



**Ad Hoc Report for  
Bachelor of Applied Science  
in Operations Management**

October 6, 2017

By

**Clover Park Technical College**

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# Contents

Overview .....	1
Need .....	2
Faculty and Staff.....	3
Curriculum Development .....	4
Independent Study, Upper Division .....	7
Consortium: Clover Park Technical College and Bellingham Technical College .....	8
Enrollment and Retention .....	9
Consortium.....	10
Resources .....	11
Admissions.....	11
Advising .....	11
Award of Credit, Prior Learning Assessment, and Transfer of Credit.....	12
Financial Aid .....	12
Library.....	12
Retention: Starfish.....	13
Tuition .....	13
Tutoring and Student Project Resources .....	13
Assessment.....	14
Progress and Challenges.....	15
Conclusion .....	16
Exhibits .....	18
Exhibit A: Curriculum .....	19
Exhibit B: Faculty Qualifications .....	20
Exhibit C: Advisory Board Members .....	21
Exhibit D: Program Outcomes.....	22
Exhibit E: Sample Syllabus .....	23
Exhibit F: Scope and Sequence .....	30
Exhibit G: Crosswalk Operations Mgmt. Courses .....	32
Exhibit H: Crosswalk Gen. Ed. Courses .....	34
Exhibit I: Breakdown of Consortium Course Offerings .....	36

## Overview

In a letter dated Feb. 1, 2017<sup>1</sup>, the Northwest Commission on Colleges and Universities requested that Clover Park Technical College (CPTC) submit an ad hoc report, with site visit, in the Fall of 2017 to continue the evaluation of our Bachelor of Applied Science (BAS) degree program in Operations Management<sup>2</sup>. This report outlines progress made in our candidacy for a BAS degree program accreditation, discusses the key elements of the program, addresses updates since the last report, and provides future considerations as CPTC continues this important program.

CPTC celebrates its 75<sup>th</sup> anniversary this year. From its origins in World War II maritime and aerospace support, it has grown to more than 40 professional--technical program areas producing more than 50 associate degree or certificate options for our students. The breadth of technical/professional programs now encompasses aerospace, advanced manufacturing, health sciences, human services, science, technology, engineering, transportation, trades, business, and hospitality. The mission of the college is "Educating tomorrow's workforce."

Realizing that the College could do more for both its working alumni and current students, CPTC requested and received approval in 2014 from the State Board for Community and Technical Colleges (SBCTC) and NWCCU to offer a Baccalaureate of Applied Science (BAS) in Manufacturing Operations to serve the needs of students who want to advance their careers into supervisory and management roles within the manufacturing industry. The first cohort began in 2014 with 12 students.

By 2015, non-manufacturing associate programs at CPTC were requesting a baccalaureate option for their students. In response, CPTC, upon advice from the SBCTC, requested a name change in January 2016 from manufacturing operations, a subset of operations management, to the broader BAS Operations Management (BAS-OPM) degree, under which the original manufacturing degree is now a specialty. The BAS-OPM required a change of only three electives, shown in the circled center block of Exhibit A. Approval was granted for the name change by SBCTC and the NWCCU. Now, BAS-OPM serves both manufacturing and non-manufacturing-related degrees, including students with associate or higher degrees (or equivalents) in all associate degrees. The first cohort under the new name (BAS-OPM) began in Fall 2016. Eleven students were admitted, with six enrolling in the Fall 2016.

CPTC proudly serves veterans and collaborates significantly with nearby Joint Base Lewis McChord. Workers retraining under state funding are also plentiful at the College. Both groups come with significant experience and could benefit from the operations management baccalaureate option, so both are particularly recruited. Both funding sources approve registration into any program for

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<sup>1</sup> <http://www.cptc.edu/accreditation>

<sup>2</sup> (<http://www.cptc.edu/sites/default/files/accreditation/S36C-917020812200.pdf>)

which available jobs are listed under the “in demand” category of jobs published by the state of Washington Employment Security<sup>3</sup>. Unfortunately, simultaneously to the start of the first BAS cohort, operations management jobs dropped from the “in demand” category—something unforeseen and unexpected. Therefore, it was not surprising to start the Fall 2016 cohort lower than capacity. However, we still teach it because of the strong regional demand for managers and operations managers, as noted in the “Need” section below.

To save costs and provide better service to students, Clover Park and Bellingham Technical colleges, finding themselves in the same situation of suddenly soft enrollment, created a consortium whereby the schools jointly offer the program, sharing costs and FTE’s. Thanks to this measure, and a retooling of marketing, the second cohort under the name change began Fall 2017 with enrollment above capacity. In summary, the program was able to increase its potential capacity to all programs of the College and created a consortium with Bellingham Technical College (BTC) to reduce costs and improve service to students.

## Need

In 2015, federal and state projections showed a strong regional need for managers and operations managers, as evidenced by the size of the gap between graduates and job openings, as well as the high median salary. Although “managers and operations managers” are no longer categorized in Pierce County among the most in-demand professions, need remains strong. The expansion of this BAS program from manufacturing operations to operations managers in any field created alignment with all of our programs and many more business and industries. The Washington State Employment Projections in June 2017 estimated a current employment of managers and operations managers at 246,728 positions. Additional jobs for operations managers, in areas such as construction and transportation logistics, are not included in that figure. Predicted openings in management in Washington State between 2015 and 2025 are 133,494 positions<sup>4</sup>.

A recent survey of local interior design job openings, for example, showed a bachelor’s degree requirement for 17 of 35 positions. The interior design faculty at CPTC believe the operations management degree, with its industry-specific electives and focused studies, would benefit their students and regional employers. Professional pilots must have a baccalaureate degree to fly for any of the larger commercial airlines. Currently, the FAA has no guidelines for the upper division education of pilots. The CPTC pilot faculty have created a set of three electives for professional pilots recognizing the increasing job availability across the country. The gap in pilots being trained and pilots needed annually exceeds 6,000 in 2017. That gap is projected to increase dramatically.<sup>5</sup> Boeing estimates “a global shortage of 533,000 pilots over the next 20 years.”<sup>6</sup>

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<sup>3</sup> <https://fortress.wa.gov/esd/wilma/wdclists/WDAArea.aspx?area=000006>

<sup>4</sup> <https://fortress.wa.gov/esd/employmentdata/reports-publications/industry-reports/employment-projections>

<sup>5</sup> Retrieved from Airline Pilot Hiring Outlook, <https://atpflightschool.com/airlines/pilot-hiring-outlook.html>

<sup>6</sup> Aviation Week, retrieved from <http://aviationweek.com/commercial-aviation/opinion-here-three-pronged-approach-pilot-shortage>

CPTC, located in the Tacoma area, also serves the nearby Seattle area. Earlier this year, the Seattle Region Partnership assembled the top manufacturing employers of the county to determine their collective employment needs. The Partnership repeated this activity with maritime industry employers. Both groups stated a strong need for a career path for entry-level workers, particularly welders or machinists: Further education “is available to those already working in the industry, but it is costly, time consuming, and geographically isolated”<sup>7</sup>. Both groups indicated in their next steps the need to establish pathways from high school to career to further education for promotion to management. The BAS program meeting in person no more than three Saturdays per quarter is ideally designed to meet this need. In addition, CPTC is currently preparing to implement the Guided Pathways model, which creates established, published pathways for students from high school to career education to job with additional opportunities to continue their education for career progression. Because CPTC’s BAS-OPM program is designed specifically for the working, place-bound adult, CPTC will continue working with the Seattle Region Partnership to supply employer needs for baccalaureate education for its workforce. As with professional pilots, manufacturing and maritime employers are concerned by the projected retirement statistics of the next ten years, noting that most of these positions will be management or senior level<sup>8</sup>.

