BUTTE COLLEGE

INDUSTRIAL TECHNOLOGIES & AGRICULTURE

Program Vitality Analysis and Revitalization Response Report for:

ADVANCED MANUFACTURING (MFG)

Submitted to the Program Research and Recommendation Committee

April 2026

RECOMMENDATION: REVITALIZE

A Two-Phase Departmental Plan: Transition and Transformation

Members of the Program Advisory Team

Industrial Technology Programs & Agriculture Dean of Instruction, Don Robinson

Industrial Technology Department Chair, Tom Williams

MFG Faculty, Kelly Womack

MFG/DFT Faculty, Phillip Manning

DFT Faculty and PRR member, John Dahlgren

Advisory Member, Scott Franklin

Advisory Member, Jim Leonord

K-12 CTE Faculty, Gavin Cockrell

CSU Chico, Dr. Nathan Anderson

Institutional Researcher, Alan Raetz

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Executive Summary

The Butte College Advanced Manufacturing Program has been referred to the Program Research and Recommendation Committee for a Program Vitality Review under Administrative Procedure 4021. This report, submitted by the Program Advisory Team (PAT), provides a comprehensive, data-informed analysis of the program's current status, responds directly to each indicator identified in the Proposal Request Form, and presents an evidence-based case for program revitalization rather than discontinuance.

The Core Diagnosis

The program's current challenges are not primarily a function of weak labor market demand or institutional commitment. They are the product of a curriculum design that predates the contemporary labor market and that no longer aligns credential attainment with wage progression. The existing 62-unit, four-semester synchronous cohort structure over prepares students for the region's entry-level manufacturing wage floor while providing no intermediate credentials and no flexible delivery options. Since 2022-23, the program has conferred 74 Certificates of Achievement (CA) but only 4 Associate of Science (AS) degrees — a 19:1 ratio that documents, unambiguously, that students are exiting at the CA point because the additional year of study produces no meaningful wage return. This is not a persistence failure; it is a rational market response to a structural mismatch.

Three external disruptions — the 2018 Camp Fire, the 2020 COVID-19 pandemic, and faculty turnover did not cause this structural mismatch. A robust, stackable program might have weathered those disruptions. A rigid cohort program could not.

The Labor Market Is Strong and Growing

The 2026 Advanced Manufacturing Career and Training Pathways Profile published by the North Far North Center of Excellence for Labor Market Research documents 13,676 Advanced Manufacturing jobs in the Far North region in 2024, projected to grow to 14,079 by 2029, generating over 1,600 annual job openings. In Butte and Glenn counties specifically, the NFN COE's March 31, 2026, custom memorandum documents 4,707 Advanced Manufacturing jobs across 222 business establishments — 27% of Far North sector employment concentrated in Butte College's direct two-county service area. Posting intensity of 3:1 (compared to the regional 2:1 average) indicates Advanced Manufacturing employers cannot find qualified candidates. Food and beverage manufacturing alone accounts for nearly 40% of Advanced Manufacturing employment in the service area, with Food Manufacturing projected to grow from 1,196 to 1,237 jobs by 2029. The COE's own conclusion recommends new low-unit certificate and noncredit program development at Butte College within Advanced Manufacturing — a direct, written endorsement of program revitalization from the authoritative regional labor market research body.

The Institution Has Already Built Half of the Solution

In 2024, Butte College was awarded a three-year NSF Advanced Technological Education (ATE) grant — SwifTECH, NSF ATE #2400478 — to develop a new Engineering Support Technician (EST) career pathway targeting process manufacturers in the food processing market for nuts, rice, finished food products and beverages. Now in Year 2, SwifTECH has secured committed industry host company partners (Lundberg Family Farms, OroFlex Packaging, Pacific Coast Producers, Carriere Family Farms, Sun West Milling, and California Olive Ranch) established a NOCTI-certified Internship Mentor Coach model, deployed Amatrol eLearning infrastructure, and aligned its credential with the Manufacturing Skills Standards Council (MSSC) Certified Production Technician (CPT) 4.0 certification. SwifTECH is led by Principal Investigator John Dahlgren and Co-Principal Investigator Jennifer Bryant.

Although focused through a STEM (Science, Technology Engineering and Math) pathway, the SwifTECH ATE grant project is directly addressing difficult to fill middle skill level Engineering Support Technician vacancies in regional food and beverage and supply chain industries including mechatronics-adjacent maintenance roles such as Industrial Machinery Mechanics or Millwrights. The Advanced Manufacturing program in its current form produces Manufacturing Technicians (machining, CNC, CAD/CAM, production systems) and many of the foundational skills are directly related to those skills addressed by the Engineering Support Technician program, most notably through the creation of ITEC-65 Introduction to Process Technologies (Curriculum Committee approved 2/9/2026).

A Departmental Two-Phase Plan

This report presents a Two-Phase Revitalization Plan:

- **Phase 1 — Transition (2026-2027):** Restructure the 62-unit cohort program into parallel one-semester and two-semester Certificate of Achievement options at 16 units each, embed ITEC-65 as the 2-unit foundation course, formally recommend transfer of welding-specific courses to the Welding Technology program, adopt the SwifTECH NOCTI/IMC internship model, and rebuild enrollment through dual enrollment, the ITEC-55/ITEC-65 formerly incarcerated student pipeline, and employer partnerships.
- **Phase 2 — Transformation (2027 and beyond):** Develop new mechatronics technical curriculum filling the documented gap in automation, PLCs, sensors, pneumatic/hydraulic systems, and process manufacturing content; establish an Advanced MFG Certificate of Achievement stacking into an Associate of Science degree targeting higher-wage technician roles ($27-49/hr.); pursue a follow-on NSF ATE award leveraging SwifTECH success; and formalize articulation with CSU Chico's B.S. in Advanced Manufacturing and Applied Robotics.

The Single Most Important Change Since the Review Was Initiated

Of the ten vitality indicators identified in the June 2025 Proposal Request Form, the personnel indicator has been directly resolved: Kelly Womack has been granted tenure effective FA2026 and is assigned full-time to the Advanced Manufacturing Program. This resolves the faculty instability that accounted for much of the program's recent operational challenge and provides stable leadership for the restructuring this plan describes.

Recommendation

The Industrial Technology Department respectfully urges the Program Research and Recommendation Committee to **endorse the full revitalization of the Butte College Advanced Manufacturing Program** and commit to the three-year institutional support necessary to implement this departmental plan.

Program Background

In June 2025, at the request of the Dean and Department Chair of the Industrial Technologies Programs initiated the Program Revitalization or Discontinuance process under AP 4021. The Proposal Request Form, submitted by Don Robinson, identified ten indicators as concerns:

- Weak enrollment trend
- Poor retention within courses
- Poor term-to-term persistence for students in the major
- Changes in the job market
- Changes in community and student needs or interests
- Diminished outside funding resources
- Program creates financial hardship for the institution
- Lack of available qualified program personnel
- Outdated curriculum
- Other: Meeting all PLOs and SLOs for the program based on instructional staff presenting all equipment and project-based work to students

Each indicator is addressed directly in Section 5 of this report. The Department does not dispute that these conditions have existed. It does dispute that they constitute grounds for discontinuance, and it presents evidence that they are the product of identifiable external disruptions, structural curriculum design factors, and correctable internal conditions — not evidence of a program without value.

Authorship: A Departmental Response

This report is best characterized as an Industrial Technology Department effort rather than by the Advanced Manufacturing program alone. The revitalization plan described in this report depends on coordinated action across three programs — Advanced Manufacturing, the NSF-funded SwifTECH Engineering Support Technician project, and the Engineering and Drafting/CAD Technology faculty who support both — and on Dean-level support for curriculum development, resource allocation, and articulation negotiation with CSU Chico noted in Phase 2.

Context: Compounding Disruptions Against a Pre-Existing Design Mismatch

The program's enrollment and persistence data must be understood in two contexts. Three compounding external disruptions that affected Butte College with disproportionate impact, and a pre-existing curriculum structure whose alignment with the contemporary labor market had already weakened before those disruptions occurred. The disruptions did not cause the structural mismatch. They accelerated their exposure.

