Academic Program Review (Machine Tool Technology and Manufacturing Technology) Latest Version

Academic Program Review: (1) Overview of the program First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:55**

Provide a brief narrative description of the current program, including the program's mission statement and the students it serves.
The **Machine Tool & Manufacturing Technology programs** at **Compton College** are designed to equip students with the technical knowledge and hands-on experience necessary for entry-level careers in the manufacturing and machining industries. The program provides foundational and advanced training in the operation and setup of key industry equipment, including drilling machines, lathes, mills, grinders, CNC lathes, CNC mills, EDMs, and computer-aided manufacturing systems.
Mission Statement:
The mission of the Machine Tool & Manufacturing Technology program is to prepare students for success in the modern manufacturing workforce by offering high-quality instruction, hands-on learning, and access to industry-relevant tools and technologies. The program supports student achievement, career readiness, and lifelong learning through an inclusive and innovation-focused educational environment.
Students Served:
The program serves a diverse population of students, including recent high school graduates, career changers, and incumbent workers seeking to enhance their skills. It caters to both beginners and individuals with some machining experience, providing flexible pathways through certificates, degrees, and real-world training opportunities such as internships and partnerships with local employers. The student body reflects the college's commitment to supporting underrepresented groups in technical fields, offering opportunities for advancement in a high-demand sector.

Describe the degrees and/or certificates offered by the program.
Degrees and Certificates Offered
Associate of Science (AS) Degrees:

- **Machinist Option**: Focuses on manual and CNC machining techniques, preparing students for roles such as machinists and tool operators.
- **Numerical Control Programmer Option**: Emphasizes CNC programming and advanced manufacturing processes, suitable for careers in CNC programming and precision manufacturing.

Certificates of Achievement:

- **CNC Machine Operator**: Provides training in operating CNC machinery, covering both basic and advanced techniques.
- **Machinist**: Offers instruction in manual machining and CNC operations, preparing students for entry-level positions in machining.
- **Numerical Control Programmer**: Focuses on CNC programming skills, including multi-axis programming and operation.

Explain how the program fulfills the College's mission and aligns with the strategic initiatives.
The **Machine Tool & Manufacturing Technology programs** at **Compton College** directly support and fulfill the college's mission and strategic initiatives in the following key ways:

Alignment with **Compton College's Mission**
Compton College Mission Statement:
"Compton College is a welcoming and inclusive community where diverse students are supported to pursue and attain student success."
The Machine Tool Technology program fulfills this mission by:

- **Providing equitable access** to high-quality career education for a diverse student population, including underserved and non-traditional students.
- **Creating real-world, hands-on learning environments** that prepare students for in-demand careers in advanced manufacturing.
- **Fostering community partnerships** that offer students access to internships, mentoring, and employment pathways, supporting student persistence and long-term success.

Alignment with **Strategic Initiatives**

Strategic Initiative	**How the Program Supports It**
A. Improve recruitment, enrollment, retention, and completion	• Offers a clear pathway to employment with stackable certificates and degrees • Attracts students through industry-relevant training and community outreach. • Helps students complete workforce-ready credentials that lead to jobs
B. Support the success of all students to meet their education and career goals	• Provides individualized support via faculty mentorship, access to job fairs, and academic counseling. • Prepares students for high-skill, high-wage careers in a growing industry. • Promotes student engagement through hands-on, applied learning
C. Support the success of students through the use of technology	• Uses industry-standard technology like CNC lathes, mills, 3D printers, CAD/CAM, and metrology tools. • Develops digital literacy and technical proficiency needed in modern manufacturing environments
D. Offer excellent programs that lead to degrees and certificates in Allied Health and Technical fields	• Offers multiple degrees and certificates tied to industry needs. • Integrates feedback from advisory boards and employers to ensure excellence and relevance. • Continuously updates curriculum and facilities to meet industry standards

In summary, the Machine Tool & Manufacturing Technology programs **serve as a cornerstone of Compton College's mission to promote equity, innovation, and career readiness;** helping students build viable futures through technical education and hands-on experience.

Discuss the status of recommendations from your previous program review.
Status of Recommendations from the Previous Program Review
The Machine Tool & Manufacturing Technology programs at Compton College have made **substantial progress** in addressing the recommendations outlined in the previous program review. These recommendations focused on upgrading equipment, expanding instructional capacity, and aligning the program more closely with industry needs. Below is a summary of the status of each recommendation:

Recommendations Implemented:

1. **Haas ST-20Y CNC Lathe with Tooling and Installation** – *Acquired*
2. **Additional Part-Time Instructor for Night Courses** – *Acquired*
3. **Probe System for Haas TM1P** – *Acquired*
4. **2 Pierson Pro Pallet Systems** – *Acquired*
5. **5-Axis CNC Mill** – *Acquired*

Recommendations Partially Implemented:

1. **20x Prusa i3 MK3S 3D Printers** – *9 of 20 acquired*

Recommendations Still Pending:

1. **CS-350 Cold Saw (14", Variable Speed)** – *Pending*
2. **Plasma Table (Shopsaber SideKick 8)** – *Pending*
3. **TW90 Vertical/Horizontal Grinder** – *Pending*
4. **Shopsaber IS-M 408 CNC Router** – *Pending*
5. **Vertical Band Saw** – *Pending*
6. **2 Microsoft Surface Studio Computers** – *Pending*
7. **10 PM-1228VF-LB Precision 12”x28” Lathes** – *Pending*
8. **Tumbler for Parts** – *Pending*

Remarks:

The program has prioritized acquiring high-impact machinery that directly benefits student training, particularly in CNC machining and precision manufacturing. The acquisitions have significantly enhanced the program’s instructional quality and alignment with modern industry practices.
However, some equipment remains **unfunded or backlogged**, limiting expansion into areas like fabrication, advanced part finishing, and full-scale prototyping. These pending items continue to be essential for completing the vision outlined in the previous review and will be carried forward into the current review cycle.
The college has demonstrated strong follow-through on many high-cost recommendations, reflecting a commitment to strategic initiatives A–D, particularly in student success, workforce preparation, and instructional excellence.

Academic Program Review: (2) Analysis of Research Data First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:55**

Head Count: Identify and explain trends in enrollment. Analyze enrollment demographic variables, including gender, ethnicity, age, educational goal and full-time/part-time status.

Enrollment Trends (Head Count by Academic Year)

Year	Unique Students
2019-20	395
2020-21	358
2021-22	298
2022-23	402

Trend Summary: After a slight decline from 2019-22, enrollment rebounded significantly in 2022-23.

Gender Distribution

Year	Man	Woman	Unknown
2019-20	197	187	11
2020-21	182	170	6
2021-22	154	137	7
2022-23	214	164	24

Insight: Gender representation is relatively balanced with a slight male majority. A notable increase in "Unknown" gender responses appears in 2022-23.

Ethnicity Breakdown (Top Groups)

Year	Latinx	Asian	Black/African American	White	Unknown
2019-20	172	127	23	22	48
2020-21	152	133	15	22	33
2021-22	115	121	18	16	26
2022-23	142	156	22	27	54

Insight: Latinx and Asian students consistently represent the largest groups, with a rise in Asian enrollment and steady representation from Latinx students.

Educational Goal Trends

Year	Enrichment	Intend to Transfer
2019-20	384	2
2020-21	356	0
2021-22	297	0
2022-23	12	387

Insight: There is a dramatic shift in 2022-23 from “Enrichment” to “Intend to Transfer,” indicating a possible curriculum realignment or advising intervention.

Age Group Trends

Year	Under 18	18–24	25–49	50+
2019-20	274	95	14	6
2020-21	312	55	12	3
2021-22	255	40	16	2
2022-23	302	63	59	9

Insight: Most students are under 18, likely due to dual enrollment. However, 2022-23 shows an increase in adult learners (ages 25–49), suggesting program appeal is broadening.

Enrollment Load

Year	Full-time	Part-time
2019-20	3	93
2020-21	2	57
2021-22	8	96
2022-23	13	89

Insight: Enrollment is predominantly part-time. While full-time enrollment has grown slightly, support for part-time students remains critical.

Course Grade Distribution: Identify and explain trends in course grades. Make sure to address gaps in grade distribution if applicable.
The grade distribution for the Machine Tool & Manufacturing Technology program at Compton College from 2019–20 through 2023–24 (partial) reveals several key strengths:

Trends in Course Grades

Year	A	B	C	D	F	W	EW	AU
2019-20	381	72	27	20	7	1	16	0
2020-21	643	83	37	22	4	6	24	0
2021-22	593	109	33	10	1	9	13	0
2022-23	708	104	56	11	2	3	20	0
2023-24*	307	90	19	6	2	7	0	0

- **High Rates of A Grades**: “A” is consistently the most frequent grade each year, accounting for 65%–75% of the grade distribution. This highlights strong student performance and effective instruction.
- **Stable Distribution of B and C Grades**: “B” and “C” grades occur regularly, indicating a reasonable spread in student achievement and a healthy assessment structure.
- **Low Failure Rates**: Grades of “D” and “F” remain low across all years, suggesting most students grasp the course material.
- **Withdrawals (W)**: The 2023–24 academic year shows an increase in W grades, which may indicate external challenges affecting student persistence, such as scheduling conflicts or workload issues.

Gaps and Opportunities

- **Withdrawal Patterns**: Increased withdrawals in 2023–24 could signal an opportunity to revisit course pacing, support services, or scheduling flexibility.

Conclusion:
The overall trend is highly positive. Students are thriving, and course outcomes reflect strong engagement and academic achievement. There are minor gaps that offer room for targeted improvements, particularly in addressing withdrawal trends and supporting students in the B/C range to grow further.

Success Rates: Identify and explain trends in success rates. Make sure to address equity gaps in success rates if applicable.
Success Rate Trends (All Students)
Success is defined as receiving a grade of **A, B, or C**.

Academic Year	Successful	Unsuccessful	Success Rate
2019–20	370	39	90.5%
2020–21	338	60	84.9%
2021–22	287	31	90.3%
2022–23	378	43	89.8%
2023–24*	329	50	86.8%

Key Positive Trends

- **Consistently High Success Rates**: The program maintains success rates above 85% across all years, indicating strong academic support and student performance.
- **Resilience Post-COVID**: The dip in 2020–21 (to 84.9%) corresponds with pandemic-era disruptions. The recovery in 2021–22 shows the program's adaptability and effective student support.
- **Stable Performance**: The rates have remained relatively consistent, even with fluctuations in enrollment and external conditions.

Equity Gaps in Success Rates

- **Educational Goal Trends** (based on displayed data): Students who reported clear goals like *“Intend to Transfer”* or *“Degree/Certificate Only”* show slightly higher success than *Undecided/Enrichment* students.
- **Age-Based Trends** (in succ_age_df): Adult learners (25+) sometimes have slightly lower success rates, suggesting they may benefit from tailored academic support or flexible course options.
- **Course-Level Variability** (in succ_crse_df): A few specific courses show lower success rates than others, indicating possible curriculum or instructional issues that could be addressed.

Conclusion
The Machine Tool & Manufacturing Technology program consistently fosters academic success, with impressive rates year over year. While the overall performance is excellent, targeted efforts—such as increased support for undecided students or working adults—could help close minor equity gaps and ensure all learners thrive.

Retention Rates: Identify and explain trends in retention rates. Make sure to address equity gaps in retention rates if applicable.
Retention Rate Trends
Retention is defined as students who did **not** withdraw (i.e., did **not** receive a “W” or “EW”).

Academic Year	Retained	Not Retained	Retention Rate
2019–20	385	16	96.0%
2020–21	353	22	94.1%
2021–22	293	11	96.4%
2022–23	388	17	95.8%
2023–24*	340	27	92.6%

Key Positive Trends

- **Retention Rates Remain High**: All years show retention rates consistently **above 92%**, indicating strong student engagement and follow-through.
- **Post-Pandemic Stability**: Despite external challenges, the program maintained a very strong retention rate throughout the pandemic and into recovery years.
- **Most Recent Year Shows Slight Dip**: The 2023–24 academic year (partial) shows a slight drop, potentially due to external factors or course scheduling dynamics.

Equity Gaps

Although this dataset doesn't segment retention directly by ethnicity, gender, or other demographics, previous data on **course grades and withdrawals (W/EW)** suggests that:

- **Withdrawal rates may be slightly higher among part-time or older students**, hinting at life obligations affecting persistence.
- Additional support structures (like evening tutoring, hybrid options, or childcare referrals) could help address these challenges.

Conclusion

Retention across the Machine Tool & Manufacturing Technology program is exceptionally strong—above 94% in most years—showing that students who enroll typically stay enrolled. Continued monitoring and targeted support for at-risk groups could ensure these excellent results remain consistent or improve further.

Distance Education: Compare and contrast success and retention rates between in-person and distance education courses.

Success Rate (% of A/B/C) and Student Count (in parentheses)

Modality	Fall '20	Fall '21	Fall '22	Fall '23	Spring '21	Spring '22	Spring '23	Summer '22	Winter '22	Winter '24
In-Person	87% (448)	93% (336)	94% (425)	94% (391)		97% (351)			100% (14)	
Synchronous					93% (393)					
Asynchronous		86% (14)	93% (46)	32% (37)	67% (6)	86% (14)	46% (24)			58% (12)
Hybrid	75% (8)	90% (21)				90% (20)		100% (12)		
Unknown*				97% (29)		86% (7)	96% (418)			

*Rows marked "Unknown" were conservatively treated as in-person in prior summaries but are shown here separately for full transparency.