## **Faculty and Staff**

BAS faculty members are well qualified to deliver an excellent curriculum at the baccalaureate level. Exhibit B displays the credentials of the faculty, who are hired through the existing College processes.

Since the BAS Operations Management program began, the faculty members have continued to increase their skills and competencies to help our students become more marketable and skilled. After the success of the first cohort, CPTC hired Dr. Mel Oyler as a full-time, tenure-track instructor to serve as the primary BAS faculty member. All tenure-track faculty are provided support and opportunities for development. Dr. Oyler has been paired with a faculty mentor and has availed himself of the professional growth and development opportunities offered by the CPTC Teaching and Learning Center. Having a full-time, stable faculty member has both allowed the program stability and improved its ability to follow emerging industry trends.

Ms. Tiffany Windmeyer, OPM 315 Lean Concepts instructor, completed her Lean black belt certification. This authorizes her to confer Lean green belts to our BAS students. Lean certification is highly desirable in American business and industry.<sup>9</sup>

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<sup>7</sup> Seattle Region Partnership Manufacturing Industry Learnings To-Date, August 2017 and Maritime Industry Learnings To-Date, August 2017.

<sup>8</sup>Seattle Region Partnership Manufacturing Industry Learnings To-Date, August 2017 and Maritime Industry Learnings To-Date, August 2017

<sup>9</sup> See, for example, Giuda, K. (2012, Sept. 9). Lean government six sigma? Why do politicians ignore it? Retrieved from /www.forbes.com/sites/realspin/2012/09/09/lean-government-six-sigma-why-do-politicians-ignore-it/#304dad6c4c3e

Mr. Larry Price, OPM 412 Workplace Health and Safety Management instructor, is currently completing his Occupational Safety and Health 501 training to enable him to confer OSHA certifications in construction and general industry to our students. These certifications are valuable in a variety of businesses and industries and increase the marketability and skills of our students.

Mr. Erwin Swetnam, J.D. is currently the director of operations for Lautenbach Industries, bringing deep operations management experience, business communications, and current project management experience to the ENGL 310 Professional Communications course.

Dr. Ali Ostadvar, Ph.D. combines manufacturing engineering, biomedical manufacturing, and project management skills for BUS 310 Project Management.

## **Curriculum Development**

The design of the BAS-OPM 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<sup>10</sup> level. Curriculum development, course coding, assigning credit value, degree requirements, and instructional activities are guided by the SBCTC and CPTC’s Curriculum Committee. The BAS Program Advisory Committee continues to keep the faculty informed of current industry and technical needs, while the technical associate program faculty communicate regularly with BAS faculty to ensure alignment. Exhibit C contains a list of the current BAS-OPM Advisory Committee members.

The curriculum consists of four tiers that progressively increase the degree of independent thought and critical thinking required by the students to the level expected in a baccalaureate degree. As demonstrated in Figure 1, below, students progress from instructor dependency to independency during the program. This model is widely used through the BAS degrees at other colleges and is provided to students during program information sessions.

As part of the CPTC Student Learning Outcomes four-year assessment plan created by the Committee on Learning Assessment, faculty were given training and time to work on their program and course outcomes at the spring in service this year. At that time, BAS faculty chose to continue using the established program outcomes, and spent time making minor modifications (mostly to wording) of the learning outcomes for the first-year operations management courses. Learning outcomes for all courses are identifiable and assessable and align with the program outcomes. Faculty and the Dean meet with the BAS Advisory Committee to continue ensuring that the

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<sup>10</sup> [http://occril.illinois.edu/applied\\_baccalaureate/ab\\_models/](http://occril.illinois.edu/applied_baccalaureate/ab_models/)

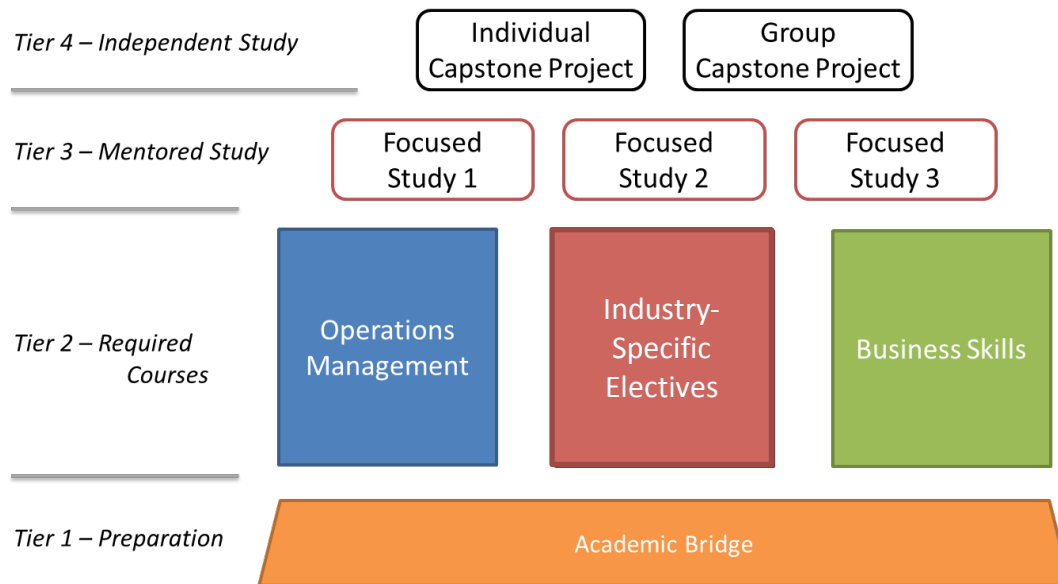


Figure 1 - Structure of the BAS-OPM Curriculum  
(with Electives shown in red block)

program is of high quality, contains content appropriate to the scope of the discipline, and is sequenced correctly. Specific career competencies to be mastered are determined by the appropriately qualified faculty (Exhibit B, Faculty Qualifications), Advisory Committee input, national skill standards, licensing regulations, and/or professional specialized accreditation standards. The program outcomes are listed in Exhibit D.

This month, the College is providing an upgraded syllabus template for inclusion in all programs. One of the new features of the syllabus is a list of all program outcomes pertinent to the course, a crosswalk with the Core Competencies (institutional outcomes), and learning outcomes, thus ensuring alignment of learning outcomes of appropriate rigor for every course. The program outcomes are located on the college website. Course syllabi are provided at the beginning of the quarter in each course, and are located for downloading and printing in the learning management system, Canvas. Using approved course outlines, the syllabi are developed with attention to appropriate depth, breadth, sequencing of courses, and synthesis of learning. Suitable learning activities, assignments, and assessments are created based on the learning outcomes. Each quarter, faculty review their course syllabi with students to ensure student awareness of College expectations regarding student learning. Students are assessed based on learning activities, projects, exams, or presentations based on the course outcomes.

Exhibit E includes a copy of the syllabus for OPM 312 to demonstrate the upward movement in critical thinking and problem solving from a 200-level course. Beginning Fall 2017, all syllabi are located in the appropriate Dean's office available for potential students to view before registering for the course.

General admission and degree requirements for the baccalaureate degree are published in the College catalog<sup>11</sup>, which is available on the college website. Students receive a copy of the scope and sequence of the program (Exhibit F) from tenured faculty advisor/counselor, Taylor McGovern, who is assigned to the BAS program and maintains contact with the students at least quarterly throughout their matriculation, ensuring the students are aware of graduation requirements and college resources.

## Curriculum

As shown in Figure 1 above, students move through four tiers of learning, progressing upwardly from instructor led to independence, through operations management, business skills, industry-specific electives, focused studies, and capstone courses.

### Operations Management

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

This set of five courses is designed to cover the essential tools and techniques to plan and operate a typical business or industry. The course learning outcomes, developed from the approved program learning outcomes, are listed in Exhibit G.

