2023-2024 Comprehensive Instructional Program Review - Plastic & Composite Manufacturing Latest Version

2023-2024 Comprehensive Instructional Program Review - Plastic & Composite Manufacturing

Program Overview and Goals

Mission and Alignment : Version by **Li, Dejun** on **01/11/2024 16:43**

The Cerritos College Plastic Manufacturing Department(PMT) was established and designed in 1974 to provide a "state-of-the-art" plastics manufacturing technology program for students intending to work in commercial manufacturing companies. Our department serves the needs of those who are "new to the technology" as well as for those "experienced professionals who wish to broaden their knowledge to remain competitive in the global business environment.

Explain how your program supports the College's Mission.
The program consists of courses **which have** been adjusted to focus and meet the needs for Certificates of Achievement, and the Associates of Arts Degree requirements for student success. The following courses will be the main focus and offered in person or online. The capstone class is the PMT 100 – Plastics Technology.

PMT I00 - PLASTICS TECHNOLOGY 3 Units
This course provides knowledge of materials and processes used in the field of plastics manufacturing today. An overview of plastic technology and the application of production processes, as well as fabrication methods, are covered. This course includes molding, forming, reinforced materials, bonding, laminating, and finishing techniques and plastic materials identification.

PMT 101 SUSTAINABLE TOY DESIGN WITH SOLIDWORKS 3 UNITS
This course will provide students to learn the basic modeling skills and sustainable design process with Solidworks. The basic modeling will include parts design from extrusion/revolution/ sweep/loft and bottom up assembly design plus the 2D drawing output. And the sustainable design will cover the definition, scope and metrics of sustainability, environmental assessment dashboard for 4 indicators like carbon footprint/ energy consumption/air acidification/ water eutrophication, and conceptual lifecycle thinking like raw material extraction/material processing /part manufacturing/ assembly/ product use/ end of life/transportation. Case studies method will be used in this course and the cases come in with different toy design from simple to complex, and the toys can be made in class with the laser cutters and 3D printers in the lab.

PMT 151 COMPOSITES FABRICATION 3.0 UNITS
This course will provide students with theory and hands-on exposure to fabrication methods with high- tech materials. Areas of concentration will include composite structures, material choices, design of composite structures, surface bonding, fastener installation, inspection processes and approved repair methods. Fabrication, safety procedures, and material handling are also covered.

PMT 159 INJECTION MOLDING I 3.0 UNITS
This course introduces the student to the fundamentals of set-up and operation of injection molding equipment as found in industry. Training on actual industrial equipment as well as safe material and equipment handling is stressed.

Degrees and Certificates : Version by **Li, Dejun** on **12/07/2023 21:33**

List the degrees and certificates the program offers as well as the number of units or courses required to complete the program.
·PLASTICS/COMPOSITES, COMPOSITE MANUFACTURING. ASSOCIATE OF ARTS
·PLASTICS/COMPOSITES, COMPOSITE INSPECTION, ASSOCIATE OF ARTS
·PLASTICS/COMPOSITES, PLASTIC MANUFACTURING, ASSOCIATE OF ARTS
·PLASTICS/COMPOSITES, TOOL DESIGN, ASSOCIATE OF ARTS

·PLASTICS/COMPOSITES, COMPOSITE MANUFACTURING. CERTIFICATE OF ACHIEVEMENT
PMT 100 (ENGT111) 3.0
ENGT116 4.0
ENGT117 4.0
PMT 151 (ENGT251) 3.0
ENGT103 3.0 or ENGT 131 3.0 or ENGT259 4.0
Total: 17-18 units

·PLASTICS/COMPOSITES, COMPOSITE INSPECTION, CERTIFICATE OF ACHIEVEMENT
PMT 100 (ENGT111) 3.0
ENGT116 4.0
ENGT117 4.0
MTT 68 2.0
PMT 159 (ENGT 209) or PMT 151 (ENGT251) 3.0
TOTAL: 16 units

·PLASTICS/COMPOSITES, PLASTIC MANUFACTURING, CERTIFICATE OF ACHIEVEMENT
PMT 100 (ENGT111) 3.0
ENGT116 4.0
ENGT117 4.0
PMT 159 (ENGT209) 3.0
ENGT103 3.0 or ENGT 131 4.0 or ENGT259 4.0
Total: 17-18 units

·PLASTICS/COMPOSITES, TOOL DESIGN, CERTIFICATE OF ACHIEVEMENT
PMT 100 (ENGT111) 3.0
ENGT116 4.0

ENGT117 4.0
ENGT259 4.0
ENGT263 4.0
PMT 159 (ENGT 209) 3.0 or PMT 151 (ENGT251) 3.0
TOTAL: 22 units

Six-Year Program Goals : Version by **Li, Dejun** on **04/03/2024 17:13**

1.

Program Goal	College's Goal Supported (Goal A - Goal F)	Status (not started; in progress; on hold; cancelled; completed; continued)	Action Plans/Timelines/Resource Needs
Increase awareness of Plastic program within general student populations by re-instating Modern 3D printing technology and composites and plastics related student clubs (Cerritos College Engineering Technology Club ---CCETC)	GOAL A --- Strengthening the culture of completion GOAL D --- Improve internal and external communication	In progress	CCETC 3D printing group and SAMPE GROUP are practicing their own design with ABS filament, and will move to Form 3D resin for more precise printing. Spring 2026
Get to know more local industry trends. Let the students know the local company and build the contact relation.	GOAL D --- Improve internal and external communication	In progress	Get more field trips to the local company like Engel machines, SpaceX, NorthRop Grumman, etc. Fall 2026
Implement Sustainable design class PMT 101	GOAL A --- Strengthening the culture of completion	Not yet	Build the concept of sustainability that natural resources on earth are finite, sustainable practice will help maintain a balance between environment, economy and equity. Spring 2027
Implement Virtual prototype technology and work with Engineering design Department to add MoldFlow simulation course (ENGT 267)	GOAL E --- Upgrading educational infrastructure	Not started yet	Work with ENGT and talk to the local industry for the industrial needs and trends. Fall 2026
Plan to merge with Engineering Design Technology Department, implement Design for Manufacturing (DFM)	GOAL D --- Improve internal and external communication	Not started yet	Work with ENGT and let the students learn how to design parts that can be manufactured. Spring 2027
Work closely with local industry associations like SAMPE (North America Society for the advancement of material and process engineering) and PIA (Plastic Industry Association)	GOAL B --- Ensuring program alignment by strengthening partnership	In progress	Get more technical presentations for the new trends, join the local show like PLASTEC WEST (2024, 2025,…) to get familiar with all the latest development of plastic product and equipment Fall 2028
Update the curriculum, courses SLOs	GOAL C --- Promoting Leadership and Staff development	Not started yet	Need to bring to the curriculum up to 2023 industry standards Spring 2025
Provide new course PMT 160 Plastic injection mold II to meet the needs for high level molding technician and supervisor requirement	GOAL B --- Ensuring program alignment by strengthening partnership	Not started yet	Working with ENGEL Machines company for advanced molding training. Fall 2028

