

# AD-HOC REPORT:

## BACHELOR OF APPLIED SCIENCE DEGREES IN OPERATIONS MANAGEMENT AND ENGINEERING TECHNOLOGY

Prepared for the  
Northwest Commission on Colleges and Universities



Bellingham Technical College  
September 12<sup>th</sup>, 2018

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# INTRODUCTION

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## **Institutional Overview**

Bellingham Technical College (BTC) is a two-year technical college located in Whatcom County, a rural area perched on the Pacific Rim and bordered by Canada to the North and the Cascade Mountains to the East. The college has served this region for over 60 years with a combination of professional technical educational programs, direct transfer programs with a workforce focus, basic education for adults, contract training, community programming, and continuing education. As an open-access institution, BTC is a critical resource for students who are economically, socially or educationally disadvantaged, including students who are low-income or first-generation. 15.2% of the county's population is below the official U.S. poverty line. In the more rural areas of the county, over 50% of K-12 students qualify for free or reduced lunch. The average age of BTC students is 31. Half of BTC's degree-seeking students are low-income, and approximately one-third are first-generation students.

BTC's mission is to provide student-centered, high-quality professional technical education for today's needs and tomorrow's opportunities. Historically, BTC was a K-12 technical institute. BTC became a college in 1991, offering mostly non-transferable certificates and degrees in high-wage, high-demand trades occupations. College personnel understood that, in order to meet current and future workforce needs, BTC had to expand transition, articulation, employment, and continuing education opportunities for the wide variety of students it serves.

As part of this work, the college implemented its first two-year academic transfer degrees (Associate of Science Direct Transfer Agreement/Major Related Programs [DTA/MRPs]) in 2013, and began development of its first Bachelor of Applied Science (BAS) degree in 2014. BTC obtained approval from the Northwest Commission on Colleges and Universities (NWCCU) in May 2016 for a **BAS degree in Operations Management**. In August of 2016, NWCCU approved the college's second BAS degree proposal for a **BAS degree in Engineering Technology**. BTC anticipates that its BAS graduates will fill highly skilled jobs and leadership roles in a variety of industries.

The purpose of this ad hoc report is to provide an update on the implementation and progress of BTC's Bachelor of Applied Science (BAS) degree programs.

## **BASOPS Overview**

The majority of employers in Whatcom County and the surrounding region are small. Research from the Washington State Employment Security department shows that, in Whatcom County alone, businesses with less than 50 employees make up the majority of all employers and employ over 50% of the county's workforce. These small businesses maintain a strong emphasis on promoting from within. For example, in most small manufacturing firms, employers prefer to hire mid-level/operational managers who have come from the production floor and are familiar with the company's manufacturing processes. These and other regional businesses often have

difficulty finding qualified managerial staff who have the requisite technical skills and bachelor degrees.

In 2014, BTC began targeted exploration and proposal development for an Operations Management BAS degree (BASOPS) that would allow the college to build upon existing associate level degree programs such as Industrial Maintenance & Mechatronics, Process Technology, and Computer Networking. This BAS program was designed to educate students about how to understand, manage, and implement change related to operational and production processes, and to prepare students for employment within a wide variety of manufacturing and other industries. The BASOPS curricula includes content in the areas of system design, quality management supply chain and logistics, lean process improvement, project management, managerial economics, industrial-organizational psychology, and professional ethics. The program was approved by the WA State Board for Community and Technical Colleges (SBCTC) in February 2016 and by NWCCU in May 2016. BTC began enrolling its first BASOPS students in Fall 2016.

BTC's Fall 2016 enrollments were low. In an effort to save costs, boost enrollment and provide better service to students, Clover Park Technical College (CPTC) and Bellingham Technical College created a consortium for the 2017-18 academic year. The colleges jointly offered the hybrid program, sharing costs and FTEs for their Fall 2017 cohorts. For the 2018-19 year, however, BTC discontinued this arrangement with CPTC. Both colleges found it difficult, inefficient and costly to enroll, track, and charge students appropriately using the current legacy student management system. BTC is offering the program independently, now in a fully online format, in Fall 2018.

BTC developed and proposed a Business Management AAS-T degree in March 2018, which was approved by NWCCU in July 2018. This program offers a direct pathway into the BASOPS degree and will enhance articulation opportunities for BTC students. This 90-credit Business Management degree requires students to complete a core set of classes in areas such as accounting, marketing, business law and human resources, and then allows students to choose from one of three tracks, including Operations Management. The Operations Management Track for the AAS-T degree results in a 15-credit short-term certificate and forms a direct pathway into the BASOPS degree.

The college's BASOPS program helps regional employers by providing a bachelor's degree pathway in which their incumbent workers can enroll without leaving the area or substantially reducing their work hours. The program also helps fill vacant supervisory positions with highly-skilled regional residents who have strong ties to the region. Current labor market data indicate significant regional hiring activity and projected growth for operations management. Employment Security data show that general and operations managers are in demand in Whatcom, Island, San Juan and Skagit counties, and both short- and long-term occupational growth is predicted. Over 2,000 northwest Washington residents are employed in this category with an average hourly pay rate of \$47.37, and the occupation averages over 700 openings per year.