### General Education (Business Skills)

<b>ENGL 310</b>	Business Communications
<b>ECON 310</b>	Managerial Economics
<b>PHIL 310</b>	Professional Ethics
<b>PSYC 311</b>	Industrial/Organizational Psychology
<b>BUS 310</b>	Project Management

Students transitioning from a technical role to a supervisory/management role need a set of core general education courses with outcomes designed to increase the student's business skills (Exhibit H) in order to be equipped to take on supervisory and management roles immediately on graduation. The five courses in the business skills group are designed to provide some of the knowledge, skills, and abilities that they will need, and include instruction on both soft skills (communication skills, ethics, and organizational psychology) and hard skills (project management and managerial economics).

Since the inception of the program, the faculty team consistently use joint projects, and commonly observe presentations of students both in their own classes and in each other's during the joint Saturday morning sessions. After the first year, although students were getting B's and above for

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<sup>11</sup> <http://catalog.cptc.edu/>



their presentation and writing skills, the faculty, upon advice from industry advisory board members, came to consensus that students needed more writing and presentation opportunities in their classes. As the former English instructor left the area, the College accepted the challenge to hire an instructor with a juris doctorate who would be willing to increase the rigor.

### **Mentored Study, Upper Division.**

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 total). Each focused study course allows the student to spend the quarter delving into a current problem of practice in his or her own profession, such as flexible manufacturing cells, labor management in the unionized workplace, or regulations specific to their industry. The student then carries out guided study and applied research through a series of assignments under the direction of a faculty member. As needed, the student may also receive guidance from an industry mentor. The student presents the results in a written report and an oral presentation at the conclusion of the quarter, thereby exercising business communications skills. Completing three guided studies ensures the student has delved deeply into his or her field.

The focused study courses build on the outcomes of other courses because the student will use the tools and knowledge gained in previous courses to explore the problem and potential solutions. Therefore, the objectives for the three focused study courses are identical:

<b>Objective 1</b> Describe, in a written report and in a presentation to a peer group, the results of a detailed investigation into a topic of current interest in Operations Management.
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<b>Objective 2</b> Explain how the topic relates to other coursework, and to best practices in Operations Management.
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<b>NOTE:</b> Additional learning objectives will be proposed by the student, agreed in conjunction with program faculty, and approved by the primary faculty member before the start of the course.
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### **Independent Study, Upper Division**

Two capstone projects are used to demonstrate students' capacity for independent study, research and application – both individually and as members of teams. In the fourth tier of the curriculum, two capstone projects – an individual project, and a group project – are used to demonstrate students' research and problem-solving skills. Students are encouraged to carry these projects out as internships whenever possible. The BAS-OPM program teaching faculty members oversee capstone projects.

### **Delivery Model**

Most students who enroll in the program are working adults, so the delivery model for the BAS-OPM 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

**Online Instruction:** Most of the formal instruction is provided online – either in asynchronous formats, or through synchronous sessions scheduled in the evenings.

**Saturday Meetings:** On three Saturdays of every quarter, students meet with their instructors for approximately three hours of face-to-face instruction time. This time is used for small group and individual student presentations, instruction, and tests. Occasionally, students from both campuses will meet on site at a plant or business, for instruction from faculty, industry speakers, and on-site tours. This is a valuable opportunity for students to connect with operations professionals working in the area and hence develop the business networks that will help their future success.

### **Consortium: Clover Park Technical College and Bellingham Technical College**

Because CPTC is 150 miles south of Bellingham Technical College (BTC) along the I-5 corridor, the two programs continue to make improvements for the benefit of their joint cohort with collaboration, not competition. For instance, students will be meeting occasionally at an actual industry location, such as a factory, for a tour in addition to regular Saturday class sessions. The faculty are creating more Skype opportunities, and the Deans may use space at other college campuses in between CPTC and BTC for on-ground meetings. There are no current plans to convert the program from hybrid to completely online despite the distance because the faculty and staff consider the benefits of networking through the cohort model too valuable. Activities such as speakers and visits are best accomplished on ground and provide the networking opportunities integral to the BAS design.

As enrollment increases, Clover Park and Bellingham will realize greater service for students needing to take the program at a slower rate because the joint program will start cohorts more often, allowing students wider enrollment options each quarter.

The MOU between CPTC and BTC does not change the curriculum. Instead, CPTC teaches the OPM 300- and 400-level courses, including the operations management math courses (MAT 311, and MAT 413), while BTC teaches the elective courses and the general academic courses, as indicated in Exhibit I. The colleges use the same curriculum and course outlines, collaboratively make alterations to curriculum, and each college submits the curriculum and course outlines through its own internal curriculum review process. Through shared course outlines and materials, each school still has the opportunity to offer any of the courses, should a change in the allocation of courses be necessary in the future.

## Enrollment and Retention

The first cohort in 2014 was 12 students. Eight of them graduated on time. A ninth graduated the following year. Two students dropped out for family/job responsibilities, not dissatisfaction with the program according to interviews by faculty and staff members with students exiting prior to completion. One has returned to the program, with an expected graduation of Winter 2018. A final student moved to a medical program.

### **BAS-OPM Enrollment/Retention/Graduation by Cohort Year.**

Cohort Year	Enrollment	Retention	Graduation
2014	12	83% (10 students)	9
2016	6 (11 admitted)	66% (4 students)	n/a
2017	30	n/a	n/a

CPTC has proceeded somewhat slowly, monitoring the program and assessing industry alignment carefully, particularly with the new, expanded Operations Management program (BAS-OPM), rather than the narrower Manufacturing Operations program (BASMO). At the same time, the unexpected change from “demand” to “not in demand” on the Pierce County Workforce Development employment statistics removed a targeted BAS audience: Veteran’s and injured workers retraining on Washington Department of Labor and Industries funding. These two groups are a significant portion of CPTC’s student population and neither the Veteran’s Administration or the Department of L&I will fund students who major in programs that are not “in demand.”

The second cohort (Academic Year 15-16) had 11 students admitted, but only six chose to enroll for the Fall 2016 start. The other five students had been admitted conditionally, still needing to take Math& 146 Statistics before entering the program. Two students have dropped out of the second cohort for family/job-related reasons, leaving four students at CPTC. BTC also has four second-year students in their program. For cost effectiveness, the two 2016 cohorts combined as of Fall 2017 for a total of eight students.

Bellingham Technical College, facing similar soft enrollment projections in their new BAS-OPM program, and Clover Park had together already collaborated on outcomes, courses, syllabi, and

**BAS-OPM FTE's by Fiscal Year**

<b>Baccalaureate FTE's</b>	<b>FY 14-15</b>	<b>FY 15-16</b>	<b>FY 16-17</b>
<b>Operations Management</b>	9.9	11.8	7.4

structure. The two colleges are located 150 miles apart, so each college routinely sends potential students to the other college whenever a student is located closer to the other school.

### **Consortium**

Because of the close relationship of the two programs, it was decided that creating a consortium and memorandum of understanding (MOU) between them would best serve the colleges and the students. CPTC teaches the operations management courses and focused studies, while BTC teaches the general education courses and the three electives. Each school teaches the capstone courses to their own students, for the sake of the student transcripts. Students apply and are admitted to both schools. Each school retains the FTE's for the courses it teaches. The registrars of both schools have established a process of sending course completion information to the other school at each quarter's end to transfer credit, so that the students' transcripts are continually updated. The final judgment for accepting transfer credit continues to be the responsibility of the receiving institution (Standard 2.C.8). The financial aid directors at both schools have also established a financial consortium for the students (Standard 2.D.8). BAS students at CPTC are given financial aid information and training in the same manner as all other students, along with the baccalaureate tuition scale. The Deans of both schools meet via telephone frequently to discuss the program, and are both members of the SBCTC BAS Leadership Council, which meets quarterly.