Key Takeaways: Success Rates

- **In-Person** courses deliver **the highest and most consistent success rates**, even during high-enrollment terms.
- **Synchronous** and **Hybrid** courses **nearly match in-person success**, suggesting that live engagement or blended formats are effective alternatives.
- **Asynchronous** courses show a **sharp drop in success rates in Fall '23 (32%) and Spring '23 (46%)**, which may indicate a need for better structure, pacing, or learner readiness support.

Fill Rates: Discuss course sections offered and fill rates. Analyze any applicable trends.

Machine Tool & Manufacturing Technology Fill Rates

Academic Year	Sections Offered	Avg. Fill Rate	Avg. Enrolled	Avg. Capacity
2019–2020	40	89%	25.6	28.3
2020–2021	41	62%	20.6	30.2
2021–2022	44	51%	17.0	30.2
2022–2023	43	56%	21.5	34.5
2023–2024	**21**	**53%**	**21.0**	**36.2**

Note: The 2023–2024 academic year data only includes up to **Fall 2023**, so the totals for that year are **incomplete**. Lower section count and enrollment figures reflect this cutoff and should not be interpreted as a downward trend.

Observations

- **High Efficiency in 2019–20**: Nearly 90% fill rate shows the program was running at near-optimal capacity pre-pandemic.
- **Pandemic Impact & Steady Recovery**: There was an understandable dip in 2020–2022, followed by signs of stabilization with fill rates in the **mid-50% range**.
- **Growing Course Capacity**: The average max enrollment has increased over time (from ~28 to ~36), indicating confidence in anticipated demand and room for future growth.

Strategic Insight

- **Post-Pandemic Rebuilding**: The program is actively recovering and restructuring following pandemic disruptions.
- **Opportunities for Marketing & Outreach**: With increased capacity, targeted outreach to high schools, adult learners, and regional employers can help boost enrollment and fill rates back toward 2019 levels.

Summary

The fill rate trends reflect a strong foundation and an encouraging recovery. Continued scheduling optimization and marketing efforts will help the program fully rebound and maximize the use of available instructional capacity.

Course Scheduling: Discuss the days and times offered for courses. Why were these choices made? Should changes be made for future scheduling?

Current Scheduling Structure

Courses in the Machine Tool & Manufacturing Technology program are typically offered:

- **Daytime classes** to accommodate full-time students and career-training pathways.
- **Evening classes** to serve working adults and part-time students.
- **Monday–Thursday** blocks are prioritized to allow lab-intensive coursework and minimize student commuting days.

This scheduling strategy reflects the program's commitment to **hands-on instruction**, which benefits from extended blocks of time and consistency.

Why These Choices Were Made

- **Alignment with Student Needs**: Many students work during the day, especially those retraining or upskilling. Evening sections increase access.
- **Lab and Equipment Availability**: Shared equipment and lab space require careful planning to avoid overlap and maximize usage.
- **Instructor Availability**: With limited full-time faculty and only a few part-time instructors, scheduling focuses on maintaining quality instruction during available windows.

Opportunities for Improvement

- **Expand Evening Options**: Fill rate and retention data show strong demand for flexible scheduling. Additional evening or hybrid offerings could improve access.
- **Consider Friday or Weekend Intensives**: For students balancing work/family, concentrated Friday/Saturday courses may be attractive.
- **Coordinate with Counseling & Outreach**: Engaging with campus counselors to align class times with peak enrollment windows could improve fill rates.

Conclusion

The current scheduling approach supports student success and efficient use of lab resources. With demand beginning to rebound post-pandemic, the program should evaluate adding

flexible evening and hybrid offerings to further support access and equity.

Degree and Transfer: What number of students earn degrees or certificates? What number of students transfer?
Educational Goal Trends by Academic Year

Year	Degree/Cert Only	Intend to Transfer	Enrichment	Other Goals
2019–202	2	384	7	
2020–210	0	356	2	
2021–220	0	297	1	
2022–231	387	12	2	

Positive Shifts

- **Massive Increase in Transfer Intent**: The 2022–23 academic year shows a dramatic shift in educational goals, with **387 students (the majority)** now identifying "Intend to Transfer" as their objective. This marks a clear evolution of the program from being seen primarily as a standalone training program to part of a broader academic pathway.
- **Continued Interest in Enrichment**: Prior to 2022, most students enrolled for enrichment purposes, reflecting strong community engagement and exploratory learning.
- **Emerging Degree/Certificate Interest**: Though still low, there are signs of growing interest in completing credentials within the program.

Implications

- The surge in transfer goals may reflect improved counseling, articulation agreements, or increased awareness of career laddering opportunities.
- While actual degree/certificate completion data isn't available in this dataset, the shift in student goals strongly suggests future increases in completions and transfers.
- Continued tracking of **award data from the institutional research office** will help validate whether these intentions are converting into actual outcomes.

Conclusion
The program is successfully evolving from an enrichment-focused offering to a transfer- and credential-oriented academic pathway. With most recent students identifying transfer as their goal, this trend supports curriculum planning, articulation development, and further investment in program pathways to four-year institutions.

List any related recommendations
Related Recommendations

- **Improve promotion and outreach**
- **Increase evening and flexible offerings**, particularly for working students.
- **Pilot a weekend or Friday course option** for students with weekday obligations.
- **Engage students and counselors in planning** to align scheduling with their needs and maximize access.
- **Continue offering hybrid formats** for lecture-heavy components, but pair them with required in-person labs to maintain hands-on quality.
- **Develop distance learning-specific support services**, such as onboarding modules and virtual office hours, to close success rate gaps.

Academic Program Review: (3) Curriculum First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:55**

Provide the curriculum course review timeline to ensure all courses are reviewed at least once every 6 years.
The curriculum course review timeline for the Machine Tool and Manufacturing Technology program at Compton College follows institutional policy and accreditation standards to ensure that all courses are reviewed at least once every six years. This process supports continuous improvement and alignment with industry standards.
Career and Technical Education (CTE) programs such as this one are required to complete a full program review every four years. In addition, they must complete a mini-review with supplemental CTE questions every two years in between full reviews.
For the Machine Tool and Manufacturing Technology program:

- A CTE mini-review is scheduled for 2025
- A full review is scheduled for 2027
- The next CTE mini-review is scheduled for 2029

Explain any course additions to current course offerings.
There have been no additions to the current course offerings during this program review cycle.

Explain any course deletions and inactivations from current course offerings.
There have been no course deletions or inactivations from the current course offerings during this program review cycle.

Describe the courses and number of sections offered in distance education. (Distance education includes hybrid classes.)
Description of Courses and Number of Sections Offered in Distance Education (Including Hybrid)
Based on available data from Fall 2020 to Fall 2023, the Machine Tool & Manufacturing Technology program at Compton College offered **a limited number of distance education courses**, including **Asynchronous**, **Synchronous**, and **Hybrid** formats. These courses were primarily used during the pandemic years and are best suited for theory-based content, given the program's hands-on focus.

Distance Education Courses by Modality and Term

Modality	Fall '20	Fall '21	Fall '22	Fall '23	Spring '21	Spring '22	Spring '23	Summer '22	Winter '22	Winter '24
In-Person	87% (448)	93% (336)	94% (425)	94% (391)		97% (351)			100% (14)	
Synchronous					93% (393)					
Asynchronous		86% (14)	93% (46)	32% (37)	67% (6)	86% (14)	46% (24)			58% (12)
Hybrid	75% (8)	90% (21)				90% (20)		100% (12)		
Unknown				97% (29)		86% (7)	96% (418)			

Each cell displays success rate (percentage of students receiving A/B/C grades) and total number of students enrolled in that modality for the term. "Unknown" was treated as In-Person in prior analyses.

Summary of Offerings

- **Hybrid courses** were offered most notably in Fall 2020, Fall 2021, and Spring/Summer 2022. These often combined online lecture content with limited in-person labs.

- **Asynchronous courses** saw increased use during the pandemic but had **variable success rates**, particularly dropping to 32% in Fall 2023, signaling potential issues with structure, pacing, or support.
- **Synchronous distance education** was only offered in Spring 2021 and demonstrated **high success (93%)**, suggesting live virtual instruction may be a viable alternative when in-person is not possible.
- **Course offerings returned primarily to in-person format post-pandemic**, reflecting the program's emphasis on hands-on learning.

Discuss how well the courses, degrees, or certificates meet students' transfer or career training needs.

How Well the Courses, Degrees, or Certificates Meet Students' Transfer or Career Training Needs

- **Degrees and Certificates Offered:**
  - *Associate of Science (A.S.) Degrees:*
    - Machine Tool Technology – Machinist
    - Machine Tool Technology – Numerical Control Programmer
  - *Certificates of Achievement:*
    - Machinist
    - CNC Machine Operator
    - Numerical Control Programmer
    - Engineering Technology – Engineering Technician
- **Career Training Alignment:**
  - Curriculum is designed for direct entry into the workforce, with training in:
    - Conventional and CNC machining
    - CAD/CAM and 3D programming
    - Advanced manufacturing processes
  - Stackable certificates provide short-term job readiness while building toward a degree
- **Transfer Readiness:**
  - Significant increase in students identifying "Intend to Transfer" as their goal:
    - Rose from just 2 students in 2019–20 to **387 students in 2022–23**
  - Course offerings support transfer to programs in engineering and industrial technology at four-year institutions
  - Emphasis on math applications, blueprint reading, and design skills prepares students for upper-division coursework
- **Student Success Metrics:**
  - **Success rates consistently above 85%**
  - **Retention rates above 94%**
  - High achievement and persistence reflect strong academic support and effective instruction

How many students earn degrees and/or certificates in your program? Set an attainable, measurable goal related to student completion of the program's degrees/certificates.
Degree and Certificate Completion Data
From 2020–2023, the number of students earning degrees and certificates in the Machine Tool Technology and Manufacturing Technology programs were:

- **2020–21**: 0 degrees, 0 certificates
- **2021–22**: 0 degrees, 16 certificates
- **2022–23**: Fewer than 5 degrees, 7 certificates

This data shows a modest upward trend following the 2020–21 academic year, likely reflecting post-pandemic recovery and increased engagement in program completion.

Are any licensure/certification exams required for program completion or career entry? If so, what is the pass rate among graduates? Set an attainable, measurable goal for pass rates and identify any applicable performance benchmarks set by regulatory agencies.
Licensure/Certification Exams
Currently, **no licensure or certification exams are required** for completion of the **Machine Tool Technology** or **Manufacturing Technology** programs at Compton College. While the program curriculum is informed by **industry skill standards** (such as those published by NIMS), the college does **not participate in NIMS certification testing** or submit student competencies to NIMS at this time.

Attainable, Measurable Goal
Goal:
By **Fall 2027**, explore the feasibility of adopting **voluntary NIMS certification pathways** for advanced students in the Machinist and Numerical Control Programmer tracks. The initial target is to **pilot NIMS testing with 5–10 students per year** and track their outcomes to evaluate long-term integration into the program.
Rationale:

- Though certification is not required for employment, many employers view NIMS as a mark of validated skill.
- Introducing NIMS on a pilot basis allows the program to assess employer demand and student readiness without placing additional requirements on all students.
- This aligns with Compton College's strategic initiative to **increase completion and career readiness in technical fields** and **strengthen industry alignment**.

If NIMS certification proves beneficial to students and employers, a more formal adoption strategy can be developed in a future program review cycle.

List any related recommendations.
· **Pilot Voluntary NIMS Certification Testing**
Launch a small-scale NIMS certification pilot for advanced students in the Machinist and Numerical Control Programmer certificate pathways by **Fall 2027**.
· **Secure Faculty Training and Certification**
Identify and support faculty members to become a **NIMS-certified evaluator** by **Spring 2026**, enabling on-campus testing and integration into lab-based instruction.
· **Seek Funding for Testing Fees and Materials**
Cover student exam fees, evaluator training, and required tooling or measurement equipment.
· **Develop Infrastructure to Support Certification**
Ensure the shop is equipped with the metrology tools and test pieces needed to facilitate the selected NIMS performance exams.

Academic Program Review: (4) Assessment of Student Learning Outcomes (SLO's) First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:56**

Provide a copy of your alignment grid, which shows how course, program, and institutional learning outcomes are aligned.