Program Goal	College's Goals Supported (Goal A - Goal F)	Status (not started; in progress; on hold; cancelled; completed; continued)	Action Plans/Timelines/Resource Needs
undefined	undefined	undefined	undefined

Assessment Report and Data Analysis

Assessment Report (Part 1: Assessment Table) : Version by **Li, Dejun** on **04/03/2024 17:13**

Course by SLO	Expected Performance	Performance
PMT151 - Composites Fabrication		
Students will be able to identify (2) methods for fabricating a composite part during examination. (Active from 2013 FA)	100.00%	94.29%
Students will be able to describe safe handling procedures or composite fabrication during examination. (Active from 2013 FA)	100.00%	89.29%
Students will be able to distinguish between various composite reinforcement materials utilized in fabrication during examination. (Active from 2013 FA)	100.00%	90.71%
Students recognize composite structure materials utilized in fabrication during examination. (Active from 2013 FA)	100.00%	94.93%
PMT59 - Injection Molding I		

Course by SLO	Expected Performance	Performance
Students will be able to produce a part following industry standardized practices during examination. (Active from 2013 FA)	100.00%	0.00%
Students will be able to distinguish between (3) major thermoplastic materials used in industry during examination. (Active from 2013 FA)	100.00%	0.00%
Students will be able to visually inspect (3) parts for defects such as shrinkage, warp and inclusions during evaluation. (Active from 2013 FA)	100.00%	0.00%
Students will be able to describe methods to increase manufacturing production rate in molding during examination. (Active from 2013 FA)	100.00%	0.00%
PMT61 - Fiberglass Technology		
Students will be able to identify four (4) types of fiberglass materials during examination. (Active from 2013 FA)	100.00%	0.00%
Students will be able to perform the Barcol hardness test on four (4) flat fiberglass panels during examination. (Active from 2013 FA)	100.00%	0.00%
Students will be able to identify (3) fiberglass fabrication methods during examination. (Active from 2013 FA)	100.00%	0.00%
PMT76 - Vacuum Infusion Process (VIP)/Resin Transfer Molding (RTM)		
Students will be able to demonstrate the basic knowledge in RTM fabrication techniques by identifying four (4) materials utilized in producing an infusion molded part during examination. (Active from 2013 FA)	100.00%	100.00%
Students will be able to demonstrate competency in safe handling of two (2) materials utilized in the RTM process during examination. (Active from 2013 FA)	100.00%	100.00%
Students will be able to identify two (2) tooling methods and safe handling practices used in the VIP and RTM industry during examintion (Active from 2013 FA)	100.00%	100.00%
Students will able to identify and differentiate the processing method utilized to mold four (4) different plastic parts during examination. (Active from 2013 FA)	100.00%	100.00%
PMT100 - Plastics Technology		
Identify (4) basic plastics processing methods during examination. (Active from 2021 FA)	100.00%	100.00%
Demonstrate proficiency at identifying (2) plastic material and part recycling methods found in industry today during examination. (Active from 2021 FA)	100.00%	100.00%
Demonstrate proficiency in identifying (4) plastic materials during examination. (Active from 2021 FA)	100.00%	90.00%
Identify and differentiate between thermoplastics and thermosetting materials during examination. (Active from 2021 FA)	100.00%	90.00%
PMT53 - Composites Repair		
Students will be able to recognize two (2) typical composite repair methods during examination. (Active from 2013 FA)	100.00%	100.00%
Students will be able to distinguish between three (3) composite reinforcement materials typically utilized in composite repair methods during examination. (Active from 2013 FA)	100.00%	100.00%
Students will be able to describe safe handling procedures of two (2) common tools utilized during composite repair methods during examination. (Active from 2013 FA)	100.00%	100.00%

Course by SLO	Expected Performance	Performance
Students will be able to recognize two (2) composite honeycomb sandwich materials typically utilized in repair of flat panels during examination. (Active from 2013 FA)	100.00%	100.00%
PMT72 - Tooling for Plastics		
Students will be able to identify (3) materials and processes used to create standard types of tooling for plastics during examination. (Active from 2013 FA)	100.00%	0.00%
Students will be able to identify (2) tooling methods and safe handling practices used in the plastic industry during examination. (Active from 2013 FA)	100.00%	0.00%
Students will be able to identify (2) methods for producing a part for tooling during examination. (Active from 2013 FA)	100.00%	0.00%
Students will be able to recognize (3) typical hand tools utilized in the making of tools/molds during examination. (Active from 2013 FA)	100.00%	0.00%
PMT100 - Plastics Technology		
Students will be able to identify (4) basic plastics processing methods during examination. (Active from 2013 FA)	100.00%	95.52%
Students will be able to demonstrate proficiency at identifying (2) plastic material and part recycling methods found in industry today during examination. (Active from 2013 FA)	100.00%	89.55%
Students will be able to demonstrate proficiency in identifying (4) plastic materials during examination. (Active from 2013 FA)	100.00%	91.04%
Students will be able to identify and differentiate between thermoplastics and thermosetting materials during examination. (Active from 2013 FA)	100.00%	98.51%