The third cohort, and our first to begin as a joint one with BTC, begins Fall 2017 with an enrollment of 30 students. The decision to increase the cap of 18 students to 30 was based on the high volume of admissions. No operations management courses have limitations such as lab stations, equipment constraints, safety concerns, or intense instructor preparation that could limit a higher cap.

Dr. Oyler and other faculty of CPTC have established relationships with many local businesses and the Center for Advanced Manufacturing of Puget Sound (CAMPS). Dr. Oyler continues to establish and maintain communications with CAMPS members to bring working, place-bound adults who need a baccalaureate degree to advance in their manufacturing field into the BAS-OPM program. CPTC includes the BAS program in its standard marketing and outreach activities to public schools, public venues such as the state fair, and our own alumni. Internally, Dr. Oyler and President Loveday have jointly presented about the BAS program to current students in several programs,

including cosmetology, whose students can benefit greatly from the operations management degree if they seek to own a salon. The operations management baccalaureate provides a pathway for students in all programs on campus to move forward.

## **Resources**

CPTC expanded and added significant staff and services to prepare a high-quality baccalaureate program. The faculty team was selected with care. Instructor qualifications are listed in Appendix B. All instructors have doctorate or doctoral-level training (or the highest in their area, where doctorates are not commonly awarded) and significant experience. The faculty coordinated with regional industry to create the outcomes, and again used industry input when the word “manufacturing” was deleted from the program outcomes.

### **Admissions**

A separate admissions process was created for the baccalaureate degree. The director of enrollment, Cindy Mowry and the Dean, Tanya Sorenson created an admissions process to admit students conditionally, subject to completion of any prerequisites, all listed specifically in the letter of admission.

Recently, CPTC began a new strategic plan for admitting and enrolling prospective students. Beginning in October, the new process streamlines the application process and allows students to apply, receive academic advising, financial aid assistance, academic placement, and to enroll in one visit to campus. Although operations management students apply to both schools, both schools have dedicated staff for enrolling non-host college students via email and telephone, so students are not expected to drive 150 miles to complete the admission process at the non-host college. Admission and graduation requirements for the BAS-OPM are clearly defined in the academic standards portion of the 2017-2018 catalog.

### **Advising**

To better assist students, CPTC has moved to an intrusive model of advising. Advisors are assigned programs, and follow students throughout their matriculation. Taylor McGovern, tenured faculty advisor, has been assigned to the BAS program and checks in with the students and faculty at least quarterly. The college is currently performing preliminary background work to incorporate the Guided Pathways model for community and technical colleges. Guided Pathways, as the name implies, helps students reduce the number of unnecessary courses by helping students better determine their major at the beginning of their matriculation. One of the key concepts of the Guided Pathways model is a clear scope and sequence for each major. CPTC already has a scope and sequence for each program, including BAS-OPM. The BAS-OPM scope and sequence is in Appendix F.

## Award of Credit, Prior Learning Assessment, and Transfer of Credit

The BAS-OPM program is awarded credit and degrees through the same processes as existing college programs. The award of credit and degrees at CPTC is based upon documented student achievement and awarded in a manner consistent with generally accepted norms, or equivalencies, in higher education.

The process for awarding credit for prior experiential learning is guided by Chapter 4, Section 11 of CPTC's Policy and Procedures Manual, which addresses Prior Learning Assessment, and is communicated in the CPTC catalog (page 140)<sup>12</sup> and on the College website.<sup>13</sup>

Also using the procedures already in place, students transferring to CPTC are given appropriate credit for college-level work successfully completed (2.0 grade) at accredited post-secondary institutions upon submission of an official transcript to the Enrollment Services Office.

## Financial Aid

BAS students receive the same financial aid services as other students, except that they receive additional counseling to understand the consortium's effect on their financial aid. Under the consortium, the financial aid directors of both colleges have created a process and collaborate, using the same forms, simplifying the process.

## Library

Understanding the importance of library and information services to student success, the library staff integrates library and information resources into the baccalaureate learning process by working closely with the instructional faculty to maintain a collection of relevant, up-to-date resources that support the BAS curriculum. The library purchased several additional databases, including an ethics database for the PHIL 310 Business Ethics students. The library routinely provides group meeting space for BAS students whenever the students request it. Students commonly work together on group projects or practice presentations together. The library has computers with oversize monitors in the group study rooms, allowing students to Skype if they are not co-located, and library staff members check out I-Pads to students wishing to record their practice sessions for review.

Another way that CPTC supports the specialized needs of the BAS students is the introduction of Alma-Primo last year. CPTC was in the first wave of Washington state community and technical colleges to receive Alma-Primo, the new library cataloging and software system that significantly eases the process of interlibrary loans and provides a greater number of databases and information for higher division students. Students, both in the library and away from it, can access these

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<sup>12</sup> <http://catalog.cptc.edu/>

<sup>13</sup> <http://www.cptc.edu/policies/credit-for-non-traditional-learning>

resources any time such as at home or in the workplace. The library also upgraded its subscription to EBSCOHost, increasing the capacity for upper division students doing research.

CANVAS, the College's learning management system, includes a link to the library website allowing faculty to easily direct students to library resources including research databases, eBooks, and the library catalog. QuestionPoint, an online reference service is available on the library webpage. QuestionPoint allows all CPTC students and staff to ask and receive assistance from professional reference librarians twenty-four hours a day. This is especially important for BAS students, as many of them work full-time. The librarians work with BAS faculty and students during the scheduled Saturday sessions, upon request. The librarians have developed additional library use materials specifically for the BAS students. Alma also provides important data for CPTC to regularly and systematically evaluate its services and resources. Library faculty and staff are currently exploring a student identification number password system that would be able to track BAS (and all other programs) students' use of the online resources.

### Retention: Starfish

CPTC maintains an active Retention Committee, which oversees all retention activities of the college, including the recent addition of the Starfish software. Starfish is a software program embedded into the school's learning management platform, Canvas, and enables instructors to alert Counseling and Advising that a student is having difficulties, whether from attendance, performance, or outside issues such as food, transportation, or shelter. The instructor keys a few buttons, and the student is contacted by counseling to offer support. BAS faculty, and all faculty, are actively encouraged to use this software.

### Tuition

BAS students regularly take both upper and lower division courses in the same quarter (at \$205.05 per credit, discounted if taking multiple credits, and \$104.86 per credit, discounted if taking multiple credits, respectively). To ensure tuition is calculated correctly, a staff person in admissions has been assigned to calculate BAS students' tuition. Admissions and Enrollment both coordinate their work with their counterparts at BTC. Under the Consortium with BTC, students pay full tuition for the first ten credits and are given the multiple credit discount at the other school (WAC 131-12-041 Interdistrict Registration of Students<sup>14</sup>).

### Tutoring and Student Project Resources

The Tutoring Center, located within the library, includes Dr. Dave Lingenfelter, who can tutor students in the upper division mathematics required of the BAS-OPM program. The Center also includes Ms. Denise Quincy, a master's level English Instructor, who is well qualified to tutor upper division students with writing needs.

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<sup>14</sup> <http://apps.leg.wa.gov/wac/default.aspx?cite=131-12-041>

Dr. Oyler, the primary operations management faculty, has initiated cooperation between the welding, non-destructive testing, and mechatronics programs to create the capacity for BAS students to work in their labs, if needed. CPTC has begun the design process of a new manufacturing facility. Dr. Oyler has already participated in conversations about BAS students' use when the building is completed.

## **Assessment**

Faculty members use the Taskstream software application to assess the efficacy of current teaching methodology and assignments in helping students achieve individual course outcomes. Faculty members also use the Advisory Committee input and return-to-industry opportunities to ensure currency and relevancy of course curriculum. New courses and updates to course outcomes are monitored through the Curriculum Committee at each college.