The Three External Disruptions

- **2018 Paradise Camp Fire:** The deadliest wildfire in California history devastated Butte County, displacing tens of thousands of residents and dramatically contracting the college's enrollment base across all programs. The Town of Paradise's population decreased by over 21,000 between January 2018 and January 2019 (NoRTEC 2019), while Chico's population increased by over 19,000. Effects on enrollment persisted for years. Butte College's overall FTES base contracted, and Advanced Manufacturing — a program with high per-student equipment and faculty cost — was disproportionately affected.
- **2020 COVID-19 Pandemic:** The closure of in-person instruction eliminated the program's primary delivery method. Advanced Manufacturing is inherently equipment-intensive and cannot be delivered remotely. Enrollment and persistence were severely impacted by conditions that had nothing to do with program quality or market demand.
- **Faculty Turnover:** The program operated for four years without consistent, stable full-time faculty leadership — a critical deficit in any CTE program that requires an instructor to simultaneously manage instruction, industry relationships, curriculum development, and student support. This condition has been directly resolved by the tenure of Kelly Womack.

The Pre-Existing Structural Mismatch

While the three external disruptions are the most visible factors in the program's recent challenges, a structural factor was already in place before 2018 that both made the program more vulnerable to those disruptions and continues to suppress enrollment and persistence today. The 62-unit, four-semester synchronous cohort curriculum — while a defensible design for the manufacturing careers of an earlier era — is misaligned with the contemporary regional labor market in two specific ways:

1. **Credential-to-wage mismatch.** Entry-level Advanced Manufacturing occupations in Butte and Glenn counties pay median hourly wages in the $19-24 range (NFN COE 2026). California's minimum wage is $16.50/hour. The wage premium from completing a 62-unit, two-year program over a shorter-duration credential that produces equivalent entry-level technical skills is not meaningful. Students rationally exit at the Certificate of Achievement (CA) point because the additional year does not produce an employment return. The program's own completion data confirms this: 74 CAs and 4 AS degrees have been awarded across 2022-23 through 2025-26 (Butte College Institutional Research, April 2026) — a 19:1 ratio consistent with students completing the CA and leaving.
2. **Co-requisite rigidity.** The four-semester cohort structure is enforced through a co-requisite lock across four content tracks: equipment (MFG-10, MFG-20), welding (MFG-12, MFG-22, MFG-32, MFG-42), finishing (MFG-14, MFG-24), and CAD/modeling (MFG-16, MFG-26, MFG-34, MFG-44). A student who wants to pursue only the CNC/CAD content — the wage-aligned outcomes employers post for — is structurally required to also take welding and finishing content. This is inefficient for students whose career interest is machining-focused, untenable for the Welding Technology sister program (which offers the welding credentials employers actually recognize), and unfriendly to working adults, dual-enrollment students, and the formerly-incarcerated

students served through the ITEC-55 / ITEC-65 pipeline who need flexible, modular entry and exit points.

3. **Lack of Exploratory Pathway.** The current program configuration demands that students enter through a prerequisite gate of ITEC-55 and immediately puts them into a rigid co-requisite synchronous cohort makes any exploration pathway into the program nearly impossible.

The revitalization plan described in this report addresses both dimensions of the structural mismatch directly in credential restructuring to align credential attainment with wage-inflection points, and co-requisite decoupling to allow stackable, modular completion.

Enrollment, Success, and Completions Data

Enrollment and completions data for the Advanced Manufacturing Program is drawn from Butte College Institutional Research reports dated April 17, 2026. This section presents the complete available record — Fall and Spring terms, enrollment and completions — to avoid the misleading partial picture that Fall-only or headcount-only reporting would produce.

Fall Term Enrollment and Outcomes

Term	Enrolled	Success Rate	Persistence (1-yr)	Context
2021FA	17	94.1%	94.1%	Growth year; momentum
2022FA	22	75.0%	72.7%	COVID-19 lingering effects
2023FA	12	81.1%	75.0%	Faculty transition period
2024FA	15	90.0%	80.0%	New equipment installed; stabilization
2025FA	7	85.7%	85.7%	PRR Vitality review was initiated June 2025
2026FA	**Unknown**	**--**	**--**	**No courses MFG scheduled at present.**

Spring Term Enrollment and Outcomes

Term	Enrolled	Success Rate	Persistence (1-yr)	Context
2023SP	15	86.7%	50.0%	Post-faculty-transition stabilization (Womack)
2024SP	9	83.3%	80.0%	New equipment integration
2025SP	12	93.6%	87.5%	Strong cohort; high success rate
2026SP	6	In progress	In progress	Review pending; compounded uncertainty. Womack tenured

What the Enrollment Data Shows

Three patterns are visible in the enrollment record, and all three are consistent with the structural diagnosis presented in this report.

Pattern 1: Success and Persistence Are Strong and Rising

Among students who enroll, the program is performing well. Success rates across the most recent three terms average approximately 89%: 90.0% (2024FA), 93.6% (2025SP), and 85.7% (2025FA). Persistence has similarly strengthened, with 2025SP reaching 87.5% one-year focused persistence — well above comparable CTE program norms. Students enrolled in the program currently are achieving strong outcomes, demonstrating that the instructional model, curriculum, and support systems are effective for those who participate. The central challenge is not the performance of current students; rather, it is the program's limited ability to reach the broader group of individuals it is designed to serve.

Pattern 2: Headcount Has Declined, with Compounding Causes

Fall headcount has fallen from 22 (2022FA) to 15 (2024FA) to 7 (2025FA). Spring headcount has fallen from 15 (2023SP) to 6 (2026SP). Multiple compounding factors are at work:

- **Structural credential-to-wage mismatch.** The diagnosis described in the previous section — the 62-unit program over-prepares students for entry-level wages without providing intermediate credentials — suppresses enrollment from the working adults, dual-enrollment students, and career changers who make up the most active recruitment pools in the service area.
- **Section reductions.** Fall MFG section count dropped from 8 in 2022FA, 2023FA, and 2024FA to 4 in 2025FA. Spring dropped from 8 in 2023SP, 2024SP, 2025SP to 4 in 2026SP. Reduced section offerings directly reduce enrollment capacity.
- **Vitality review uncertainty.** The AP 4021 review initiated in June 2025 created an enrollment signal to prospective students that the program's future was uncertain. This effect is documented in similar program review contexts across California community colleges and is a known contributing factor to enrollment drops during review periods.
- **Faculty transition effects.** Although Kelly Womack has been granted tenure and stabilized the faculty assignment, the transition period from the 2020-2024 vacancy did not fully resolve until well into 2024, limiting recruitment and outreach activity during the crucial period leading into 2025FA.

Pattern 3: Completions Tell a Different — and Strong — Story

Academic Year	AA/AS Degrees	Certificates of Achievement	Certificates of Completion	Total Awards
2022-23	0	25	22	**47**
2023-24	1	25	4	**30**
2024-25	3	24	5	**32**
2025-26*	0	0	1	**1**
TOTAL	**4**	**74**	**32**	**110**

** 2025-26 year in progress as of April 2026 however data reflects one CC completion that cannot be explained..*

Across the three most recent complete academic years, the Advanced Manufacturing Program has awarded **74 Certificates of Achievement and 4 Associate in Science degrees**, plus 32 Certificates of Completion — **109 total credentials across three years**. The 19:1 ratio of CAs to AS degrees is the most important data point in this entire report. It demonstrates, with the clarity only completion data can provide, that **the program is producing workforce-ready manufacturing technicians at scale**, and it documents that students rationally exit at the CA point because the additional year of study does not produce a meaningful wage return. This is not evidence of a failing program. It is evidence of a successful program operating within a flawed credential structure. The revitalization plan in this report aligns credential attainment with the wage points where students are already exiting — converting the program's de facto success into formally recognized, labor-market-aligned credentials.