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## **BASET Overview**

Western Washington boasts a high density of aerospace, engineering and advanced manufacturing companies, which are demanding Engineering Technologists with strong backgrounds in and understanding of technical skills in specialized areas. Rapid growth statewide in aerospace and manufacturing fields are driving a sharp increase in demand for qualified personnel in these areas.

BTC began planning and developing its BAS degree in Engineering Technology (BASET) in tandem with the BASOPS degree, but deliberately staggered launches of the two programs to provide more time for curriculum development and design of the BASET degree. The BASET program was approved by SBCTC in May 2016 and by NWCCU in August 2016, and will enroll its first cohort of students in Fall 2018.

The BASET degree builds upon existing BTC associate level offerings in Engineering Technology and forms a direct pathway from the Engineering Technology: Mechanical Design Specialization degree. The BASET degree can also be accessed by BTC students in other professional technical programs who complete a required suite of transferable general coursework. This program combines theoretical content with a heavy emphasis on practical application. Students will learn extensive applied skills, particularly in the areas of industrial, chemical, electrical, and mechanical engineering, and in industries such as general manufacturing, legacy and renewable energy, and aerospace. Engineers, technologists and technicians can all work in the engineering field or in a variety of engineering industries. The BASET degree is meant to provide a pathway into the engineering field for students with non-traditional academic backgrounds. The program has been designed to accept students who have an AAS-T or other Associate's degree, and those who have taken a more trades-oriented pathway.

BTC's BASET degree will help fill an immediate and critical need for bachelor-prepared Engineering Technologists in a wide variety of industries. While trying to respond to increased demand for services and products, regional employers are also faced with a corresponding increase in retirement rates among senior engineers and technologists. Current labor market data indicate strong to balanced growth in related occupations such as Industrial and Mechanical Engineering, with workers earning from \$37 to \$41 per hour and over 130 job openings in the occupations annually.

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## CURRICULUM DEVELOPMENT

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### **BASOPS**

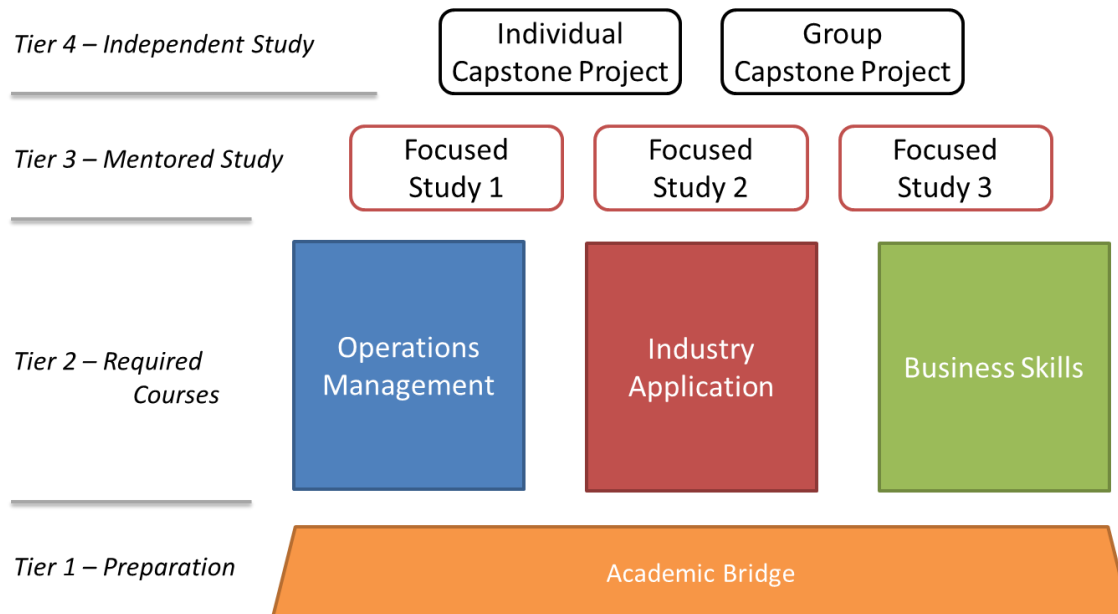
BTC has redesigned its BASOPS curriculum (see appendix A) to be wholly online for the 2018-19 academic year, which will enhance program accessibility. The structure of the BASOPS degree follows the well-established “management capstone” model for applied bachelor degrees, where a technical associate degree is supplemented with business- and management-focused coursework at the upper division.