The BAS-OPM faculty collectively determine individual and co-curricular methods and consistency to assess student achievements described in each course syllabus in a manner consistent with institutional policies that reflect generally accepted learning outcomes. The BAS-OPM faculty often co-create assignments applicable to more than one course in the same quarter to increase coherence of the program. These assignments are assessed in a manner agreed upon.

Student achievement, demonstrated through multiple means during a quarter, is documented through a commonly accepted 4.0 grading structure that uses grades A through F. The BAS program has criteria for achieving each grade based on percentage scores and specific assessment criteria as listed in the course syllabi. For an example syllabus, please see Exhibit E. All courses in the BAS-OPM program require oral presentations and written reports in addition to other assessment criteria in specific courses, such as performance-based skill demonstration that can be performed in the classroom, skills labs, or work sites. Assessment practices are examined and modified through student input, Advisory Committee recommendations, faculty evaluation of efficacy, and relevancy to updated curriculum.

Student feedback on the program is gathered through Class Climate, the online student assessment of learning engagement (SALE) tool. The Dean and the faculty review the results after each quarter and use this information to improve the learning and student achievement in each course.

All programs at CPTC are subject to a program review every five years. BAS-OPM will undergo its first program review in 2018. This year, the entire CPTC faculty has received training to write solid program and course outcomes. All programs, including BAS, have used the training to review and revise their program outcomes. Faculty have created crosswalks linking program outcomes to institutional outcomes (Core Abilities) and course outcomes to better assess the effectiveness of their programs. The operations management crosswalk will be reviewed at its next Advisory Committee meeting in October.



All programs at CPTC, including operations management, use the Nichols process for assessment of their programs. This is a data-driven process by which faculty make decisions for improvement.

Formative assessment tools are used throughout the program, including discussion boards, quizzes, presentations, reports, and papers. As far as possible, most assignments and assessments are designed to mimic on-the-job experiences of an operations manager. Summative assessments are usually final projects, as opposed to exams, to better assess the students' ability to apply what they have learned. Students participate in individual and group projects. Both formative and summative assessment tools address cognitive and affective learning domains.

Programmatic outcome data, including enrollment, on-time graduation, attrition, post-graduation employment, and other data are continually assessed through the Office of Institutional Research. This information is provided quarterly to program faculty and much of it is available through intranet dashboards on the CPTC website<sup>15</sup>.

Student feedback has shown that summer courses are highly unpopular and can potentially dissolve a cohort into two tracks, forcing the College to teach additional sections for smaller populations. To address this and to align with Bellingham, operations management courses will no longer be offered routinely during the summer.

## **Progress and Challenges**

The BAS Operations Management program at CPTC has achieved a high level of progress toward full enrollment and a top-quality program. As of Fall 2017, enrollment is at 166 percent of previous capacity. CPTC and Bellingham Technical College have created a consortium between their programs that offers significant cost savings and better service to students. The offices of enrollment, admissions, financial aid, counseling, and instruction of the two colleges have collaborated in an exemplary fashion to create a smooth and flexible experience for students in the consortium. The process is not perfect, but continues to mitigate challenges. Although the initial admissions packet for a BAS-OPM student cannot be completed online, the College is seeking ways to make this possible. CPTC has hired a full-time tenure-track instructor to anchor the program, and to market the program internally. This faculty member maintains strong contacts with our BAS-OPM alumni who are now publicizing the program and participating in the BAS Advisory Committee. Currently, the Advisory Committee is heavily populated with manufacturers, but the College will continue seeking other industry members and input, including architects, professional pilots, mid-level managers, cosmetologists, and others.

College support for the program has been strengthened. New marketing strategies, including reaching out to other community and technical colleges, continues. The library, Tutoring Center, and counseling/advising have fortified their services and software to better help the baccalaureate students. Improvements have also been made to the admissions process, and the offices of

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<sup>15</sup><http://www.cptc.edu/institutional-effectiveness/data-dashboards>

enrollment, financial aid, the curriculum has been strengthened, and new marketing strategies are in place and continue to be developed.

The biggest challenge remaining is to continue making connections with employers to encourage them to send their staff members through the program. The College web developer and marketing staff have done an excellent job of saturating the website with the BAS-OPM program. The retail management faculty member recently redesigned the program brochure to increase its readability and appeal. Now, the biggest challenge for the program is to increase the number of employers and potential students seeing these marketing efforts.

## **Conclusion**

Clover Park Technical College has worked carefully, thoughtfully, and tenaciously to build a high-quality operations management applied baccalaureate degree program. CPTC has created a very successful consortium with Bellingham Technical College, both of whom have operations management programs. Students receive excellent instruction by well-qualified faculty, and have more options due to the creation of the consortium. The curriculum provides significant opportunities mirroring actual job activities and problems. Industry personnel continue to be excited by the quality and the delivery system of our program.

Our list of students interested but still completing an associate degree continues to expand. The College is proud of its program and continuous improvement activities, and looks forward to full accreditation status. The program design continues to meet the needs of business and industry according to the BAS-OPM Advisory Committee. Associate degree faculty continue to collaborate with BAS-OPM faculty to ensure alignment of needs based on the advisory committees of all of them. The hybrid, Saturday meeting format has proven to be very convenient to working students.

Enrollment has remained low for several reasons that are being illuminated and corrected. After the first year of the program, the primary developer and recruiter of the BAS program left the college. At that time, it was decided not to replace him, but to increase admissions support staff dedicated to BAS-OPM. The time lapse between these created a lull in recruitment efforts. Since the onboarding of the admissions support staff, work has been underway to decrease the obstacles in the enrollment process (including finding a way to integrate an online application system for baccalaureate degrees with the existing undergraduate system, and reducing the admissions requirements to align them with other public institutions).

In the past, the normal recruitment channels of the College have been directed toward students without previous education, including high school students. This has provided challenges for integrating BAS-OPM recruitment into normal channels, as these students may be years away from entering a baccalaureate program. CPTC is now attaching BAS marketing to existing structures, using Azorus, our Customer Relations Management System, to identify potential alumni, and

increasing and forging partnerships with other colleges, and local business and industry. Working BAS-OPM students in the first cohort have provided entry to several local industries, which have, in turn, promoted our program and hired our BAS-OPM graduates.

## **Exhibits**

OPM 498: Individual Capstone Project

**Exhibit A: Curriculum**

OPM 499: Group Capstone Project

OPM 492: Focused Study 2

OPM 493: Focused Study 3

OPM 315: Lean Concepts and Applications

OPM 491: Focused Study 1

BUS 310: Project Management

OPM 314: Logistical Planning & Supply Chain Management

MAT 413: Measurement & Statistical Process Control

PSYC 310: Organizational Psychology

OPM 313: Quality Management

OPM 412: Workplace Health and Safety Management

PHIL 310: Professional Ethics

OPM 312: Forecasting and System Design

OPM 411: Facility Layout and Materials Handling

ECON 310: Managerial Economics

MAT 311: Mathematical Techniques for Operations Management



**INDUSTRY APPLICATION**

ENG 310: Business Communications

**OPERATIONS MANAGEMENT**

**BUSINESS SKILLS**

## Exhibit B: Faculty Qualifications

### BAS Faculty Degrees and Relevant Experience

(Per professional and technical administrators and instructors in the Washington Administrative Code WAC 131-16-094).