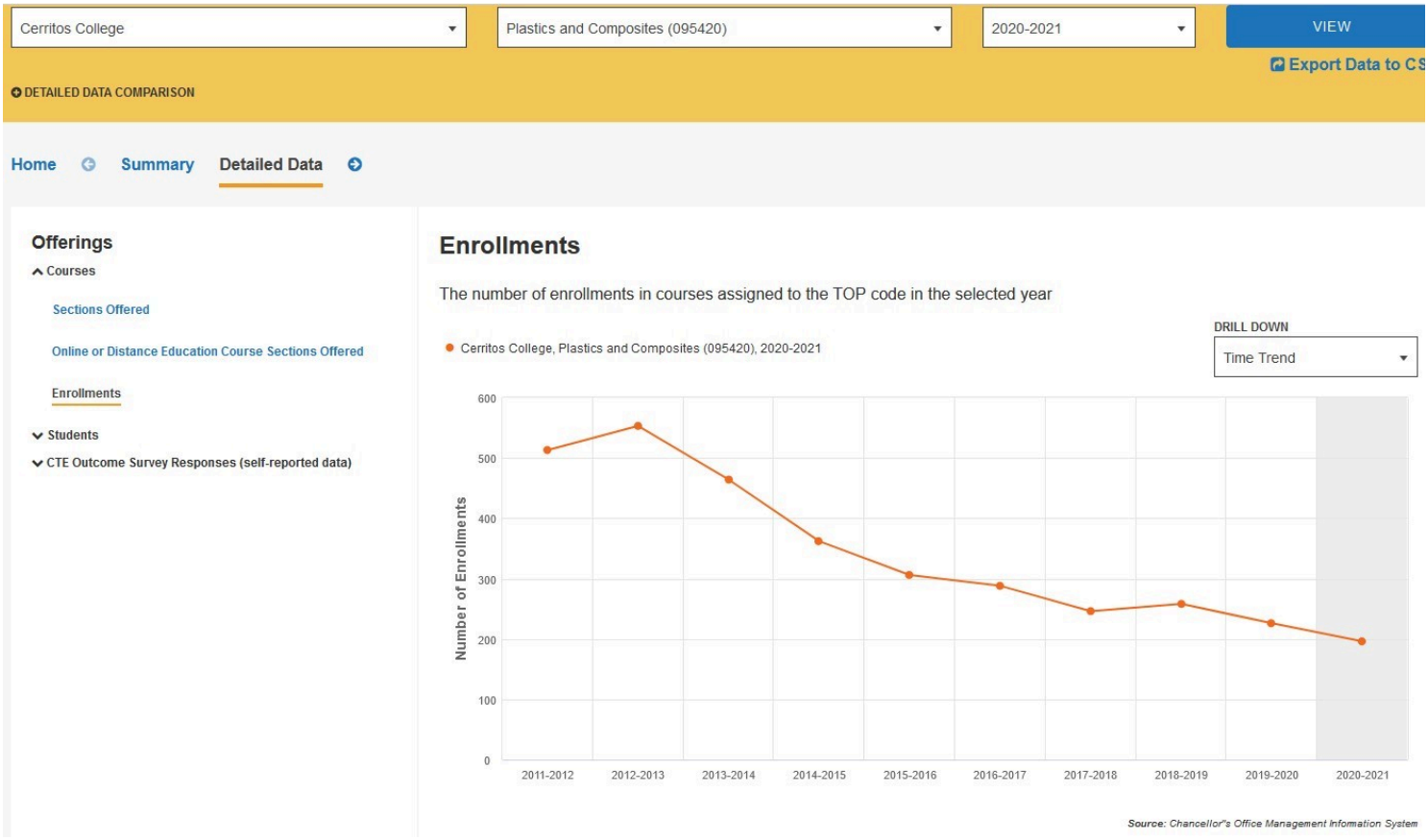
Assessment Report (Part 2: Assessment Responses) : Version by **Li, Dejun** on **04/03/2024 17:13**

SLOs are assessed every semester and results are discussed during the first month of the following semester. Results have been mostly favorable and when they are not, an attempt is made to determine the causes and a corrective action.
SLOs are "0's" for PMT 61 and 72 since the classes were not offered. For PMT 59, the department will work with IERPG to ensure SLO's that are conducted are included in data.

Explain the frequency (i.e., when and how often) and content of assessment process (e.g., planning, data collection, and results) for the program (e.g., department meetings, advisory boards, etc.). Also, describe the process for reviewing and discussing outcomes data.
When previous SLO results have been unfavorable, 1) revise Program assignments and measurements to increase student achievement. 2) Instructors have been asked to improve their instructional materials and techniques. Also, We have advisory committee meeting every semester. During the meeting, we had been trying to know the current trends, diagnose all the issues we have and find the possible solutions especially for our enrollment erosion problems.

Describe the process for development of plan for improvement and summarize the changes that discipline faculty plan to implement based on the analysis of the student learning and program effectiveness. Provide specific examples.
Almost all of the PMT classes are hands-on based; students from the local industry needs to learn how to operate the plastic injection machines like PMT 159 class. For the composite class, they need to learn how to make the parts by hand like PMT 151. Online contents are still needed for the general introduction and some technology which we can't cover in the lab due to our limited number of machines and equipment.
Facing so many production problems in their daily work, students also need to learn more modern technologies to solve them instead of relying on the personal experiences. For PMT 159 class, plastic injection simulation had been introduced and welcomed by all the students. With this virtual prototyping technology, they can estimate all the possible consequences before the molding trial, which will give them a clear direction to improve or solve them later on.
Ultrasonic welding is a new technology and getting mature, it’s clean and highly efficient for the current industry like medical equipment and toy manufacturing. We will implant this technology into our PMT 100 class.

Data Analysis of Program Data : Version by **Li, Dejun** on **04/16/2024 16:44**

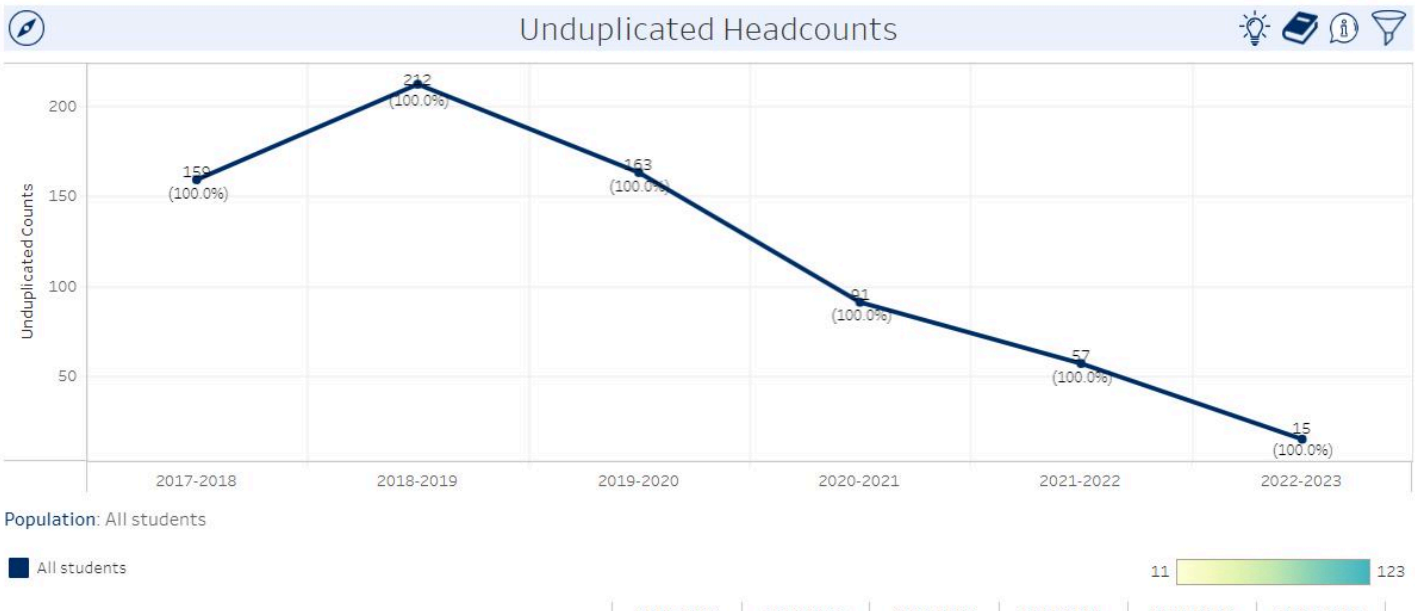


Describe your student demographics (race/ethnicity, gender, age, and others that might be relevant). Consider the following questions when writing your response:

- How do the demographics of your program and its related courses compare with the college as a whole?
- Have they changed over time?

