COVER SHEET
NEW DEGREE PROGRAM PROPOSAL

Program Information

Program Name:	Manufacturing Operations
Institution Name:	Clover Park Technical College
Degree:	Bachelor of Applied Science in Manufacturing Operations
Level:	Bachelor
Type:	Applied Science
CIP Code:	52.0205

Contact Information

Name:	Dr. Steve Addison
Title:	Director of Bachelor Degrees and New Program Development
Address:	Clover Park Technical College 4500 Steilacoom Blvd. SW Lakewood, WA 98499
Phone:	253 589 5613
Fax:	253 589 5851
Email:	steve.addison@cptc.edu

Dr. Joyce Loveday
Vice President for Instruction

Date:

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Introduction

Clover Park Technical College (CPTC) has designed a Bachelor of Applied Science in Manufacturing Operations (BASMO) degree to meet the needs of students who want to advance their careers into supervisory and management roles in the manufacturing industry. During the BASMO degree, students will learn about operations management tools and techniques, develop their business skills, and apply them to solve problems in the manufacturing industry.

The delivery model for this degree has been designed to meet the educational needs of working adults who are expected to be the largest group of students. It is based on a combination of asynchronous and synchronous web-based instruction with study groups meeting at times convenient to students. Mentored "focused study" courses, and individual and group capstones will be used to develop students' independent thought and critical thinking skills to the level expected in a baccalaureate degree and required for a successful career in a manufacturing management role.

The BASMO degree will accept students who have graduated from manufacturing-related associates' degrees taught at CPTC including (but not limited to) Manufacturing Technology, Welding Technology, and Aviation Maintenance Technology; and graduates with similar manufacturing-related associates' degrees (or equivalent) from other institutions.

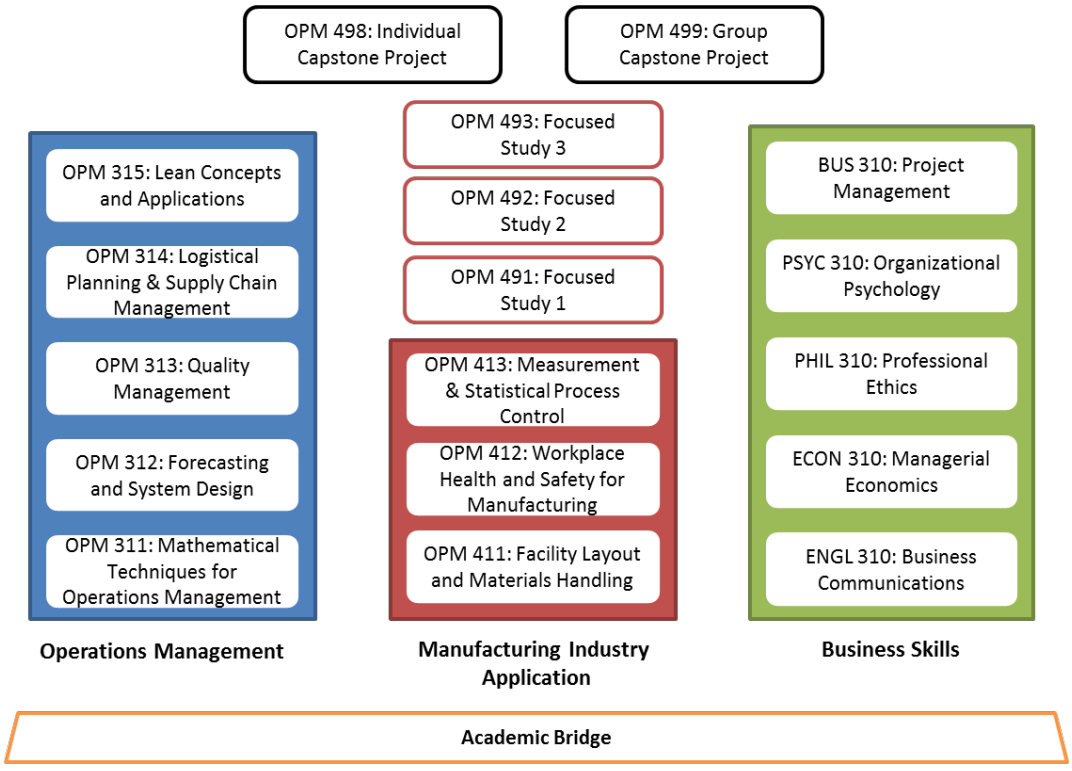

Figure 1 - CPTC Bachelor of Applied Science in Manufacturing Operations

1. Curriculum

Program Learning Outcomes

The curriculum for the BASMO degree has been developed by CPTC under the guidance of experts in both industry and academia, and is aligned with CIP Code 52.0205 - Operations Management and Supervision:

> *A program that prepares individuals to manage and direct the physical and/or technical functions of a firm or organization, particularly those relating to development, production, and manufacturing. Includes instruction in principles of general management, manufacturing and production systems, plant management, equipment maintenance management, production control, industrial labor relations and skilled trades supervision, strategic manufacturing policy, systems analysis, productivity analysis and cost control, and materials planning.*[1]

Graduates of the BASMO program will:

1. Demonstrate a mastery of the mathematical tools required for manufacturing operations management.
2. Apply qualitative and quantitative forecasting techniques to the selection of processes and facility layouts that will optimize production.
3. Plan a comprehensive quality management program for use within a manufacturing organization.
4. Apply mathematical approaches to solve typical make/buy and outsourcing problems.
5. Assess the value of Lean concepts including Value Stream Mapping, Workplace Organization and Standardization, 5-S and Cellular Flow, Kan Ban and Total Production Maintenance to operations management in a manufacturing environment.
6. Develop a written proposal for a newly designed or modified manufacturing facility including a financial justification for the project, and carry out a verbal presentation of the results.
7. Recommend appropriate statistical process control (SPC) techniques, such as control charts, continuous improvement, acceptance sampling, and the design of experiments; for use in a manufacturing environment.
8. Demonstrate the application of project management techniques to develop realistic and comprehensive project plans; identify risk areas; monitor the plans; and deal with problems.
9. Develop clear and coherent technical reports, proposals, memoranda, and e-mails; and deliver presentations too groups.
10. Analyze projects, compare alternatives, and make business decisions based on economic principles such as time value of money, internal rate of return, and cost-benefit ratios.
11. Demonstrate the ability to identify and then develop acceptable resolution of ethical dilemmas that might occur in the workplace.

[1] http://nces.ed.gov/ipeds/cipcode/

12. Analyze how leadership skills; recruitment and retention practices; motivation and team building; the management of change; and conflict resolution affect the behavior and interaction of people at work.
13. Evaluate work design and ergonomic options for their impact on operator effectiveness and production costs.
14. Demonstrate a level of critical thinking, teamwork, communication, and technical and information literacy commensurate with a management position in the manufacturing industry.

Curriculum Structure

The design of the BASMO program follows the well-established "management capstone" model for applied baccalaureate degrees where a technical associates degree is supplemented with business and management-focused coursework at the upper division[2].

The curriculum consists of four tiers which progressively increase the degree of independent thought and critical thinking required by the students to the level expected in a baccalaureate degree.

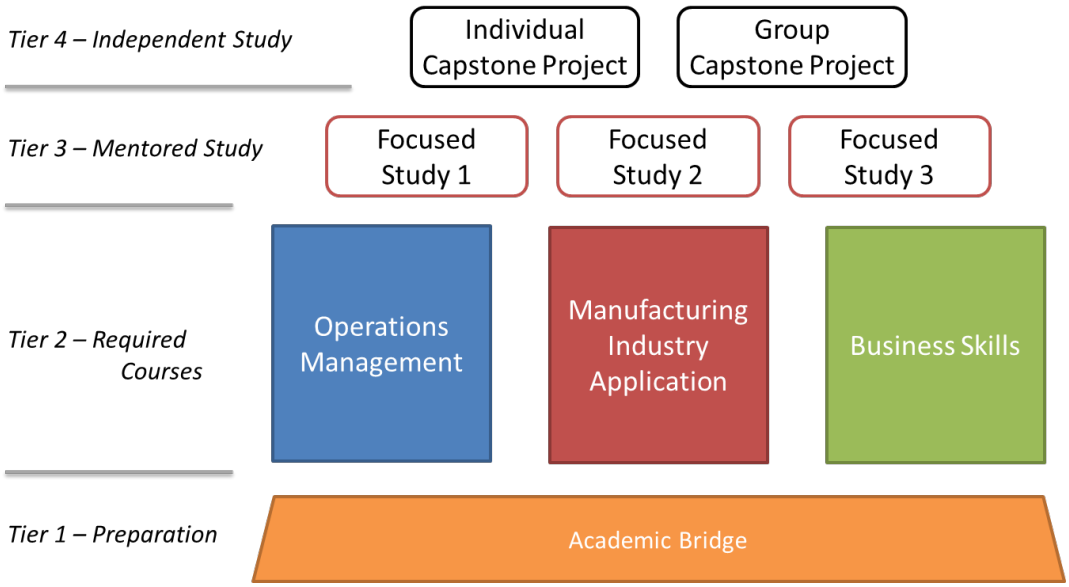

Figure 2 - Structure of the BASMO Curriculum

1) In keeping with SBCTC's aims for applied baccalaureate degrees[3], the BASMO program has been designed to accept students with a broad range of educational backgrounds, and to facilitate students re-joining the educational system after time in the workforce. An Academic Bridge is therefore included as Tier 1 of the program to allow students from "traditionally terminal" associates' degrees to take any additional General Education courses needed to enter the Junior

[2] http://occrl.illinois.edu/applied_baccalaureate/ab_models/

[3] "Increase educational pathways for professional and technical associate graduates who have been limited in their ability to apply credits toward a bachelor degree."
Ref: http://www.sbctc.ctc.edu/college/e_appliedbaccalaureates.aspx

year of the BASMO program.