Faculty Name	Credentials	Status	Course(s)
Dr. Mel Oyler, lead faculty	Ph.D. Business, Distribution Services, Industrial Engineering, Technical Services Marketing. U of Washington. M.S. Electrical & Computer Engineering. U of California, Davis. M.S., Chemical Engineering. U of California, Davis. B.S., Chemical Engineering. U of California, Davis.	Full-time, Tenure Track Faculty  Master's Required, Ph.D. preferred	MAT 311 Mathematical Techniques for OPM OPM 312 Forecasting and System Design OPM 313 Quality Management OPM 314 Logistical Planning & Supply Chain Mgmt. OPM 411 Facility Layout and Materials Handling OPM 413 Measurement and Statistical Process Control OPM 491 Focused Study 1 OPM 492 Focused Study 2 OPM 493 Focused Study 3 OPM 498 Individual Capstone Project OPM 499 Group Capstone Project ECON 310 Managerial Economics
Ms. Tiffany Windmeyer	Lean Black Belt, U. of WA 40 credits doctoral work completed, Walden U. M.A. Psychology and Industrial/Organizational Psychology, Walden U. B.A. Psych, Langston U.	Adjunct Faculty  Master's Required, Ph.D. preferred	OPM 315 Lean Concepts PHIL 310 Professional Ethics PSYC 311 Industrial/Organizational Psychology
Erwin Swetnam, J.D.	Juris Doctor, Western SU. BA Political Science, Idaho SU (full scholarship for collegiate debate)	Adjunct Faculty  Master's Required, Ph.D. preferred	ENGL 310 Business Communications
Col. Larry Price (Ret.)	M.B.A., Columbia College. M.Ed. Continuing Education, Western WA U. B.S. Forest Resource Mgmt., W. Virginia U. 20 years military service in workplace health and safety management	Adjunct Faculty  Master's Required, PhD not typical to industry	OPM 412 Workplace Health and Safety Management
Ali Ostadfar, Ph.D.	Ph.D. Biomedical Engr. M.Sc. Biomedical Engr. B.Sc. Mechanical Engr.	Adjunct Faculty  Master's Required, Ph.D. preferred	BUS 310 Project Management
Dean Tanya Sorenson	Ed.D. program, Northeastern University, expected 2018 M.Div., Divinity, Seattle U. M.Ed., Heritage U. B.A. Criminal Justice, Washington State U	Direction of program	Back up instructor for ENGL 310 and PHIL 310

## **Exhibit C: Advisory Board Members**

Dr. Steve Addison, Oregon State University Engineering, Seattle Campus

Mr. Ken Albers, AIM Engineering, Renton, WA

Ms. Allison Budvarson, Out of the Box Manufacturing, Seattle, WA

Mr. Eric Felch, Fastenal Manufacturing, Lakewood, WA

Ms. Samantha Hamlin, Rainier Industries, Tukwila, WA.

Dean Walter Hudsick, Bellingham Technical College, Bellingham, WA

Col. Larry Price (Ret.), USMC, workplace health and safety management, Renton, WA

## **Exhibit D: Program Outcomes**

Graduates of the BAS-OPM program will:

1. Demonstrate a mastery of the mathematical tools required for operations management.
2. Apply qualitative and quantitative forecasting techniques to the selection of processes and facility layouts that will optimize production.
3. Describe how to plan, implement and manage a comprehensive quality management program within an organization.
4. Apply mathematical approaches to solve typical make/buy and outsourcing problems.
5. Explain the meaning of Lean terminology and concepts including Value Stream Mapping, Workplace Organization and Standardization, 5-S and Cellular Flow, Kan Ban and Total Production Maintenance.
6. 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 the results.
7. Explain key terms used in statistical process control (SPC) including control charts, continuous improvement, acceptance sampling, and the design of experiments.
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 sound 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.
12. Discuss how these leadership skills can affect the behavior and interaction of people at work: good recruitment and retention practices, motivation and team building, the management of change, and conflict resolution.
13. Explain how efficient work design and ergonomics can increase operator effectiveness and reduce production costs.
14. Demonstrate a level of critical thinking, teamwork, communication, and technical and information literacy commensurate with a management position in industry.



**Exhibit E: Sample Syllabus**



*4500 Steilacoom Blvd. SW  
Lakewood, WA 98499-4098*

**BAS – Operations Management**

**Forecasting and System Design**

CIP #: 52.0205

5 Credits  
Lecture: 50 hrs.

Instructor: Mel Oyler  
Office Hours: Th: 11am Bldg. 14, Rm. 208, or by appointment  
Telephone: 253.589.5879  
Location: Bldg. 19, rm. 105I  
Email Address [mel.oyler@cptc.edu](mailto:mel.oyler@cptc.edu) or [melolife133@gmail.com](mailto:melolife133@gmail.com)  
Revision Dates:

## COURSE DESCRIPTION

Introduces forecasting and capacity planning tools for manufacturing and service organizations. Discusses selection of appropriate processes and facility layouts, and the design of work systems to optimize production. Discusses maintenance planning including the differences between breakdown (reactive) and preventative (planned) maintenance. Demonstrates techniques for job design such as methods analysis and time study methods.

## PREREQUISITES

MATH& 146

## COLLEGE-WIDE CORE ABILITIES

Core abilities are transferable skills that are essential to an individual's success, regardless of occupation or community setting. These skills.....

- complement specific occupational skills
- broaden one's ability to function outside a given occupation, and
- connect occupation, personal, and community roles.

Graduates of all Clover Park Technical College programs will be able to demonstrate competency in each of the following CORE ABILITY areas:



**COMMUNICATION**



**CRITICAL THINKING/PROBLEM SOLVING**



**PERSONAL/PROFESSIONAL RESPONSIBILITY**



**INFORMATION/TECHNOLOGICAL LITERACY**

These symbols appear in the course syllabus to identify which specific learning objectives relate to the core abilities. Your instructor will provide more detailed explanations of how acquiring these core abilities can help you to successfully achieve your career, educational and personal goals

## Learning Objectives and Core Abilities:

Learning Objectives:	Core Abilities:			
Upon completion of this course the learner will be able to:				
<b>Objective 1</b> Outline the steps involved in the forecasting process	X			
<b>Objective 2</b> Compare and contrast quantitative and		X		

qualitative approaches to forecasting.				
<b>Objective 3</b> Apply averaging techniques, trend and seasonal techniques, and regression analysis to solve typical problems.		X		
<b>Objective 4</b> Discuss some of the legal, ethical and sustainability considerations that arise in product and service design.			X	
<b>Objective 5</b> Explain the purpose and goal of life cycle assessment.	X			

 Communication	 Personal/ Professional Responsibility
 Critical Thinking/ Problem Solving	 Information/ Technological Literacy

### ASSESSMENT OF OBJECTIVES

Your final grade is a weighted average of:

Projects	25%
Homework	25%
Discussions	25%
Final	25%

#### Projects:

Projects are a major part of your work in this course and in the BASOPs program. Developing project proposals, then executing your projects to produce deliverables for assessment is a key activity in this course. Your projects will produce key artifacts I will assess to determine your course grade.

#### Homework

Homework assignments form a significant portion of your final grade for the course. You will turn in your homework assignments by file upload on the course Canvas site. Grading standards regarding your homework problem setup, solution format and presentation become stricter in the later part of the course since you should be learning from feedback on your prior submissions. Do not email your homework to me.

#### Discussions

Your discussions are a central component to your learning in the course. They represent opportunities to explore and apply the course material in specific areas. You are expected to participate regularly in course discussions.

#### Final

The final will include a poster board presentation in addition to other assessments which will be described and negotiated as the course proceeds. The format is “science fair meets trade show”. These are not only assessment events, but rehearsals for interaction with industry and other professionals.

