degree application request.
- Get letters of support from aerospace and defense stakeholders.
- Submit bachelor's degree program request by deadline in April 2023.

4. Develop new associate degree programs in areas relevant to data science, electrical engineering, and engineering fundamentals (for transfer to higher education). (6 Months to 1 Year)

- Meet with academia to determine degree titles, courses, and curriculum.
- Review degree titles, courses, and curriculum with China Lake, Edwards, and Mojave Air and Space Port.
- Complete three associate degree requests to the Chancellor's Office.

5. Develop and offer noncredit courses in information technology linked to certifications. (3-6 Months)

- Meet with the Information Technology Departments at China Lake, Edwards, and Mojave Air and Space Port to determine the need for noncredit courses and certifications.
- Develop a list of certifications and noncredit courses that are needed.

- Complete curriculum development and certification alignment for each course.
- Determine the cost of each certification.
- Identify a revenue source to cover the costs of certifications.
- Develop a master schedule of noncredit/certifications being offered by CCCC for the next calendar year.

6. Develop and offer noncredit courses in professional development to align with aerospace and defense industry needs (e.g., CAMIO software training and/or certification). (3-6 Months)

- Meet with non-IT departments at China Lake, Edwards, and Mojave Air and Space Port to determine the need for noncredit courses and certifications.
- Develop a list of certifications and noncredit courses that are needed (examples: leadership, Microsoft Office, and project management).
- Complete curriculum development and certification alignment for each course.
- Determine the cost of each certification.
- Identify a revenue source to cover the costs of certifications.
- Develop a master schedule of noncredit/certifications being offered by CCCC for the next calendar year.

7. Explore apprenticeship programs in machining, information technology, and engineering. (6 Months – 1 Year)

- Meet with China Lake, Edwards, and Mojave Air and Space Port to determine apprenticeship needs.
- Develop a regional apprenticeship committee.
- Establish an apprenticeship review committee, rules and regulations for apprenticeships, and apprenticeship documents to be used by the apprenticeship committee.
- Determine the curriculum and hours for on-the-job training (OJT) and related supplemental instruction (RSI) that totals at least 2,000 or more hours.
- Submit an application to the US Department of Labor for each apprentice program.
- Develop an RSI schedule for each apprenticeship program.
- Assign faculty to each RSI course.

8. Offer STEM summer academies and/or bootcamps to include K12 field trips that focus on military and aerospace topics. (6-9 Months)

- Meet with China Lake, Edwards, and Mojave Air and Space Port to determine the availability of base facilities and personnel for summer academies and bootcamps for K12.
- Develop academies and bootcamp titles along with topics to be covered in each session.
- Meet with K12 districts to gain support and involved in the academies and bootcamps.
- Identity faculty to lead each academic/bootcamp.
- Develop a summer schedule at least three months in advance to allow for planning, scheduling, and recruitment.

- Work with local K12 districts to organize field trips to aerospace and defense industry organizations.
- Determine the funding stream for each academy/bootcamp.

9. Expand upon dual enrollment specific to STEM programming (existing or newly developed). (0-6 Months)

- Meet with area high schools to increase STEM offerings to high school students.
- Schedule a meeting with the education staff at Edwards to establish dual-enrollment opportunities.
- Develop a master schedule of all dual-enrollment courses being offer during the school year that includes course prefix, course title, location, date/time of course, and faculty member.
- Determine faculty needs for dual-enrollment expansion.

10. Promote and attend recruiting events that support the aerospace and defense industry. (0-3 Months)

- Work with the Career Services Department to increase awareness about aerospace and defense industry opportunities.
- Place a request to China Lake, Edwards, and Mojave Air and Space Port to be notified about all recruitment events, webinars, and other public events.
- Attend recruitment events at China Lake, Edwards, Mojave Air and Space Port, and other regional organizations that support the aerospace and defense industry.
- Work with China Lake, Edwards, Mojave Air and Space Port, and other regional aerospace and defense organizations to post job openings on the CCCC Career Services webpage.

References:

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