Known Graduate Employment Placements

Employment tracking is traditionally difficult for community college CTE programs as students are lost to follow-up contact. Known placements from the Advanced Manufacturing Program include graduates at Metalworks, Safepath, Norfield Industries, and PBM — all regional manufacturing employers. Both graduates of the 2nd cohort (Spring 2024) secured employment prior to graduation, at Safepath and Metal Works respectively, demonstrating continuing employer demand for program completers. NOTE: As of Spring 2026, five of the six students enrolled in the program will finish with offers of employment at the conclusion of the semester including QC Molds, INTECH Machine, Slag Factory, Kraemer Manufacturing and Paul Components.

Response to Program Vitality Indicators

The following table addresses each checked indicator from the Proposal Request Form. The revitalization plan described in this report directly addresses each indicator either by documented resolution, by structural remedy in Phase 1, or by transformational remedy in Phase 2.

Indicator	Status	Program Response
Weak Enrollment Trend	STRUCTURAL REMEDY IN PHASE 1	Enrollment decline reflects the 62-unit cohort model's misalignment with contemporary student and employer needs, compounded by the Camp Fire, COVID-19, the 2020-2024 faculty vacancy, and vitality review uncertainty. Phase 1 restructures into stackable CAs in two-semester delivery options, decoupling co-requisite tracks and aligning credentials with wage points. Dual enrollment, ITEC-55/ITEC-65 pipeline, and SwifTECH-adjacent recruitment channels rebuild enrollment through established infrastructure. The Phase I Transition Plan reduces the 62-unit total to 36-unit total in two CAs (one-year entry level and second year advanced level).
Poor Retention Within Courses	STRUCTURAL REMEDY IN PHASE 1	In-course retention is high (2024FA: 100.0%; 2025FA: 100.0% at end of term). The cohort model's rigid co-requisite lock creates attrition pressure that falls heaviest on students with work, family, or scheduling constraints. Phase 1 replaces the lock with modular delivery, reducing all-or-nothing completion pressure.
Poor Term-to-Term Persistence	ADDRESSED; DATA DOES NOT CONFIRM THE INDICATOR AS CURRENTLY SEVERE	Persistence rates across the most recent three terms are 80.0% (2024FA), 87.5% (2025SP), and 85.7% (2025FA) comparable to or exceeding CTE program norms. The Phase 1 modular restructuring provides additional flexibility that will further strengthen persistence, but current-term persistence is a strength, not a weakness.
Changes in the Job Market	SUPPORTS REVITALIZATION	The 2026 NFN COE report and the March 31, 2026 Butte/Glenn memorandum document a sector that is growing, not contracting. 4,707 Advanced Manufacturing jobs in Butte/Glenn (27% of Far North sector employment). Posting intensity of 3:1 (vs. 2:1 regional average) signals unmet demand. COE's own conclusion recommends new program development at Butte College. The job market has not weakened — the program's alignment with it has.

Changes in Community/Student Needs	SUPPORTS REVITALIZATION	The fastest-growing Advanced Manufacturing subsector in the service area is Food Manufacturing, projected to add 41 jobs by 2029. The top Butte/Glenn employers posting Advanced Manufacturing jobs are Sierra Nevada Brewing Co. and Pacific Coast Producers — both food/beverage manufacturers in Butte College's direct service area. The SwifTECH project has already established committed host company partnerships with Lundberg Family Farms, OroFlex Packaging, Carriere Family Farms, Sun West Milling, and California Olive Ranch. Community needs are strong, growing, and documented.
Diminished Outside Funding	ADDRESSED BY DEMONSTRATED FEDERAL CAPACITY	Butte College has demonstrated capacity to win federal workforce funding: SwifTECH (NSF ATE #2400478) is an active 3-year award now in Year 2. Phase 1 funding strategy leverages Strong Workforce Program funding through the North Far North Regional Consortium (which itself funded the 2026 COE report recommending Butte College program expansion), Perkins V, and EDD/WIOA incumbent worker training. Phase 2 pursues follow-on NSF ATE funding, building directly on the SwifTECH project's demonstrated success.
Financial Hardship to Institution	ADDRESSED IN PHASE 1	As enrollment increases, the cost per student decreases because students can earn stackable credentials with multiple entry and exit points. The SwifTECH project has already established shared instructional infrastructure at Butte College, including Amatrol eLearning systems, MSSC certification pathways, and a NOCTI-certified Internship Mentor Coach model. This shared approach significantly reduces the cost of each individual program. In addition, manufacturing jobs generate a powerful economic multiplier — each job creates more than two additional jobs in the region — meaning the community's return on investment is far greater than the direct cost of the program.
Lack of Qualified Personnel	RESOLVED	Directly and permanently resolved by the tenure of Kelly Womack as full-time faculty assigned to the Advanced Manufacturing Program. Additional departmental faculty — John Dahlgren (tenured), Jennifer Bryant (tenured) — provide supporting expertise through the SwifTECH project and the shared Industrial Technology Department structure.

Outdated Curriculum	STRUCTURAL REMEDY IN PHASE 1; TRANSFORMATIONAL REMEDY IN PHASE 2	Phase 1 revises Course Outlines of Record (CORs) to align with COE-documented employer demand, embeds ITEC-65 as a 2-unit mechatronics-oriented foundation course substituting for ITEC-55 within the MFG pathway, formally recommends transfer of four welding-specific courses (MFG-12, MFG-22, MFG-32, MFG-42, totaling 14 units) to the Welding Technology sister program, and removes two finishing courses (MFG-14, MFG-24) from the required CA pathway. Phase 2 develops new curriculum in PLCs, industrial sensors, pneumatic/hydraulic systems, automation controls, and process manufacturing — content entirely absent from the current CORs.
PLOs/SLOs and Equipment-Based Instruction	ADDRESSED IN PHASE 1	New equipment (HAAS CNC mills and lathes, HAAS simulators, 2 shears, roller, plasma table, robotic welding systems, Stronghand tables, fume collectors) are installed and mostly operational as of 2024. With tenured faculty in place and revised CORs explicitly aligned with current equipment capability and regional employer skill demand, equipment-based instruction can be fully and consistently delivered. Phase 1 COR revisions will make this alignment explicit in assessment.

Regional Labor Market Need

The data in this section is drawn from two authoritative sources published by the North Far North Center of Excellence for Labor Market Research (NFN COE), a California Community Colleges Chancellor's Office funded research body: the 2026 Advanced Manufacturing Career and Training Pathways Profile published March 2026 and the memorandum Advanced Manufacturing in Butte and Glenn Counties dated March 31, 2026 and prepared in direct response to Butte College's request for data to support new program development within Advanced Manufacturing.

Far North Regional Sector Overview

The 2026 Far North Advanced Manufacturing sector profile documents:

- **13,676** manufacturing jobs in the Far North region in 2024
- **14,079** projected jobs by 2029 (3% growth)
- **403** new jobs added 2024-2029 (additions due to capacity increases, new business and retirement replacement)
- **1,600+** annual job openings
- **853** business establishments
- **3.6%** of all Far North employment in the sector

Posting Intensity: A Market Failure the Program Addresses

One of the most compelling findings in the 2026 COE report is the job posting data, which documents not just demand but the degree to which that demand is going unmet. Advanced Manufacturing employers in the Far North posted 1,282 unique job listings in the twelve months from November 2024 through October 2025, with a posting intensity of 3:1 — compared to the 2:1 regional average across all sectors. This means Advanced Manufacturing employers are reposting the same jobs 50% more frequently than the regional norm because they cannot find qualified applicants. Jobs remain open for a median of 26 days (vs. 23 days regional average). This is a documented, measurable market failure that a revitalized Butte College Advanced Manufacturing program is uniquely positioned to address.