Unduplicated headcounts for all students::

UNIT PLANNING AND PROGRAM REVIEW

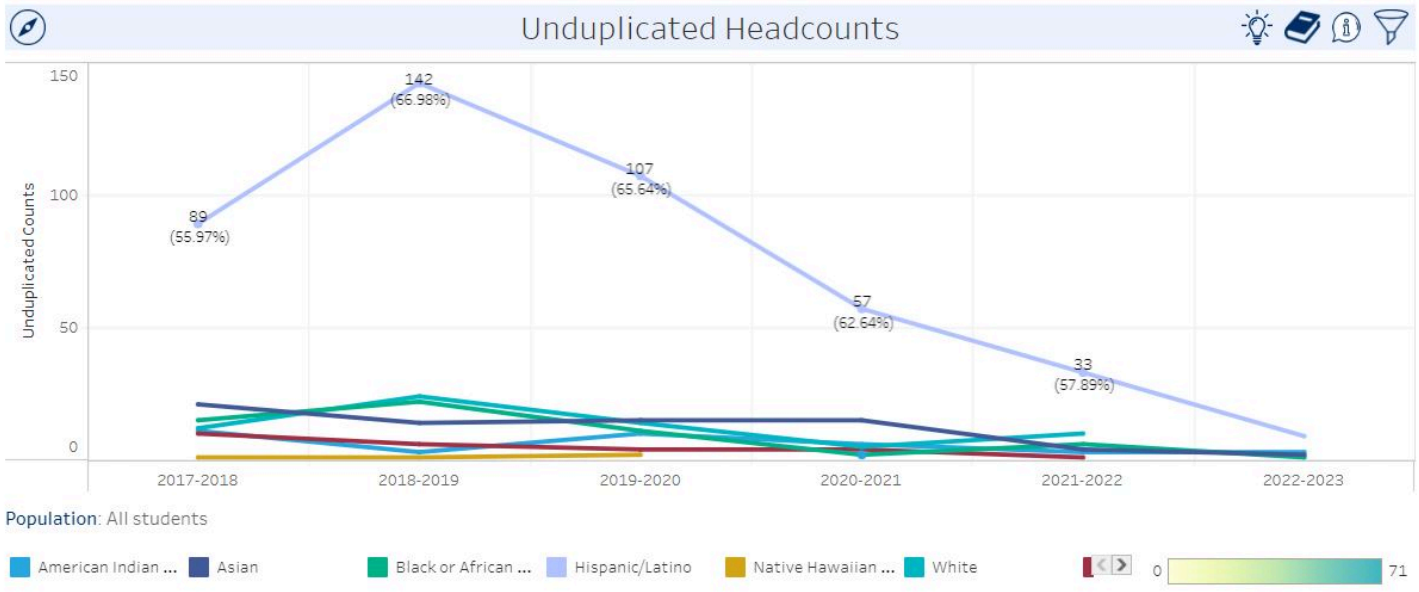


From 2018 to 2019 the department's enrollment (unduplicated counts) decreased 23% (from 212 to 163),. From 2019 to 2020 the department's enrollment decreased 44%. From 2020 to 2021 the department's enrollment decreased 37%, From 2021 to 2022 the department's enrollment decreased 74%, mainly due to the reduced class sizes for in-person classes predicated by COVID-19 requirements.

To change this trend and get a better enrollment, we need to attract more students to join our classes. we have been building up the robotics team in our engineering technology club (CCETC) and attending several collegiate robotics tournaments, the club students have been increased from 20 to more than 60. we also set up the connection with the local associates like SAMPE (North America Society for the advancement of material and process engineering) and PIA (plastic industry associate) and work with them, so we can get the students directly from the local industry.

Unduplicated headcounts with race/ethnicity:

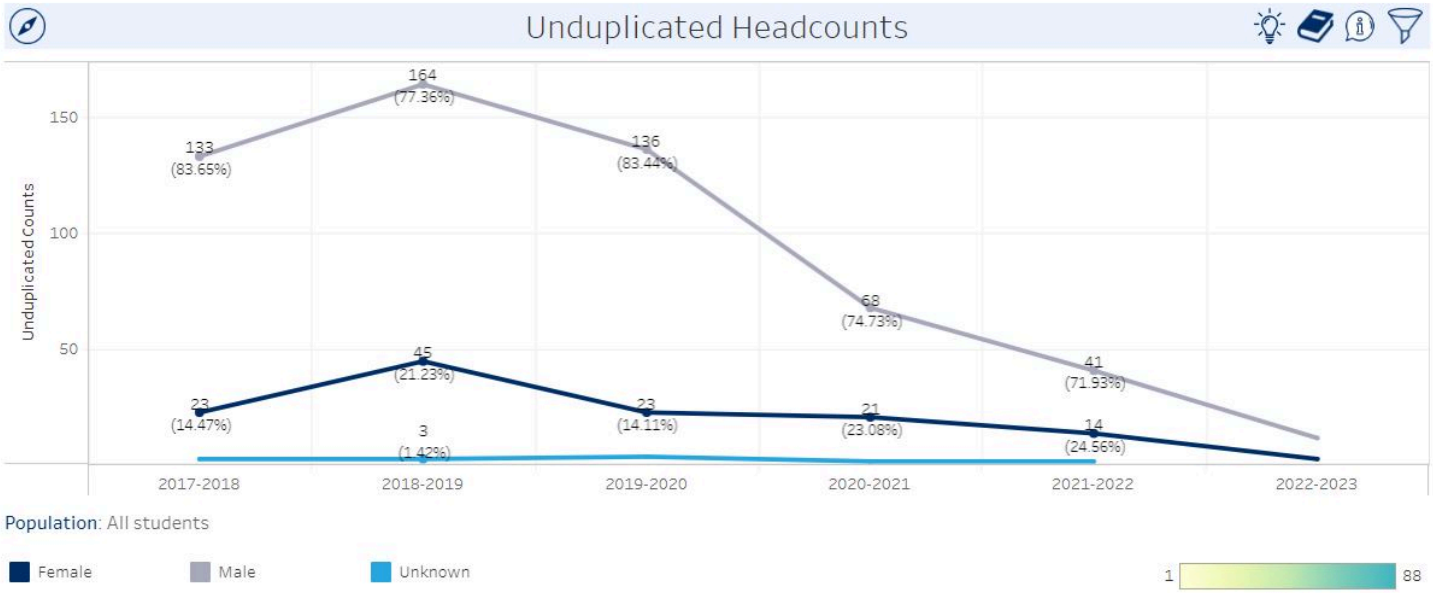
UNIT PLANNING AND PROGRAM REVIEW



The predominate race/ethnicity of the department is Hispanic/Latino (approximately 60%) followed by Asian (15%), White (14%), and Black or African (10%). The percentages for Cerritos College are Hispanic/Latino (66%) followed by White (11%), Asian (9%), and Black or African (7%). Compared to the college as a whole the department has a lower percentage of Hispanic/Latinos and a higher percentage of Asian, white and Black or African.