Program Name ENGINEERING TECHNOLOGY Engineering Technician - Certificate of Achievement

List PLOs:

1. Demonstrate an understanding of the relationships between manufacturing technology, engineering materials and components, engineering measurements, engineering analysis, and engineering design.
2. Create industry standard mechanical and civil drawings.
3. _____
4. _____
5. _____
6. _____

SLO-PLO Alignment Grid

Course	SLO #	SLO statement	SLO to PLO (Mark with an X)					
			P1	P2	P3	P4	P5	P6
ETEC 110	1	In this course, students will explore technology system and engineering process to learn how math, science, and technology impact our society. The topics introduced include the design process, communication and documentation, engineering system, statics, properties of materials, quality assurance, material testing and engineering for reliability.	X					
OR ETEC 110A/B:								
ETEC 110A	1	Research engineering and engineering technology careers and create a report	X					
ETEC 110A	2	Build the STEM project demonstrating the six simple machines.	X					
ETEC 110A	3	Build a mousetrap-powered car.	X					
ETEC 110B	1	Build an automated marble sorter.	X					
ETEC 110B	2	Build the SMET project demonstrating the six simple machines.	X					
ETEC 110B	3	Research engineering and engineering technology careers and create a report.	X					
ETEC 112	1	Utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models.	X	X				
OR ETEC 112A/B:								
ETEC 112A	1	Utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models	X	X				
ETEC 112B	1	Utilize AutoCad Inventor software to produce a design package including two-dimensional drawings and three-dimensional models	X	X				
ETEC 114	1	Use NAND and NOR Gates to configure and test logic equivalencies of NOT, AND, OR, Exclusive OR and Exclusive NOR logic functions.	X					
ETEC 114	2	Use discrete TTL or CMOS Logic Gates to design, construct, and demonstrate a logic circuit which displays the students Birth Date using three toggle switches, various logic gates, and a single seven-segment common anode LED display	X					
OR ETEC 114A/B								
ETEC 114A	1	Use NAND and NOR Gates to configure and test logic equivalencies of NOT, AND, OR,Exculsive OR and Exclusive NOR logic functions.	X					
ETEC 114A	2	Use NAND and NOR Gates to configure and test logic equivalencies of NOT, AND, OR,Exculsive OR and Exclusive NOR logic functions.	X					
ETEC 114B	1	Use discreet TTL or CMOS Logic Gates to design, construct, and demonstrate a logic circuit which displays the students Birth Date using three toggle switches, various logic gates, and a single seven segment common anode LED display.	X					
ETEC 116	1	Measure and solid model a provided assembly.	X					
OR ETEC 116A/B								
ETEC 116A	1	Program a robot arm to palletize parts.	X					
ETEC 116B	1	Measure and solid model a provided assembly	X					
MTT 101	1	Measuring and Recording Dimensions . Given a ground steel block of known and verified dimensions, measure and record the three dimensions of the block using a micrometer to a precision of .001 inches.	X					
MTT 101	2	Blue Prints - Given a Blue Print, student will use all manufacturing equipment available to manufacture the project on the Blue Print to noted specifications.	X					
MTT 101	3	Orthographic Projections - The student will be able to solve shop math problems and interpret orthographic projection engineering drawings that incorporate geometric dimensioning and tolerancing to produce assigned work within the tolerances specified on engineering drawings.	X					
ETEC 115	1	Learn about aerodynamics, astronautics, space-life sciences, and systems engineering.	X					
ETEC 115A/B								
ETEC 115A	1	Learn about Airodynamics and Astronautics, space -life science and system engineering.	X					
ETEC 115B	1	Learn about aerodynamics, astronautics, space-life sciences, and systems engineering.	X					
ETEC 118	1	Work as part of an engineering group to develop an engineering concept that is new in nature, safe, cost effective, reliable, and could be mass produced.	X					
ETEC 118	2	Develop and maintain an engineering notebook. This legal document contains all the information that is relevant to its purpose of original design. It includes contact information, correspondence, telephone logs, sketches and drawings, reference citations, collected data, and a chronological listing of the events dates and time, connected to the journal purpose. Documentation is a vital part of engineering. In the case of liability suits, good documentation.	X					
OR ETEC115A/B:								
ETEC 118A	1	Work as part of an engineering group to develop an engineering concept that is new in nature, safe, cost-effective, reliable, and could be mass-produced.	X					
ETEC 118A	2	Develop and maintain an engineering notebook. This legal document contains all the information that is relevant to its purpose of original design. It includes contact information, correspondence, telephone logs, sketches and drawings, reference citations, collected data, and a chronological listing of the dates and time of the event, connected to the journal purpose. Documentation is a vital part of engineering. In the case of liability suits, good documents.	X					
ETEC 118B	1	Work as part of an engineering group to develop an engineering concept that is new in nature, safe, cost effective, reliable, and could be mass produced.	X					
MTT 160	1	Calculate the correct rotations per minute (rpm) for a high speed steel end mill using the correct cutting speed and end mill diameter.	X					

MTT 160	2	Select correct metal working hand tools, measure and layout, utilizing semi-precision and precision measuring tools, and produce projects or exercises within the tolerances specified on engineering drawings.	X						
MTT 160	3	Operate foundry equipment to produce aluminum castings and to operate welding equipment to braze, weld and cut materials to produce projects within tolerances specified on engineering drawings.	X						
MTEC 170	1	Define and understand schematic symbols and assembly illustrations.	X						
MTEC 170	2	Construct and test prototype robots.	X						
MTEC 175A	1	Correctly program a robot to travel 5 feet turn 180 degrees and return to the start point.	X						
MTEC 175A	2	Understand the meaning and the math behind each color band used to indicate resistance value of the given resister.	X						
MTEC 175A	3	Effectively solder wires together.	X						
MTEC 175B	1	Configure a VEX robot with the components provided to successfully negotiate a Maze Avoidance course.	X						
MTEC 175B	2	Write software instructions in BASIC to enable a Boe-Bot to transverse through a prescribed agility course.	X						
MTEC 175B	3	Build simple interface circuits capable of driving the electromechanical devices (such as motors, solenoids, and relays).	X						
WELD 105	1	Upon completion of this course, students will be able to differentiate the basic welding processes from one another, e.g. SMAW,GTAW, GMAW,OFC and FCAW.	X						
WELD 105	2	Upon completion of this course, students will be able to safely physically demonstrate the set up, use, and shut down of various welding machinery.	X						
WELD 105	3	Upon completion of this course, students will be able to make an informative decision about the direction of welding training that they wish to pursue, whether it be structural or light gauge,	X						

Program Name MACHINE TOOL TECHNOLGY: Machinist – A.S.
SHOULD ONLY BE 3 PLO'S – THEY'RE REPEATED – PLEASE FIX
List PLOs:

1. Apply principles from mathematics, physics, and chemistry to solve applied problems in engineering.
2. Identify different digital and analog sensor technologies.
3. Follow and build robotic devices and components in accordance with industry standard schematics and diagrams.
4. Solving Engineering Problems: students will apply principles from mathematics, physics, and chemistry to solve applied problems in engineering.
5. Digital and Analog Sensor Technologies: Upon completion of the courses in this discipline, the student will be able to identify different digital and analog sensor technology.
6. Industry Standards: Upon completion of the courses in this discipline, the student will be able to follow and build robotic devices and components in accordance with industry standard schematics and diagrams.

SLO-PLO Alignment Grid

Course	SLO #	SLO statement	SLO to PLO (Mark with an X)					
			P1	P2	P3	P4	P5	P6
MTT 101	1	Measure and record the three dimensions of the block using a micrometer to a precision of .001 inches.			X			
MTT 101	2	Use all manufacturing equipment available to manufacture the project on the Blue Print to noted specifications.			X			
MTT 101	3	Solve shop math problems and interpret orthographic projection engineering drawings that incorporate geometric dimensioning and tolerancing to produce assigned work within the tolerances specified on engineering drawings.	X					
MTT 103	1	Machine the part on a lathe or lathe emulator that meets the required specifications called out in the drawings.			X			
MTT 103	2	Read, debug and edit CNC lathe word address programs and enter Manual Data Input (MDI) CNC word address lathe programs to produce work within the tolerances on engineering drawings.	X		X			
MTT 103	3	Solve shop math problems relating to lathe operation that include speeds and feeds, trigonometry, tapers, threads, engineering drawing interpretation and calculations.	X					
MTT 105	1	Utilize provided engineering drawings and metrology equipment to inspect a given part to determine if the part was manufactured within allowable tolerances. Answers will be recorded to an inspection sheet.			X			
MTT 105	2	Set up and operate milling machines to produce assigned work within the tolerances specified on engineering drawings.			X			
MTT 105	3	Read, de-bug and edit CNC vertical milling machine word address programs and to enter Manual Data Input (MDI) CNC word address milling machine programs to produce parts within the tolerances specified on engineering drawings.	X		X			
MTT 107	1	Record the benefits and downsides of the following processes Waterjet cutting, EDM wire cutting, Plasma cutting and Laser cutting.	X					
MTT 107	2	Select and use cylindrical squares, precision height gauges, vernier bevel protractors and gauge blocks to inspect assigned work within the tolerances specified on engineering drawings.			X			
MTT 107	3	Utilize a 3d printer and understand the pros and cons of each rapid prototyping process. Given a list of hypothetical projects, the student should be able to determine the most appropriate prototyping machine for the given specifications.			X			
MTT 110	1	Convert created toolpath operations into G-Code that gives directions to a CNC (computer numerically controlled) machine.			X			
MTT 110	2	Use CAD software to create a dimensionally accurate 3d model of the given blueprint.			X			
MTT 110	3	Create the required toolpaths to machine the part with dimensional accuracy within given tolerances.			X			
MTT 120	1	Correctly sketch a part in orthographic orientation.	X					
MTT 120	2	Demonstrate basic understanding or Multi-View Orthographic drawings, including part visualization and interpretation and the mechanics of dimensioning, tolerancing and drawing.	X					
MTT 120	3	Gain a basic understanding of GD T (Geometric Dimensioning and Tolerancing) practices. Presented with a Feature Control Frame, students will calculate total positional tolerance of a hole utilizing Maximum Material Condition, Least Material Condition and Regardless of Feature Size Modifiers.	X					
MTT 140	1	Calculate the correct feed per minute for an end mill using the correct chip load (CL), rotations per minute (RPM), and number of teeth.	X					

MTT 140	2	Compute and perform screw threading operations to include 60-degree thread formulas, acme thread formulas and calculations of the parts of a screw thread to industry standard tolerances.	X		X			
MTT 140	3	Calculate the geometric dimensions along with tolerances in a selected engineered drawing and be able to relay that information verbally and in writing to the instructor and student peers.	X					
MTT 160	1	Calculate the correct rotations per minute (rpm) for a high-speed steel end mill using the correct cutting speed and end mill diameter.	X					
MTT 160	2	Select correct metal working hand tools, measure and layout, utilizing semi-precision and precision measuring tools, and produce projects or exercises within the tolerances specified on engineering drawings.	X		X			
MTT 160	3	Operate foundry equipment to produce aluminum castings and to operate welding equipment to braze, weld and cut materials to produce projects within tolerances specified on engineering drawings.			X			

Provide a timeline for your course and program level SLO assessments.

Compton College
Student Learning Outcome Course Report Timelines
2025-2036

All academic programs course report due date: end of Spring semester of year indicated.

Academic Program	Division	CTE	Course Report Due		
Administration of Justice	HEPS	Yes	2026	2030	2034
Art	FACH	No	2025	2029	2033
Auto Collision Repair and Painting	BIST	Yes	2025	2029	2033
Auto Technology	BIST	Yes	2025	2029	2033
Business	BIST	Yes	2025	2029	2033
Chemistry	STEM	No	2026	2030	2034
Child Development	SSCI	Yes	2028	2032	2036
Communication Studies	FACH	No	2028	2032	2036
Computer Information Systems	BIST	Yes	2025	2029	2033
Cosmetology	BIST	Yes	2027	2031	2035
Dance	FACH	No	2025	2029	2033
Theater	FACH	No	2025	2029	2033
Earth Science	STEM	No	2026	2030	2034
English	FACH	No	2028	2032	2036
English as a Second Language	FACH	No	2028	2032	2036
Heating, Ventilation, A/C and Refrigeration	BIST	Yes	2025	2029	2033
History	SSCI	No	2028	2032	2036
Human Development	HEPS	No	2026	2030	2034
Kinesiology and PE (First Aid, Kinesiology, Physical Education, Recreation)	HEPS	No	2025	2029	2033
Languages (American Sign Language, Spanish)	FACH	No	2026	2030	2034
Library and Library Science	FACH	No	2028	2032	2036
Life Sciences	STEM	No	2028	2032	2036
Machine Tool and Manufacturing Technology	BIST	Yes	2027	2031	2035
Mathematics	STEM	No	2026	2030	2034
Music (*Commercial Music, Music)	FACH	*Yes	2025	2029	2033
Nursing	HEPS	Yes	2025	2029	2033
Physics/Astronomy	STEM	No	2026	2030	2034
Political Science	SSCI	No	2028	2032	2036
Psychology	SSCI	No	2026	2030	2034
Social Media and Film/Video					

All courses are assessed each semester. Each four years, a "course report" is written by the department, which engages disaggregated SLO data and analyzes it.

State the percent of course and program SLO statements that have been assessed.
All courses have begun collecting SLO data for all statements since the last program review.