Butte and Glenn Counties: The Program's Direct Service Area

The NFN COE's March 31, 2026 custom memorandum focuses specifically on Butte College's two-county service area and provides the most current, geographically specific data available:

- 222 Advanced Manufacturing business establishments in Butte and Glenn counties
- 4,707 Advanced Manufacturing jobs, 27% of all Far North Advanced Manufacturing employment concentrated in Butte College's direct service area

- 142 unique Advanced Manufacturing middle-skill job postings in the 12 months from March 2025 to February 2026

Food and Beverage Manufacturing Leads Service Area Employment

Industry	2024 Jobs	2029 Jobs	Establishments	Change 2024-2029
Food Manufacturing ★	1,196	1,237	38	**+41 (GROWING)**
Beverage and Tobacco Product Manufacturing ★	683	672	14	-11
Machinery Manufacturing	474	353	24	-121
Nonmetallic Mineral Product Manufacturing	361	338	13	-23
Fabricated Metal Product Manufacturing	353	332	28	-21
Wood Product Manufacturing	300	272	14	-28
Miscellaneous Manufacturing	242	207	17	-35
Printing and Related Support	212	216	12	+4
Plastics and Rubber Products ★	202	237	10	**+35 (GROWING)**
Paper Manufacturing	191	191	3	0

★ denotes food and beverage manufacturing and allied industries.

Food Manufacturing is the single largest Advanced Manufacturing industry in Butte College's service area with 1,196 jobs across 38 establishments — and it is growing. Combined with Beverage and Tobacco Product Manufacturing (683 jobs, 14 establishments), food and beverage processing accounts for 1,879 of 4,707 total Advanced Manufacturing jobs in Butte and Glenn counties — nearly 40% of Advanced Manufacturing employment in the service area. This concentration is precisely where the revitalized MFG program, the SwifTECH Engineering Support Technician credential, and committed host company partnerships (Lundberg Family Farms, OroFlex Packaging, Carriere Family Farms, Sun West Milling, and California Olive Ranch) align.

Top Middle-Skill Occupations in the Service Area

The following occupations are the top middle-skill positions in Butte and Glenn counties with the most annual openings:

Occupation	2024 Jobs	2029 Jobs	Annual Openings	Entry Ed
First-Line Supervisors of Production and Operating Workers	254	262	27	HS Diploma
Industrial Machinery Mechanics ★	219	238	**22**	HS Diploma
Inspectors, Testers, Sorters, Samplers, Weighers	150	160	20	HS Diploma
Welders, Cutters, Solderers, Brazers	208	199	19	HS Diploma
Separating/Filtering Machine Operators	107	100	12	HS Diploma
Machinists	94	82	8	HS Diploma
CNC Tool Operators	43	34	3	HS Diploma
Electrical/Electronic/Electromechanical Assemblers	22	22	3	HS Diploma
TOTAL ANNUAL OPENINGS			**114+**	

★ *Industrial Machinery Mechanics is the occupation most directly aligned with both the SwifTECH Engineering Support Technician credential and the Phase 2 mechatronics development in the revitalized MFG program. These 114+ annual openings in the two-county service area alone represent a consistent pipeline demand the departmental ecosystem is designed to meet.*

Wage Alignment: The Structural Diagnosis Confirmed by COE Data

The COE wage data is the foundation of the structural diagnosis presented in Section 2 of this report. Entry-level hourly wages for the top Butte/Glenn middle-skill level manufacturing occupations cluster tightly between $18 and $27 per hour — within a few dollars of California's $16.50/hour minimum wage and at or just above the Far North region's $16.22/hour living wage for a single working adult (NFN COE 2026 sector profile):

Occupation	Entry (25th pct)	Median	Experienced (75th pct)
Welders, Cutters, Solderers, Brazers	$20.74	$24.17	$29.81
Industrial Machinery Mechanics ★	$25.14	$32.07	$39.01
Separating/Filtering Machine Operators	$20.15	$23.40	$30.67
Machinists	$21.01	$24.09	$31.36

Occupation	Entry (25th pct)	Median	Experienced (75th pct)
Millwrights ★	$27.84	$31.67	$37.64
Calibration Technologists and Technicians ★	$33.53	$39.76	$49.11
Electrical/Electronic Engineering Technicians ★	$31.52	$39.70	$49.52

★ Occupations marked with a star require specialized training beyond entry-level work and show meaningful wage premiums — $25-39/hour entry, $33-49/hour experienced. These are precisely the wage-premium occupations the Advanced MFG CA (Phase 1) and AS degree (Phase 2) are designed to prepare students for. The entry-level occupations without stars ($18-24/hour entry) pay a wage at or near minimum wage regardless of whether the student completed a one-year CA or a two-year AS. **This is the structural basis of the 74:4 CA-to-AS completion ratio.**

Top Employers and In-Demand Skills Documented in Job Postings

The top employers posting Advanced Manufacturing jobs in Butte and Glenn counties (March 2025 – February 2026) are food/beverage manufacturers and agricultural processors:

Employer	Postings	Location
Sierra Nevada Brewing Co. ★	8	Chico, CA
Pacific Coast Producers ★	7	Butte County plants
Flynn's Welding and Machine Shop	5	Chico, CA
Sierra Pacific Industries	4	Chico, CA
Graphic Packaging International	3	Butte County
Carriere Family Farms ★†	3	Glenn County
Butte County	3	Oroville, CA

★ food and beverage manufacturers and agricultural processors. † Carriere Family Farms is also a committed SwifTECH host company partner. The top two employers by posting volume — both food/beverage manufacturers headquartered in Butte College's direct service area — are precisely the employers the revitalized MFG program, the SwifTECH EST credential, and the Phase 2 mechatronics development target. California Olive Ranch (another SwifTECH committed partner) is among the Far North region's named anchor employers; Adams Vegetable Oils ranks among the top posting volume employers regionwide.

Skills Gaps with No Current Community College Program

The COE's Butte/Glenn memo identifies the top specialized skills in Advanced Manufacturing job postings and flags which skills have no active California Community College training program. Four of the top eight in-demand skills have no active CCC training — documented gap opportunities the revitalized MFG program will address through COR revisions:

% of Postings	Skill(s) Stated in Job Postings	Far North CCC Program(s)
29%	Quality Management (QA/QC)	YES — existing CCC program (TOP 0956.80)
26%	Welding	YES — existing Butte College Welding Technology
18%	**Blueprinting (interpreted as Blueprint Reading)**	NO — gap opportunity addressed (Phase 1 COR revisions)
16%	**Continuous Improvement Process**	NO — gap opportunity addressed (Phase 1 COR revisions)
14%	OSHA / Occupational Safety	YES — existing CCC program (TOP 0956.70)
12%	**Hand Tools / Power Tools**	NO — gap opportunity addressed via ITEC-65 integration
8%	**Standard Operating Procedures**	NO — gap opportunity addressed (Phase 1 COR revisions)
7%	Computer Numerical Control	YES — existing Butte College MFG Technology Program

The COE's Direct Endorsement of Program Development

The March 31, 2026 COE memorandum closes with an explicit conclusion: ***"There are opportunities for additional programs within Advanced Manufacturing that align with the in-demand skills and jobs in Butte and Glenn counties. These include low-unit certificates and noncredit programs. New programs should prioritize integrating the top [skills] found in job postings to align programs with employer preferences."*** *(NFN COE, March 31, 2026)*

This conclusion — issued by the same authoritative labor market research body whose data is used throughout California community college program evaluation — is a direct, written endorsement of new program development at Butte College within Advanced Manufacturing. It is the precise opposite of a recommendation for discontinuance.

SwifTECH and the Industrial Technology Departmental Infrastructure

The revitalization plan described in this report is not a proposal to build a new program in isolation. It is a proposal to align Advanced Manufacturing with infrastructure and governance that the Industrial Technology Department has already built and is currently operating under federal funding. This section describes that infrastructure and how the revitalized MFG program uses it.

SwifTECH: An NSF ATE Award in Execution

In 2024, Butte College was awarded the **SwifTECH — Engineering Support Technician Certification Project** (NSF ATE #2400478), a three-year Small Projects for Institutions New to ATE award under NSF Solicitation #21-598. The project is now in Year 2. The award establishes a new career pathway for an Engineering Support Technician (EST) credential targeting mid-level mechatronics-adjacent maintenance roles — replacing the retiring millwright workforce in regional food, beverage, agricultural processing, and machinery manufacturing companies.

SwifTECH Credential Architecture

SwifTECH is a NSF Advanced Technical Education grant that is a proof-of-concept establishing a 19-unit Certificate of Achievement spanning two semesters, with additional industry-based training, safety training and a 160-hour (minimum) internship placement in a local process manufacturer with a goal of work readiness in 12 months from start of program. The curriculum and training align with the Manufacturing Skills Standards Council (MSSC) Certified Production Technician (CPT) 4.0 certification readiness.