Unduplicated headcounts with gender:

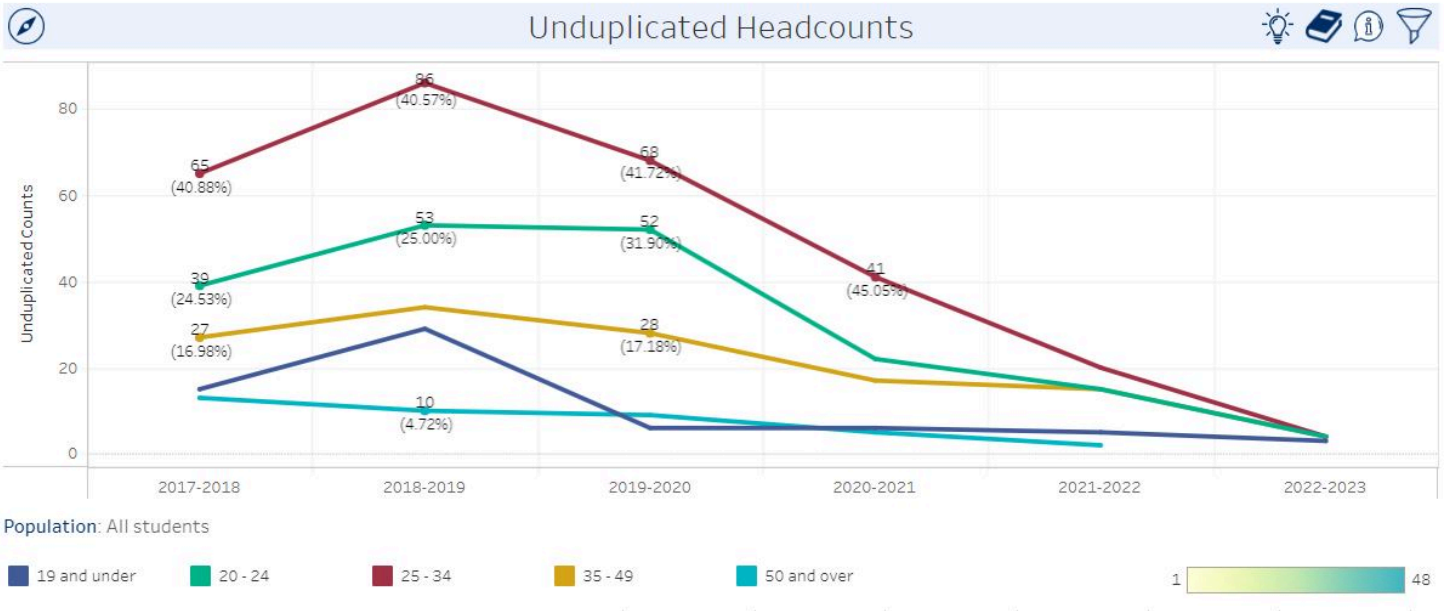
UNIT PLANNING AND PROGRAM REVIEW



The percentage of male students in the department is approximately 75% compared to the college average of 44%. The percentage of female students in the department has increased from 21% to 24% during the past 6 years.

Unduplicated headcounts with age:

UNIT PLANNING AND PROGRAM REVIEW

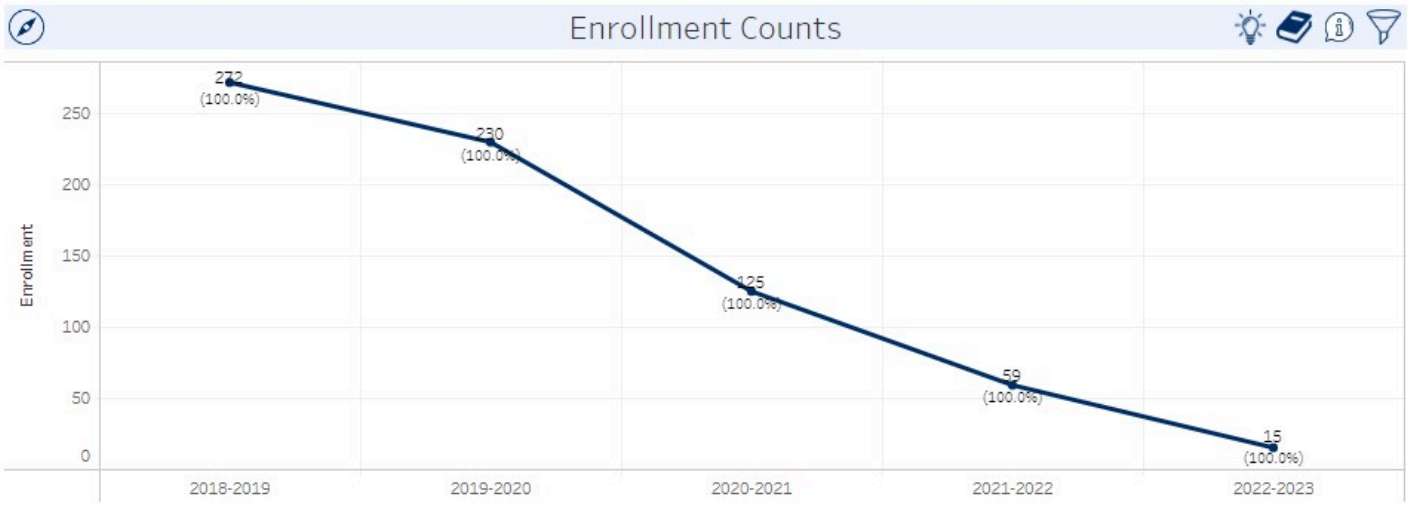


For the last 6 years, most of the students are male Hispanic aged from 20 to 34. They are similar with the college demographics except the gender.

Headcount (unduplicated) and enrollment (duplicated) in the program. Consider the following questions when writing your response:

- Identify enrollment trends.
- Have there been an increase or decrease in enrollment in the last year?
- Are there differences in trends when you disaggregate the data (e.g., online versus face-to-face, demographics, special populations, etc.)?
- How will enrollment trends affect staffing decisions?