Program student learning outcomes are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve, and include:

- Demonstrate a mastery of the mathematical tools required for operations management.
- Apply qualitative and quantitative forecasting techniques to the selection of processes and facility layouts that will optimize production and/or service delivery.
- Plan a comprehensive quality management program for use within an organization.
- Apply mathematical approaches to solve typical make/buy and outsourcing problems.
- 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.
- Demonstrate the application of project management techniques to develop realistic and comprehensive project plans, identify risk areas, monitor the plans, and deal with problems.
- Develop clear and coherent technical reports, proposals, memoranda, and e-mails; deliver presentations to groups.
- 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.
- Demonstrate the ability to identify and then develop acceptable resolution of ethical dilemmas that might occur in the workplace.
- 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.
- Demonstrate a level of critical thinking, teamwork, communication, and technical and information literacy commensurate with an operations management position.

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 bachelor degree (see Figure 1).

Figure 1. BTC’s Bachelor of Applied Science (BAS) in Operations Management – curricular structure



The college’s BASOPS program has been designed to accept students with a broad range of educational backgrounds in order to help students re-join 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 year of the BASOPS program.

**Tier 2** consists of required courses in three areas:

- A. Operations Management - designed to train students in the essential tools and techniques needed to plan and operate a typical business or industry.
- B. Industry Application - includes specialized courses in manufacturing and industry operations.
- C. Business Skills - provides instruction on both soft skills (communication, ethics, and organizational psychology) and hard skills (project management and managerial economics).

To extend students’ specialized understanding of the subject and develop the research and critical thinking skills necessary for their future success, **Tier 3** includes three Focused Study courses (15 credits total). Each Focused Study course allows students to spend the quarter delving into current problems of practice in their own profession—such as flexible manufacturing cells, labor management in the unionized workplace, or regulations specific to their industry—and use tools and knowledge gained in previous courses to explore potential solutions. Students then carry out guided study and applied research through a series of

assignments under the direction of a faculty member and, as needed, receive guidance from industry mentors. Students present the results in a written report and oral presentation at the conclusion of the quarter.

The objectives for the three Focused Study courses are identical:

**Objective 1:** 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.

**Objective 2:** Explain how the topic relates to other coursework, and to best practices in Operations Management.

***NOTE:** Additional learning objectives will be proposed by the student, agreed upon in conjunction with program faculty, and approved by the primary faculty member before the start of the course.*

The two capstone projects of **Tier 4** are used to demonstrate students’ capacity for independent study, research and application, both individually and as members of teams. The independent capstone can be replaced by an internship. The BASOPS program faculty members oversee capstone projects.

The BASOPS program is comprised of 90 credits earned across 18 courses. The program utilizes a cohort model, and students can choose a full-time (two-year) or part-time (three-year) option. Full-time students begin the program each fall and enroll in three courses per quarter over six quarters, while part-time students join in fall and take two courses per quarter over nine quarters. Students may take general education bridge courses in the summer, but no core program courses are held during the summer. The coursework for the program is delivered through Canvas, BTC’s online learning management system.

A student’s typical full-time schedule is below:

| QUARTER 1 |   | 15 CREDITS |
|-----------|---|------------|
| Course ID | Course Name                                       | Credits    |
| OPM 311   | Mathematical Techniques for Operations Management | 5          |
| OPM 312   | Forecasting and System Design                     | 5          |
| ENGL 310  | Business Communications                           | 5          |

| QUARTER 2 |   | 15 CREDITS |
|-----------|---|------------|
| Course ID | Course Name                                     | Credits    |
| OPM 313   | Quality Management                              | 5          |
| OPM 314   | Logistical Planning and Supply Chain Management | 5          |
| PHIL 310  | Professional Ethics                             | 5          |



| <b>QUARTER 3</b>         |                                | <b>15 CREDITS</b> |
|--------------------------|--------------------------------|-------------------|
| <b>Course ID</b>         | <b>Course Name</b>             | <b>Credits</b>    |
| OPM 315                  | Lean Concepts and Applications | 5                 |
| See Elective Course List | Elective 1                     | 5                 |
| ECON 310                 | Managerial Economics           | 5                 |

| <b>QUARTER 4</b>         |                    | <b>15 CREDITS</b> |
|--------------------------|--------------------|-------------------|
| <b>Course ID</b>         | <b>Course Name</b> | <b>Credits</b>    |
| See Elective Course List | Elective 2         | 5                 |
| See Elective Course List | Elective 3         | 5                 |
| BUS 310                  | Project Management | 5                 |

| <b>QUARTER 5</b> |                                      | <b>15 CREDITS</b> |
|------------------|--------------------------------------|-------------------|
| <b>Course ID</b> | <b>Course Name</b>                   | <b>Credits</b>    |
| OPM 491          | Focused Study I                      | 5                 |
| OPM 492          | Focused Study II                     | 5                 |
| PSYC 310         | Industrial Organizational Psychology | 5                 |

| <b>QUARTER 6</b> |                             | <b>15 CREDITS</b> |
|------------------|-----------------------------|-------------------|
| <b>Course ID</b> | <b>Course Name</b>          | <b>Credits</b>    |
| OPM 493          | Focused Study III           | 5                 |
| OPM 498          | Individual Capstone Project | 5                 |
| OPM 499          | Group Capstone Project      | 5                 |