Summarize the SLO and PLO assessment results over the past four years and describe how an analysis of those results led to improved student learning. Analyze and describe those changes. Provide specific examples.
Holistically:
Looking at the data as a whole, it's evident that the class is meeting its Student Learning Outcomes effectively. All nine students met expectations for SLO #1, eight met expectations for SLO #2 and SLO #3. There seems to be a high level of understanding and competence when it comes to using micrometers and understanding shop math problems and engineering drawings. However, there may be a slight difficulty in the application of manufacturing equipment according to a blueprint, as seen in SLO #2 and SLO #3.
Disaggregated Data:
a) Mode of Instruction:
The mode of instruction for the class was hybrid, with lectures being conducted online and lab sessions in person. The data suggests that this mode of instruction was largely effective, as a high percentage of students met the learning outcomes. However, the slight dip in performance in SLO #2 and SLO #3 may indicate a challenge in translating online theoretical knowledge into practical application in the lab. This might be an area to examine more closely to ensure the hybrid format is supporting all learning outcomes.
b) Race/Ethnicity:
The students who identified as Hispanic/Latinx showed similar patterns to the overall student body. Out of the seven Hispanic/Latinx students, six met expectations for both SLO #2 and SLO #3, while one did not. The two students who didn't provide their ethnicity met all expectations.
c) Gender:
Regarding gender, it seems all male students met expectations across all SLOs. However, one female student did not meet expectations for SLO #2 and SLO #3. This suggests that there may be a slight gap in learning outcomes based on gender.
Differences Between Groups:
The main difference appears to be based on gender. Female students seem to have a slight difficulty meeting expectations in SLO #2 and SLO #3 compared to male students.
Important or Unexpected Findings:
The most important finding is that the majority of students are meeting the course's learning outcomes. An unexpected finding was the slight discrepancy in learning outcomes based on gender.

Semester and Year Assessment Conducted: Fall of 2022

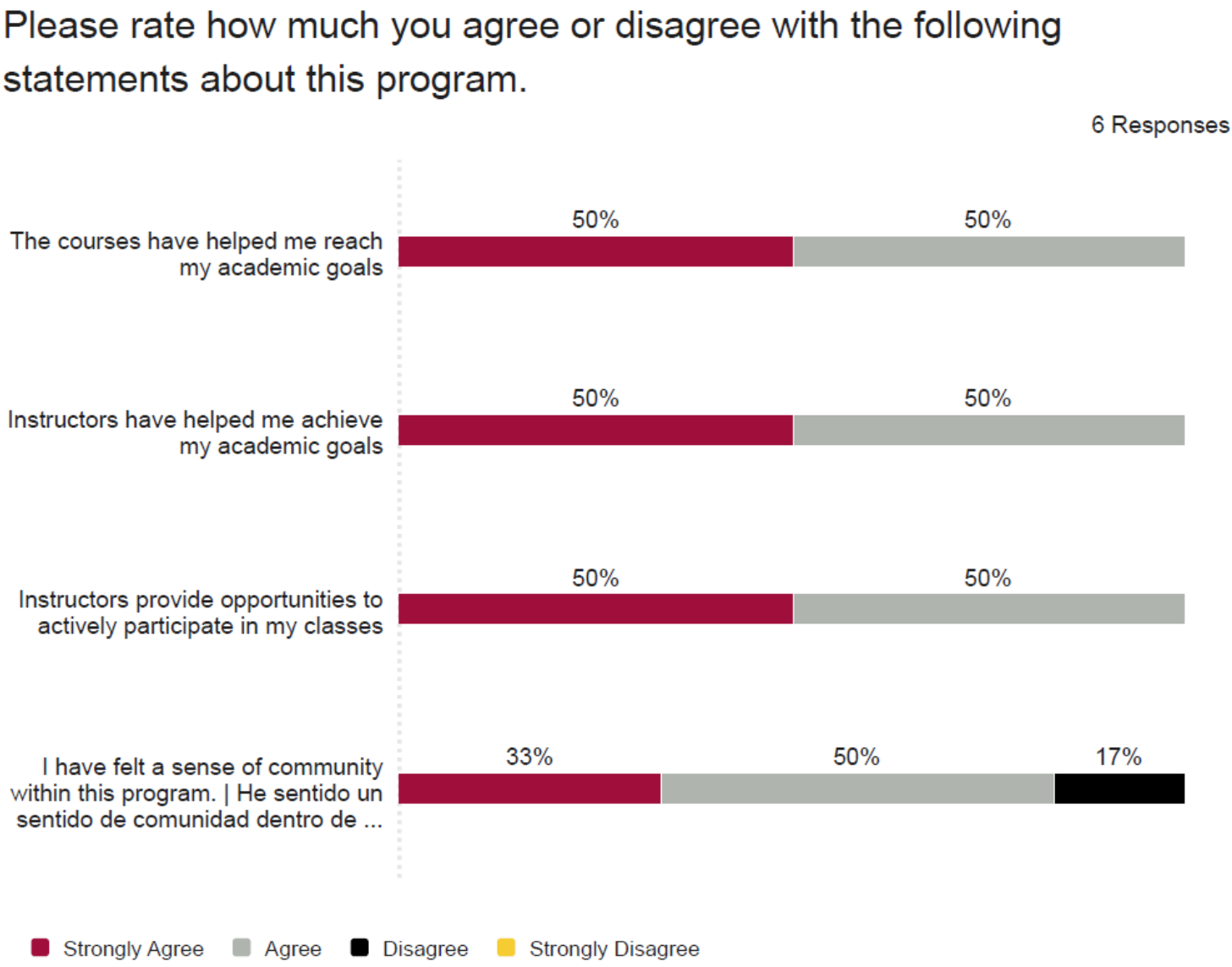
Describe how you have improved your SLO/PLO assessment process and engaged in dialogue about assessment results.
The Student Learning Outcome (SLO) and Program Learning Outcome (PLO) assessment process has seen significant improvements through increased collaboration among faculty and a focused effort to revise and align course outcomes. All Machine Tool Technology (MTT) Course Outlines of Record (CORs) are currently under review by the Curriculum Committee. This institutional process has prompted detailed discussions among faculty members regarding the clarity, measurability, and alignment of existing SLO statements.
Faculty have engaged in informal and formal dialogue during department meetings, as well as one-on-one conversations, to evaluate whether the current SLOs accurately reflect the essential skills and knowledge students should acquire. As a result of these discussions, edits to SLO language have been proposed and implemented to improve precision and ensure alignment with program-level outcomes (PLOs) and industry expectations.

List any related recommendations.
No Value

Academic Program Review: (5) Analysis of Student Feedback First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:56**

Describe the results of the student survey in the area of student support.

Academic Support and Development



The student survey results in the area of academic support reflect a generally positive experience among participants, though they also highlight areas for improvement.

- **Courses Supporting Academic Goals:**
  All respondents agreed or strongly agreed that the courses helped them reach their academic goals. Specifically, 50 percent strongly agreed and 50 percent agreed. This indicates that the course content is well aligned with student objectives.
- **Instructor Support:**
  All students felt that instructors helped them achieve their academic goals, with an even split between strongly agree at 50 percent and agree at 50 percent. This reflects effective instructional support and guidance.
- **Opportunities for Active Participation:**
  Every student reported that instructors provided opportunities for active participation in class. The responses were again split evenly between strongly agree and agree.
- **Sense of Community:**
  This area showed more variation. About 33 percent of students strongly agreed and 50 percent agreed that they felt a sense of community within the program. However, 17 percent disagreed. This suggests that while most students feel connected, there is room to enhance peer engagement and program cohesion.

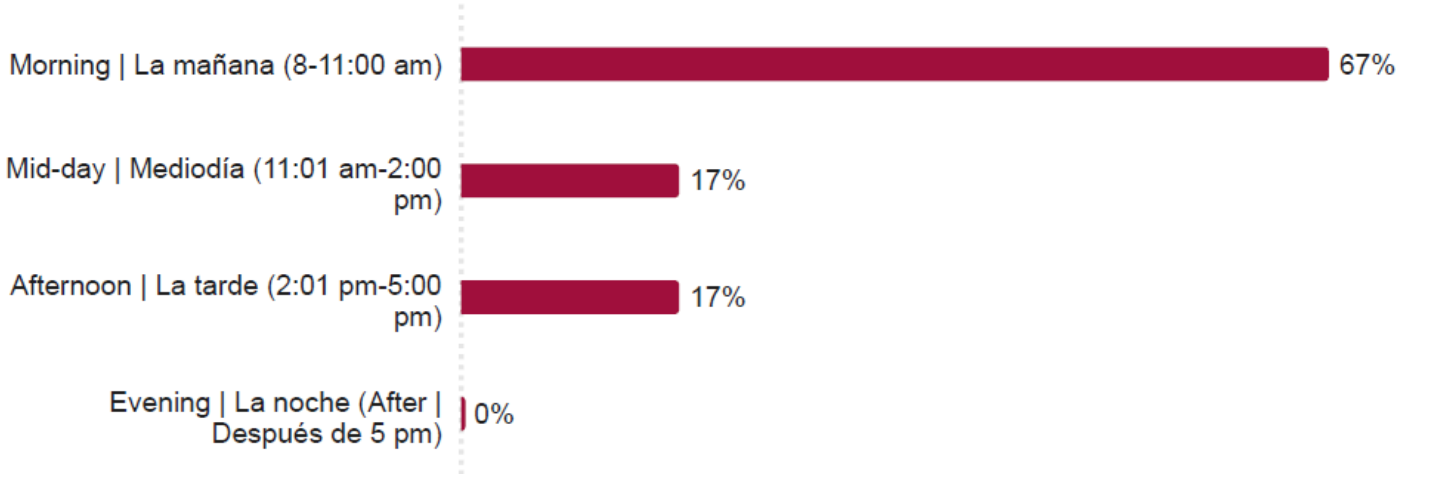
Summary:
The results show high satisfaction with academic and instructional support. To strengthen the program further, efforts should be made to build a stronger sense of community among students. Possible actions include implementing peer mentoring, student project groups, or informal networking activities to improve social and academic integration.

Describe the results of the student survey in the area of curriculum.

Curriculum

What time of the day do you prefer to take courses at Compton College?

6 Responses



The curriculum survey results show that a majority of respondents prefer morning class times. Specifically:

- **67 percent** preferred **morning classes (8:00–11:00 am)**
- **17 percent** preferred **mid-day classes (11:01 am–2:00 pm)**
- **17 percent** preferred **afternoon classes (2:01–5:00 pm)**
- **0 percent** selected **evening classes (after 5:00 pm)**

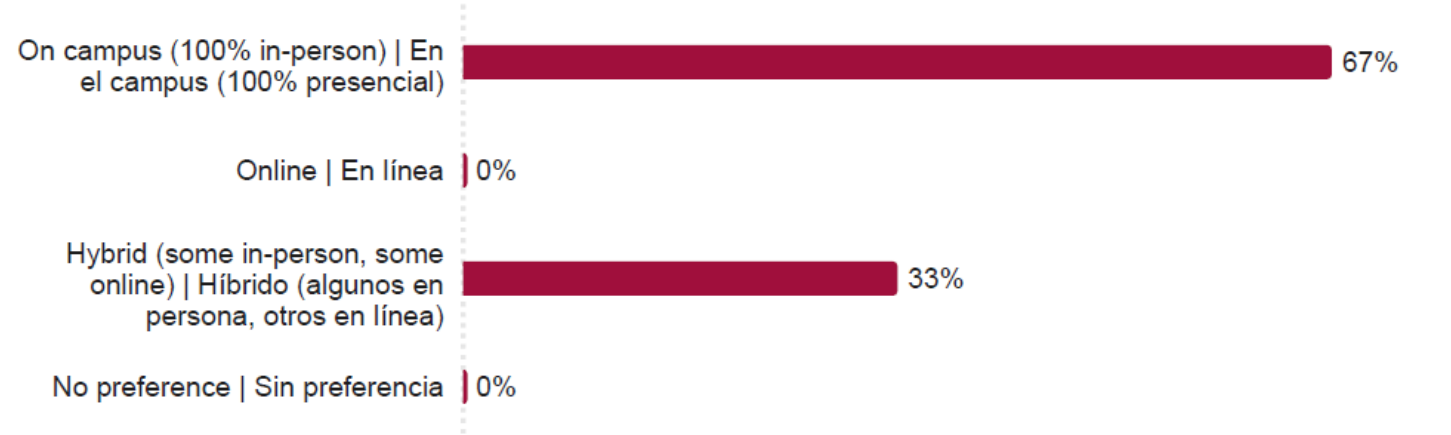
It is important to note that all survey respondents were already enrolled in daytime courses, which may have influenced the results. The absence of interest in evening classes may reflect the composition of the survey sample rather than an overall lack of demand.

Summary:

While morning courses are clearly preferred among current daytime students, this feedback does not capture the potential interest of students who are unavailable during the day due to work or other obligations. Expanding course offerings into the evening could increase access for working adults, support enrollment growth, and fulfill Compton College's strategic initiative to provide flexible and equitable educational opportunities. Further outreach or targeted surveys could help assess demand among prospective evening students.

Which teaching method do you prefer?