Enrolllment (duplicated):



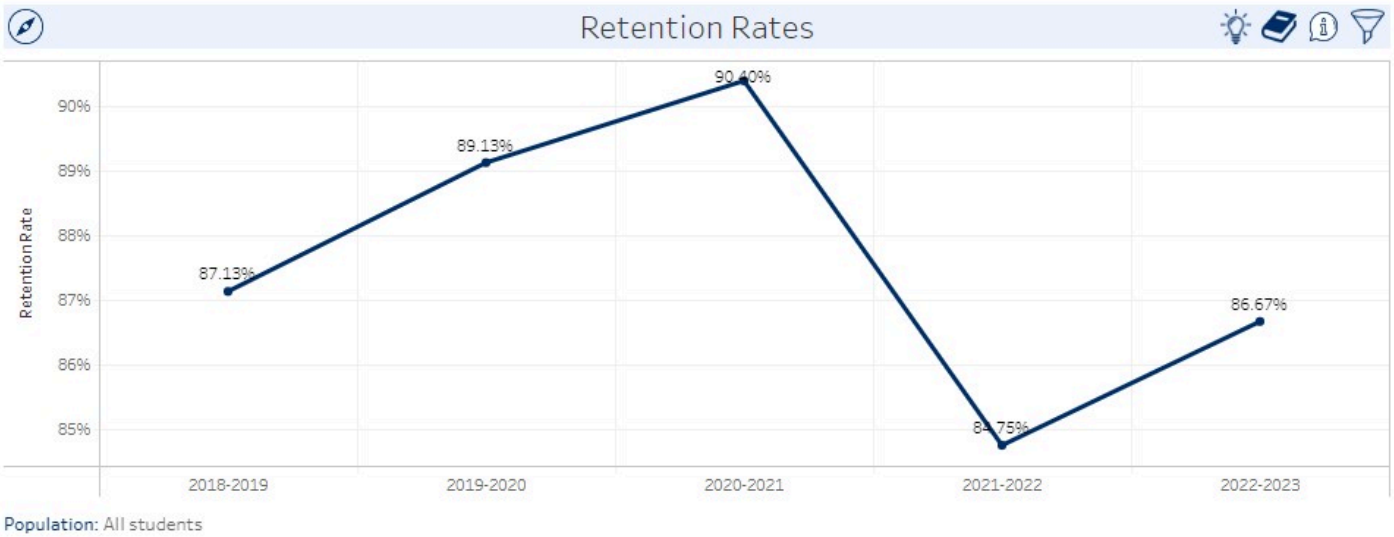
Apparently, the enrollment has been going down significantly for the last 6 years, some courses had to be canceled or deactivated due to this declining trend.

Discuss the program's success and retention rates, addressing any performance gaps if success rates are lower for disproportionately impacted students. Consider the following questions when writing your response:

- How have the success and retention rates changed over time?
- Are there particular courses that have particularly low rates and may prove a barrier to program completion?

Success rates:

Retention rates:



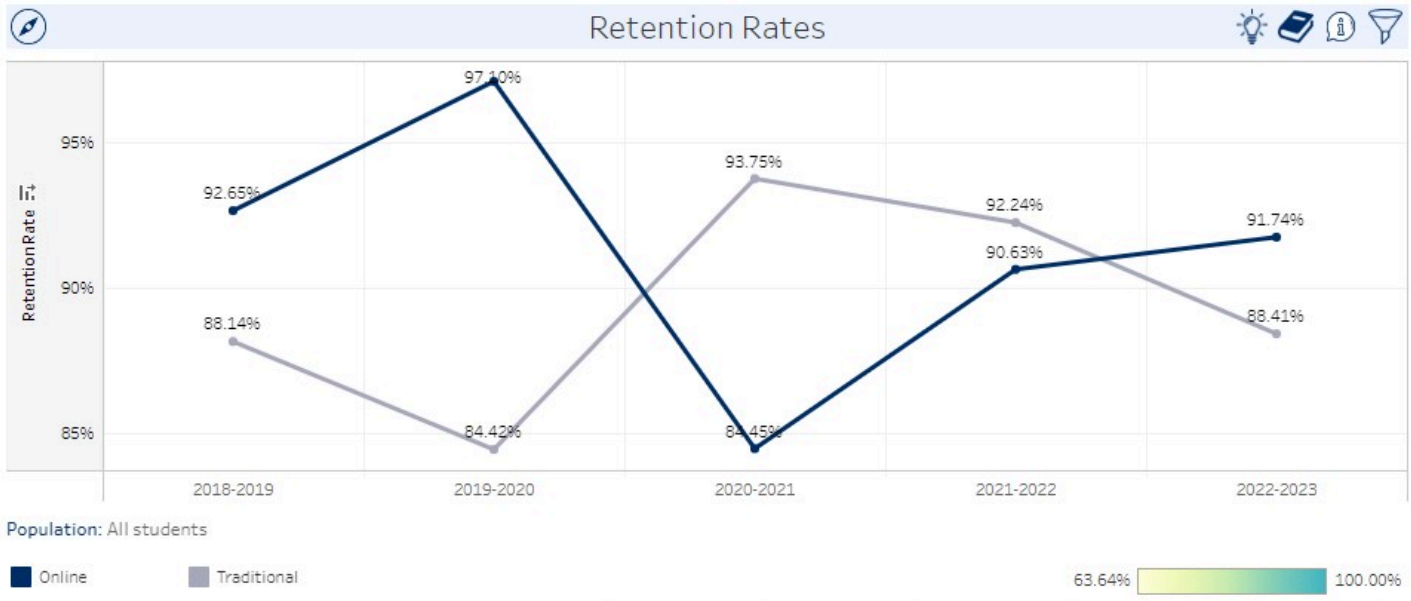
For the last 6 years, there are variations for the success rates (73.33% to 82.61%) and retention rates (84.75% to 90.40%), but no significant change. The overall success rate was approximately 80% over the past 6 years, the retention rate was approximately 85% - these compare favorably with the college averages of 68% and 81%, respectively. Rates do vary year-to-year but are generally in a range of plus or minus 5%. The courses that vary the most have smaller enrollment with a disproportionate effect from the actions of a few (maybe even only one) students.

With regards to success and retention rates, what is the program doing or planning to do to close performance gaps and address student equity? Consider the following question when writing your response:

- Are there differences in success rates across delivery method (e.g., face-to-face compared to online)?

Success rates with mode of instruction:

Retention rates with mode of instruction:



During pandemic, there is significant change for the success rates and retention rates with the mode of instruction as online classes are mainly introductory type ones in this period, but when it's getting back to normal, the difference is getting much smaller.

Discuss conclusions drawn from the program data, assessments (SLOs), and/or other data. Indicate any specific responses or programmatic changes based on the data.
All in all from the above analysis, the main problem we are facing is the declining enrollment trend. To change that, we need to make the following changes:

1. Personalize student communications in the class or through club activities
2. High school visit or presentation to the students, get the parents involved and help them to make the right selection for their college and career pathway.
3. Reduce the course numbers and focus on a few key courses
4. Get students not only from the campus but also from the local industry.