**NOTE:** With faculty permission, OPM 495 (Internship) can be substituted for OPM 498 (Individual Capstone Project).

Elective Course List:

| <b>Course ID</b> | <b>Course Name</b>                          | <b>Credits</b> |
|------------------|---|----------------|
| OPM 411          | Facility Layout and Materials Handling      | 5              |
| OPM 412          | Workplace Health and Safety Management      | 5              |
| OPM 413          | Measurement and Statistical Process Control | 5              |

## **BASET**

The BASET program curriculum (see appendix B) has been specifically designed to align with the guidelines and standards established by the Engineering Technology Accreditation Commission (ETAC) of ABET (formerly called the Accreditation Board for Engineering and Technology) in order to create a high quality and sustainable engineering technology program and prepare the program to pursue ABET accreditation. The BASET program builds upon BTC's strong engineering program cluster, and includes instruction in areas including engineering, technology, science, applied math, and business skills. There is a strong focus throughout the program on the practical application of this knowledge to solve real-world engineering problems.

The program learning outcomes are divided into two parts and follow the pattern established by the requirements of the ABET criteria for accrediting engineering technology programs. They are also consistent with existing ABET-accredited baccalaureate-level engineering technology degrees. The BASET program has been designed to accept students with a broad range of educational backgrounds, and to facilitate students re-entering the educational system after time in the workforce.

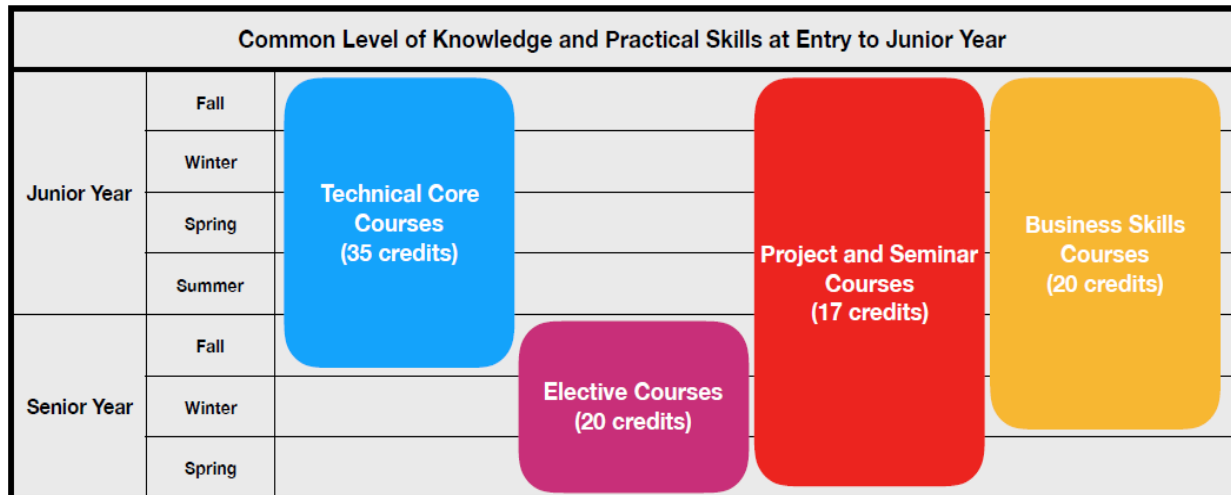
Program student learning outcomes are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve, and include:

- an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
- an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
- an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
- an ability to function effectively as a member or leader on a technical team.

Figure 2. BTC’s Bachelor of Applied Science (BAS) in Engineering Technology – program and curricular structure

**Structure of the BAS Engineering Technology Degree**

|  |                                     |  |
|--|-------------------------------------|--|
| <b>Minimum Requirements Needed to Apply to the Program</b><br>Students must complete an accredited associate degree or higher, and if necessary take these additional courses before applying to the BASET program | ----                                | Completed Accredited Associate Degree or Higher                          |
|  | ENGL& 101                           | English Composition I  |
|  | HUMANITIES                          | VAR - Any Humanities Course  |
|  | MATH& 141                           | Precalculus I  |
|  | ENGR& 114 or ENGR 180 or Equivalent | Engineering Graphics or Parametric Modeling or Program Director approval |
| <b>Bridge Courses – Up to 15 credits; Required for Entry into the Technical Core Courses</b><br>Students must complete these courses before being admitted to the 300-level Technical Core courses                 | MATH& 142                           | Precalculus II   |
|  | PHYS& 114 or PHYS& 221              | General Physics I w/lab or Engineering Physics I w/lab                   |
|  | CHEM& 161                           | General Chemistry w/lab I  |



The curriculum has been designed around four key elements:

- A. Bridge – allows access to a broad spectrum of prospective students while maintaining a verifiable level of academic knowledge and practical skills at the entry to the junior year.
- B. Technical Core – provides a solid grounding in the engineering science and applied math that is essential to working as an engineer.
- C. Projects, Seminars and Electives – gives students the opportunity to apply the knowledge and skills—including business skills—that they have gained and integrate various aspects of their learning.
- D. Business Skills – provides students with the opportunity to develop communication skills, develop leadership and financial management skills, and explore engineers’ ethical responsibilities to society.