2) Tier 2 consists of 13 required courses in three areas:
    a. Operations Management
    b. Business Skills
    c. Manufacturing Industry Applications

3) Tier 3 consists of three focused study courses which provide students with opportunities to explore areas of professional interest under the direction of faculty members and/or industry mentors.

4) In Tier 4, two capstone projects are used to demonstrate students' capacity for independent study, research and application – both individually and as members of teams.

Tier 1 – The Academic Bridge

The "Academic Bridge" – is designed to facilitate entry of students from diverse academic backgrounds into the program by addressing some of the preparatory General Education requirements that might not have been covered during students' associate degrees.

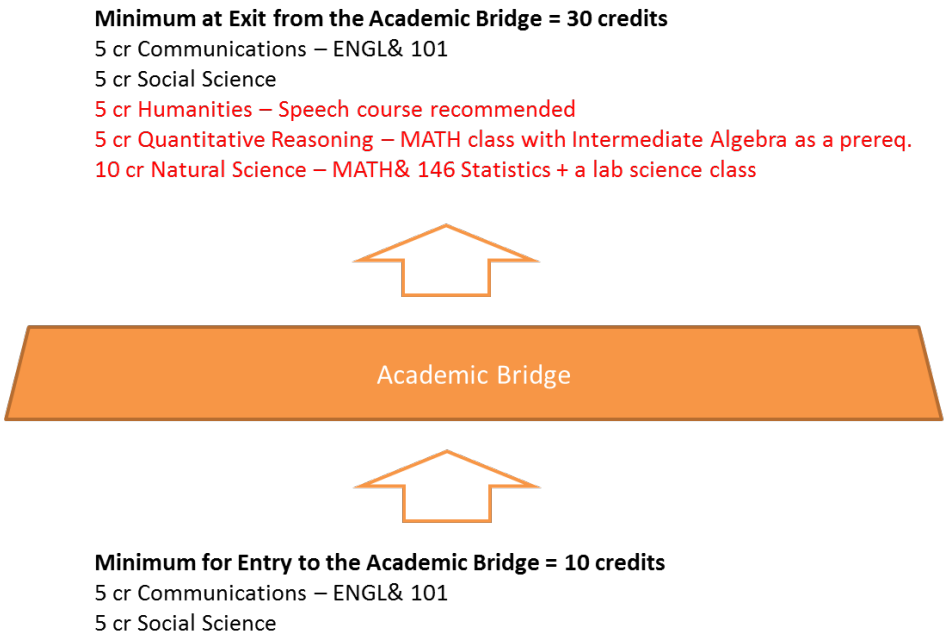

Figure 3 - General Education Credits Before and After the Academic Bridge

Figure 3 and Table 1 shows the minimum general education requirements for admission to the program (discussed in more detail in Section 3) and for entry to the Junior year.

To be admitted to the BASMO program, students must have a minimum of 10 credits of generally-transferable General Education including ENGL& 101 (or equivalent) and 5 credits of Social Science. At the end of the Academic Bridge, before students enter the Junior Year of the BASMO degree, they must

have at least 30 credits of General Education. This will therefore involve them taking between 0 and 20 credits of coursework depending on the General Education component of the student's associate's degree.

Table 1 - General Education Requirements and the Academic Bridge

	Minimum required to enter the BASMO program	Courses to be taken during the Academic Bridge period if needed.	Minimum required at entry to the Junior Year
Communications	5 credits – ENGL& 101 or equivalent	(none required)	5 credits
Quantitative/Symbolic Reasoning	Intermediate Algebra or higher (minimum 2.5 GPA); or equivalent COMPASS math scores (within the past 2 years)	5 credits of a college-level math class with Intermediate Algebra as a prerequisite - Pre-Calculus I or above preferred.	5 credits
Social Sciences	5 credits	(none required)	5 credits
Humanities	(none required)	5 credits - Speech class recommended	5 credits
Natural Sciences	(none required)	10 credits including MATH& 146 and 1 lab class – ENVS& 101 or CHEM& 121 recommended	10 credits

Tier 2 – Upper Division – Required Courses

The second tier of the BASMO curriculum is a set of 13 required courses (5 credits each - 65 credits in total) that provide students with a solid foundational knowledge of operations management concepts, tools, and techniques; enhances their business skills to a level commensurate with managers in manufacturing industry; and demonstrates the application of these knowledge skills and abilities to the manufacturing industry. Detailed course descriptions are included in Appendix A.

Operations Management

OPM 311	Mathematical Techniques for Operations Management
OPM 312	Forecasting and System Design
OPM 313	Quality Management
OPM 314	Logistical Planning & Supply Chain Management
OPM 315	Lean Concepts and Applications

Operations Management can be defined as "… the management of systems or processes that create goods and/or provide services"[4] and encompasses topics such as:

- Forecasting and Capacity Planning

[4] Stevenson, W.J. (2009) *Operations Management*. McGraw-Hill Education

- Process Selection and Facility Layout
- Work Design and Measurement
- Location Planning
- Quality Management
- Scheduling, MRP and ERP
- Inventory & Supply Chain Management
- JIT and Lean Operations

This set of 5 courses is designed to cover the essential tools and techniques that would be needed to plan and operate a typical manufacturing operation. OPM 311 is designed to provide the foundational mathematical tools that the other courses in the operations management sequence will require. OPM 312, 313 and 314 cover classical operations management topics. OPM 312 introduces students to forecasting and capacity planning tools for manufacturing and service organizations. OPM 313 is designed to equip students with the managerial concepts and quantitative tools used in the management of quality in manufacturing and service organizations. OPM 314 introduces students to the complexities of domestic and global supply chains including consideration of make/buy and outsourcing decisions. Finally, OPM 315 is a detailed examination of "Lean" concepts that are being applied in many manufacturing and service organizations around the world.

Business Skills

ENGL 310	Business Communications
ECON 310	Managerial Economics
PHIL 310	Professional Ethics
PSYC 310	Organizational Psychology
BUS 310	Project Management

Students transitioning from a technical role to a supervisory/management role need to acquire a set of core business skills in order to be equipped to take on supervisory and management roles immediately on graduation. The courses in the 5-course Business Skills group are designed to provide some of the knowledge, skills and abilities that they will need to do this, and include instruction on both soft skills (communication skills, ethics, and organizational psychology) and hard skills (project management and managerial economics). ENGL 310 focuses on audience-oriented communication in the business environment and covers both written and oral presentation skills. ECON 310 focuses on forecasting and estimating techniques; and on tools used to analyze projects, compare alternatives, and make sound business decisions. PHIL 310 examines ethical dilemmas that might occur at work, and shows how such ethical issues can be resolved by management analysis and decision-making. PSYC 310 examines how people behave and interact with each other at work with an emphasis on the way that this affects job performance. BUS 310 teaches students some of the techniques necessary to develop realistic and comprehensive project plans; identify risk areas; monitor the plans; and deal with problems.

Manufacturing Industry Applications

OPM 411	Facility Layout and Materials Handling
OPM 412	Workplace Health and Safety Management
OPM 413	Measurement and Statistical Process Control

This group of courses extends the material covered in the earlier courses and looks at application to three specific areas of the manufacturing industry. In OPM 411, students will learn about how to apply the principles learned in earlier courses to the layout of manufacturing facilities including consideration of emerging advanced manufacturing approaches such as Flexible Manufacturing Cells. Operational management often requires taking responsibility for workplace health and safety management. In OPM 412, students will learn about the regulatory requirements, and how to set up and maintain a program. Finally, OPM 413 will cover the use of advanced measurement techniques and statistical methods to monitor and control production activities, and will also discuss how the calibration of equipment should be managed in the context of a Total Quality Management system.