### **SCHEDULE AND ASSIGNMENTS**

This course is a hybrid online course, featuring the topic modules shown in the calendar below:

#### **Calendar**

- Week 1: Introduction to Operations Management, Problem Solving, Webbing Laws, 312 Kickoff Meeting (10/1/16)
- Week 2: Operations Manager’s Roles, Enterprise Project Management, Evaluating Ideas
- Week 3: Strategy & Competition, Projects, Growth Models, WBS
- Week 4: Operations Management Art & Science, Project Initiation, Visual Inquiry
- Week 5: Product & Service Design, Product Development, Finance, Webbing BOWL & LADLE
- Week 6: Operations Management as Systems, Supply Chain, Know Stakeholders for Project Wins!, Webbing SOUP, 312 Midterm Meeting (11/5/16)
- Week 7: Forecasting, Planning & Scheduling, Cryptography, Project Proposals Due
- Week 8: Project Scope Control & Management
- Week 9: Maintenance Activities, Pareto Phenomenon & Maintenance Decisions
- Week 10: Building Hi-Performance Teams
- Week 11: Improving Production Processes, Final Exam Meeting (12/10/16)
- Week 12: Reflections on Course Learnings

#### **GRADING SCALE**

PERCENTAGE	GRADE	PERCENTAGE
93-100	A	93-100
90-92	A-	90-92
88-89	B+	88-89
83-87	B	83-87
80-82	B-	80-82
78-79	C+	78-79
70-77	C	70-77
67-69	C-	67-69
Not Passing	D+	Not Passing
Not Passing	D	Not Passing
Not Passing	D-	Not Passing

## TEXT, REFERENCES, LEARNING MATERIALS

Required Texts: OPM 312 Texts Fall 2016

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### **Manager's Guide to Operations Management 1st Edition**

John Kamauff

Series: Briefcase Books (Paperback)

Paperback: 272 pages

Publisher: McGraw-Hill Education; 1 edition (October 13, 2009)

ISBN-10: 0071627995

ISBN-13: 978-0071627993

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### **Operations Management 12th Edition**

by William J. Stevenson (Author)

Series: McGraw-Hill Series in Operations and Decision Sciences

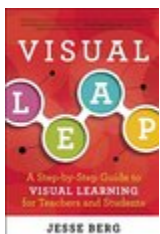
Hardcover: 944 pages

Publisher: McGraw-Hill Education; 12 edition (January 7, 2014)

ISBN-10: 0078024102

ISBN-13: 978-0078024108

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### **Visual Leap: A Step-by-Step Guide to Visual Learning for Teachers and Students**

by Jesse Berg

Paperback: 280 pages

Publisher: Routledge (October 6, 2015)

ISBN-10: 1942108079

ISBN-13: 978-1942108078

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**The Fast Forward MBA in Project Management 5<sup>th</sup> Ed**

by Eric Verzuh (Author)

Series: Fast Forward MBA Series

Paperback: 528 pages

Publisher: Wiley; 5 edition (November 9, 2015)

ISBN-10: 1119086574

ISBN-13: 978-1119086574

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**Other Required Materials:**

Software to scan your homework and exams into pdf files for submission online

**Attendance Policy and Class Conduct**

Regular participation in course activities is important for your learning. I will take roll at the three course meetings. This will not directly affect your grade, however, an absence which interferes with your group project work or deliverables will be penalized in your project grading.

Respectful participation is encouraged. Due consideration and respect for other participants is required. Private conversations demonstrate lack of consideration for others and should be avoided.

I expect that you are familiar with and that you adhere to the student code of conduct as presented in the current college catalogue. <http://www.cptc.edu/catalog>

**Plagiarism**

Plagiarism is presenting someone else's words, analysis, homework, ideas, or data as one's own. Even if the someone else is a student in the class. Attribution is the key to avoiding plagiarism. Attribution means that you cite the source and give credit for any part of your submissions which include the work of someone else.

**Student concerns process**

Should you have a concern of any nature, you may follow the student concerns process as outlined in the current college catalogue. [http://support.cptc.edu/stu\\_concern/](http://support.cptc.edu/stu_concern/)

**General Resources for Students**

**Academic support**

Tutoring center, eLearning, TLC Building 15. <http://www.cptc.edu/tutoring>

**Crisis counseling**

Advising and counseling offers short term counseling and referrals for students in crisis. Building 17. <http://www.cptc.edu/advising>

**Financial emergency support**

The College Foundation sometimes can help with an emergency grant. Building 19. <http://www.cptc.edu/foundation>

**Disability support services**

Building 17. <http://www.cptc.edu/disabilities>

Veterans' office  
Building 17 and Building 2 RM 109. <http://www.cptc.edu/vrc>

Peer mentor program  
Sponsored by Associated Student Government in building 23. <http://www.cptc.edu/asg>

## Exhibit F: Scope and Sequence

Academic Bridge					
Courses	Hours				Credits
	Lecture	Lab	Other	Total	
0 to 20 credits of lower division courses as required to meet the requirements for entry to the Junior Year.					
<b>TOTAL</b>					0 - 20

Quarter 1					
Courses	Hours				Credits
	Lecture	Lab	Other	Total	
MAT 311: Mathematical Techniques for Operations Management	50			50	5
OPM 312: Forecasting and System Design	50			50	5
ENGL 310: Business Communications	50			50	5
<b>TOTAL</b>				150	15

Quarter 2					
Courses	Hours				Credits
	Lecture	Lab	Other	Total	
OPM 313: Quality Management	50			50	5
OPM 314: Logistical Planning & Supply Chain Management	50			50	5
PHIL 310: Professional Ethics	50			50	5
<b>TOTAL</b>				150	15

Quarter 3					
Courses	Hours				Credits
	Lecture	Lab	Other	Total	
OPM 315: Lean Concepts and Applications	50			50	5
OPM 412: Workplace Health and Safety Management (elective)	50			50	5
ECON 310: Managerial Economics	50			50	5
<b>TOTAL</b>				150	15



Quarter 4					
Courses	Hours				Credits
	Lecture	Lab	Other	Total	
OPM 411: Facility Layout and Materials Handling (elective)	50			50	5
MAT 413: Measurement and Statistical Process Control (elective)	50			50	5
BUS 310: Project Management	50			50	5
<b>TOTAL</b>				150	15

Quarter 5					
Courses	Hours				Credits
	Lecture	Lab	Other	Total	
OPM 491: Focused Study I	30	40		70	5
OPM 492: Focused Study II	30	40		70	5
PSYC 311: Industrial/Organizational Psychology	50			50	5
<b>TOTAL</b>				190	15

Quarter 6					
Courses	Hours				Credits
	Lecture	Lab	Other	Total	
OPM 493: Focused Study III	30	40		70	5
OPM 498: Individual Capstone Project (or, with instructor's permission, OPM 495: Internship)	10	80		90	5
OPM 499: Group Capstone Project	10	80		90	5
<b>TOTAL</b>				250	15

## Exhibit G: Crosswalk Operations Mgmt. Courses

The core abilities CPTC has created to align courses with its mission are listed below and noted in parentheses behind applicable objectives.

- A. Communication
- B. Critical Thinking/Problem Solving
- C. Personal/Professional Responsibility
- D. Information/Technological Literacy