SwifTECH Committed Host Company Partnerships

The SwifTECH proposal was awarded with binding letters of commitment from industry host companies. These companies are the primary intended host sites for SwifTECH's Internship Mentor Coach (IMC) internship model. Each company commits to qualifying a minimum of two IMCs and hosting up to four student interns:

- Lundberg Family Farms (rice processing, Richvale, CA)
- Pacific Coast Producers (fruit processing, Oroville, CA — also a top Butte/Glenn posting-volume employer per COE memo)
- Carriere Family Farms (walnut processing, Glenn County — also a top Butte/Glenn posting-volume employer per COE memo)
- Sun West Milling (grain and oilseed milling)
- California Olive Ranch / Cal-Olive (olive oil production, Chico CA — also a named anchor employer in the NFN COE sector profile)

SwifTECH Infrastructure Assets

SwifTECH has deployed, or is deploying, the following infrastructure at Butte College:

- **Amatrol eLearning platform** — 2,500+ competency-based modules across mechanical, electrical, and fluid (pneumatic/hydraulic) technologies, with instructor-led simulation equipment at the Butte College Training Place Center and an 80% competency threshold for module completion.
- **MSSC Certified Production Technician (CPT) 4.0 certification pathway** — gives students access to a nationally portable industry credential alongside college credit.
- **NOCTI-certified Internship Mentor Coach (IMC) model** — each host company IMC is certified through the National Occupational Competency Testing Institute's CTE instructor credential, providing structured hands-on coaching that replaces the traditional 'one day per week' part-time internship model.
- **The Training Place MiniSkills and Upskill Academy** — existing non-credit industrial training programs operated by Butte College's Training Place Center, now being converted to credit-bearing pathway via SwifTECH. MiniSkills provides 8-hour 'Level 1' training in mechanical, electrical, shop math, and blueprint reading; Upskill Academy provides 32-hour targeted modules in mechanical, electrical, and fluid skills using Amatrol content.
- **BILT (Business & Industry Leadership Team) advisory model** — a structured industry advisory committee governance model that the SwifTECH team is deploying through the 2024 Working Partners Workshops. As described by SNF ATE: “The BILT model is a strategic approach to employer engagement in technical and applied programs, supported by the National Science Foundation. Unlike traditional advisory committees that meet infrequently and primarily approve faculty-developed curriculum, BILTs co-lead programs, providing direct input on the knowledge, skills, and abilities (KSAs) students should acquire 12–36 months into the future."

The Sibling-Program Architecture: Three Credentials, Shared Infrastructure

The revitalized MFG program operates as a sibling credential within the Industrial Technology Department ecosystem. The three departmental credentials — SwifTECH EST, revitalized MFG, and Welding Technology — share substantial infrastructure but maintain distinct curricula and complementary occupational targets:

Program	Credential Structure	Occupational Target	Wage Range
SwifTECH EST	19-unit CC → enhanced CA → future AS	Engineering Support Technician; replaces retiring millwrights in food/beverage/ag processing	$45K-$86K salary / $22-$39/hr (entry-experienced)

Program	Credential Structure	Occupational Target	Wage Range
Revitalized MFG (Phase 1 Core)	2-semester CA, 18 units each	Manufacturing Technician; Machinist; CNC Operator	$20-$25/hr entry
Advanced MFG (Phase 1-2)	Advanced CA / AS stacking on Core MFG CA	Industrial Machinery Mechanic; Calibration Technologist; Production Supervisor	$27-$49/hr
Welding Technology (sibling)	Existing CA and AS	Welders, Cutters, Fabricators	$20-$30/hr

Distinct at the Course and Credential Level

The revitalized MFG program will not offer the EST credential and does not duplicate SwifTECH's course offerings. The MFG credential produces Manufacturing Technicians for machining, CNC operation, CAD/CAM, and production systems roles. The SwifTECH EST credential produces mechatronics-adjacent maintenance technicians. These are complementary — not competing — workforce outputs. A regional employer with both machining and maintenance hiring needs can draw from both pathways; a student has a visible branching decision to make based on career interest rather than a single forced pathway.

Welding Technology remains a separate sister program with its own Certificate of Achievement and Associate of Science degrees dedicated to welding-focused careers. Students pursuing welding careers are directed to the Welding Technology program. The revitalized MFG program does not produce welders but a common thread of interest is produced through fabrication processes and skills.

Phase 1: Transition — Curriculum Architecture

As proposed, Phase 1 restructures the Advanced Manufacturing curriculum from a 62-unit, four-semester synchronous cohort into a stackable architecture with parallel delivery options. The Phase 1 architecture uses existing CSU-transferable Butte College courses where possible, requiring revised Course Outlines of Record (CORs) but no new course development. This keeps the curriculum-committee approval pathway straightforward and allows Phase 1 to be implemented within the 2025-2027 window without waiting for Chancellor's Office approval of new courses.

Current Program: 62-Unit Four-Semester Cohort

The current program organizes 16 MFG courses (plus ITEC-55 as a required prerequisite) across four parallel content tracks ascending through four levels:

Track	Intro (Term 1)	Intermediate (Term 2)	Advanced (Term 3)	Advanced+ (Term 4)
CNC / Equipment	MFG-10 (8)	MFG-20 (8)	—	—
Welding	MFG-12 (3)	MFG-22 (3)	MFG-32 Robotic (4)	MFG-42 Robotic (4)
Finishing	MFG-14 (3)	MFG-24 (3)	—	—
CAD / Modeling	MFG-16 (3)	MFG-26 (3)	MFG-34 (3)	MFG-44 (3)
ERP / Production Systems	—	—	MFG-30 (3)	MFG-40 (3)
Internship	—	—	MFG-36 (4)	MFG-46 (4)
TOTAL	17 Units	17 Units	14 Units	14 Units

Total: 62 units across 4 semesters

All 16 MFG courses plus ITEC-55 carry CSU transfer status. Each course includes 'Practice safety skills that are required on jobsites as Objective #1 (redundant across the curriculum), and most include some version of trade math, measurement conversions, and industry terminology content (additional redundancy). Every course at Term 2, 3, and 4 locks all four co-requisite tracks, forcing students who want one content area to also enroll in the other three.

Analysis: Where the 62 Units Actually Come From

The following analysis breaks down the current 62 units by content track, with alignment to the top COE-documented skills demanded in Butte/Glenn job postings:

Content Track	Current Unit Allocation	Labor Market Alignment
CNC / Equipment (MFG-10, MFG-20)	16 units (26%)	Strong — CNC, machining, nesting; COE gap skill: CNC
Welding (MFG-12, -22, -32, -42)	14 units (23%)	Scope overlap with Welding Technology
CAD / Modeling (MFG-16, -26, -34, -44)	12 units (19%)	Strong — AutoCAD, SolidWorks, 3D modeling; COE top technical skills
Internship (MFG-36, MFG-46)	8 units (13%)	Strong value, but current delivery model inadequate
Finishing (MFG-14, MFG-24)	6 units (10%)	Weak — not in COE's top 10 demanded skills
ERP / Production Systems (MFG-30, MFG-40)	6 units (10%)	Strong — COE top skills: Quality Mgmt (29%), Continuous Improvement (16%)
Mechatronics / Automation	0 units (0%)	ABSOLUTE GAP — no current COR covers PLCs, sensors, automation, pneumatic/hydraulic systems, or process manufacturing

If welding and finishing content is removed from the required MFG pathway, the program retains 40 units of labor-market-aligned CSU-transferable content (plus 2 units from ITEC-65). This is more than sufficient to build two parallel Core CAs at 16 units each, plus an Advanced MFG CA or AS stacking on top.

The Revitalized MFG Architecture

ITEC-65 Substitutes for ITEC-55 within the MFG Pathway

The current program requires ITEC-55 (Introduction to Industrial Trades) as a prerequisite. ITEC-55 is NCCER-aligned construction-trades pre-employment content: basic safety, hand tool identification, ANSI hand signals, rigging, and materials handling. While valuable for construction-sector pathways, it is not aligned with the contemporary Advanced Manufacturing occupations the COE has identified.