The BASET program is comprised of 92 credits earned across 25 interdisciplinary courses, which includes a year-long capstone project. The program utilizes a cohort model. Students will begin the program each fall and enroll in three to five classes per quarter over six quarters. The program will also offer optional summer internship credits. Instruction for the program is primarily through in-class instruction and guided laboratory activities. The majority of the coursework for this face-to-face program is managed with the assistance of Canvas, BTC's online learning management system.

A student's typical schedule is below:

| <b>QUARTER 1</b> |   | <b>16 CREDITS</b> |
|------------------|---|-------------------|
| <b>Course ID</b> | <b>Course Name</b>                                | <b>Credits</b>    |
| ENGT 301         | Introduction to Engineering Technology            | 1                 |
| ENGT 311         | Fundamental Principles of Manufacturing Processes | 3                 |
| ENGT 312         | Applied Electricity and Electronics               | 5                 |
| AMAT 312         | Applied Linear Algebra                            | 2                 |
| ENGL 310         | Business Communication                            | 5                 |

| <b>QUARTER 2</b> |                                 | <b>15 CREDITS</b> |
|------------------|---------------------------------|-------------------|
| <b>Course ID</b> | <b>Course Name</b>              | <b>Credits</b>    |
| AMAT 301         | Programming for Technologists   | 2                 |
| ENGT 313         | Applied Statics                 | 5                 |
| AMAT 313         | Technical Calculus              | 2                 |
| ENGT 390         | Project Planning and Management | 1                 |
| PHIL 310         | Professional Ethics             | 5                 |

| <b>QUARTER 3</b> |                                     | <b>15 CREDITS</b> |
|------------------|-------------------------------------|-------------------|
| <b>Course ID</b> | <b>Course Name</b>                  | <b>Credits</b>    |
| ENGT 314         | Applied Strength of Materials       | 5                 |
| AMAT 314         | Applied Differential Equations      | 2                 |
| ENGT 391         | Introduction to Analysis and Design | 3                 |
| ECON 310         | Managerial Economics                | 5                 |

| <b>QUARTER 4: Summer - Student can arrange to take elective credits</b> |                                   | <b>VAR CREDITS</b> |
|---|-----------------------------------|--------------------|
| <b>Course ID</b>  | <b>Course Name</b>                | <b>Credits</b>     |
| ENGT 395  | Field-Based Experience/Internship | VAR*               |

| <b>QUARTER 5</b> |   | <b>16 CREDITS</b> |
|------------------|---|-------------------|
| <b>Course ID</b> | <b>Course Name</b>                        | <b>Credits</b>    |
| ENGT 316         | Applied Fluid Mechanics and Heat Transfer | 5                 |
| AMAT 316         | Numerical Methods for Technologists       | 2                 |
| ENGT 490         | Engineering Technology Capstone I         | 2                 |

|                          |                                       |   |
|--------------------------|---------------------------------------|---|
| AMAT 490                 | Statistical Methods for Technologists | 2 |
| See Elective Course List | BASET Elective 1                      | 5 |

| QUARTER 6                |                                      | 15 CREDITS |
|--------------------------|--------------------------------------|------------|
| Course ID                | Course Name                          | Credits    |
| ENGT 491                 | Engineering Technology Capstone II   | 5          |
| See Elective Course List | BASET Elective 2                     | 5          |
| PSYC 310                 | Industrial Organizational Psychology | 5          |

| QUARTER 7                |                                     | 15 CREDITS |
|--------------------------|-------------------------------------|------------|
| Course ID                | Course Name                         | Credits    |
| ENGT 492                 | Engineering Technology Capstone III | 5          |
| See Elective Course List | BASET Elective 3                    | 5          |
| See Elective Course List | BASET Elective 4                    | 5          |

#### Elective Course List

| Course ID | Course Name                                 | Credits |
|-----------|---|---------|
| ENGT 352  | Process Safety                              | 5       |
| ENGT 395  | Field-Based Experience/Internship           | 3-5     |
| ENGT 415  | Technical Dynamics                          | 5       |
| ENGT 441  | Applied Process Control                     | 5       |
| ENGT 465  | Applied Environmental Engineering           | 5       |
| ENGT 481  | Special Topics in Engineering Technology    | 5       |
| ENGT 495  | Field-Based Experience/Internship           | 3-5     |
| ENGT 499  | Special Problems                            | 3-5     |
| OPM 313   | Quality Management                          | 5       |
| OPM 315   | Lean Concepts & Applications                | 5       |
| OPM 411   | Facility Layout & Materials Handling        | 5       |
| OPM 413   | Measurement and Statistical Process Control | 5       |