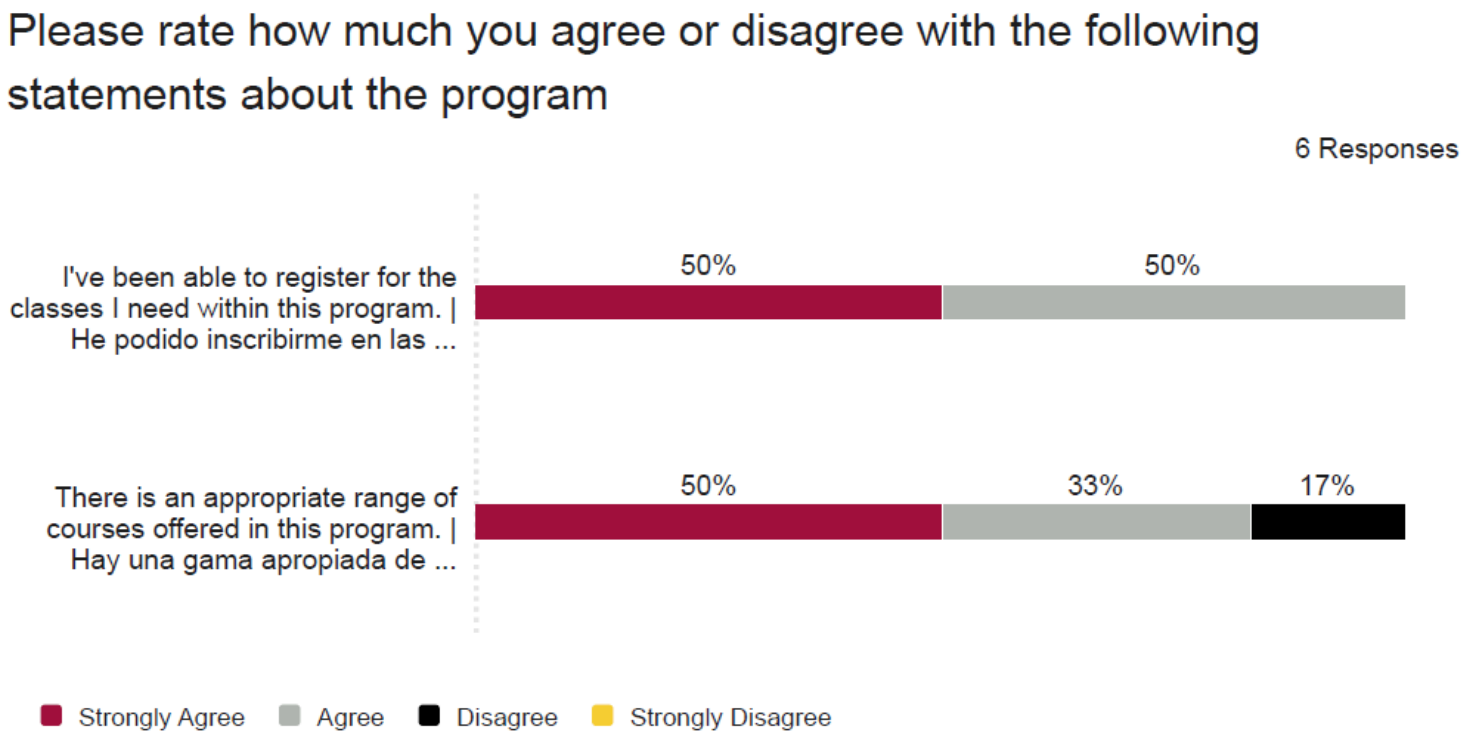
6 Responses



Survey results show that students in the Machine Tool Technology and Manufacturing Technology programs strongly prefer in-person instruction:

- **67 percent** prefer **on-campus (100% in-person)** instruction
- **33 percent** prefer **hybrid (some in-person, some online)** instruction
- **0 percent** preferred **fully online** instruction
- **0 percent** indicated **no preference**

Summary:
The majority of respondents value hands-on, in-person learning experiences, which aligns with the technical and skills-based nature of the program. However, one-third of students expressed interest in hybrid formats, suggesting an opportunity to increase flexibility by integrating limited online components where appropriate.
This feedback supports continuing the strong emphasis on in-person learning while also exploring hybrid models for specific course elements such as lecture content, tutorials, or support services. Doing so may help accommodate students with work or family commitments while maintaining the hands-on integrity essential to machining education.



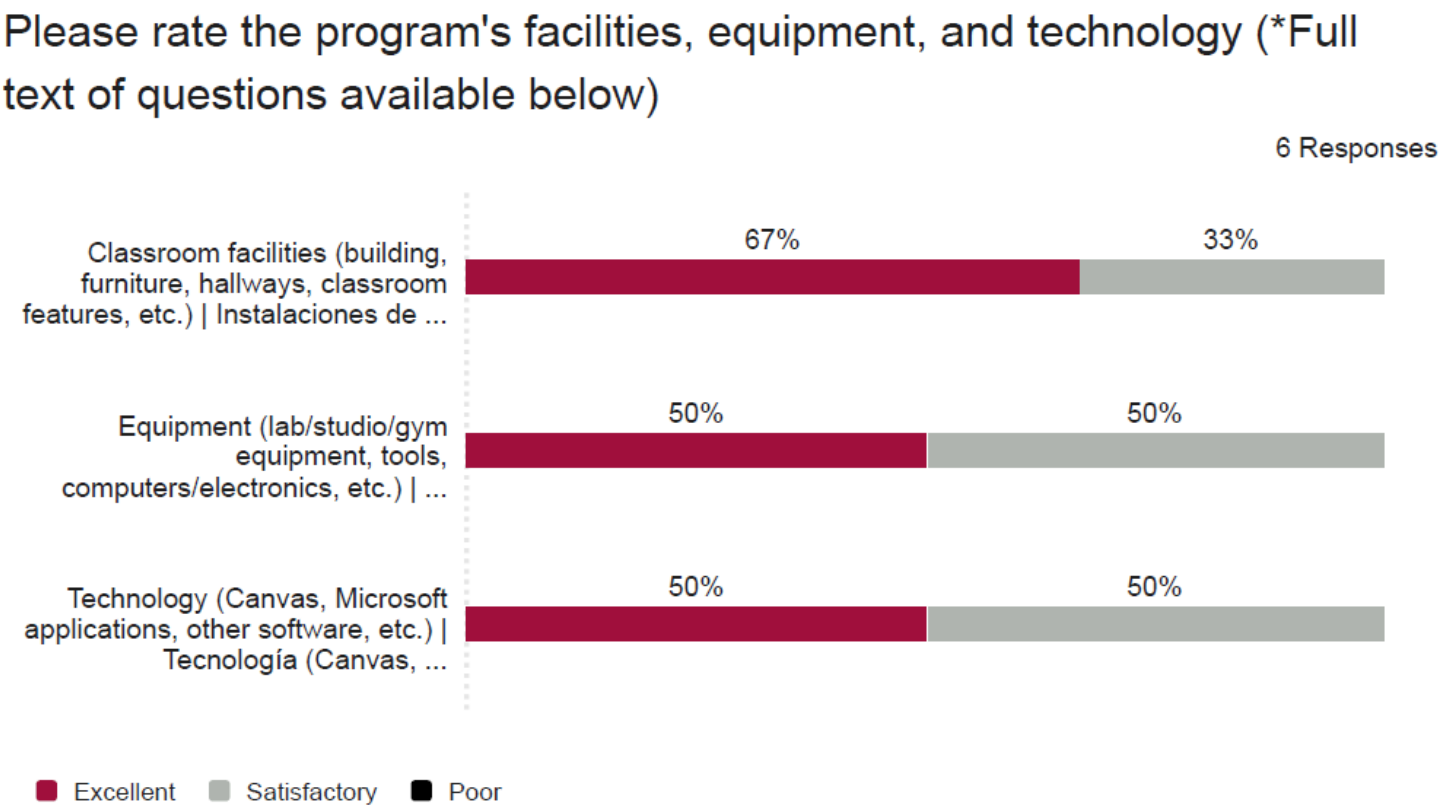
Survey responses indicate generally positive feedback regarding students' ability to register for classes and the range of courses offered, with some room for improvement:

- **50 percent** of students **strongly agreed** and **50 percent agreed** that they have been able to register for the classes they need.
  This suggests that, for currently enrolled students, access to required courses has been sufficient.
- Regarding the range of courses offered:
  - **50 percent** strongly agreed
  - **33 percent** agreed
  - **17 percent** disagreed

Summary:
The majority of students are satisfied with their ability to access required courses and feel that the program offers a good range of options. However, the 17 percent who disagreed about the course range suggests a need to explore expanding or rebalancing course offerings.
This feedback supports ongoing curriculum planning efforts and highlights the potential value of adding more specialized, advanced, or flexible course options, including evening or hybrid sections, to better serve a broader range of students and meet evolving workforce demands.

Describe the results of the student survey in the area of facilities, equipment and technology.

Facilities, Equipment, and Technology



***Question 1:** Classroom facilities (building, furniture, hallways, classroom features, etc.)

***Question 2:** Equipment (lab/studio/gym equipment, tools, computers/electronics, etc.)

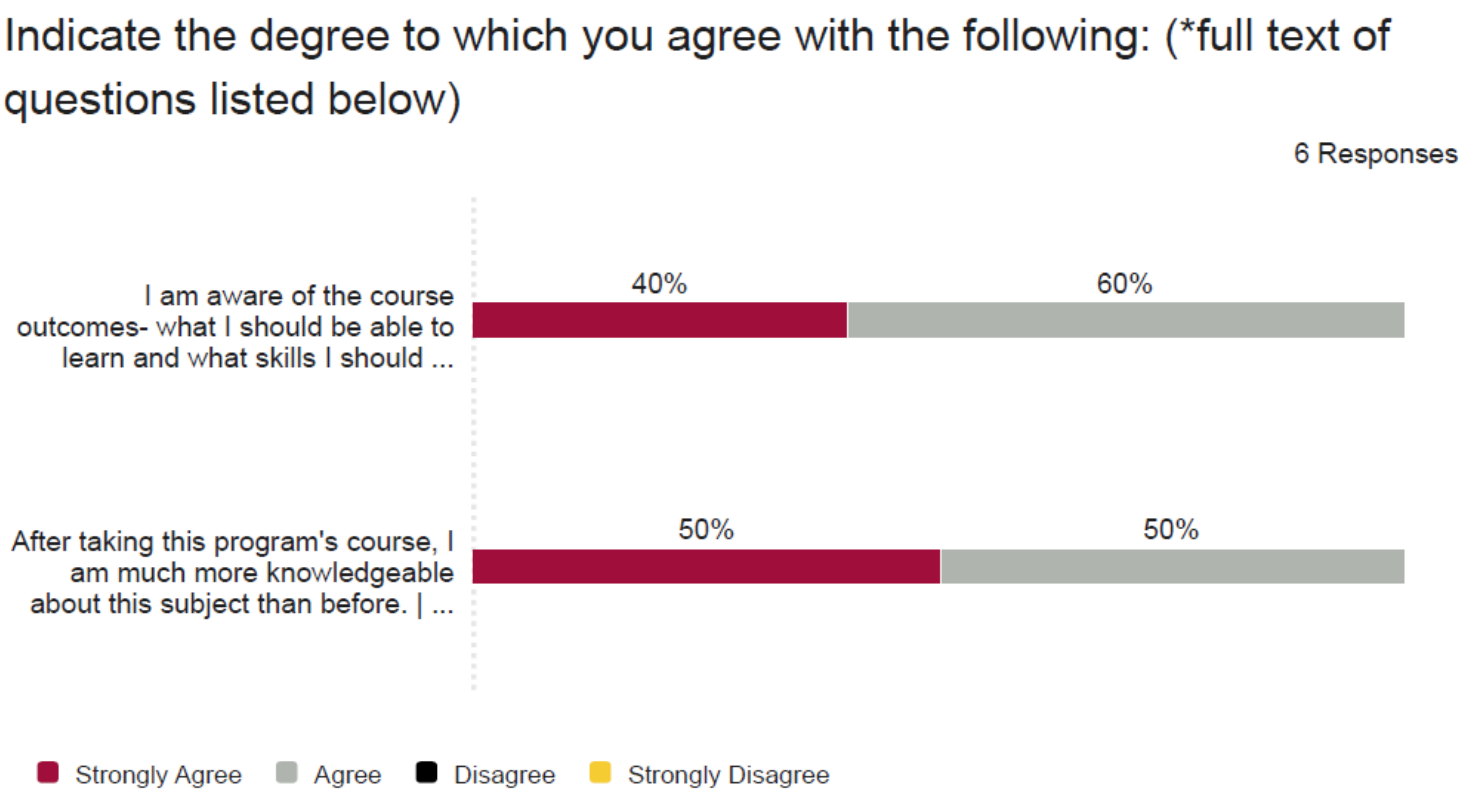
Survey responses indicate generally positive feedback from students regarding the program's physical learning environment and access to tools and technology:

- **Classroom Facilities (building, furniture, hallways, classroom features):**
  - **67 percent** rated the facilities as **excellent**
  - **33 percent** rated them as **satisfactory**
  - **0 percent** rated them as poor
- **Equipment (lab tools, machines, computers, etc.):**
  - **50 percent** rated the equipment as **excellent**
  - **50 percent** rated it as **satisfactory**
  - **0 percent** rated it as poor
- **Technology (Canvas, Microsoft applications, software):**
  - **50 percent** rated the technology as **excellent**
  - **50 percent** rated it as **satisfactory**
  - **0 percent** rated it as poor

Summary:
Students are largely satisfied with the program's facilities, tools, and technology, with no ratings indicating poor conditions. The classroom environment received the highest marks, while equipment and digital tools also received solid approval. This feedback supports continued investment in maintaining current assets and suggests the program is providing an effective and well-supported learning environment. Still, the even split between "excellent" and "satisfactory" for equipment and technology suggests potential opportunities for targeted upgrades to raise the overall experience.

Describe the results of the student survey in the area of program objectives.

Program Objectives



***Question 1:** I am aware of the course outcomes- what I should be able to learn and what skills I should possess after completing courses in the program.