The revitalized MFG pathway embeds **ITEC-65 (Introduction to Process Technologies)** as the 2-unit foundation course instead. ITEC-65 is functionally identical in structure to ITEC-55 (2 units, 17 lecture / 51 lab hours, CSU transferable) but is designed for manufacturing and mechatronics contexts. ITEC-65 introduces, at the entry level: manufacturing-facility safety, hand tool identification and application, technical drawings, basic mechanical systems (levers, cams, pulleys, gears), basic AC/DC electrical circuits and measurement, and pneumatic systems problem-solving. The course description explicitly frames itself as 'pre-employment training for processing technologies and mechatronics technology.'

Substituting ITEC-65 for ITEC-55 within the MFG pathway accomplishes four things simultaneously:

1. Aligns the entry course with the correct industry sector (manufacturing, not construction).
2. Introduces mechatronics foundations (mechanical, electrical, pneumatic) at the entry level — seeding Phase 2 content from Day 1.
3. Creates a shared foundation with SwifTECH, which also uses ITEC-65. Students enter the Industrial Technology Department through a common gateway and branch into their track of choice.
4. Preserves the ITEC-55 equity pipeline: ITEC-55 continues to serve formerly-incarcerated students pursuing construction pathways through other programs. ITEC-65 serves the same kind of entry-level, pre-employment student population for manufacturing pathways.

ITEC-65 counts as 2 of the 16+ units of the MFG Core CA — it is embedded within the credential, not a separate prerequisite students must complete before enrolling in the CA.

Core MFG Certificate of Achievement — Parallel Delivery Options

The Core MFG CA is a 18-unit Chancellor's Office-recognized Certificate of Achievement. Target student: working adult, parent, dual-enrollment high school student, formerly-incarcerated student transitioning through the ITEC-55 (ITEC-65) pipeline, or any student who cannot commit to a full-time load or as a start point for the advanced CA and/or AS in CNC Technician. NOTE: This CA also benefits the student intent to transfer to CSU Chico. Manufacturing Technician, CNC Operator, Machine Operator at $20-25/hour entry.

Course	Units	Notes
Semester 1 (10 units):		
• **ITEC-65** — Introduction to Process Technologies	**2**	Manufacturing and mechatronics foundation; substitutes for ITEC-55
• **MFG-10** — Introduction to Manufacturing Equipment (8 units) delivered via extended-term or hybrid modality as COR revision supports	**8**	CNC/equipment foundation; revised to emphasize COE gap skills (Blueprinting, SOPs, Hand Tools)
Semester 2 (8 units):		
• **DFT-2** Engineering Graphics I	**3**	CAD/modeling foundation and positive view from current DFT and ENGR students
• **MFG-30** ERP Software for Manufacturing	**3**	Production systems; revised to emphasize Quality Management and Continuous Improvement (top COE skills)
• **MFG-36** Work Readiness Preparation	**2**	Tours, guest speakers, online portfolio, resume building.
TOTAL	**18**	Chancellor's Office CA threshold met

Advanced MFG Certificate of Achievement — Stacks on Core CA

The Advanced MFG CA stacks additional units on the Core CA for students pursuing higher-wage technician roles (Industrial Machinery Mechanic, Calibration Technologist, Production Supervisor) at $27-49/hour. The Advanced CA can also stack into the Phase 2 Associate of Science degree. Advanced CA courses:

Course	Units	Notes
Semester 1 (11 Units)		
MFG-20 — Manufacturing Equipment (revised COR)	**8**	Advanced CNC, press brake, lathe, cutting table, nesting software, automation pick and place robot, machine operations and assembly
MFG-34 — 3D Modeling to Production (revised COR)	**3**	3D modeling for production, CAM integration, plastics technology and additive manufacturing (3D printing)
Semester 2 (7 Units)		
MFG-40 — Advanced ERP Software for Manufacturing (revised COR)	**3**	Advanced quality systems, supervisory preparation
MFG-46 — Advanced Internship (NOCTI/IMC model)	**4**	Intensive industry internship using SwifTECH IMC framework
SUBTOTAL (from existing CORs)	**18**	Stacks on Core CA for 40-unit total

The Advanced CA can be awarded at 18 units on top of the 18-unit Core CA, or expanded with Phase 2 additions into a full Associate of Science degree (Phase 2 development).

Transfer of Welding Courses to Welding Technology

This report recommends that MFG-12 (Introduction to Production Welding, 3 units), MFG-22 (Production Welding, 3 units), MFG-32 (Introduction to Robotic Welding, 4 units), and MFG-42 (Advanced Robotic Welding, 4 units), totaling 14 units of welding-specific content be reviewed by the Department and the Curriculum Committee for transfer to the Welding Technology program.

Rationale for the recommendation:

- **The four courses are welding-outcome courses, not survey-level manufacturing-processes content.** MFG-12 and MFG-22 teach gas metal arc welding (GMAW) pulse spray process; MFG-32 and MFG-42 teach robotic welding including jigs, fixtures, feeds, speeds, weld evaluation, and

dual-sided welding. These are direct welding-career preparation, which belongs in the Welding Technology program's credential pathway rather than fragmented across a separate Advanced Manufacturing credential.

- **The robotic welding content (MFG-32 and MFG-42, 8 units combined) is specialized advanced-welding curriculum that would strengthen the Welding Technology program's offerings** if the Welding Technology program is not currently offering this content. This is an additive recommendation for the sister program.
- **MFG-12 and MFG-22 (6 units combined) overlap with existing Welding Technology coursework** and should be reviewed for consolidation, archive, or reframing as part of the transfer process to avoid program duplication.
- **Process questions** — faculty load assignments, equipment disposition (including the robotic welding systems installed in 2024), and Welding Technology faculty input on the transfer scope are appropriately addressed through the standard curriculum review cycle rather than resolved in this report. The recommendation here is for the Department and Curriculum Committee to initiate that review; the department is not requesting the PRRC resolve these process questions.

Disposition of Finishing Courses

This report recommends that MFG-14 (Introduction to Finishing, 3 units) and MFG-24 (Finishing, 3 units) are removed from the required Core and Advanced MFG CA pathways.

The content of spray urethane paint, powder coating and surface preparation does not map to the COE's top 10 specialized skills demanded in Butte/Glenn Advanced Manufacturing job postings. These courses remain available in the catalog as potential electives for students with specific finishing-focused interests, but they do not load onto the required MFG credential.

Phase 2: Transformation — Mechatronics, AS Degree, and CSU Chico Articulation

Phase 2 extends the revitalized MFG program into content areas currently absent from the curriculum, building the higher-wage occupational preparation that the Advanced MFG Associate in Science degree will deliver. Phase 2 begins in parallel with Phase 1 (curriculum development in 2026-2027 during Chancellor's Office approval cycles) and launches formally in 2027 and beyond.

The Mechatronics Curriculum Gap

The current MFG program covers 0 units of mechatronics content. No course addresses PLCs, industrial sensors, automation controls, pneumatic or hydraulic systems, industrial electrical systems beyond welding power, process monitoring, hygienic design, HACCP/GMP (food and beverage regulations) compliance, or industrial maintenance and troubleshooting. This is an absolute gap — unlike the ERP, CAD, and CNC tracks which can be strengthened through COR revision, the mechatronics content must be built as new curriculum.

Phase 2 New Curriculum Scope

Phase 2 develops approximately 2-3 new courses totaling 8-12 units covering:

- PLC fundamentals and programming (potentially leveraging SwifTECH's Amatrol content licensing where scope permits)
- Industrial sensors, actuators, and vision systems
- Pneumatic and hydraulic systems for industrial applications
- Automation controls, industrial data systems, SCADA introduction
- Process manufacturing — hygienic design, HACCP/GMP for food and beverage applications
- Industrial maintenance, troubleshooting, and calibration — directly aligned with the Industrial Machinery Mechanic and Calibration Technologist occupations

Phase 2 new courses stack onto the Core MFG CA and Advanced MFG CA to complete an **Associate of Science in Advanced Manufacturing**, with the mechatronics sequence supporting transfer to CSU Chico's B.S. in Advanced Manufacturing and Applied Robotics.