Curricular Course Review : Version by **Li, Dejun** on **04/16/2024 16:44**

Provide the curriculum course review timeline to ensure all courses are reviewed at least once every six years.
PMT courses had been changed to ENGT through curriculum and the PMT courses will be inactivated. Courses migrated for the following:
PMT 100 TO ENGT 111
PMT 151 TO ENGT 251
PMT 159 TO ENGT 209

PMT 101 TO ENGT 281
Going forward, there will not be a separate PMT cycle and will now become part of the ENGT IPR process.
Explain any course additions to current course offerings.
PMT 101. Sustainable toy design with Solidworks software. We are facing more and more environmental challenges currently. Plastic products have been used everywhere on earth which create a lot of pollution problems. Sustainable development requires an integrated approach that takes into consideration environmental concerns along with economic development. This class will build the sustainable design concept through the introduction of 3 pillars of sustainability (economic, environmental, and social) during the toy design process.

Explain any course deletions and inactivations from current course offerings.
We have planned to keep PMT 100/101/151/159 and deactivate all others like PMT 53, PMT 61, PMT 72 on the course list.

Discuss how well the courses, degrees, and/or certificates meet students' transfer or career training needs. Consider the following questions:

- Have all courses that are required for the program's degrees and certificates been offered during the last two years? If not, has the program established a course offering cycle?
- How has degree and/or certificate completion changed over time?
- Are there sufficient completers compared with the size of your program?

We are planning to offer PMT 100 for every spring semester, PMT 159 for every summer and PMT 151 for every fall. And PMT 101 will be added later on like 2027 Spring.

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.

So far, we haven't joined any commercial license programs like RJG (Robert J. Goldstein & Associates) and Paulson certificate yet, , but we are trying to adjust and prepare our courses like PMT 159 which can help students to get the above certificates. David Li got the onsite training by the RJG instructor last summer, learned the latest ENGEL machine (https://www.engelglobal.com/) advancement and new injection molding technology like scientific molding process which has been applied in plastic industry especially medical and aerospace industry.

Program Reflection

Six-Year Program Reflection : Version by **Li, Dejun** on **04/16/2024 16:44**

Provide an analysis of your program throughout the last six years, reflecting on student demographics and enrollment. Reflect on any changes you would like to see in your program in the next six years.
PMT is one of the few programs in community colleges approved in this specialty in the state, and the the program contains both plastics and composite technology education. Almost all the courses provide hands-on trial and practical experience, which will give a clear pathway for the students to achieve in their educational goals either for the associate degree or certificate of achievement.
Due to the enrollment erosion, some classes had to be deactivated and we will focus on the classes like PMT100, PMT 101, PMT 151, PMT 159, and works together with engineering design technology department for the classes like ENGT 263 (Industrial mold design with Solidworks) and 267 (Moldflow Plastic injection simulation).

What is the six-year trend of degrees and certificates awarded? Is there anything you can do to help increase the number of students who acquire degrees and/or transfer?
Apparently, the trend of degrees and certificates awarded is going down so far, we need to attract more campus students to join PMT programs and get more students directly from the local industry through the following:

1. Encourage more campus students to join the club (CCETC) activities, and show them the relevance to their future careers through hands-on practice. Increase awareness of program within general student populations by re-instating composites and plastics in CCETC.
2. Work with SAMPE (Society for the advancement of material and process engineering) for their scholarship program.
3. Talk to the local industry through PIA (Plastic industry associate), try to get more students from the local company.

Were there any unplanned events (positive or negative) that affected your program? If so, what were they and how did they affect the program?
The campaign "Break free from Plastic" started in 2018 and Cerritos college became the first community college to adopt a policy to abandon the use of plastic products. In a sense, that gives plastic a bad name to many students on campus which definitely affected the student's interest to pursue their career in PMT program.
The largest post-pandemic impact on the program was an enrollment decline due to the reduced class sizes for in-person classes - most had enrollment caps of 50% of their enrollment numbers in the official course of record. The division mandated that approximately 50% of all courses be schedule in-person (the 50% mandate was also part of the college's "Return to Campus" plan) which led to a theoretical enrollment loss of around 25%.

Please describe any recent achievements in your program by faculty and staff who have won awards or distinctions, new projects your program has implemented, committee work, professional development work, conference presentations, community engagement, or recently published work.
PMT 159 class replaced PMT 59 with a brand new approach this summer, new injection machine had been used for the students to practice in the lab, each student had to learn how to operate the industrial machine (machine operator job for $20/HR.), figure out how to adjust the machine parameters to solve most of the production issues on site (technician job for 30$/hr.), try to learn the whole work flow for the setup and process control (Supervisor's job for $40/hr.). Simulation software had been used for the virtual prototyping to find the potential problems and dig into the right path to solve them.

Provide a status update on goals from the last program review cycle.

1. Joined local trade shows like MD&M West.
2. Established Activity for the students to know the local industry
3. Implemented Design for Manufacturing (DFM) with ENGT 263 class
4. Purchased electron microscope and vacuum processing equipment
5. Put almost all Faculty (P/T and F/T) courses on Canvas.
6. Made promotional visits to local high schools annually
7. Revised class scheduling.
8. Prepared instructors to offer Distance Education courses.
9. Contacted local high school with PLTW training courses to promote more students to enroll in Cerritos college like Downey high and WELSON High.
10. Disposed of obsolete equipment and replaced it with state of the art equipment
11. Increased awareness of program within general student populations by re-instating composites and plastics related student clubs
12. Maintained contact with local plastic and composite company regarding local industry requirements and available onsite visits.
13. Offered Distance Education course.
14. Supported a technology based learning environment: Enhance prototyping capabilities

15. Streamlined certifications to no more than 16-18 units and cross-list on curriculum appropriate ENGT and MTT classes

If applicable, describe the resources the program received from the last review cycle and the impact it had on the program?
Create surface microscale metrology lab by purchasing SEM microscope

Resource Requests

Faculty Resource Request(s) : Version by **Li, Dejun** on **11/16/2023 17:35**

none

Program/Department/Division:
none

Title of instructor position:
none

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

none
Is this position:

- New (not in the current budget)
- Replacement (in the current budget, currently vacant or will be vacant in the next budget year)
- Full-Time Temporary
- Conversion (grant to general fund)

none
Cost estimate:
none
Occurrence:

- Recurring expense
- One-time augmentation

none
Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

none
Provide a summary and rationale for this position. Explain how the position will help the program better meet its goals.
none
If this position is not filled, what is the potential impact to student success?
none

Classified Resource Request(s) : Version by **Li, Dejun** on **11/16/2023 17:35**

None

Program/Department/Division:
none
Position requested:
none
Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

none
Is this position:

- New (not in the current budget)
- Replacement (in the current budget, currently vacant or will be vacant in the next budget year)
- Full-Time Temporary
- Conversion (grant to general fund)

none
Cost estimate:
none
Occurrence:

- Recurring expense
- One-time augmentation

none

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

none

Provide a summary and rationale for this position. Explain how the position will help the program better meet its goals.

none

If this position is not filled, what is the potential impact to student success?

none

Other Staffing Resource Request(s) (e.g., Manager, Confidential, etc.) : Version by **Li, Dejun** on **11/16/2023 17:35**

none

Program/Department/Division:

none

Position requested:

none

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

none

Is this position:

- New (not in the current budget)
- Replacement (in the current budget, currently vacant or will be vacant in the next budget year)
- Full-Time Temporary
- Conversion (grant to general fund)

none

Cost estimate:

none

Occurrence:

- Recurring expense
- One-time augmentation

none

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

none

Provide a summary and rationale for this position. Explain how the position will help the program better meet its goals.

none

If this position is not filled, what is the potential impact to student success?

none

Professional Development Resource Request(s) : Version by **Li, Dejun** on **09/22/2023 21:06**

Explain and justify the program's training and professional development needs. Explain how the training/professional development will help the program better meet its goals.