***Question 2:** After taking this program's course, I am much more knowledgeable about the subject than before.

Survey results indicate that students feel confident in the knowledge and skills they gain through the program, with consistently positive responses regarding both learning outcomes and subject understanding:

- **Awareness of Course Outcomes:**
  - 40 percent **strongly agreed**
  - 60 percent **agreed**
    All students reported being aware of what they are expected to learn and accomplish in their courses. This reflects a solid baseline of communication around course objectives, with an opportunity to further highlight outcomes to enhance clarity and engagement.
- **Knowledge Gained Through Courses:**
  - 50 percent **strongly agreed**
  - 50 percent **agreed**
    Every student felt they left the course more knowledgeable than when they started, which is a strong indicator that the curriculum is effectively supporting student learning and growth.

Summary:
The data shows that students clearly recognize the value of the program and feel they are gaining meaningful knowledge and skills. With all respondents affirming awareness of course objectives and growth in subject mastery, the program is meeting its instructional goals. Continued efforts to reinforce outcomes throughout the course experience may further enrich this already positive trend.

Discuss the implications of the survey results for the program.
The student survey results paint an encouraging picture of the Machine Tool Technology and Manufacturing Technology programs. Students report strong satisfaction with instructional quality, learning outcomes, facilities, and access to required courses. These findings suggest that the program is successfully delivering a high-quality educational experience aligned with student needs and expectations.
Several key implications emerge from the data:

1. **Instructional Effectiveness and Student Learning**
   Students consistently agreed that they are gaining valuable knowledge and skills, with 100 percent indicating increased subject knowledge after completing courses. This validates

the strength of the current curriculum and instructional approach. It also affirms that students view their educational experience as transformative and career-relevant.

2. **Clarity of Learning Outcomes**
   While all students acknowledged awareness of course outcomes, only 40 percent strongly agreed. This suggests an opportunity to improve how learning objectives are communicated—possibly through clearer integration in syllabi, in-class reminders, or visual displays in lab spaces. Enhancing visibility of outcomes could help students better understand how daily tasks connect to long-term goals.
3. **Course Access and Scheduling**
   Students report they've been able to register for required courses, though a few responses indicated interest in a broader range of offerings. Since current feedback comes from daytime-enrolled students, there may be untapped demand for evening or weekend options, especially among working adults. Exploring evening or hybrid formats could expand access and support enrollment growth.
4. **Facilities and Equipment**
   The overwhelmingly positive ratings for classroom facilities, equipment, and technology suggest that the shop environment is viewed as functional and well-resourced. One comment about lighting indicates that while the foundation is strong, continued fine-tuning—especially in areas impacting hands-on visibility—could further improve the learning environment.
5. **Sense of Community**
   While most students reported feeling a sense of community, this was the least unanimous area of support. Creating more opportunities for peer interaction, collaborative projects, or informal student engagement could help build a stronger cohort experience.

Conclusion
The results affirm that the program is on the right track, providing meaningful, career-focused training in a supportive environment. Small refinements in communication, schedule flexibility, and learning space enhancements can further elevate the student experience and position the program for continued growth and innovation.

Discuss the results of other relevant surveys (if applicable).
The student survey results paint an encouraging picture of the Machine Tool Technology and Manufacturing Technology programs. Students report strong satisfaction with instructional quality, learning outcomes, facilities, and access to required courses. These findings suggest that the program is successfully delivering a high-quality educational experience aligned with student needs and expectations.
Several key implications emerge from the data:

1. **Instructional Effectiveness and Student Learning**
   Students consistently agreed that they are gaining valuable knowledge and skills, with 100 percent indicating increased subject knowledge after completing courses. This validates the strength of the current curriculum and instructional approach. It also affirms that students view their educational experience as transformative and career-relevant.
2. **Clarity of Learning Outcomes**
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Conclusion
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List any related recommendations

1. **Explore Evening and Hybrid Course Offerings**
   - Pilot at least one evening or hybrid-format course to serve working adults and expand access.
   - Conduct a follow-up survey targeting potential evening students or local industry partners to assess demand.
2. **Improve Lighting in Classroom/Lab Spaces**
   - Address the student comment regarding lighting by evaluating current lab lighting levels.
   - Prioritize lighting improvements, especially in areas used for precision machining or detailed work.
3. **Enhance Sense of Community**
   - Develop peer mentorship or project-based team activities to promote collaboration and student engagement.
   - Explore hosting informal events or showcasing student projects to build connection and program identity.
4. **Maintain and Modernize Equipment and Facilities**
   - Continue investing in up-to-date, industry-relevant machinery to ensure alignment with workforce expectations.
   - Schedule regular evaluations of equipment and software to identify upgrade needs before they impact instruction.

These recommendations reflect the program's commitment to continuous improvement and student-centered innovation.

Academic Program Review: (6) Facilities and Equipment First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:56**

Describe and assess the existing program facilities and equipment.
The **Machine Tool Technology** and **Manufacturing Technology** programs at Compton College are housed in a facility that contains a range of essential machining and manufacturing equipment. While the **equipment inventory has expanded significantly** in recent years, the **physical space and overall infrastructure remain outdated and inadequate** for the scale and vision of the program.

Current Equipment Strengths:

- **Recent Advanced CNC Equipment Acquired:**
  - *Haas ST-20Y CNC Lathe*
  - *5-axis CNC Mill*
  - *Probe system for Haas TM1P*
  - *9 Prusa i3 MK3S 3D printers*
  - *Pierson Pro Pallet System*

This equipment allows students to train on industry-relevant machines and engage in complex machining, additive manufacturing, and part verification processes.

Facility Limitations:

- **Lighting Deficiency:** The current lighting is dim and uneven, making precision tasks more difficult and creating a less motivating learning environment.
- **HVAC Issues:** The outdated HVAC system leads to uncomfortable conditions during hot weather, which impacts safety and student focus. The welding ventilation is also very loud.
- **Cramped Layout:** The shop layout is fragmented, with machinery and lab spaces constrained by walls and tight walkways. This restricts the ability to scale up enrollment or simulate realistic production environments.
- **Visual Aesthetics and First Impressions:** The facility does not reflect the high-tech, clean, and open environments students will encounter in modern manufacturing settings such as aerospace or medical device shops.

Overall Assessment:

- **Equipment Quality:** High and improving—many industry-relevant machines have been acquired or are pending.
- **Facility Quality:** Poor—space, lighting, layout, and climate control all need major upgrades.
- **Conclusion:** While the program's tooling is approaching a strong standard, the physical environment lags behind and undermines both the **learning experience** and **recruitment potential**.

This mismatch between equipment and facility design highlights a critical opportunity to elevate the program's visibility, usability, and alignment with modern industry expectations.

Explain the immediate (1-2 years) needs related to facilities and equipment. Provide a cost estimate for each need and explain how it will help the program better meet its goals.

To maintain instructional effectiveness, meet industry standards, and prepare students for high-skill careers, the Machine Tool Technology and Manufacturing Technology programs have identified the following critical equipment and facility needs for the next one to two years:

1. **Replace Aging Manual Lathes and Mills**

Estimated Cost: $200,000

Justification: The current manual machines are approaching end-of-life and are no longer reliable for consistent instruction. Replacing these essential tools will enhance safety, restore full functionality for skill-building exercises, and ensure students receive foundational training on equipment that mirrors workplace expectations.

2. **Repair and Update CMM (Coordinate Measuring Machines)**

Estimated Cost: $25,000

Justification: The CMMs need mechanical servicing and software updates to return to operational status. Reintroducing these tools into active instruction will give students experience in precision metrology and quality control—key skills in aerospace, automotive, and medical device manufacturing sectors.

3. **Acquire CNC Router**

Estimated Cost: $100,000

Justification: A full-size CNC router will allow the program to expand capabilities in multi-material machining, sign making, mold creation, and advanced part prototyping. This addition also strengthens cross-program collaboration with engineering, art, and design disciplines.

4. **Complete 3D Printing Lab Expansion**

Estimated Cost: $20,000

Justification: Acquiring the final 11 Prusa i3 MK3S printers will round out the planned 20-unit lab and ensure all students have consistent access during class. This supports growth in additive manufacturing instruction and provides a gateway to innovation and interdisciplinary STEM projects.

5. **Install Automatic Horizontal Band Saw**

Estimated Cost: $30,000

Justification: An automatic horizontal band saw will streamline stock preparation, improve throughput, and reduce physical strain on students and staff. It also reflects modern industry practices and will enhance student familiarity with automated shop tools.

Total Estimated Immediate Investment (1–2 Years): $375,000

These upgrades will significantly improve the program's technical capacity, safety, and student readiness for industry and academic advancement. Investing in these areas will help solidify the program's role as a leading center for advanced manufacturing education in the region.

Explain the long-range (2-4+ years) needs related to facilities and equipment. Provide a cost estimate for each need and explain how it will help the program better meet its goals.

As the Machine Tool Technology and Manufacturing Technology programs continue to grow, it is essential to look beyond immediate upgrades and address long-term structural and instructional capacity. The following items outline the major facility and equipment needs anticipated within the next two to four years:

1. **Full Facility Renovation and Modernization**

Estimated Cost: $1.5-$2M

Justification: The current facility is outdated in terms of layout, infrastructure, and overall appearance. A full renovation is needed to upgrade electrical systems, flooring, ceilings, lighting, HVAC, and ventilation. These improvements will modernize the space, reduce operational inefficiencies, and create a learning environment that aligns with the standards of modern manufacturing facilities.

2. **Facility Expansion Feasibility Study and Planning**

Estimated Cost: $50,000

Justification: To support future equipment acquisitions, workspace needs, and enrollment growth, a feasibility study should be conducted to explore options for expanding the department's physical footprint. This long-range planning will ensure the program is prepared to scale effectively as student and industry demand increases.

3. **Advanced Robotic Workcells and Automation Expansion**

Estimated Cost: $250,000

Justification: Investing in robotic arms, programmable automation systems, and smart sensors will prepare students for advanced careers in Industry 4.0 environments. These systems reflect the evolving nature of manufacturing and will give students hands-on experience with technologies used in modern production settings.

4. **Dedicated Metrology and Quality Control Lab**

Estimated Cost: $100,000

Justification: A climate-controlled lab space designed specifically for precision measurement tools (CMMs, surface plates, height gauges, etc.) will enhance training in quality control and inspection. This lab will strengthen the program's capabilities in high-tolerance manufacturing and support alignment with university and industry standards.

Total Estimated Long-Range Investment (2–4+ Years): $1.8-$2.4M

These long-range upgrades will elevate the instructional environment, expand capacity, and ensure that the program remains at the forefront of manufacturing education. Investing in thoughtful planning and high-impact technologies will support student success and strengthen Compton College's role as a regional leader in workforce development.

List any related recommendations.

No Value

Academic Program Review: (7) Technology and Software First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:56**

Describe and assess the adequacy and currency of the technology and software used by the program.
The Machine Tool Technology and Manufacturing Technology programs at Compton College use a strong combination of industry-relevant technology and software to support instruction in machining, CNC programming, CAD/CAM, and additive manufacturing.
Current Technology and Software in Use:

- **Autodesk Fusion 360:**
  Fusion 360 is used for CAD modeling and CAM programming. It is widely used in industry and supports a full range of design and machining workflows. Students access the software through educational licensing.
- **Haas CNC Machines with NGC and Pre-NGC Controllers:**
  The program includes both modern Haas machines with Next Generation Controllers (NGC) and legacy machines that use Pre-NGC controllers. Including both systems is essential because many shops still use Pre-NGC machines. This gives students a broad skill set that matches what they are likely to encounter in the workplace.
- **Prusa i3 MK3S 3D Printers and PrusaSlicer:**
  These tools support instruction in additive manufacturing. PrusaSlicer and related tools are adequate for course-level prototyping and entry-level 3D printing education.
- **Microsoft Office Suite:**
  Students use Word, Excel, and PowerPoint for documentation, inspection reports, and presentations. These tools support clear communication and technical writing across the program.
- **Canvas Learning Management System (LMS):**
  Canvas performs well for organizing course materials, collecting assignments, tracking SLOs, and communicating with students. It is used consistently by faculty and well received by students.
- **Laptops and Classroom PCs:**
  The program uses laptops and desktop computers that run required applications such as Fusion 360 and slicing software. While the hardware is currently functional, many of the systems are aging and will likely need to be upgraded in the next few years to maintain compatibility and performance.

Assessment Summary:

- **Adequacy:**
  The current software and equipment meet program needs. Students receive hands-on experience using tools that are directly applicable in the manufacturing industry.
- **Currency:**
  The program software is up to date and relevant. The main area to monitor is computer hardware, which is still adequate but approaching the point where replacement planning is needed.

Conclusion:
The program's technology infrastructure is solid and supports effective instruction. The use of both NGC and Pre-NGC Haas controllers reflects real-world shop conditions and provides a well-rounded training experience. While computing hardware will need eventual upgrades, the program is currently meeting its instructional goals with reliable and relevant tools.

Explain the immediate (1-2 years) needs related to technology and software. Provide a cost estimate for each need and explain how it will help the program better meet its goals.
The Machine Tool Technology and Manufacturing Technology programs have identified two critical technology priorities for the next one to two years. These investments will modernize student access to essential digital tools and expand the program’s ability to deliver advanced CNC instruction.