The Associate of Science Degree

Target AS degree structure into two offerings:

- **Advanced MFG CNC Operator:** Core MFG CA (16 units) plus Advanced MFG CA courses (24 units)
- **Advanced MFG Process Maintenance:** Phase 2 mechatronics sequence (16-24 new units)
- General education per Butte College and CSU transfer requirements

The AS degree provides the pathway for students pursuing either (a) advanced operator level manufacturing roles (CNC operator, setup scheduling technicians at Butte/Glenn employers with Advanced CA credentials plus general-education breadth, or (b) process maintenance roles at Butte/Glenn employers with potential of Engineering Support Technician credentials and additional industrial mechanical, electrical, pneumatic and hydraulic application skills.

Additionally, all efforts must be made to create transfer centered articulations with those intent to pursue Bachelor of Science degrees in Advanced Manufacturing and Applied Robotics at CSU, Chico under formal articulation agreements.

CSU Chico Articulation Pathway

CSU Chico is located approximately 14 miles from Butte College's main campus. Its **B.S. in Advanced Manufacturing and Applied Robotics** is the natural four-year articulation target for the revitalized MFG AS. Phase 2 formalizes an articulation agreement at the 100- and 200-course level, creating a continuous regional educational ladder: High School CTE → ITEC-65 gateway → Butte College Core MFG CA → Butte College Advanced MFG CA / AS → CSU Chico B.S. in Advanced Manufacturing and Applied Robotics.

In Phase 2, the MFG program will add one Certificate of Achievement program with current working title "**Certificate of Achievement in Manufacturing Fundamentals**". This CA will build on the same CA currently offered by the Engineering program serving students who have all intentions to transfer to CSU Chico and pursue a bachelor's degree. Configuring this CA will rest on the articulation of a core of CSU Chico courses in the Adavanced Manufacturing and Applied Robotics program, specifically AMAR 160 Manufacturing Processes, AMAR 260 Applied Advanced Manufacturing and MECH/MECA 140 Introduction to Design and Automation. The transformation process would happen in two steps, first reconfigure current MFG 10 and MFG 20 courses specifically aimed at articulation with AMAR 160 and AMAR 260 and the creation of a new course in conjunction with the Engineering program to articulate with MECH/MECA 140.

Course	Articulation Target	Units	Notes
MFG-10	AMAR 160	4	**Reconfigure** current MFG-10
MFG-20	AMAR 260	4	**Reconfigure** current MFG-20
ENGR-NEW1	MECH/MECA 140	2	**Create new** with ENGR collaboration
DFT-2	MECH 100	3	**Existing articulation** with CSUC
DFT-8	MECH 200	3	**Existing articulation** with CSUC
Total		**16**	Chancellor's Office CA threshold met

The STEM and Guided Pathways approach provide the institutional channel for this articulation. CSU Chico is already the receiving institution for Butte College STEM transfer students in engineering, physics, and mathematics — existing pathway infrastructure that the MFG articulation and minimum new course creation that extends rather than builds from all from scratch.

Phase 2 Funding Strategy

Phase 2 funding builds on demonstrated departmental capacity to win federal workforce awards:

- **Follow-on NSF ATE award:** SwifTECH's 3-year term concludes in 2027. The Industrial Technology Department is positioned to apply for a follow-on NSF ATE award (either New to ATE for a new target technician occupation, or Small Projects / Project extending SwifTECH outcomes) that supports Phase 2 mechatronics curriculum development. The demonstrated capacity from SwifTECH — industry partnerships, evaluator relationships, BILT governance, dissemination through ATE Central and the HI-TEC conference — dramatically strengthens a follow-on application.
- **Strong Workforce Program (Regional):** North Far North Regional Consortium SWP allocations specifically support regional priority occupations. The COE's own conclusion endorses new Advanced Manufacturing program development in the service area — a direct alignment with SWP regional priority criteria.
- **GO-Biz / Cal Competes:** Governor Newsom's November 2025 Cal Competes awards identified food production and manufacturing as priority sectors, creating alignment between state economic development investment and workforce training funding.
- **Amatrol infrastructure already in place:** SwifTECH has already deployed Amatrol equipment and licensing at the Training Place Center. Phase 2 mechatronics curriculum can leverage this infrastructure without duplicating the acquisition cost, reducing Phase 2 capital expenditure requirements substantially.

Funding Strategy

The revitalization plan is funded through a combination of state, federal, regional, and employer sources. The Industrial Technology Department has demonstrated capacity to successfully compete for each of these funding streams.

Phase 1 Funding Sources (2025-2027)

- **Strong Workforce Program (SWP) North Far North Regional Consortium.** The primary vehicle for COR revisions, curriculum development, faculty professional development, and equipment refresh. Notably, the 2026 NFN COE sector profile and March 31, 2026, Butte/Glenn memo — both cited throughout this report — were themselves SWP-funded. This confirms that the

regional infrastructure supporting workforce research is actively engaged in the Advanced Manufacturing sector and Butte College's role in it.

- **Perkins V (Carl D. Perkins Career and Technical Education Act).** Federal CTE funds supporting curriculum development, equipment, and faculty professional development for programs with documented labor market alignment. The COE documentation in this report establishes Perkins V alignment directly.
- **EDD / WIOA Incumbent Worker Training.** Regional food and beverage manufacturers seeking to improve their existing workforce in automation, process manufacturing, and quality systems are eligible for WIOA-funded training with Butte College as the training provider. This funding stream also aligns with the Upskill Academy-to-credit conversion pathway SwifTECH is already building.
- **Employer contributions.** The MFG Advisory Committee has a documented history of donations — materials, monetary contributions, tours, guest speakers, graduation gifts — from Valley Iron, Metal Works, MJB Welding, Weiss McNair, Quality Craft Molds, Sel-Tech, Norfield, Safepath, NCL, Tink, Sierra Pacific Industries, Jem, and Transfer Flow. Formalizing these into structured partnership agreements generates reliable non-state resources.

Phase 2 Funding Sources (2027 and beyond)

- **NSF Advanced Technological Education (ATE) with potential follow-on award.** Butte College's SwifTECH award (NSF #2400478) demonstrates the Industrial Technology Department's capacity to compete successfully for NSF ATE funding. A follow-on award supporting Phase 2 mechatronics curriculum development is a realistic funding target — with the SwifTECH dissemination record, industry partnerships, and evaluator relationships strengthening any follow-on application substantially.
- **SWP Regional — larger-scale allocations** for programs serving documented regional labor market priorities. The food and beverage manufacturing concentration in the service area qualifies the Phase 2 pivot for regional rather than local SWP consideration.
- **GO-Biz / CalCompetes and related state economic development incentives** for partnerships with priority-sector employers.

Alignment with Butte College Strategic Plan

- **Student Success and Completion:** Two-semester Core CA options with modular stackability reduce barriers and provide intermediate credentials with direct labor market value. The 74 CAs already produced under the current rigid structure demonstrate the program's underlying capacity to generate completions; the restructured pathway converts this capacity into formally aligned credentials.
- **Workforce and Economic Development:** The program prepares students for 114+ annual middle-skill openings in the two-county service area and 1,600+ annual openings across the Far North region, directly fulfilling the college's regional workforce mission. Food and beverage manufacturing — the fastest-growing local subsector — is the primary occupational target.
- **Partnerships and Community Engagement:** The sibling-program architecture with SwifTECH, the formal recommendation regarding welding course transfer to the Welding Technology program, committed host company partnerships through SwifTECH (Lundberg Family Farms, Pacific Coast Producers, OroFlex Packaging, Carriere Family Farms, Sun West Milling, California Olive Ranch), the Advanced Manufacturing Program Advisory Committee, and Phase 2 CSU Chico articulation together create a dense regional partnership network.
- **Equity and Access:** Flexible pathways (one-semester intensive vs. two-semester) expand access for working adults, parents, and dual-enrollment high school students. The ITEC-65 substitution preserves the equity pipeline previously served by ITEC-55. The formerly incarcerated student population (ITEC-55 → MFG pipeline continues to be served under the ITEC-65 substitution. SwifTECH's target of 75% enrollment from underrepresented populations (Latinx/Hispanic, veterans, reskilling adults) extends to the sibling MFG program.
- **Resource Stewardship:** The funding strategy built on demonstrated NSF ATE capacity, SWP regional infrastructure, Perkins V alignment, and employer partnerships ensures institutional investment is matched by external resources. Shared departmental infrastructure (ITEC-65, Amatrol, Training Place, IMC model, BILT governance) reduces per-program overhead.