*\* 5 credits of ENGT 395 or ENGT 495 can substitute for 5 credits of ENGT electives. 5 credits of ENGT 481 and/or ENGT 499 can substitute for up to 10 credits of ENGT electives. 92 credits is the minimum number of total program credits, not counting bridge courses or the possibility of gaining extra credits for an internship.*

## FACULTY & STAFF

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### BASOPS & BASET

Dr. Timothy Ewing, tenure-track Engineering Technology Instructor and BAS Program Lead, receives one-third release time for administrative oversight of both BAS programs, under the guidance of the Dean of Professional Technical Education (Ray Kubista) and Vice President of Academic Affairs and Student Learning (Walter Hudsick). Dr. Ewing is the current advisor of record for both the BASOPS and BASET programs. A part-time Program Office Coordinator

(Andrea Schuman) has been responsible for recruiting and pre-advising potential and current students for both programs, along with helping coordinate program activities and implementing external program marketing in coordination with other BAS staff and the college's Marketing and Communications department.

Several adjunct faculty members have provided instruction for the BASOPS program. In 2018-19, the college will hire a 1 FTE faculty member with release time to help fill the lead faculty role for this program. Dean Ray Kubista, who joined BTC in Summer 2018, will work with the two BAS leads to help support BAS students and the teaching and learning environment. The college is also hiring a 1 FTE Program Office Assistant in Fall 2018 to replace the .4 FTE Program Office Coordinator position and provide robust student and program support for both programs.

- Dr. Ewing holds a PhD in Chemical Engineering from Washington State University, along with an MS in Biological and Agricultural Engineering and BS in Chemical Engineering.

Current adjunct faculty members teaching in both the BASOPS and BASET programs include:

- Ms. Cameron Farrington, MBA, has extensive teaching experience in business law, finance, and managerial accounting.
- Dr. Ali Ostadfar holds a PhD in Engineering Sciences, and combines manufacturing engineering, biomedical manufacturing, and project management skills.
- Mr. Larry Price, MEd and MBA, is completing his Occupational Safety and Health 501 training to enable him to confer Occupational Safety and Health Administration (OSHA) certifications in construction and general industry to students.
- Mr. Erwin Swetnam, JD, is currently the director of operations for Lautenbach Industries, and brings operations management experience, business communications, and current project management experience.

See appendix F for a full listing of faculty qualifications.

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## ENROLLMENT, RETENTION & COMPLETION

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### **BASOPS & BASET**

BTC's first BASOPS cohort in Fall 2016 began as three (3) students. Because the college allowed late entry that year, the 2016-17 new student enrollment increased to five (5) by the end of the year. This low enrollment was due in part to issues with financial aid approval: the program did not receive final approval to award aid until Spring 2017. Two of these students graduated from the BASOPS program in Spring 2018. In Fall 2017, the college enrolled 18 new students into the program, and the third cohort begins in Fall 2018. BTC offers BASOPS students both a full-time (two year) and part-time (three year) option.

The college will enroll new students into its BASET program for the first time in Fall 2018.

**BASOPS & BASET Enrollment/Retention/Graduation by Cohort Year.**

| <b>BASOPS Cohort Year</b> | <b>New BTC Student Enrollment</b> | <b>Retention (second year)</b> | <b>Completion</b> |
|---------------------------|-----------------------------------|--------------------------------|-------------------|
| 2016                      | 5                                 | 2                              | 2                 |
| 2017                      | 18                                | 12                             | n/a               |
| 2018                      | 6                                 | n/a                            | n/a               |
| <b>BASET Cohort Year</b>  | <b>New BTC Student Enrollment</b> | <b>Retention (second year)</b> | <b>Completion</b> |
| 2018                      | 4                                 | n/a                            | n/a               |

## RESOURCES

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**BASOPS & BASET**

Targeted recruitment, competitive admissions, and advising processes have been created for BTC’s bachelor degrees. The college hosts regular information sessions and engages in social media and print marketing for external audiences, and will publicize BAS options to BTC students at New Student Orientation sessions and other events to support recruitment efforts.

All prospective students interested in a BAS degree at BTC are referred directly to BAS staff members for pre-advising and admissions assistance. BAS program developers and the college’s Student Services staff members worked together to create a competitive admissions process for the programs that meet State guidelines and also aligns with standard BTC processes for admissions and registration. Prospective students for both BAS programs follow the below steps for entry (see appendices C and D for sample student information sheets):

1. All prospective BAS students are encouraged to schedule an appointment to talk to the BAS Program Office Assistant for assessment and to evaluate transcripts.
2. After this meeting, students apply online for admission to BTC and receive a student identification number.
3. Students then complete and submit the admission packet for their BAS program of choice.
4. Applicants receive notification to schedule an interview with the BAS program lead or an administrator, and receive follow-up notification if they are accepted into the program.
5. If admitted, the students meet with the BAS Program Office Assistant to develop their educational plan and receive registration entry codes.