Tier 3 – Upper Division – Mentored Study

In order to extend students' understanding of the subject, and develop the research and critical thinking skills necessary for their future success, the curriculum includes three Focused Study courses (15 credits in total). Each student, in conjunction with program faculty, will choose three areas of personal professional interest and carry out guided study and applied research under the direction of a faculty member and/or industry mentor. They will present their results in a written report and an oral presentation thereby exercising their business communications skills. Mentored study courses will be overseen by the BASMO program teaching faculty.

Table 2 shows some of the topics that may be appropriate for these courses depending on the professional interests of the students and on the availability of faculty and/or qualified industry mentors with specialized knowledge.

Table 2 – Upper Division Focused Study – Some Suggested Topics

Information Technology for Manufacturing Facilities
ERP Planning and Implementation
Product Data Management
Computer Integrated Manufacturing
Flexible Manufacturing Cells
Purchasing
Warehousing
International Shipping and Logistics
Labor Management in the Unionized Workplace
Small Business Financing for Manufacturing
Rules & Regulations in Aerospace Manufacturing
Rules & Regulations in Biomedical Device Manufacturing
Rules & Regulations in Food Processing

Tier 4 – Upper Division – Independent Study

In the fourth tier of the curriculum, two capstone projects – an individual project, and a group project – will be used to demonstrate students' research and problem-solving skills. Students will be encouraged to carry these projects out as internships whenever possible. Capstone projects will be overseen by the BASMO program teaching faculty.

Upper Division – General Education

As noted earlier, students will have at least 30 credits of General Education at the end of the Academic Bridge. The remaining 30 credits needed to meet the requirements for an Applied Baccalaureate degree are satisfied by six of the upper division courses as shown in Table 3.

Table 3 – General Education Requirements Satisfied by Upper Division Courses

	Min. Credits at Entry to Junior Year	Upper Division Course(s)	Minimum Credits at End of BASMO Degree	Min Required Credits for a BAS Degree
Communications	5	ENGL 310 – Business Communication	10	10
Quantitative/ Symbolic Reasoning	5	OPM 311 – Mathematical Techniques for Operations Management OPM 411 – Measurement & Statistical Process Control	15	5
Humanities	5	PHIL 310 – Professional Ethics	10	10
Social Sciences	5	PSYC 310 – Organizational Psychology ECON 310 – Managerial Economics	15	10
Natural Sciences	10	(none required)	10	10
Any of the Above	--		--	15
TOTAL	30		60	60

Credit Budget

The total credit load for the BASMO degree is 90 to 110 credits depending on how many courses are required in the Academic Bridge, and is broken down as follows:

Table 4 – Credit Budget

		Credits
Academic Bridge	General education courses as required	0 – 20
Upper Division	Required Courses	65
	Focused Study	15
	Capstone Projects	10
	TOTAL	**90 – 110**

Note: Does not include credits from Associate's degree

If students take a full load of courses (15 credits) each quarter, the program could be completed in 6 quarters after the requirements of the Academic Bridge have been met. However, since many of the students are likely to be working adults, completion times may vary according to students' personal circumstances.

Delivery Model

It is anticipated that the majority of students who enroll in the program will be working adults, and the delivery model for the BASMO program has been designed to meet their needs. It follows a pattern common in other programs designed for working adults with instruction delivered in a hybrid mode using a combination of face-to-face interactions and web-based tools such as online courses, assignments, and discussion boards. In particular:

- ***Study Groups***
  Students will be enrolled into the program in "study groups" of 6 to 8 rather than larger cohorts of 25. We believe that a smaller group size will be more conducive to student success for working adults who have out-of-school pressures and competing priorities – particularly with much of the formal instruction being provided online (see below). The smaller group size also makes it easier to allow quarterly – rather than annual – enrollment in the program which will, again, benefit working adults.

- ***Online Instruction***
  The majority of the formal instruction will be provided online – either in asynchronous formats, or through synchronous sessions scheduled in the evenings.

- ***Weekly Study Group Meetings***
  In order to reduce student (and faculty) time lost to commuting, study groups will be required to meet together on campus for one evening each week for each course, rather than for shorter periods on multiple evenings. A member of the BASMO teaching faculty will coordinate and be present for these meetings which may include live lectures, in-class discussions, and/or group work as appropriate to the course.

- ***Quarterly All-Program Meetings***
  Once every quarter, all students enrolled in the BASMO program – whatever stage they are in – will be required to meet at the CPTC campus for a 1-day meeting which will combine presentations by the students, and one or more faculty and/or industry speakers. This will also be a valuable opportunity for students to connect with other manufacturing and operations professionals working in the area and hence develop the business networks that will help their future success. This will be coordinated by the Program Director.

We believe that this approach best suits the needs of our potential students who often have restricted ability to travel due to work and/or family obligations. It also reflects the increasing use of web-based

communications tools in today's business environment while still recognizing the need for students to develop the interpersonal skills still needed to deal with coworkers, clients, and others in the workplace.

Program Evaluation Criteria and Process

Per CPTC's Policy and Procedures Manual, formal review of the BASMO program for effectiveness will be conducted on a four-year basis. However, during the first three years of operation, the program will undergo formal reviews annually.

In addition to the formal program reviews noted above, CPTC will employ other criteria and methods for assessing the entire program, drawing upon the input from a variety of stakeholders, including the following:

- *Program Advisory Committee:* A committee comprised of industry experts and educators will provide perspective, evaluation, and feedback on the program.

- *Administrative Review:* The Program Director will develop assessment criteria, including qualitative and quantitative measurements. Administrative review will be done no less often than annually, and on a quarterly basis during the first two years.

- *Student Surveys:* Upon graduating from or leaving the program, students will be surveyed as to what they perceived to be the strengths and weaknesses of all aspects of their experience, including classroom activities, pedagogical techniques, the relevance of specific courses, and other criteria, as appropriate.

- *Employers Survey*: Students will be tracked after graduation, and the employers of those whom are hired will be surveyed as to their impressions of how well the program prepared these students for the real-life workplace.

- *Faculty Evaluations:* On a regular basis, the program faculty will meet as a team to discuss the program and its current curricula, and how they might be improved. The faculty will also meet with the Advisory Committee at least annually to ensure that the curriculum meets current industry needs.

- *Course Evaluations:* To provide specific feedback from the students' perspective, surveys of student assessments on course and instructor effectiveness will be distributed at the end of each quarter and monitored by the Program Director.

- *Internship and Capstone Projects:* Reviews of internship and capstone will be coordinated by the Program Director. These will incorporate feedback from students, instructors, staff and (where appropriate) employers.

- *Wage Progression and Employment Status:* The Program Director, working with CPTC's Institutional Research staff, will develop reporting processes for graduates of the BASMO program that are consistent with CPTC best-practice.

2. Faculty and Staff

Projected Student and Teaching Faculty Numbers

The number of teaching faculty needed for the BASMO program is based on the number of students to be enrolled in the program and a target student/faculty ratio of 25:1 when the program is fully operational.

Table 5 – Projected Student and Teaching Faculty Numbers

	AY 14/15	AY 15/16	AY 16/17	AY 17/18	AY 18/19
Enrolled Students (FTE)	25	50	50	50	50
Student/Teaching Faculty Ratio	12.5:1	25:1	25:1	25:1	25:1
Teaching Faculty – BASMO (FTE)	1.5	1.5	1.5	1.5	1.5
Teaching Faculty – Other (FTE)	0.5	0.5	0.5	0.5	0.5
Teaching Faculty – Total (FTE)	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**

CPTC plans to admit 25 new students into the program each Fall starting in 2014 meaning a target total enrollment of 25 in AY 14/15, and 50 in each year after that. However, attrition is an inevitable feature of any program aimed at working adults. Therefore, the student numbers in the program will be maintained at the planned level through quarterly enrollment of new study groups as necessary.

It is planned to teach all 4 quarters of the academic year.

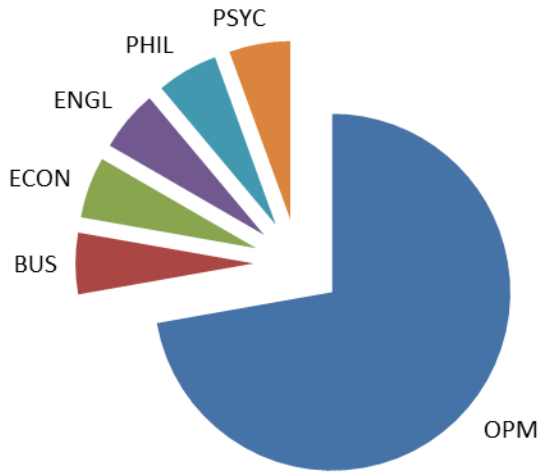

Figure 4 - Distribution of Upper Division Courses by Discipline

Once the program is in full operation in AY 15/16, 2.0 FTE of teaching faculty will be required to maintain the 25:1 student to faculty ratio. The majority of the Upper Division courses (13 of 18; or 72%) fall into the category of Manufacturing Operations Management (OPM) and will be taught by faculty assigned specifically to the BASMO program. This will require 1.5 FTE of teaching faculty which will be

staffed using 50% of the Program Director's time plus 1 FTE of additional faculty dedicated to this program.