1. **Replace Aging Student Laptops and Classroom PCs**
Estimated Cost: $35,000
Need: Upgrade or replace aging laptops and desktops used by students for CAD/CAM design, CNC simulation, and 3D printing software.
Rationale: Existing machines are becoming outdated and increasingly struggle to keep up with current versions of Autodesk Fusion 360 and other resource-intensive applications. Upgrading this hardware will reduce technical delays, improve in-class efficiency, and ensure students can access the full capabilities of the software used in coursework.

2. **Install Mastercam Software with Robust Desktop Workstations**
Estimated Cost: $21,000
Need: Purchase and install three high-performance desktop workstations ($5,000 each) along with three Mastercam licenses ($6,000 total) for instructor and student use.
Rationale: Mastercam is a widely used CAM software in the manufacturing industry, especially for advanced CNC programming. To integrate this tool into instruction, three robust desktop systems will be required to handle the software’s processing demands—one for the full-time instructor, one for part-time instructors, and one for student demonstrations. The addition of Mastercam will give students experience with a tool they are highly likely to encounter in real-world machining environments.

Total Estimated Cost (1–2 Year Technology Needs): $51,000

Explain the long-range (2-4+ years) needs related to technology and software. Provide a cost estimate for each need and explain how it will help the program better meet its goals.
The long-range technology and software needs of the Machine Tool Technology and Manufacturing Technology programs align directly with previously stated recommendations in the **Facilities and Equipment** section of this program review. Because these initiatives involve a combination of physical equipment, digital infrastructure, and specialized software, they fall naturally under both categories.
For clarity and consistency, the same two major initiatives are repeated here:

1. **Advanced Robotic Workcells and Automation Expansion**
Estimated Cost: $300,000
Justification: Investing in robotic arms, programmable automation systems, and smart sensors will prepare students for advanced careers in Industry 4.0 environments. These systems reflect the evolving nature of manufacturing and will give students hands-on experience with technologies used in modern production settings. Accompanying software—such as programming platforms and robotic simulation tools—will be essential to deliver this instruction effectively.

2. **Dedicated Metrology and Quality Control Lab**
Estimated Cost: $100,000
Justification: A climate-controlled lab space designed specifically for precision measurement tools (CMMs, surface plates, height gauges, etc.) will enhance training in quality control and inspection. Software for CMM data analysis, digital GD&T interpretation, and quality reporting will complement this equipment. Together, these resources will strengthen the program’s capabilities in high-tolerance manufacturing and support alignment with university and industry standards.

List any related recommendations.
No Value

Academic Program Review: (8) Staffing First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:57**

Describe the program's current staffing, including faculty, administration, and classified staff.
The Machine Tool Technology and Manufacturing Technology programs are currently operating with inadequate staffing, particularly in classified support.
Faculty and Administration:

- The program currently has one full-time faculty member and utilizes part-time instructors to cover additional course sections.
- Administrative support is provided at the division level, shared across multiple programs.

Classified Staff:

- The program does not currently have a dedicated full-time lab technician or toolroom manager.
- A **part-time temporary toolroom attendant** is employed but is limited to 25 hours per week and a restricted number of working days per year. This level of support is insufficient given the scale and complexity of the facility and equipment involved.

Background on Staffing Gap:
A significant gap was created when the **full-time Machine Tool Technology Lab Technician** position (Vocational Instructional Technician/Tool Room Attendant – Machine Tool Technician) was reassigned to support the Autobody program during the COVID-19 campus shutdown. Although that shift may have been necessary at the time, the position was originally created to serve the Machine Tool Technology program and was officially filled following approval at the April 16, 2019, Board of Trustees meeting.
The current absence of a full-time technician has left a critical void in managing, maintaining, and supporting the advanced manufacturing lab. This facility contains a wide range of complex machinery including:

- Manual and CNC mills and lathes
- Advanced Haas ST-20Y Lathe and UMC-500 5-axis CNC mill
- CMMs and digital metrology tools
- 3D printers
- Toolroom inventory
- Welding, cutting, and inspection tools
- Computers and software-based equipment (Fusion 360, Mastercam, etc.)

Some examples the classified position was designed to: (The full job description is included below)

- Support instruction
- Maintain and repair shop equipment
- Manage tool checkout and inventory
- Order and maintain supplies
- Ensure OSHA safety compliance
- Assist students with machine operation and lab readiness

These duties are outlined in the official job description, which includes instructional support, tool repair, requisition processing, safety monitoring, and maintenance of complex equipment like CNC machines and metrology systems.

Impact of Not Meeting This Staffing Need:
The absence of a full-time classified lab technician continues to place an unsustainable burden on faculty and part-time support. The lack of consistent support compromises:

- Equipment uptime and maintenance
- Student safety and supervision
- Inventory control and shop organization
- The ability to run labs efficiently and at full capacity

This staffing shortage also limits the program's ability to expand course offerings, host outreach events, maintain industry relationships, and fully utilize newly acquired equipment.

Conclusion:
The current staffing level is insufficient to support a program of this scale and technical complexity. Restoring the full-time Vocational Instructional Technician (Machine Tool) position is essential for safe, efficient, and sustainable program operation. This is a very specialized position.

For reference, here is a copy of the position that was filled:

COMPTON COMMUNITY COLLEGE DISTRICT
EL CAMINO COLLEGE COMPTON COMMUNITY EDUCATIONAL CENTER

EMPLOYMENT OPPORTUNITY FOR:

VOCATIONAL INSTRUCTIONAL TECHNICIAN
TOOL ROOM ATTENDANT
(MACHINE TOOL TECHNICIAN)

750020/25
FLSA: NON-EXEMPT

FILING DATES: OPEN - AUGUST 04, 2014 / CLOSING - SEPTEMBER 3, 2014

	Start	6 mos*	1 yr	2 yrs	3 yrs	4 yrs	5yrs
SALARY:	$3104.83	$3260.08	$3423.08	$3594.25	$3774.00	$3962.67	$4160.80 per month
HOURLY:	$17.913	$18.808	$19.749	$20.736	$21.773	$22.862	$24.005 per hour *probation

DEFINITION

Under general supervisor; provide vocational instruction support for the various vocational programs such as welding, auto technology, machine tool technology and aerospace fasteners; prepare equipment, materials, supplies and training aids for classroom instruction and student laboratory assignments for the assigned program; provide instruction and assist students in the proper use and operation of shop equipment; maintain a clean, safe and orderly learning environment; and perform related duties as assigned. Implement an effective tool inventory and control process.

The machine tool technology tool room attendant position requires maintaining tools and equipment. Duties include but are not limited to filling tool and equipment requisitions, checking tools in and out to jobs, cleaning and inspecting tools. The machine tool technology tool room attendant is responsible for tracking installation tools, maintaining tool room, certifying tools, repairing tools, and other duties as required maintaining tool program. Inspect, trouble-shoot, rebuild, service, machine tool technology tools and equipment, and provide instructional support for machine tool technology and aerospace fastener programs.

SUPERVISION RECEIVED AND EXERCISED

Receives general supervision from assigned management or supervisory staff. Exercises no supervision of staff.

CLASS CHARACTERISTICS

This class is responsible for providing assistance to instructors and students to reinforce classroom lessons and to assist them in improving in remedial skill areas. The work requires specialized knowledge of subject areas applicable to the area of assignment and the ability to provide support to students in an effective and engaging manner. Responsibilities include providing technical assistance to students in the maintenance and use of equipment in the assigned area, as well as to instructors in areas such as assisting with setup, maintenance and replacement of tool room equipment, record-keeping, and maintaining the assigned area in a safe and efficient working order. This class is distinguished from the Instructional Assistant in that it requires the knowledge of specialized equipment and materials related to the assigned program.

EXAMPLES OF ESSENTIAL FUNCTIONS (Illustrative Only)

Management reserves the right to add, modify, change, or rescind the work assignments of different positions and to make reasonable accommodations so that qualified employees can perform the essential functions of the job.

- Assist instructors in planning for and conducting class session; provide input on class sessions; content and laboratory exercises; prepare training aids for class sessions; demonstrate technique, processes and methods for students; tutor students in small groups or on an individual basis on class session material and demonstrated techniques, processes and methods; answer questions and monitor the work of students in completing homework and lab assignments; provide instruction on the proper and safe use of equipment, tools and materials; issues tools and supplies to students for classroom and laboratory use.
- Prepare equipment, material, tools and supplies required for class sessions and student laboratory assignments; as necessary, inspect, troubleshoot, rebuild, repair, service and/or fabricate items required; refer to manuals, schematics to determine and repair causes of equipment malfunction; check out and organizes tools required for student and laboratory use; inspect tools for damage and defects; recommend or send items out for repair.
- Operate and demonstrate equipment, such as Mills, Lathes, CNC equipment, Cold-headers, Threadroller, Centerless Grinders, and related tools; perform basic maintenance to ensure proper operational condition.
- Supervise work study students assigned to the program; coordinate and assign work; monitor and provide instruction on safe work practices and procedures; provide performance feedback.
- Prepare requisitions and place orders to maintain an inventory of shop equipment, tools, materials and supplies; pick up ordered items from vendors when necessary; maintain security of lab equipment, materials and facilities; open and close shop.
- Maintain computer, systems and software applicable to the program; perform general administrative and clerical duties in support of program activities, including; forecasting and monitoring expenditures, tracking budget accounts, and maintaining fiscal records; maintaining purchasing and inventory records; preparing and submitting time cards for student workers; maintaining program- specific database.
- Assist in maintaining a safe, clean and orderly learning environment to ensure the health and safety of instructors, students, work study assistants and staff; maintain, inspect repairs and clean shop facilities and equipment or arranges for their repair and/or replacement; ensure proper storage and handling of hazardous materials.
- Recommend the major repair of demonstration machine tool technology parts and shop equipment by outside vendors.
- Perform related duties as assigned.

KNOWLEDGE AND ABILITIES:

KNOWLEDGE OF:

- Methods, techniques, parts, tools and materials used in the assigned department.
- Operation and maintenance of a wide variety of hand, power and shop tools and equipment common to the trade.
- Properties of vehicle lubrication systems, including oils and grease used in servicing and maintaining vehicles and equipment.
- Safe work methods and safety regulations pertaining to the work and knowledge of OSHA safety regulations.
- Machine Shop mathematics.
- Welding properties of various metals and alloys.
- Federal, state and local laws and regulations pertaining to the handling and disposal of hazardous materials and clean air requirements.
- Administrative practices, including purchasing and record keeping.

ABILITY TO:

- Diagnose and repair a wide variety of machine tool technology and fastener manufacturing related equipment.
- Demonstrate work processes, methods and techniques to students clearly and effectively.
- Operate and maintain a wide variety of hand power and shop tools and equipment used in the work.
- Follow, demonstrate and enforce safe work practices, safety precautions and safety policies and procedures when working with students and student workers.
- Estimate necessary materials and equipment to complete assignments.
- Read and interpret manuals, specifications and drawings applicable to the work.
- Use machine tool mathematics to complete assignments.
- Organize, set priorities and exercise sound judgment with areas of responsibility.
- Organize and maintain records and files.
- Communicate in English clearly and effectively, both orally and in writing.

- Understand and follow written and oral instructions.
- Use tact, discretion, courtesy and patience in dealing with sensitive and difficult students and situations.
- Establish and maintain effective working relationships with instructors, faculty, staff, vendors, students, the public and others encountered in the course of work.

REQUIRED QUALIFICATIONS

A typical way of obtaining the knowledge, skills and abilities outlined above is graduation from high school or G.E.D. equivalent; and two years of journey-level experience in the appropriate discipline; or an equivalent combination of training and experience. An Associate's degree is highly desirable.

DESIRABLE QUALIFICATIONS

- Two (2) years industry experience in operation, maintenance, and repair of Vertical Mill, Horizontal Mill, Lathe, CNC Mill, CNC Lathe, Vertical Saw, Automatic Turing Machine (Traub), Cold header, Thread Roller, Centerless Grinder, and Compressors.
- Two (2) years performing preventative maintenance including lubrication systems such as: oiling, greasing, cleaning of machine shop and manufacturing equipment.
- Two (2) years industry experience in writing purchase requisitions and follow-up of purchased items including record keeping. Knowledge of SolidWorks, MasterCam7, Robotics (Vex or Legos or equal).

PHYSICAL DEMANDS

Must possess mobility to work in a standard office setting and use standard office equipment, including a computer; vision to read printed materials and a computer screen; and hearing and speech to communicate in person, before groups, and over the telephone. This classification primarily works indoors and requires frequent standing in and walking between work areas. Finger dexterity is needed to access, enter, and retrieve data using a computer keyboard or calculator and to operate standard office equipment. Positions in this classification frequently bend, stoop, kneel, reach, push, and pull drawers open and closed to retrieve and shelve materials. Employees must possess the ability to lift, carry, push, and pull materials and objects weighing up to 50 pounds.

ENVIRONMENTAL ELEMENTS

Employees work in both a shop and office environment with moderate to frequently loud noise levels, controlled temperature conditions, and some direct exposure to hazardous physical and/or chemical substances and materials. Employees may interact with distressed staff and/or public and private representatives in interpreting and enforcing departmental policies and procedures.

Explain and justify the program's staffing needs in the immediate (1-2 years) and long-term (2-4+ years). Provide cost estimates and explain how the position/s will help the program better meet its goals.