Recommendation

Based on the evidence presented in this report, the Butte College Industrial Technology Department makes the following formal recommendation to the Program Research and Recommendation Committee:

After thorough evaluative research process the Program Analysis Team compels the REVITALIZATION of the Advanced Manufacturing Program through a firm, three-year institutional commitment to implement the two-phase departmental plan described in this report.

Specifically, the PAT requests:

1. **Support designation** of the Advanced Manufacturing Program for **Revitalization** under AP 4021.
2. **Support substitution of ITEC-65 for ITEC-**55 within the MFG pathway, with ITEC-65 embedded as 2 units in the Core Certificates of Achievement and the Associate of Science degree.
3. **Support the Phase 1** curriculum restructuring led by tenured MFG faculty Kelly Womack in coordination with the SwifTECH project leadership (John Dahlgren, Jennifer Bryant) and the Welding Technology program faculty (for the welding course transfer recommendation).
4. **Support adoption** of the SwifTECH NOCTI-certified Internship Mentor Coach (IMC) model for the revitalized MFG internship (replacing the current 'one day per week' structure in MFG-46).
5. **Support formal referral** of MFG-12, MFG-22, MFG-32, and MFG-42 (14 units of welding-specific content) to the Welding Technology program and the Curriculum Committee for review, transfer, consolidation, or archive as appropriate.
6. **Support removal** of MFG-14 and MFG-24 from the required MFG CA pathway, with these courses retained as potential electives in the catalog.
7. **Support a minimum three-year commitment of institutional support** for the restructuring described in this report, including Dean-level and ITP Department support for COR revisions and Phase 2 new curriculum development.
8. **Support reassign time** for lead faculty to accomplish Phase 2 Transformation changes.
9. **Support funding augmentation(s)** through Strong Workforce Program, Perkins V, EDD/WIOA, and NSF ATE funding sources as described in the Funding Strategy section.
10. **Support Phase 2 development of two AS degree paths** including a Advanced Manufacturing CNC Operator and Advanced MFG Process Maintenance both with formal articulation negotiations with CSU Chico's Bachelor of Science in Advanced Manufacturing and Applied Robotics.
11. **Support Phase 2 development of a new CA in Manufacturing Fundamentals** specific to CSU Chico articulation

AP 4201 Resource Review

Program Resources and Capacity

In addition to the quantitative and qualitative data presented in this report, the Advanced Manufacturing Program has been reviewed in terms of resource availability and capacity to support both current operations and the proposed revitalization plan. This includes facilities, operating budget, equipment, staffing, and other institutional resources.

Facilities

The Advanced Manufacturing program is supported by dedicated lab and classroom spaces within the Industrial Technology facilities. These spaces are equipped to support hands-on instruction across machining, fabrication, and production systems. Existing facilities are sufficient to support the proposed Phase 1 curriculum, and no additional facility expansion is required.

Operating Budget

The program operates within the existing departmental budget structure, with primary costs associated with instructional delivery, consumable materials, and equipment maintenance. The proposed restructuring is designed to improve cost efficiency through increased accessibility and enrollment, while leveraging existing infrastructure. No significant increase in operating budget is required for Phase 1 implementation.

Equipment

The program has access to modern, industry-relevant equipment, including CNC machines, fabrication tools, robotic systems, and supporting instructional equipment. Much of this equipment has been recently updated and is aligned with current industry practices. The proposed Phase 1 curriculum is designed to better utilize existing equipment rather than require significant new capital investment.

The program also benefits from shared access to equipment and instructional resources through the SwifTECH project, including Amatrol training systems and curriculum that support mechanical, electrical, and process-based learning. In addition, equipment, such as 3D printers are lower cost and can be shared across programs, including Drafting and CAD Technology Engineering, further maximizing utilization and reducing duplication of resources.

As part of Phase 2 development, additional equipment will be required to support expanded instruction in automation, controls, and process systems, similar in scope to CSU Chico's MECH 140 course. These additions are targeted and align with identified industry skill gaps in areas such as sensors, PLCs, and system integration. Equipment needs will be developed strategically and pursued through external funding opportunities and existing institutional processes. The SwifTECH program currently has sufficient equipment to support instruction, and additional equipment can be scaled and added incrementally as enrollment increases, ensuring responsible and efficient resource growth.

Staff

The program is supported by full-time, tenured faculty, providing stability in instruction, curriculum development, and industry engagement. Additional support is available through the broader Industrial Technology Department, including faculty involved in related programs such as Drafting and CAD

Technology and Project SwifTECH (Phillip Manning, John Dalgren and Jennifer Bryant). This collaborative structure strengthens instructional capacity and supports the proposed program redesign.

Other Institutional Resources

The program is supported by existing institutional resources, including prior program review processes, industry advisory input, and externally funded initiatives such as the SwifTECH project. These resources provide additional infrastructure, curriculum support, and industry alignment. The program also benefits from established industry partnerships and advisory engagement, which support ongoing curriculum relevance and workforce alignment.

The Case in Summary

The 2026 NFN COE sector profile documents over 1,600 annual Advanced Manufacturing job openings in the Far North region. The COE's March 2026 Butte/Glenn memorandum documents 4,707 Advanced Manufacturing jobs and 142 unique job postings in the two-county service area alone — with the top two posting-volume employers being food and beverage manufacturers headquartered in Butte College's service area. The COE's own conclusion recommends new program development at Butte College. A 3:1 posting intensity indicates employers cannot find qualified workers. Butte College is the only institution in the Far North region offering the comprehensive Advanced Manufacturing, Manufacturing Operations, and Production Management portfolio.

The Industrial Technology Department has already won an active NSF ATE award (SwifTECH, #2400478) supporting a sibling Engineering Support Technician credential with committed industry host company partnerships, Amatrol infrastructure, MSSC certification pathways, and a NOCTI-certified internship model. The revitalized MFG program uses this infrastructure — not as a future aspiration, but as infrastructure in current execution.

The program has survived extraordinary external disruption. Stable tenured faculty leadership is in place. Modern equipment is installed and operational. Over the course of three years, the program has awarded 74 Certificates of Achievement — workforce output at scale that the revised credential architecture will align with the wage-inflection points where students actually exit. A clear, fundable, and achievable departmental plan is before this committee.

This region and its employers need this program. The students need this program. The Industrial Technology Department urges the Committee to invest in its future.

Appendices

Link to all appendices: https://www.livebinders.com/b/3706973

Appendix	Title
A	Proposal Request Form (AP 4021) — Advanced Manufacturing, June 2025
B	2-Year Program Review — Advanced Manufacturing, 2024
C	May 2024 Advisory Committee Meeting Agenda and Minutes
D	Current Program Map — Certificate of Achievement in Advanced Manufacturing (2023-2024)
E	2026 Advanced Manufacturing Career and Training Pathways Profile — North Far North Center of Excellence for Labor Market Research (March 2026)
F	NFN COE Memorandum — Advanced Manufacturing in Butte and Glenn Counties (March 31, 2026)
G	SwifTECH Project Description — NSF ATE Award #2400478 (2024)
H	ITEC-55 Course Outline of Record
I	ITEC-65 Course Outline of Record
J	Current MFG Course Outlines of Record (MFG-10 through MFG-46)
K	Butte College Institutional Research – Program Review Data (Fall and Spring terms 2022-2026)
L	CSU Chico B.S. in Advanced Manufacturing and Applied Robotics — Articulation Contact and Program Information (to be added)