The other 5 courses:

- BUS 310 – Project Management
- ECON 310 – Managerial Economics
- ENGL 310 – Business Communications
- PHIL 310 – Professional Ethics
- PSYC 310 – Organizational Psychology

will be taught either by suitably-qualified CPTC faculty and/or by adjunct faculty with specialized knowledge of the subjects. This will require 0.5 FTE teaching faculty.

Anticipated faculty assignments for upper division courses, including academic qualifications for identified teaching faculty members, are shown in Appendix D.

Lower Division courses that are required by students during the Academic Bridge will be taught by existing faculty at CPTC.

Qualifications for Teaching Faculty

All full-time faculty teaching core courses in the BASMO program – including the Program Director – will have a minimum of a Master's degree (Doctorate preferred) in a relevant field with at least five years of teaching and/or business experience. Teaching experience at the bachelor's degree level or higher and experience in advising students will be preferred.

All full- and part-time faculty members hired to teach technical courses will meet the certification requirements for professional and technical administrators and instructors in the Washington Administrative Code.

The Program Director

The Program Director will share teaching duties with administrative responsibilities which include:

- Development, implementation, and quality control of the curriculum
- Class scheduling and staffing
- Supervision of program faculty and program support staff
- Development of the program budget, and financial management
- Maintenance of accreditation and industry standards for the program
- Development and monitoring of best practices to support student success
- Recruitment and admissions
- Oversight of capstone projects and internships

Once the program is in full operation (AY 15/16), it is planned that the Program Director's time be split 50:50 between teaching and program-related administrative responsibilities.

The Program Director will be required to have:

1) A minimum of a Master's degree (preferably a Doctorate) in Business Administration, Industrial Technology, Manufacturing Engineering , or a related field
2) Teaching experience at the baccalaureate level or higher
3) Considerable experience (at least five years) in the manufacturing industry
4) Contacts within the local manufacturing industry able to help with curriculum design and student recruitment

Admissions/Student Services

The need to provide specialized support to BASMO students – particularly through the admission process – is recognized by the plan to provide 1FTE of additional resources within CPTC's Admissions and Student Services departments throughout the program.

Because of the scheduling required to accommodate working adults, faculty and student services personnel will be available to work with students outside normal college hours.

Library and Learning Resources

The CPTC Learning Center provides a variety of print, audiovisual and online resources to students, faculty, and staff. The general collection of books, reference materials, magazines and multi-media resources support CPTC's instructional programs. In addition, the computer lab has a collection of electronic resources including online reference databases, electronic journals, computer applications, Internet access, and a variety of assistive technologies. A professional library staff is ready to help either in the building or online.

In order to support the specialized research needs of BASMO students, the plan provides for 0.2 FTE of additional librarian support throughout the program together with additional funding to allow the library to add specialized data resources and subscriptions.

Administrative Support

0.5 FTE of administrative support will be provided for the program starting in Summer 2014.

Table 6 – Summary of Faculty and Staff Requirements

	AY 13/14*	AY 14/15	AY 15/16	AY 16/17	AY 17/18	AY 18/19
Program Director (FTE)	1.0	1.0	1.0	1.0	1.0	1.0
Teaching Faculty - BASMO (FTE)		1.0	1.0	1.0	1.0	1.0
Teaching Faculty - Other (FTE)		0.5	0.5	0.5	0.5	0.5
Admissions & Student Services (FTE)	1.0	1.0	1.0	1.0	1.0	1.0
Librarian (FTE)		0.2	0.2	0.2	0.2	0.2
Administrative Support (FTE)		0.5	0.5	0.5	0.5	0.5

* Spring Quarter Only

3. Admissions Process

CPTC adheres to the open access mission and values of the State Board of Community and Technical Colleges, documented in Chapter Three of the SBCTC Policy Manual. Admission requirements are flexible to allow for broad participation, but selective enough to recruit students with the greatest likelihood of success.

Information Sessions

Information sessions will be presented on a regular basis, both day and evening, to provide prospective students with an overview of the BASMO program and to explain the admission process. An online option will also be available through the Admissions office for prospective students who are unable to attend an in-person session.

Program Admission Requirements

Admission to the BASMO program is open to students who meet all of the following requirements:

1. An earned associate degree (or equivalent) in a manufacturing-related discipline from a regionally-accredited institution with a minimum of 90 quarter credits, and minimum cumulative GPA across all college coursework of 2.5.

2. Intermediate Algebra or higher with a minimum 2.5 GPA, or equivalent COMPASS math score within the past 2 years

3. Completion of at least 10 credits of college-level General Education with a minimum of a 2.5 GPA in each class as follows:

    - English Composition (ENGL&101 or equivalent) - 5 credits
    - Social Sciences - 5 credits

Credit may be awarded for military experience, as demonstrated through a student's military transcript, based upon guidelines from the American Council of Education. Credit for prior learning and experiential competencies gained through work will be assessed on an individual basis, according to institutional guidelines described in Section 11, Chapter 4 in CPTC's Policies and Procedures Manual.

Applicants must also submit:

a) A formal resume.

b) A one-to-two page admission essay describing the candidate's interest in the degree, his or her background and experience in the manufacturing industry, how completion of this degree meets his or her personal education and employment goals, his or her understanding of the commitment that will be required to complete the program, and any other information that

may support entry to the program.

c) Two letters of recommendation attesting to the student's ability to succeed at the baccalaureate level (include with packet in a sealed envelope), preferably one from an instructor and one from an employer (such as a supervisor).

d) $50 non-refundable application fee.

Selection Criteria

Complete applications will be reviewed by an Admissions Committee chaired by the Program Director.

Applicants will be selected based on the criteria listed above. GPA is the most heavily-weighted criteria followed by resume, admission essay and recommendation letters. Prior to reviewing applicants, the Admissions Committee will design comprehensive rubrics for evaluating the resume, admission essay and references. These rubrics will ensure that a consistent and rigorous method is applied to each application equally. Draft versions of the rubrics for the essay and resume are included in Appendix E.

Qualified applicants will be admitted on the basis of first-received, first-admitted. If there are more applications than available slots, qualified students will be placed on a waiting list, again in the order of the dates on which their applications were received.

It is anticipated that the college will use a weighted method for selection criteria for the BASMO program similar to that used in other SBCTC colleges awarding applied baccalaureate degrees. An example is shown in Table 7. The final decision on admission to the BASMO program will be made by the Program Director.

Table 7 – Example of Weighted Criteria for Selective Program Admission

Application Requirements	Max. Pts	Notes
English Composition (ENGL& 101) Social Science	**20**	Multiply average GPA of classes by 5 to determine total points
Cumulative College Level Associate Degree GPA	**40**	Multiply cumulative GPA by 10 to determine total points
Resume	**10**	Based on evaluation rubric
Essay	**10**	Based on evaluation rubric
Recommendations	**20**	10 points for each recommendation, based on evaluation rubric
TOTAL	**100**	

Encouraging Diversity

Diversity Strategies at CPTC

Three of CPTC's Core Values[5] clearly identify the important place that diversity has in the college:

> **Equity**
> We recognize that the unique needs, goals and circumstances of the individual have a direct impact on a person's ability to access and benefit from college activities and opportunities.
>
> **Diversity**
> We celebrate the many individuals that make up our community and embrace the opportunity to learn from both their differences and similarities.
>
> **Social Responsibility**
> We commit to decisions and actions that are socially aware and make us a strong community partner.

The efforts of the college in this area are coordinated by an active Diversity Committee[6] which includes representatives from student, staff and faculty groups. The committee meets monthly to progress its work in accordance with a detailed Diversity Plan[7]. Some of the strategies described in the plan include:

- Inclusion of a Diversity requirement for degree-seeking students
- Professional development and staff training on diversity issues
- Efforts to increase the retention of diverse staff
- Increased support for employees to attend diversity trainings, activities, workshops and conferences on diversity-related topics, including those that focus on strategies for implementing and promoting campus change
- Improve awareness among minority students about grants and financial aid opportunities available to them
- Expand recruiting efforts in programs where minority students are underrepresented
- Encourage diverse representation, understanding, and awareness about diversity issues within student government
- Ensure that diverse populations are represented in campus signage and art
- Ensure that the campus is fully accessible to allow full participation of all individuals in classes, programs, and activities
- Ensure that campus offices and common space reflect diverse cultures and populations
- Seek out grant funding specifically for diversity activities, trainings, initiatives, and events
- Conduct research to identify programs in which protected and nontraditional" populations are underrepresented.