Immediate (1–2 Years): Reinstate Full-Time Vocational Instructional Technician (Machine Tool)

Estimated Cost: $0 (position is already filled)

Justification:

The full-time Vocational Instructional Technician (Machine Tool) position was officially approved and filled in 2019, but during the COVID-19 shutdown, the technician was temporarily reassigned to support the Autobody program. Now that full operations have resumed, the position should be reassigned back to the Machine Tool Technology program, where it is urgently needed.

This technician's responsibilities are vital to:

- Managing tool checkout and inventory control
- Supporting instructional setups and safety protocols during active class sessions
- Performing ongoing maintenance and repair of complex equipment (e.g., CNC machines, lathes, mills, CMMs, 3D printers, and more) **during non-instructional hours**
- Assisting faculty with equipment prep, material procurement, software setup, and lab safety compliance

The technician's presence is essential not just during class time but also outside of it, when equipment servicing, calibration, and toolroom organization must take place to keep the lab running efficiently and safely.

Long-Term (2–4+ Years): Expand Program Offerings Through Strategic Use of Part-Time Faculty

Estimated Cost: Variable (depending on load; likely $20,000 annually)

Justification:

At this time, a second full-time faculty member is not yet warranted. However, as the program moves toward expanding its course offerings, particularly in CNC programming and toolpath generation to support AS degree and certificate requirements, strategic additional assignments should be made available to part-time faculty with expertise in programming. This targeted approach will allow the program to:

- Introduce or expand key programming courses without committing to a full-time hire
- Maintain scheduling flexibility while fulfilling curriculum needs
- Strengthen pathways for students seeking certificates and degrees in CNC programming and advanced manufacturing

This approach also allows the department to assess enrollment demand and course viability before pursuing a full-time staffing expansion.

Impact if Not Met:

- **Short-Term:** Without restoring the full-time technician to their original assignment, faculty will continue to absorb non-teaching duties related to lab prep, toolroom management, and equipment maintenance. Reducing instructional capacity and increasing burnout.

List any related recommendations.

Develop a Schedule for the Technician to Support Equipment Maintenance During Non-Class Hours

- **Cost Estimate:** None (planning-based)

- **Justification:** Establish a formal schedule that allocates non-instructional hours for the technician to focus on preventative maintenance, repairs, inventory checks, and shop improvements. This ensures that equipment remains operational, safe, and ready for instruction without disruption.

Academic Program Review: (9) Direction and Vision First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:56**

Describe relevant changes within the academic field/industry. How will these changes impact the program in the next four years?
The manufacturing and machining industries have undergone significant transformation in recent years, driven by automation, digital integration, and evolving workforce demands. These changes have a direct impact on the direction and expectations of academic programs like Machine Tool Technology and Manufacturing Technology.

1. Emerging Trends and Industry Changes

a. Industry 4.0 and Smart Manufacturing
- The rise of **Industry 4.0**—which integrates automation, data exchange, Internet of Things (IoT), cloud computing, and cyber-physical systems—is reshaping modern manufacturing.
- Companies now require workers who are proficient not only in manual and CNC machining but also in **data literacy, PLCs, robotics, and networked equipment.**

b. Increased Use of Multi-Axis CNC and CAD/CAM
- The demand for **3-axis, 4-axis, and 5-axis CNC machine operators and programmers** is growing.
- The integration of **CAD/CAM tools like Fusion 360 and Mastercam** is now a baseline skill expectation in the job market.

c. Additive Manufacturing and Hybrid Processes
- Additive manufacturing (3D printing) is increasingly used in prototyping, aerospace, medical, and small-batch production.
- Hybrid processes that blend additive and subtractive technologies are also emerging.

d. Emphasis on Quality Assurance and Metrology
- High-tolerance industries like aerospace and medical devices demand precision.
- Skills in **CMM operation, digital metrology, GD&T interpretation, and inspection software** are becoming essential.

e. Labor Force Shifts and Skill Gaps
- As experienced machinists retire, employers are seeking **versatile, cross-trained entry-level employees** who can adapt quickly.
- The pressure to fill skilled trade positions has elevated the importance of hands-on technical programs at community colleges.

f. Sustainability and Lean Manufacturing
- Green manufacturing, waste reduction, and efficient energy use are gaining traction.
- Students need to be exposed to **lean principles** and sustainable practices.

Impact on the Program in the Next Four Years
To stay relevant and competitive, the Machine Tool Technology and Manufacturing Technology programs must:
- Continue to expand into **automation, robotics, and smart manufacturing systems**
- Integrate **more advanced CNC programming and CAD/CAM applications**
- Invest in **modern metrology labs and software**
- Strengthen instruction in **additive manufacturing and hybrid processes**
- Prepare students for **cross-functional roles** that bridge machining, programming, inspection, and design

These shifts will require ongoing investment in equipment, software, curriculum development, and faculty training to align with the pace of change in industry.

Explain the direction and vision of the program and how you plan to achieve it.
The vision for the Machine Tool Technology and Manufacturing Technology programs at Compton College is to become a regional leader in advanced manufacturing education, producing graduates who are not only skilled machinists but also adaptable, industry-ready professionals equipped for the future of smart manufacturing.

1. Ideal Future Direction
In the next four years, the program aims to:
- **Modernize the Facility**
  Create a bright, open, and flexible learning environment that mirrors professional machine shops and manufacturing labs. This includes facility renovation, improved lighting, enhanced HVAC systems, and the removal of restrictive barriers that limit workflow and visibility.
- **Expand Advanced Manufacturing Capabilities**
  Integrate robotic workcells, automation trainers, and Industry 4.0 simulation platforms. The goal is to expose students to interconnected systems, sensors, and data-driven processes found in modern smart factories.
- **Strengthen Metrology and Quality Assurance Instruction**
  Establish a dedicated precision metrology lab with climate control, CMMs, height gauges, and inspection software. This lab will give students hands-on experience with high-tolerance measuring tools used in aerospace and medical manufacturing.
- **Support Emerging Technologies and Interdisciplinary Projects**
  Enhance the additive manufacturing lab and introduce hybrid manufacturing projects that combine 3D printing, CNC machining, and manual fabrication. Students will be encouraged to prototype and design real-world solutions.
- **Align Curriculum with Industry Certifications and Career Ladders**
  Continue developing stackable certificates that lead toward an AS degree and integrate skills aligned with NIMS (even if not required), Mastercam, Fusion 360, and OSHA safety practices.
- **Serve a Broader Population of Students**
  Explore offering **evening and hybrid courses** to support working adults and expand program access. Strategic scheduling and the addition of specific programming courses will allow the program to better meet degree and certificate requirements.

How We Plan to Achieve This Vision
- **Maximize Use of Existing Resources**
  Restore the full-time toolroom technician to manage day-to-day operations, equipment maintenance, and instructional support. Expand part-time instructional load where needed to support programming-related coursework.
- **Continue Strategic Equipment Investment**
  Use program review data to advocate for and prioritize funding for advanced machinery, robotics, CMMs, and instructional technology aligned with industry trends.

- **Partner with Industry and Workforce Development Organizations**
  Build new and deepen existing partnerships with local manufacturers, advisory board members, and regional workforce boards to ensure curriculum relevance and identify internship and apprenticeship opportunities.
- **Leverage Faculty Expertise and Community Engagement**
  Engage in regional events, school outreach, and student showcases to build enrollment and visibility. Use faculty time strategically for curriculum development and collaboration across disciplines.

List any related recommendations.
To support the program's long-term direction and vision, the following related recommendations are made:

1. **Pursue Facility Renovation and Layout Redesign**
   - Create an open, modern, and well-lit floor plan that supports industry-simulated workflows and improves student engagement and safety.
   - Aligns with the vision of making the program more visible, functional, and competitive.
2. **Restore the Full-Time Toolroom Technician to the Machine Tool Program**
   - Reassign this already-filled position to its original role to support equipment maintenance, safety, and instructional preparation—all critical for achieving the program's modernization goals.
3. **Invest in Advanced Robotic and Automation Systems**
   - Acquire robotic arms, programmable automation systems, and simulation software to reflect current Industry 4.0 practices and support interdisciplinary training.
4. **Develop a Dedicated Metrology and Inspection Lab**
   - Create a space equipped with CMMs and digital inspection tools to support high-precision measurement and strengthen alignment with aerospace and medical manufacturing standards.
5. **Expand Evening and Hybrid Course Offerings**
   - Pilot evening and hybrid course formats to reach working adults and non-traditional students, increasing access and strengthening community engagement.
6. **Leverage Part-Time Faculty to Offer Programming Courses**
   - Assign additional instructional load to qualified part-time instructors to support CNC programming and toolpath generation courses required for certificates and AS degrees.

These recommendations are aligned with the program's commitment to student success, workforce readiness, and future-proofing the curriculum through strategic, scalable improvements.

Academic Program Review: (10) Prioritized Recommendations First Submission: Version by **Vanoverbeck, Michael** on **05/28/2025 06:56**

Provide a single, prioritized list of recommendations and needs for your program/department (drawn from your recommendations in sections 2-8). Include cost estimates and list the college strategic initiative that supports each recommendation.
The following list presents a single, prioritized summary of the Machine Tool Technology and Manufacturing Technology program's recommendations, as developed and justified throughout Sections 2–8 of this review. Each item includes a cost estimate and the associated **Compton College Strategic Initiative (SI)** it supports.

Priority	Recommendation	Estimated Cost	Strategic Initiative(s)	Justification
1	**Reassign full-time Toolroom Technician back to Machine Tool Technology**	$0	SI 1, SI 4, SI 5	Critical support role for equipment maintenance, lab prep, and safety. Position is already filled; only administrative reassignment is needed.
2	**Replace aging manual lathes and mills**	$200,000	SI 1, SI 4, SI 5	Current machines are unreliable and beyond serviceable life. Replacement is essential for safety, instructional integrity, and foundational training.
3	**Repair and update CMM equipment and software**	$25,000	SI 1, SI 5	Precision measurement and quality control are essential in modern manufacturing. Upgrading CMM capability restores key instructional capacity.
4	**Install Mastercam software with 3 high-performance desktop workstations**	$21,000	SI 1, SI 4, SI 5	Expands CAM instruction, adds industry-standard software, and increases student exposure to advanced programming workflows.
5	**Replace aging student laptops and classroom PCs**	$35,000	SI 1, SI 4	Current systems are outdated and strain under modern software. Upgrading ensures performance stability and supports software integration.
6	**Acquire CNC router**	$100,000	SI 1, SI 4, SI 5	Enhances capability in digital fabrication, mold-making, and cross-program collaboration. Supports advanced project work and prototyping.
7	**Install automatic horizontal band saw**	$30,000	SI 1, SI 4	Improves efficiency, safety, and throughput in material preparation. Reflects real-world industry practices.
8	**Complete 3D printing lab expansion (11 more Prusa i3 MK3S units)**	$20,000	SI 1, SI 4, SI 6	Supports additive manufacturing instruction, ensures full student access during labs, and fosters interdisciplinary STEM engagement.
9	**Conduct facility expansion feasibility study**	$50,000	SI 5, SI 6	Required to evaluate space and infrastructure for future program growth and additional equipment.
10	**Offer additional programming-focused courses via part-time faculty**	$10,000–$20,000	SI 1, SI 4, SI 5	Addresses a curriculum gap related to the AS degree and programming certificate; avoids need for full-time faculty expansion at this time.
11	**Full facility renovation and modernization**	$1.5M–$2M	SI 1, SI 5, SI 6	A complete upgrade of HVAC, lighting, layout, and infrastructure to create a modern, clean, and high-functioning lab environment.
12	**Invest in robotic workcells and Industry 4.0 automation systems**	$300,000	SI 1, SI 5, SI 6	Supports training in smart manufacturing and robotics. Expands program relevance and positions students for next-generation manufacturing jobs.
13	**Create a dedicated metrology and quality control lab**	$100,000	SI 1, SI 5	Provides a climate-controlled space for training in high-precision inspection and measurement techniques.

Justification for Prioritization
This list is prioritized to:

- **Address urgent instructional and safety gaps** (technician reassignment, equipment replacement, CMM functionality)
- **Ensure technology infrastructure supports current software and student access**
- **Advance curriculum depth and future-proof the program** (Mastercam, CNC router, robotics, metrology)
- **Lay groundwork for sustainable growth** (facility planning, targeted expansion, and interdisciplinary integration)

Each item directly supports **Compton College's strategic initiatives** related to student success, innovation, workforce readiness, and instructional infrastructure.

Here are the **Compton College Strategic Initiatives**, as outlined in the *Program Review Handbook (2025 Revision)*:
Compton College Strategic Initiatives

1. **Improving Enrollment, Retention, and Completion**
   Enhance efforts to recruit, enroll, retain, and support students through completion of their educational goals.
2. **Implementing Guided Pathways**
   Ensure that academic programs are clearly mapped out, students are provided with timely guidance, and barriers to completion are removed.
3. **Supporting Student-Centered Learning**
   Promote instructional practices, support services, and learning environments that center on student engagement, equity, and success.
4. **Enhancing Technology and Infrastructure**
   Invest in instructional technology, physical infrastructure, and support systems to ensure a high-quality learning environment.
5. **Advancing Career and Workforce Preparation**
   Align programs with regional labor market needs, provide hands-on training, and strengthen partnerships with industry and community organizations.
6. **Cultivating Collaborative and Collegial Culture**
   Foster a positive and inclusive campus culture where communication, shared governance, and professional development are valued.