6. Admitted students then register and pay online or in-person for their first quarter courses.

BAS staff work closely with BTC's Registration and Enrollment area to ensure that tuition is assessed correctly. To better assist BAS students, the BAS Program Office Assistant provides wraparound and intrusive support services for students, from prospect to graduate. This position works closely with the BAS program lead, faculty, and Student Services staff to help BAS students navigate the transcript evaluation, admissions, registration and financial aid processes. In 2018-19, all students from both programs will be scheduled to meet once per quarter with the advisor of record.

BAS program students are awarded financial aid, course credit, and degrees through the same processes as other BTC programs. BTC staff use established transfer and Prior Learning Assessment procedures to award appropriate credit for successfully completed college-level work and/or experiences to students transferring to BTC to enroll in a BAS program. The Program Office Assistant creates individualized academic plans with each student and checks in with students two to three times per quarter to assess their progress, address any barriers, help prepare them for the upcoming quarter, and refer information about any outstanding barrier(s) to the program advisor of record.

BTC is currently transitioning to the Microsoft Dynamics Communications Relations Management (CRM) system, which will house BTC's early alert and progress reporting system. This system enables BAS instructors to issue an alert if a student is having difficulties (e.g., attendance, performance, lack of transportation or shelter), and work closely with the program advisor of record, program assistant, and campus support staff to proactively engage with that student to address the barrier(s).

College library staff continue to work closely with BAS faculty to maintain a collection of relevant, up-to-date resources that support the BAS curriculum. To date, the BTC Library has acquired 52 titles recommended by BASOPS and BASET faculty members and is subscribing to recommended databases, including EBSCO Academic Search Elite, Business Source Elite, and Resources for College Libraries (a collection of basic titles arranged in 61 different disciplines, including professional technical disciplines). The library's eBook subscription includes hundreds of titles for both programs, and library staff have been enhancing higher-level general education resources in subjects such as Technical Communications and Industrial Psychology. Faculty and staff continue to improve integration of information literacy into the curriculum for both programs. Library staff will also assist faculty and students use tools such as Zotero (an online research management tool) both inside and outside the classroom.

The library provides group meeting spaces with oversized monitors for BAS students upon request, and has a large computer lab. Library staff members offer research and technology assistance, and staff are continually increasing the technologies and equipment available to students. BAS students may check out digital recorders, digital cameras, presentation clickers, laptops, and iPads. 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. BTC Library OneSearch, an online reference service, is available on the library webpage. The 'Book a Librarian' service allows all BTC students and staff to schedule an appointment and receive assistance from professional reference librarians, and the library site offers a 'chat' function for 24-hour support.

The on-campus Tutoring Center includes tutors who can assist students with the upper division mathematics and English required for the bachelor programs. BASET program faculty have initiated conversations with professional technical programs such as Electrician, Machining, Instrumentation & Control Technology, and the two-year Engineering Technology degree programs to create the capacity for BAS students to work in their labs as needed.

## **FACILITIES & EQUIPMENT**

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### **BASOPS & BASET**

All BASOPS and BASET program courses use Canvas. The BASOPS program is now fully online through the Canvas system, and the BASET program faculty will use Canvas to enhance their face-to-face courses. BTC's New Student Orientation, which is attended by BASOPS and BASET students and staff, includes information on BTC email, network, and online instructional systems. Ongoing student support is offered through the eLearning Help Desk (phone and email) and library staff. Online tutorials and videos are also available on the BTC website and through the online Canvas system. BTC's eLearning department provides campus-wide training and support for faculty and staff on Canvas as well as for other instructional technologies, such as Panopto (instructional videos) and Zoom (video conferencing). The eLearning department regularly surveys faculty members and students to determine needs and priorities.

The BASET program courses will be primarily located at the Technology Development Center (TDC), which is owned and operated by the Port of Bellingham and is a facility shared between BTC, Western Washington University (WWU), and the Bellingham Makerspace. The TDC is located less than two miles from the BTC campus. The TDC includes a materials processing lab, a clean room, a teaching classroom, and mobile laptop lab.

The program classroom is equipped with interactive instructional technology, including media stations and video recording technology. BASET faculty will also have access to mobile laptop computer learning labs to enhance the instructional experience. Classroom computers are loaded with specialized computer software and hardware, including upgraded systems with advanced computer-aided drawing and numerical analysis program software. Wireless internet is available throughout all BTC facilities, and students also have access to the Library's 30-station open computer lab as well as its technology-rich small group study rooms.