[5] http://www.cptc.edu/vision
[6] http://www.cptc.edu/diversity
[7] http://www.cptc.edu/files/diversity-plan.pdf

Diversity Measures in the BASMO Program

In addition to ongoing work at the college level, the following measures will be adopted in the BASMO program to encourage diversity.

- The course that will satisfy the college's diversity requirement in the degree program will be PSYC 310 – Organizational Psychology. In addition, the content of all other courses in the program will be monitored by the Program Director to ensure that they are consistent with CPTC's core values and diversity statement.

- Recruitment for the BASMO program will be designed to appeal to all ages and genders, as well as to students of color.

- Because the BASMO program will use selective admission, the Program Director will carefully monitor diversity in student enrollment in the program to determine the extent to which it represents the local community and to determine if action needs to be taken to change the recruitment processes.

- Efforts will be made to ensure representatives from industry partners represent a variety of backgrounds, and that speakers invited to campus will be carefully selected to encourage diversity.

4. Student Services Plan

Student Services at CPTC include all of the following services:

- Advising-Counseling
- Assessment Center
- Child Care Center
- Enrollment Services
- Event Services
- Financial Aid
- International Programs
- Opportunity Grant
- Outreach
- Prior Learning Assessment
- Services for New Students
- Student Disabilities
- Student Programs

Ted Broussard – Interim Vice President for Student Services – is responsible for all of the services listed above.

Generally Available Services

Students in the BASMO program will have access to all of the support, advising, and counseling services generally available to students at CPTC. These services include:

- **Access and Disabilities Accommodations**. CPTC is committed to providing reasonable accommodations for students of all abilities. Appropriate adjustments and assistive services or technologies will be provided to qualified students with disabilities during recruitment, the application process, enrollment, registration, financial aid, course/module work, counseling, and program fulfillment. A Student Disability Specialist is on duty to be of assistance.
- **Admission and Enrollment Services**. CPTC is dedicated to making the admissions experience as simple and intuitive as possible for new students. The registration process in available online (http://www.cptc.edu/register/). Credit evaluation, transfer review, and prior learning assessment are handled by the Transcript Evaluator in the Office of the Registrar.
- **Advising & Counseling Services** (http://www.cptc.edu/advising) cover a gamut of student needs on many topics, from career options to mental health assistance. The office is open Monday through Friday 8:00 to 5:00, with evening hours every other Wednesday. Among the more popular services include:
    - **Ask Me Center** provides students with peer-based information for getting started at CPTC and finding assistance on a variety of issues.

- **Getting Started Workshops** about CPTC are scheduled weekly, addressing topics like: the enrollment process, program information, assessment processes, costs and financial aid, campus support and worker training services.
- **Veterans Services** (http://www.cptc.edu/veterans) exist to guide veterans to resources in the community and CPTC. The resource center provides information and assistance on CPTC's programs that are eligible for benefits under a variety of Veterans' Administration regulations.
- **Work Source/ Career Center** offers valuable resources such as a free Career Scope assessment to help students choose a program of study, labor market and occupational information, career-job search tools, job search assistance, interviewing tips, access to job postings, interest tests and one-on-one conversation with professional staff.

- **Financial Aid Office** (http://www.cptc.edu/money) reviews applications for aid and considers students for grants, loans, work-study funding, and other awards as appropriate. Students can apply, get information, monitor their applications, and view their awards through the Financial Aid Student Portal. Appointments to meet with professional financial aid counselors are also available Monday through Friday during business hours.
- **Library and Computer Labs** (http://www.cptc.edu/library) are newly renovated. The library and information commons is a "one-stop" learning center dedicated to providing facilities and resources that support CPTC students, faculty, and staff. Its mission is to provide education leading to competencies that meet business and industry standards for the diverse workforce of today and tomorrow.

  The Learning Center provides a variety of print, audiovisual and online resources to students, faculty, and staff. The general collection of books, reference materials, magazines and multi-media resources support CPTC's instructional programs. In addition, the computer lab has a collection of electronic resources including online reference databases, electronic journals, computer applications, Internet access, and a variety of assistive technologies. A professional library staff is ready to help either in the building or online.
- **My Clover Connection** (http://www.cptc.edu/mycc) is a one-stop utility for managing all functions of student accounts. These include: checking email, scheduling, paying fees, dropping class, changing PIN or contact information, and viewing/ order official transcripts.
- **Tutoring Services** (http://www.cptc.edu/tutoring) are available to help in a variety of subjects such as basic math, writing, accounting, calculus and statistics. CPTC's students also have access to eTutoring's free 24/7 online tutoring services in a variety of subject areas.
- **Childcare Services** (http://www.cptc.edu/childcare) The Hayes Child Development Center provides services for children ages four weeks to twelve years with a discount rate for CPTC students and staff.

Program-Specific Services

Additional Resources

The financial plan shown in Section 5 below provides for 1FTE of additional resources within CPTC's Student Services department throughout the program to provide specialized support to BASMO students – particularly through the admission process – and act as a focal point within Student Services. It is planned to hire this person in Spring 2014 to provide sufficient time to establish formal processes before recruitment to the program begins in Summer 2014.

Financial Aid

Although the specific financial aid needs of students in the BASMO program may differ in some respects from the needs of students in traditional Associates' programs, it is not planned to have a separate group dealing with this. Instead, existing Financial Aid staff will be provided with training as required to understand any differences that may exist.

Program Advising

Advising is the formal responsibility of Student Services staff. As such, it falls under the ultimate responsibility of Ted Broussard – Interim Vice President for Student Services.

However, it is inevitable that questions will arise that need input from program faculty. At the request of CPTC's Student Services department, faculty teaching in the BASMO program will be available to advise students on course choice, discuss student progress, direct students to needed resources, and assist with other program-related issues or problems

Prior Learning Assessment

The management of the Prior Learning Assessment will continue to be the responsibility of the Director of Enrollment Services who reports directly to the Vice President of Student Services. Assessment of work submitted to gain credit for prior learning will be the responsibility of qualified program faculty.

Extension of Student Services Hours

One of three Strategic Initiatives[8] defined by President Howard, after analysis of CPTC's strategic plan, is to be more responsive to our local community and to the needs of business and industry. In support of this goal, CPTC is currently reviewing existing systems and plans to add services to better support students who are unable to visit the campus during regular office hours.

Student Services currently offers access to Financial Aid, Advising and Counseling, Student Records, and Assessment on the second and fourth Wednesday of each month until 7pm. As evening program offerings increase, the college is preparing to expand current evening services to every Wednesday evening until 7pm. This is a starting place and, over the next 6 months, the college plans to evaluate student needs for additional services, and to extend the hours further as needed.

[8] http://www.cptc.edu/vision

5. College Commitment and Financial Plan

Financial Plan

The following financial plan assumes the following:

1) Student enrollment will be 25 FTE during AY 14/15, and 50 FTE each subsequent year. Teaching will occur in all 4 quarters.
2) In Spring 2014, the Program Director will be hired and 1 FTE of Admissions/Student Services resources will be assigned to the program to recruit students into the program; develop and formalize the admissions processes; and start development of the instructional resources.
3) In Summer 2014, an additional full-time faculty will be hired to work on detailed lesson planning and further development of instructional resources.
4) Administrative support (0.5 FTE) and library support (0.2 FTE) for the program will be provided starting in Summer 2014.
5) Faculty and staff salaries and benefits assume a benefits rate of 30%.
6) Tuition and fees have been assumed to be $2,164 per student per quarter based on the FY2012-13 Resident rate:

Applied Baccalaureate Tuition Fees at the 15 Credit Level	2,504
CTC Building Fee and CTC S&A Fee	(261)
Paid to College	2,243
To Financial Aid @ 3.5%	(79)
Net per Quarter per FTE	2,164

Table 8 shows the financial plan for Spring 2014 plus the first 5 full years of the BASMO program operations.

College Commitment

The college is committed to fund the costs associated with the launch of the program through payments from college reserves of $ 63,547 in AY 13/14, and $ 200,527 in AY 14/15 – a total of $ 264,074.

Facilities, Equipment and Instructional Resources

The BASMO program is a hybrid (online and classroom) program that requires no additional facilities and equipment beyond existing classrooms, instructional equipment, and computer laboratories at CPTC.

The primary instructional resources that will be needed are library materials. In order to support the anticipated needs and demands of the BASMO program, the annual program budget includes additional funds to be used for targeted collection and resource development. The choice of specific data and reference sources to be used will be informed by the lesson planning process, but our library staff believes that the funding included in this budget will be sufficient to meet the needs of the program.