### Crosswalk of Program Outcomes to Operations Management Course Objectives

BAS-OPM Program Outcome	Objectives from Course Syllabi: Operations Management
Demonstrate a mastery of the mathematical tools required for manufacturing operations management.	<p><b>MAT 311: Mathematical Techniques for Operations Mgmt.</b></p> <p>Objective 1 Compare and contrast single- and multiple-sampling plans. (B)</p> <p>Objective 2 Construct a decision tree and use it to analyze a business problem. (C)</p> <p>Objective 3 Conduct sensitivity analysis of a simple decision problem.</p> <p>Objective 4 Perform reliability calculations for a system. (B)</p> <p>Objective 5 Describe the type of problem that would lend itself to solution using linear programming. (A)</p> <p>Objective 6 Formulate a linear programming model from a desc. of a business problem. (D)</p>
Apply qualitative and quantitative forecasting techniques to the selection of processes and facility layouts that will optimize production.	<p><b>OPM 312: Forecasting and System Design</b></p> <p>Objective 1 Outline the steps involved in the forecasting process. (A)</p> <p>Objective 2 Compare and contrast quantitative and qualitative approaches to forecasting. (B)</p> <p>Objective 3 Apply averaging techniques, trend and seasonal techniques, and regression analysis to solve typical problems. (B)</p> <p>Objective 4 Discuss some of the legal, ethical and sustainability considerations that arise in product and service design. (C)</p> <p>Objective 5 Explain the purpose and goal of life cycle assessment. (A)</p>
Describe how to plan, implement and manage a comprehensive quality management program within a manufacturing organization.	<p><b>OPM 313: Quality Management</b></p> <p>Objective 1 Compare and contrast the quality management concepts espoused by Deming, and some of the resulting approaches such as Total Quality Management (TQM), Six Sigma, ISO 9000 and AS 9100. (B)</p> <p>Objective 2 Discuss quality requirements specific to regulated industries such as biomedical devices and aerospace.</p> <p>Objective 3 Develop a plan for the implementation and management of a comprehensive quality management program within an organization with special emphasis on process documentation, staff training, and communication of results to management and auditors. (B, C)</p>
Apply mathematical approaches to solve typical make/buy and outsourcing problems.	<p><b>OPM 314: Logistical Planning and Supply Chain Mgmt.</b></p> <p>Objective 1 - Discuss the differences between supply chain mgmt. and logistics mgmt.</p> <p>Objective 2 Explain how inventory management strategies relate to overall business strategy.</p> <p>Objective 3 Analyze the strategic, legal, financial and ethical considerations that must be taken into account when making outsourcing and make/buy decisions in a range of business situations. (B)</p> <p>Objective 4 Apply modern inventory management techniques, including mathematical approaches, to solve typical problems. (B)</p> <p>Objective 5 Compare and contrast the uses of materials resource planning (MRP), mfg. resource planning (MRPII) and enterprise resource planning (ERP) systems. (D)</p>
Explain the meaning of Lean	<p><b>OPM 315: Lean Concepts and Applications</b></p>

<p>terminology and concepts including Value Stream Mapping, Workplace Organization and Standardization, 5-S and Cellular Flow, Kan Ban and Total Production Maintenance.</p>	<p>Objective 1 1 Analyze a business process using SIPOC diagrams, process mapping, and value stream mapping.  Objective 2 Design and execute DMAIC projects and Kaizen events. (B)  Objective 3 Use statistical analyses to determine the relationship between process inputs and outputs. (B)  Objective 4 Apply cause-effect diagrams and FMEA to identify process failure modes  Objective 5 Apply Lean concepts including 5S, waste reduction, and source inspection/mistake proofing to real business problems</p>
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## Exhibit H: Crosswalk Gen. Ed. Courses

### Crosswalk of Program Outcomes to General Education Objectives

The core abilities CPTC has created to align courses with its mission are listed below and noted in parentheses behind applicable objectives (Standard 2.C.10).

- A. Communication (including human relations, Standard 2.C.9)
- B. Critical Thinking/Problem Solving (including computational skills, Standard 2.C.9)
- C. Personal/Professional Responsibility (including human relations, Standard 2.C.9)
- D. Information/Technological Literacy

BAS-OPM Program Outcome	Objectives from Course Syllabi: General Education
Develop clear and coherent technical reports, proposals, memoranda, and e-mails; and deliver presentations too groups.	<p><b>ENGL 310: Business Communications</b></p> <p>Objective 1 Explain how different organizational cultures, business practices, and social norms affect communication in a broad range of business contexts.(A)</p> <p>Objective 2 Analyze an organization's communication processes and key messages and recommend changes that would improve the communication and delivery of messages and business information. (B)</p> <p>Objective 3 Produce effective, grammatically-correct business letters, reports, memos, emails appropriate to a given situation, attending to the writer's objectives and the readers' needs. (A)</p> <p>Objective 4 Working as part of a team, design and deliver a persuasive presentation using appropriate electronic presentation software and systems in a specified time limit. (D)</p> <p>Objective 5 Demonstrate clarity, precision, conciseness and coherence in the use of the English language in both verbal and written communications. (A)</p>
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.	<p><b>ECON 310: Managerial Economics</b></p> <p>Objective 1 Explain the meaning of the terms "time value of money", "internal rate of return", and "cost-benefit ratio".</p> <p>Objective 2 Explain cash flows, their estimation, and how to graphically represent them.</p> <p>Objective 3 Perform calculations involving simple and compound interest, and rate of return.</p> <p>Objective 4 Develop spreadsheets to solve common managerial economics problems. (D)</p> <p>Objective 5 Compare alternatives using net present worth, equivalent annual worth, internal rate of return, and cost-benefit analysis. (B)</p> <p>Objective 6 Apply cost estimation techniques and probabilistic risk analysis to make a decision among alternative courses of action applicable to a real-world, contemporary case study. (B)</p>
Demonstrate the ability to identify and then develop acceptable resolution of ethical dilemmas that might occur in the workplace.	<p><b>PHIL 310: Professional Ethics</b></p> <p>Objective 1 Distinguish between ethical and other types of values.</p> <p>Objective 2 Define corporate responsibility, corporate compliance, and social responsibility</p> <p>Objective 3 Compare differences in ethics in international communities.</p> <p>Objective 4 Evaluate the ethics of business decisions and general practices in business and the professions using systematic ethical reasoning. (B)</p> <p>Objective 5 Resolve ethical dilemmas effectively in oral and written forms. (A)</p>
Discuss how the leadership skills; good recruitment and retention practices; motivation and team building; the management of change; and conflict resolution can affect the behavior and interaction of people at work.	<p><b>PSYCH 311: Industrial/Organizational Psychology</b></p> <p>Objective 1 Write job descriptions for positions in a typical organization that follow best practices and comply with applicable laws. (A)</p> <p>Objective 2 Develop a workforce training strategy for a typical organization including training needs assessment, consideration of modality of training, and evaluation methods.</p> <p>Objective 3 Analyze the skills that are generally considered to be essential for effective leadership. (C)</p> <p>Objective 4 Discuss the legal issues that must be considered during a typical recruitment process. (C)</p> <p>Objective 5 Carry out a mock interview, and document the results.</p> <p>Objective 6 Develop specific, measurable and achievable goals for employees in a typical</p>

	<p>organization. (A)</p> <p>Objective 7 Compare and contrast different forms of individual and organizational incentives intended to motivate employees in a typical organization. (B)</p> <p>Objective 8 Develop a plan (including a communications plan) for managing the organizational change associated with an event such as a reorganization, downsizing, changes to working practices, or a company merger.</p> <p>Objective 9 Explain the types of conflict &amp; causes of conflict that can arise in the workplace.</p>
<p>Demonstrate the application of project management techniques to develop realistic and comprehensive project plans; identify risk areas; monitor the plans; and deal with problems.</p>	<p><b>BUS 310: Project Management</b></p> <p>Objective 1 Distinguish between ethical and other types of values.</p> <p>Objective 2 Define corporate responsibility, corporate compliance, and social responsibility.</p> <p>Objective 3 Compare differences in ethics in international communities.</p> <p>Objective 4 Evaluate the ethics of business decisions and general practices in business and the professions using systematic ethical reasoning. (B)</p> <p>Objective 5 Communicate the resolution of ethical dilemmas effectively in oral and written forms. (A)</p>

## Exhibit I: Breakdown of Consortium Course Offerings

Quarter	Clover Park Technical College	Bellingham Technical College
<b>1</b>	MAT 311 OPM 312	ENGL 310
<b>2</b>	OPM 313 OPM 314	PHIL 310
<b>3</b>	OPM 315 OPM 412	ECON 310
<b>4</b>		ELECTIVE ELECTIVE BUS 310
<b>5</b>	OPM 491 OPM 492	PSY 311
<b>6</b>	OPM 493 OPM 498 Individual Capstone* OPM 499 Group Capstone*	OPM 498 Individual Capstone* OPM 499 Group Capstone*
*The capstone courses will be taught by the home colleges		