"Autodesk Moldflow Insight Fundamentals" training: get acquainted with the layout and workflow of Moldflow Insight. learn about the different types of meshes, meshing requirements, and how to mesh. Helpful tools within the software, such as Gate Location, Molding Window, and modeling tools will be covered. learn how to run both filling and packing analyses, and the accompanying settings. Results will be covered in-depth, including both interpretation and ways to customize your results. Various reporting tools will be reviewed. This course covers everything needed to prepare students for the Autodesk Associate Certification exam.

Professional Development Resource Request(s):

Instructor needs to know the latest technology for the plastic simulation.

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

MoldFlow simulation has been implanted into PMT 159 and ENGT 263 class, Getting to know the latest development of the plastic flow simulation is important for both classes.
Cost estimate:
Currently $2,705. In-person at AIM (American injection molding Institute) at AIM Institute's Headquarters 6100 West Ridge Road, Erie, PA 16506
Occurrence:

- Recurring expense
- One-time augmentation

one time training.
Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

PerKins

Facilities Resource Request(s) : Version by **Li, Dejun** on **09/22/2023 21:06**

Identify and justify any facilities and equipment needs. Explain how it will help the program better meet its goals. If possible, indicate other disciplines who may share this space.
1. Ultrasonic welding technology has been implanted in the industry for years due to the clean and high efficient advantages.
2. New Chiller can reduce the lab noise level.
What impact will this have on student success? What is the consequence of not getting this request fulfilled?
1. Ultrasonic welder will provide the latest technology for the clean and strong plastic welding training.
2. The new chiller can reduce the working noise in the lab.
Facilities Resource Request(s):

1. Purchase Ultrasonic Plastic Welder --- Model 2000 IW+, 20khz, 200-240V, 2200W Integrated Ultrasonic Plastics Assembly System
2. Purchase a new chiller --- TEMPTEK CGD-5A 4.9 Tons cooling Capacity, 17.2Kw, 5 HP compressor, Air-cooled, R-410ARefrigerant, 2 HP Process Pump, 52 PSI, 25 Gallons Reservoir, Dimensions: 60"X34"X40", 800 LBS Weight (may change due to the technology development)1.

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

1. Ultrasonic welder is critical
2. chiller can wait
Cost estimate:
1. Ultrasonic welder: $20,000.00
2. Chiller: $15,000.00
Occurrence:

- Recurring expense
- One-time augmentation

one time augmentation
Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

Perkins

Technology and Software Resource Request(s) : Version by **Li, Dejun** on **09/22/2023 21:06**

Identify and justify technology and software needs. Explain how it will help the program better meet its goals. If possible, indicate other disciplines who may share the technology and/or software.
none
What impact will this have on student success? What is the consequence of not getting this request fulfilled?
none
Technology and Software Resource Request(s):
none
Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

none
Cost estimate:
none

Occurrence:

- Recurring expense
- One-time augmentation

none

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

none

Other Resource Request(s) : Version by **Li, Dejun** on **09/22/2023 21:06**

Identify and justify any other needs. Explain how it will help the program better meet its goals.

none

What impact will this have on student success? What is the consequence of not getting this request fulfilled?

none

Other Resource Request(s):

none

Priority:

1. Critical (mission critical or must have)
2. Important (creates value and efficiency for program)
3. It can wait (would be nice if the money is available)

none

Cost estimate:

none

Occurrence:

- Recurring expense
- One-time augmentation

none

Funding source:

- Instructional equipment
- Perkins
- Grants/contracts
- Vintage
- General fund (Program 100)
- Categorical – Equity
- Categorical – 3SP
- Categorical – Other
- Other funding

none

Prioritized Resource Request Recommendations : Version by **Li, Dejun** on **09/22/2023 21:06**

Resource Request	Priority	Cost Estimate	Program Goal Alignment
Ultrasonic Plastic Welder		$20,000.00	G1
TEMPTEK CGD-5A		$15,000.00	G2

Resource request:	Priority:	Cost estimate:	Program goal alignment:
undefined	undefined	undefined	undefined

Career Technical Education (CTE) Supplemental Questions : Version by **Li, Dejun** on **04/03/2024 17:20**

How strong is the labor market demand for the program? Utilizing labor market data, describe changes in demand over the last six years and discuss the occupational outlook for the next six years.

The plastic manufacturing industry is a global industry that produces various types of plastics used in a wide range of applications, from packaging and consumer goods to construction and automotive industries. The industry includes a diverse range of companies, from large multinational corporations to small and medium-sized enterprises.

In April 2020, plastics manufacturing employment decreased to 531,200 from 592,100 in March based on estimates from the U.S. Bureau of Labor Statistics. In May this year, the total number of employees in plastic products manufacturing increased to 589,200. While the gap is closing, manufacturing employment is still 2,900 short of March last year. (https://www.plasticsindustry.org/blog/update-plastics-manufacturing-employment/)

How does the program address needs that are not met by similar programs in the college's region/service area? Identify and describe any distinctive component of the program and/or unique contributions.

PMT is one of the few programs in community colleges approved in this specialty in the state. We are focusing on all the hands-on activities for the students to learn and practice onsite.

What is the success, completion, and employment rates for students in the program? Identify the standards set by the program for each metric and discuss any factors that may impact the metrics for students in the program. Based on the program's benchmarks, describe the status of any action plans for maintaining/improving the metrics.
So far, we don't have this information yet, will try to work with the school and collect the related data in the future. Meanwhile, we are planning to do more survey in our classes, maintaining student contact lists, having more field trips to the local factories and getting to know the real needs from the local industry.

List any licensure/certification exam(s) required for entry into the workforce in the field of study and report the most recent pass rate(s) among program graduates. Identify performance benchmarks set by regulatory agencies and based on the program's benchmarks, describe the status of any action plans for maintaining/improving the pass rates.
According to AIM (American injection molding) Institute (https://aim.institute/accreditation/): so far, ANAB (ANSI National Accreditation Board) Accreditation has the following programs: Plastics technology & Engineering (PTE) Certificate program, molder's series Molding 1, Molding 2, Molding 3, and on the current market, there are also a few programs like RJG and Paulson certificate.
Currently, we haven't joined any programs yet, but we are preparing our courses like PMT 159 which can help students to get the above certificates.