Table 8 – Program Costs and Funding

	AY 13/14 Spring Qtr Only	*AY 14/15*	*AY 15/16*	*AY 16/17*	*AY 17/18*	*AY 18/19*
Program Director - BASMO	21,594	86,374	86,374	86,374	86,374	86,374
Teaching Faculty - BASMO	-	65,267	65,267	65,267	65,267	65,267
Teaching Faculty - Other	-	32,634	32,634	32,634	32,634	32,634
Admissions & Student Services	15,750	63,000	63,000	63,000	63,000	63,000
Librarian	-	14,400	14,400	14,400	14,400	14,400
Administrative Support	-	22,500	22,500	22,500	22,500	22,500
Faculty & Staff Salaries	37,344	284,175	284,175	284,175	284,175	284,175
Benefits @ 30%	11,203	85,252	85,252	85,252	85,252	85,252
FACULTY & STAFF COSTS	48,547	369,427	369,427	369,427	369,427	369,427
Goods & Services	5,000	5,000	5,000	5,000	5,000	5,000
Professional Development	-	5,000	10,000	10,000	10,000	10,000
Equipment & Software	5,000	7,500	12,500	15,000	15,000	15,000
Marketing & Outreach	5,000	15,000	15,000	10,000	10,000	10,000
Library Resources	-	15,000	15,000	10,000	10,000	10,000
OTHER COSTS	15,000	47,500	57,500	50,000	50,000	50,000
Tuition & Fees	-	216,400	432,800	432,800	432,800	432,800
College Support	63,547	200,527	-	-	-	-
TOTAL FUNDING	63,547	416,927	432,800	432,800	432,800	432,800
TOTAL COSTS	63,547	416,927	426,927	419,427	419,427	419,427
TOTAL FUNDING	63,547	416,927	432,800	432,800	432,800	432,800
BALANCE	0	0	5,873	13,373	13,373	13,373

6. Program-Specific Accreditation

Program-specific accreditation is not required for BASMO graduates to be employed in the manufacturing industry.

Because of the uniqueness and innovative nature of the applied baccalaureate program in Manufacturing Operations, there is no professional or technical education association that provides direct and comprehensive accrediting oversight. The Program Director and faculty will review and reassess options for appropriate accreditation as the program evolves.

With SBCTC approval of the Manufacturing Operations Program, CPTC will immediately file a Major Substantive Change Proposal with the Northwest Commission on Colleges and Universities.

7. Pathway Options

There are a number of potential post-baccalaureate pathways for BASMO graduates including, but not limited to those shown in Table 9. We are in the process of developing formal articulation agreements, and these will be finalized after the BASMO program has been implemented.

Table 9 – Potential Post-Baccalaureate Pathways

University of Washington - Tacoma	Master of Business Administration
City University of Seattle	Master of Business Administration Master of Science in Project Management
Western Governors University	Master of Business Administration*
Northeastern University	Master of Business Administration*
Colorado Technical University	Master of Business Administration* Master of Science in Management*
University of Phoenix	Master of Business Administration*

** = Online Degrees*

Aubree Steffens - MBA Program Adviser at UW Tacoma notes:

"The admission requirement for the MBA at UWT is that applicants have a Bachelor's degree from an accredited institution. We aren't looking for degrees in particular fields, since we like to have a class full of students with a variety of educational and professional backgrounds. Since Clover Park is accredited, this Bachelor's degree would meet admission criteria once it is approved as a degree program. It sounds like a really great option for students with a related associate's degree to earn a Bachelor's. The coursework looks like it would provide a nice foundation for those interested in one day earning the MBA."

Lori Silverman - National Advisor, Community College Partnerships for University of Phoenix – notes:

"Because Clover Park is regionally accredited, we will accept the completion of an approved bachelor program at CPTC as part of our admissions requirements for a UoPX Master's Degree. So yes, there is potential for the program to feed into our MBA once accredited."

Other institutions shown in Table 9 are understood to have similar policies.

CPTC is also looking into potential education pathways for BASMO graduates in fields such as Supply Chain Management, Logistics Management, Finance, Industrial Psychology, and International Business. We have already established that fully-online options exist in these fields at both the Masters and/or graduate certificate level. Once the BASMO program is approved, we will approach the institutions offering these programs to establish formal pathways for graduates.

As detailed program and lesson planning progresses during 2014, CPTC will also seek to work with industry associations such as:

- The Society of Manufacturing Engineers (SME) – http://www.sme.org
- Association for Operations Management (APICS) – http://www.apics.org/
- Production and Operations Management Society (POMS) – http://www.poms.org
- The Association of Technology Management and Applied Engineering (ATMAE) – http://www.atmae.org

to align the BASMO curriculum with industry-specific certifications which would further students' careers.

8. External Expert Evaluations

During the development of the BASMO program design, CPTC has sought out, and responded to, the opinion of industry experts at a broad range of organizations including (but not limited to) the Center of Excellence for Aerospace and Advanced Manufacturing, Impact Washington, the Center for Advanced Manufacturing Puget Sound, Boeing, AIM Aerospace, TTF Aerospace, Ops Savvy LLC, McGladrey LLP, and the Society of Manufacturing Engineers.

CPTC has also sought expert reviews of this proposal from two individuals – one representing the perspective of an academic administrator from a peer program (the BAS Manufacturing Operations at Southern Polytechnic State University), and the second from a senior manufacturing manager with a broad background in manufacturing operations who is currently serving on the Society of Manufacturing Engineer's International Board of Directors. The following are summaries of their comments. The full text of the documents, including each reviewer's professional vitae, can be found in Appendices B and C.

Thomas Ball is an Assistant Professor and Department Chair of the Industrial Engineering Technology Department at Southern Polytechnic State University in Marietta, GA. In addition to the IET program, the IET Department teaches Bachelor of Applied Science degrees in Manufacturing Operations, and Supply Chain Logistics.

Professor Ball comments that "My overall impressions of the proposal are very favorable," and that this program fills a need by creating "a seamless pathway for selected associate of applied science majors to attain a bachelor of applied science" degree.

He further remarks that "The program provides an excellent balance of needed industry skills in today's environment such as quality assurance, concepts of Lean manufacturing, work place design, ergonomics, resource planning, facility layout, human resources, costing and sustainability."

In response to his stated concern that some students might require more foundational knowledge of statistical concepts, CPTC's planners have added MATH&146 as a general education requirement.

Also, acknowledging his encouragement that CPTC should consider offering an online version of the class, the planners would like to reiterate the hybrid nature of the program.

Mr. Edward Halloran is a Licensed Professional Engineer and Certified Manufacturing Engineer with more than 40 years of professional experience in aerospace, marine, and automotive aftermarket manufacturing industries. He also serves on the board of the Society of Manufacturing Engineers.

Mr. Halloran states "I believe that a Program of this nature is a natural next step in a progression towards the development of a superior industrial workforce that our United States and many other countries worldwide will require to continue to progress and prosper. Having the next step in a young

person's education and career path development defined and available for review, as this Program will be, allows for better educational planning , less wasted energy exploring career paths that do not support a person's passions and a more productive and satisfying long term career for the individual."

He identifies no particular weaknesses in the proposal, but does note that corrections and changes would probably be required as the program is launched and matures. This has been addressed through an additional emphasis on formal program reviews during the first three years of operation.

He also strongly recommends that CPTC should engage in a series of face-to-face meetings and presentations to other educational institutions in the area, and to industry organizations. CPTC has met with, and carried out informal presentations to many organizations as part of the design and development process for this proposal. However, once the degree is approved, these presentations will be formalized, and will be extended to all interested parties – both face-to-face, and online.

Mr. Halloran concludes by noting that "A successful program will encourage and support a most important goal, that of continuous life–long learning." This is in complete alignment with one of CPTC's key Strategic Goals: "Expand lifelong learning and professional credentialing opportunities"[9]

[9] http://www.cptc.edu/vision

Appendix A – Course Descriptions

Note: The following course descriptions do not include lower division courses that might be taken during the Academic Bridge in order to meet general education requirements. All courses listed here are 5 credits, and course numbers are provisional at this time.

Operations Management

OPM 311: Mathematical Techniques for Operations Management

This course provides students with the foundational mathematical tools required for operations management including acceptance sampling; decision theory including its application under uncertain conditions; the application of probability theory to determine the reliability of systems; solution of linear programming problems using graphical and computational methods; and the application of learning curves for planning and scheduling. These techniques are introduced in this course and then exercised and practiced through repeated application to real problems in other courses.

OPM 312: Forecasting and System Design

This course introduces students to forecasting and capacity planning tools for manufacturing and service organizations. Qualitative and quantitative techniques are discussed, and the pros and cons of each are identified. The selection of appropriate processes and facility layouts, and the design of work systems to optimize production are discussed; and the impact of good product design on production operations is highlighted. Maintenance planning is discussed including the differences between breakdown (reactive) and preventative (planned) maintenance. Techniques for job design such as methods analysis and time study methods are demonstrated. Both graphical and computational (spreadsheet) techniques are used throughout the course to solve a range of typical problems.

OPM 313: Quality Management

This course is designed to equip students with the managerial concepts and quantitative tools used in effective and efficient management of quality in manufacturing and service organizations. The course begins with the quality management concepts espoused by Deming and discusses some of the resulting approaches such as Total Quality Management (TQM), Six Sigma, ISO 9000 and AS 9100. Quality requirements specific to regulated industries such as biomedical devices and aerospace will also be surveyed. Students will learn how to plan, implement and manage a comprehensive quality management program within an organization with special emphasis on process documentation, staff training, and communication of results to management and auditors.

OPM 314: Logistical Planning & Supply Chain Management

A supply chain is a sequence of organizations involved in the production and delivery of a product or service. Supply chain management is the coordination of those organizations, and logistics is the management of the flow of resources e.g. goods, materials, information; between the organizations. This course will students will introduce students to the complexities of domestic and global supply

chains including consideration of make/buy and outsourcing decisions. The importance of the procurement function is explored, and inventory management techniques are presented including the application of mathematical approaches to solve typical problems. Finally, the use of materials resource planning (MRP), manufacturing resource planning (MRPII) and enterprise resource planning (ERP) systems in operations management is examined.

OPM 315: Lean Concepts and Applications

Lean production is a modern management practice applicable to both manufacturing and service industries that considers the expenditure of resources for any goal other than the creation of value for the end customer to be wasteful and thus a target for elimination. This course introduces students to the theory behind Lean including concepts such as Value Stream Mapping, Workplace Organization and Standardization, 5-S and Cellular Flow. Terminology, including Kan Ban and Total Production Maintenance, and tools such as Gap Analysis, 5 Why's, root cause analysis, Pareto charts, and cause effect diagrams are covered. The importance of workforce development and ongoing training to Lean implementation is stressed, and students will learn about the how to apply Lean techniques to both industrial and service operations.

Business Skills

ENGL 310: Business Communications

This course focuses on audience-oriented communication in the business environment. Course content includes writing reports, proposals, memoranda, and e-mails; graphical presentation of data using Excel; and developing and delivering presentations using PowerPoint and other visual aids. Students will develop and demonstrate these communication skills individually, in smaller groups, and in presentations to larger audiences.

ECON 310: Managerial Economics

This course focuses on forecasting and estimating techniques; and on tools used to analyze projects, compare alternatives, and make sound business decisions based on economic principles such as time value of money, internal rate of return, and cost-benefit ratios. The course includes the use of Excel as a tool for analysis and decision making.

PHIL 310: Professional Ethics

This course aims to raise students' awareness of ethical dilemmas that might occur at work, to show how such ethical issues are subject to management analysis and decision-making action, and to provide students with the conceptual tools necessary to identify and then develop an acceptable resolution of these dilemmas. The course will include the presentation of ethical arguments to groups, and debate on their merits.

PSYC 310: Organizational Psychology

This course examines how people behave and interact with each other at work with an emphasis on the way that this affects job performance. Topics covered in this course include the development of leadership skills; recruitment and retention; motivation and team building; managing change; and conflict resolution. Group work is used to build and practice the interpersonal skills critical for workplace management.

BUS 310: Project Management

Coordination of projects involving multiple tasks and resources, and the resolution of the conflicts that arise is a critical skill in business. This course teaches students some of the techniques necessary to develop realistic and comprehensive project plans; identify risk areas; monitor the plans; and deal with problems. The course will also cover management of the procurement process, and communication with project stakeholders. The course includes the use of Microsoft Project to develop and manage project plans.

Manufacturing Industry Application

OPM 411: Facility Layout and Materials Handling

This course covers the design and optimal layout of industrial facilities, materials handling systems, and warehousing for the most efficient flow of raw materials, work-in-process, and completed product. Students, working in groups, will be required to develop a written proposal for a newly designed or modified facility including a financial justification for the project, and carry out a verbal presentation of their results.

OPM 412: Workplace Health and Safety Management

This course provides a foundation for students to take on responsibility for the management of health and safety in the workplace. Students will learn about OSHA and the inspection process, identification of safety hazards and implementation of preventative measures, and developing a formal health and safety training program. The course will also cover work design and ergonomics aimed at increasing operator effectiveness and reducing production costs.

OPM 413: Measurement and Statistical Process Control

Statistical process control (SPC) is a quality control technique which employs statistical methods to monitor and control a process to ensure that it operates at its full potential, and that the finished products meet specified criteria. In this course, students will be introduced to key tools used in SPC include control charts, continuous improvement, acceptance sampling, and the design of experiments. Students will also be taught about fundamental metrology principles including error measurement and analysis, the impact of temperature and pressure on precision measurement; equipment calibration; and advanced test and measurement techniques.

Focused Study and Capstones

OPM 491: Focused Study 1
OPM 492: Focused Study 2
OPM 493: Focused Study 3

These three courses provide students with opportunities to explore areas of professional interest and to develop a greater understanding of those areas through focused study and applied research under the direction of a faculty member and/or industry mentor. Topics to be studied will be agreed in conjunction with program faculty and approved by the program director; and each course will require both a written report and an oral presentation of the research findings.

OPM 498: Individual Capstone Project

This course involves the self-directed execution of a project in the field of manufacturing operations employing elements from many of the courses the student has already taken linked together in a methodical, systematic way. The topic to be studied will be agreed in conjunction with program faculty and approved by the program director; and a faculty member or industry mentor will be available throughout the course to act as an advisor. However, it is expected that the student demonstrates independent thought and self-direction during the project. The project may be carried out with an industry partner/employer. The course requires both a written report and an oral presentation of the project results.

OPM 499: Group Capstone Project

This course involves working as a team on a project in the field of manufacturing operations. The topic to be studied will be chosen by the group, agreed in conjunction with program faculty, and approved by the program director. A faculty member or industry mentor will be available throughout the course to act as an advisor. However, it is expected that the group is self-directing, and that individuals in the group demonstrate the ability to work with other team members during the project. The project may be carried out with an industry partner/employer. The course requires both a written project report and an oral presentation of the project results by the group, and individual summary reports by each student.

Appendix B – Program Review by Professor Thomas Ball, MBA

Thomas Ball is an Assistant Professor and Department Chair of the Industrial Engineering Technology Department at Southern Polytechnic State University in Marietta, GA. In addition to the IET program, the IET Department houses Apparel/Textile Technology, Master of Science in Quality Assurance and Bachelor of Applied Science programs in Manufacturing Operations, and Supply Chain Logistics. Before joining SPSU in 2004, Professor Ball held senior management positions throughout much of his 30-year career in manufacturing, operations and distribution. His academic background includes an Associate of Science degree from Southern Polytechnic, BA from Oglethorpe University and an MBA from Georgia State University.

The following are the comments provided by Professor Ball:

General Impressions of the Proposal

My overall impressions of the proposal are very favorable. It is my opinion that one of the largest post-secondary educational growth sectors will be the two-year technical school programs. Many of these students and their employers will also recognize a need for the next academic step, the bachelor level degree. This program recognizes that need and is proposing a seamless pathway for selected Associate of Applied Science majors to attain a Bachelor of Applied Science.

Proposal Strengths

The program provides an excellent balance of needed industry skills in today's environment such as quality assurance, concepts of lean manufacturing, work place design, team development, work measurement, ergonomics, resource planning, facility layout, human resources, costing and sustainability.

Proposal Weaknesses

I feel a background in statistics will be necessary for Quality Concepts and Statistical Quality Control and perhaps others as well. Without a statistics course such as MATH&146 Introduction to Statistics as a pre-requisite, I caution that material outlined in the course descriptions for quality assurance will be difficult to cover if the instructor is teaching basic statistics prior to engaging in the subject matter.

Suggestions for Consideration

I would encourage Clover Park Technical College to consider an online version of the program which would enable the school to not only extend the BAS program to other schools who offer the three AAS majors but also to schools offering other programs that could possibly articulate to BAS Manufacturing Operations. Additionally, an online program could provide the flexibility for those students who financially may need to enter the workforce while pursuing the BAS degree.

Appendix C – Program Review by Mr. Edward Halloran, PE CMfgE

Mr. Edward Halloran has over 40 years of professional experience, including numerous leadership responsibilities as a senior aerospace manufacturing engineer, production and program manager, and additional senior management and engineering experience in both the sailboat manufacturing and automotive aftermarket industries. He has been a member of the Society of Manufacturing Engineers (SME) since 1975 and is recognized by the Society as a Life Member (LSME). He holds a Certified Manufacturing Engineer (CMfgE) SME Certification and is a Licensed Professional Manufacturing Engineer in the State of California. Ed is currently serving on SME's International Board of Directors. He holds a BS in Industrial Technology-Manufacturing from California State University-Long Beach, and an MS in Systems Management from the University of Southern California. Ed is also one of the co-founders of The Century Club, an organization that works very closely with SME and other education and manufacturing organizations. The Century Club's goal is to help ensure that the career development aspects of all students' education processes recognize the importance of proper preparation for the rewarding and fulfilling careers in manufacturing. Ed continues his involvement in education and industry as the Owner/President of HALCO Management Systems – a broad-spectrum industry-based consulting firm located in the Puget Sound area.

The following are the comments provided by Mr. Halloran:

General Impressions of the Proposal

My overall impression of this proposal is based on my own personal educational path from high school to U.S. military service to simultaneously enrolling in college and working in industry as well as my many years in manufacturing. I believe that a Program of this nature is a natural next step in a progression towards the development of a superior industrial workforce that our United States and many other countries worldwide will require to continue to progress and prosper. Having the next step in a young person's education and career path development defined and available for review, as this Program will be, allows for better educational planning , less wasted energy exploring career paths that do not support a person's passions and a more productive and satisfying long term career for the individual.

Proposal Strengths

Currently, a significant amount of pressure is being put on young people regarding their education planning and their choices regarding the courses that need to be taken to ensure a successful educational outcome. This pressure is highlighted by the emphasis being put on STEM education at very early stages of a student's educational development. This Program's strengths will be apparent and enhanced by clearly advertising its values through the planned Information Sessions and through community outreach efforts. The Program's goal to have strong, diverse and fair entry requirements for admission and a comprehensive student support plan to ensure students complete the Program are clearly strengths. In addition, as these strengths are made known to the feeder schools and workforce development organizations in the area, the Program's student body will gain in stature with industry support and job opportunities to follow.

Proposal Weaknesses

I do not perceive of any particular weaknesses in this Program's proposal. That is not to say that there will not be start-up issues and obvious corrections and changes required as the Program begins to mature. I do feel that the depth of the proposal content itself, coupled with my conversations with Dr. Addison and my knowledge of the College give me great confidence that Clover Park Technical College will be excellent stewards of this proposed Program.

Additional Comments and Suggestions

I would suggest that Clover Park Technical College, upon receiving the go-ahead for the Program from the appropriate organizations, engage in a series of face to face meetings and presentations to other area educational institutions and industry organizations. In my experience, partnerships and collaborations are one of the most important keys to a successful program.

I also feel that programs and curriculum, such as is being proposed here, creates interest amongst the students participating, to explore other areas of manufacturing, industry and business. While meeting the students' personal goals, this type of program meets some of the immediate needs of local industry. These types of programs with a wide range of subject matter encourage graduates to continue to pursue other related areas of activity such as product design, rapid prototyping, advanced manufacturing methods, Research and Development, management, inventive and entrepreneurial projects and teaching, to name just a few. A successful program will encourage and support a most important goal, that of continuous life–long learning.

Appendix D – Faculty

Key faculty members are listed below. The faculty and administrators responsible for technical courses will meet certification requirements for professional and technical administrators and instructors in the Washington Administrative Code WAC 131-16-094.

Faculty Name	Credentials	Status	Course(s)	
Dr. Steve Addison	PhD Engineering Cambridge University MA Engineering Cambridge University	Program Director	OPM 311 OPM 312 OPM 313 OPM 314 OPM 315	Mathematical Techniques for Operations Management Forecasting and System Design Quality Management Logistical Planning & Supply Chain Management Lean Concepts and Applications
To Be Hired	Masters Required PhD Preferred	Full Time (Tenure Track)	OPM 411 OPM 412 OPM 413 OPM 491 OPM 492 OPM 493 OPM 498 OPM 499	Facility Layout and Materials Handling Workplace Health and Safety Management Measurement and Statistical Process Control Focused Study 1 Focused Study 2 Focused Study 3 Individual Capstone Project Group Capstone Project
Dr. Phil Venditi	Ph.D., Educational Administration University of Texas at Austin M.S., English Education University of Tennessee-Knoxville	Tenured	ENGL 310	Business Communications
To Be Hired	Masters Required PhD Preferred	Adjunct	ECON 310	Managerial Economics
Tanya Sorenson	M.Div, Divinity/Ministry Seattle University B.A, Criminal Justice/Law Enforcement Administration Washington State University	Adjunct	PHIL 310	Professional Ethics
Mike Wheeler	MS Pacific Lutheran University BS Washington State University Licensed WA State Mental Health Counselor	Tenured	PSYC 310	Organizational Psychology
Dr. Steve Addison	PhD Engineering Cambridge University	Program Director	BUS 310	Project Management

Appendix E – Draft Evaluation Rubrics for Admissions

Applicants for places in the BASMO program will be asked to provide both a formal resume, and an admission essay.

In order to ensure that a consistent and rigorous method is applied to each application, evaluation rubrics will be developed and applied to all resumes and admissions essays. Scores from the rubrics will be pro-rated to match the weighting defined in Table 7 of Section 3. The final decision on admission to the BASMO program will be made by the Program Director.

The following are **draft** rubrics for evaluation of candidates' resumes and admissions essays. Before use, they will be revised as necessary and approved by an Admissions Committee chaired by the Program Director. The committee will be established once the BASMO program is approved.

Rubric for Evaluation of Candidate's Resume

	Above Average	Average	Below Average	Scoring Guidelines
Manufacturing Industry Experience (10 pts)	Has worked in the manufacturing industry for 4 years or more. Ideally has worked in a variety of different roles.	Has worked for 2-4 years in the manufacturing industry.	Little or no experience in the manufacturing industry.	Above = 7 to 10 Average = 3 to 6 Below = 0 to 2
Progressive Responsibility (10 pts)	Work experience shows a clear progression in terms of responsibility. Ideally will have had some supervisory experience.	Shows progression in responsibility. May have had some limited supervisory responsibility.	No evidence of progression in responsibility.	Above = 7 to 10 Average = 3 to 6 Below = 0 to 2
Quality of Resume (5 pts)	Detailed description of work experience with job title and location (city and state). Clearly explains duties and key accomplishments. Grammar and presentation above average.	Some descriptions of positions held are incomplete or missing. Occasional grammatical errors.	Dates and location, job responsibilities and accomplishments are incomplete or missing. Grammar, spelling, and formatting errors prevalent. Hard to follow.	Above = 4 to 5 Average = 1 to 3 Below = 0
Overall (5 pts)	Candidate's experience will clearly add value to the cohort's learning experience.	Candidate's experience will brings some value to the cohort's learning experience.	Candidate will have to rely on something other than work experience to add value to the cohort's learning experience.	Above = 4 to 5 Average = 2 to 3 Below = 0 to 1

Rubric for Evaluation of Candidate's Essay

Candidates for admission to the BASMO program will be asked to provide a one-to-two page essay describing:

- the candidate's interest in the degree
- his or her background and experience in the manufacturing industry
- how completion of this degree meets his or her personal education and employment goals
- his or her understanding of the commitment that will be required to complete the program
- any other information that may support entry to the program.

	Above Average	**Average**	**Below Average**	**Scoring Guidelines**
Alignment with Program Goals (20 pts)	Clearly states his/her career goals. Understands the goals of the program, and describes how it will meet his/her career goals.	States his/her career goals. Understands the goals of the program but fails to relate them to his/her career goals.	Shows little understanding of the program goals. Little evidence that he/she has defined his/her career goals.	Above = 15 to 20 Average = 6 to 14 Below = 0 to 5
Relationship of Previous Experience to the Program (10pts)	Clearly explains how his/her education and experiences relates to the program, and provides examples.	Is aware that his/her education and experience relates to the program, but fails to provide examples.	Fails to connect his/her education and experience to the program. The essay is a simple retelling of the candidate's life events.	Above = 7 to 10 Average = 3 to 6 Below = 0 to 2

	Above Average	Average	Below Average	Scoring Guidelines
Program Instructional Format, and Commitment Required for Completion (20 pts)	Clearly understands the instructional model for the program. Understands the work and time commitment involved in completion of the program.	Is aware of the instructional model but does not indicate that he/she has thought about the work and time commitment involved.	Shows little or no awareness of the work and time commitment that would be required for successful completion of the program.	Above = 15 to 20 Average = 6 to 14 Below = 0 to 5
Clarity of Writing (5pts)	Writing is clear, concise, and engaging. Very few (if any) mistakes in grammar, spelling, and/or punctuation.	Writing is fairly easy to read. Some mistakes in grammar, spelling, and/or punctuation.	Writing is difficult to read or confusing. Main ideas are unclear. Numerous mistakes in grammar, spelling, and/or punctuation.	Above = 4 to 5 Average = 1 to 3 Below = 0
Presentation (5 pts)	Professional document. Document is focused and polished.	Average document organization and presentation. Not much time spent on editing or polishing.	Poor presentation. Seems rushed or incomplete.	Above = 4 to 5 Average = 1 to 3 Below = 0