BASET program staff and students will have access to TDC laboratory space outfitted with standardized industry equipment. Examples of equipment include 3D printers, tensile testing

equipment, extensive workshop hand and power tools, composite layup and processing equipment, ultrasound and repair technology tools, and electronics. The laboratory space is equipped with utility columns, and includes AC/DC utility, vacuum, air, and data ports. The lab is designed for ease of reconfiguration as instructional needs or content change, and includes ten-foot-wide overhead doors to bring large equipment in and out, 220 and 110 volt outlets, and flammable storage cabinets.

BAS faculty offices are located in J building, Campus Center, Morse Center and the TDC. The dean and support staff for the programs are also located in Morse Center. All employees, including adjunct instructors, have shared offices with essential office furniture and technology. All staff and faculty have access to centralized print/copy stations, break room amenities, open classrooms, and conference rooms for private meetings with students.

## **ASSESSMENT**

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### **BASOPS & BASET**

BTC faculty members assess the efficacy of current teaching methodology and assignments in helping students achieve individual learning outcomes through annual Student Learning Outcomes reports. These reports, which have been recently updated and streamlined, include program- and course-specific student learning outcomes, measures/assessments, and student achievement data. Faculty assess program results and discuss future plans based on their program data. Beginning in 2018-19, with the addition of lead faculty member roles for both degrees, the BAS programs will participate in the college's annual instructional program assessment process.

New courses and updates to course-level student learning outcomes are vetted and monitored through BTC's Instruction Council, and related advisory committee groups in the Business and Computer Information Systems and Engineering Technology program areas help provide input and feedback. The BAS faculty determine methods to assess student achievements described in each course syllabus in a manner consistent with institutional policies. 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 programs have criteria for achieving each grade based on percentage scores and specific assessment criteria as identified in the course syllabi. Assessment practices are examined and modified through student input, advisory committee recommendations, faculty evaluation of efficacy, and relevancy to updated curriculum.

Student feedback for all programs is currently gathered through an online student assessment of satisfaction, and BAS program students will participate in these assessments in the future. The dean and faculty will use this information to improve student satisfaction levels as needed.

BTC has a wide variety of online data dashboards and performs ongoing analysis of relevant institutional data such as student enrollment, demographics, course success, transition, retention, satisfaction, and completion; and graduate employment. These dashboards allow faculty and staff to explore data by instructional program, student demographics, specific timeframe, and other measures, which helps instructional programs, including the BAS programs, assess their performance. Most institutional and program-specific assessment and performance information are housed on BTC's data dashboards, which can be accessed by any BTC employee.

The BAS programs will begin completing annual Program Effectiveness Reports in 2018-19. These reports are generated by Institutional Effectiveness staff with input from and collaboration with faculty members and deans. The reports will be used to evaluate each BAS program as compared to pre-determined standards. The Program Effectiveness Reports include program-specific data on and standards for annual full-time headcount, annual FTEs, retention rates, number of degrees/certificates awarded, student satisfaction levels, and graduate employment and wage results. BAS faculty will review the reports for their areas; add enrollment, retention data, degree/certificate award, and employment and wage data from their own records if they wish; assess whether or not each standard was met; and respond to reflective questions. The BAS faculty and deans will review the reports together to assess and evaluate each program, discuss the effectiveness of any prior changes and identify any further changes needed or new areas for improvement.

## **PROGRESS & CHALLENGES**

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### **BASOPS & BASET**

The BAS programs at BTC have been carefully planned and implemented, with ongoing improvement efforts directed not only at improving curriculum and instructional delivery, but also at recruiting and supporting students. College Admissions, Academic and Career Advising, Registration and Enrollment, Financial Aid, and Marketing and Communications offices have collaborated closely with BAS program staff, faculty and administration to create seamless entry and support systems for students in the programs. In Spring 2018, BTC achieved an important milestone for its BAS programs by graduating students from its first Fall 2016 BASOPS cohort.

While BAS programs at BTC have also experienced several setbacks and changes—and are experiencing low enrollment—both are on track to become more robustly resourced and effective moving forward. The college has committed to independent operation of the BASOPS program (exiting the consortium with Clover Park Technical College), and to full-time lead faculty positions and a full-time support position for both programs. These positions will serve to anchor the programs and provide strong support for both recruitment and retention efforts. In an effort to increase enrollment and bolster community awareness of the degrees, BTC's

Marketing and Communications and Admissions staff are focusing on promoting the programs through in-person information sessions, as well as print, online and social media channels.

Frequently, students trying to enroll in the BAS programs must complete pre-requisite courses prior to enrolling, and these courses (particularly Math) can form a barrier for prospective students. In addition, students can be unprepared for a fully online program such as BASOPS. By strengthening wraparound services for prospective and current students, engaging in continuous focus on recruitment and preparation for prospective students, and creating new options for students to articulate directly into its BAS programs, BTC hopes to successfully address these barriers.

## CONCLUSION

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The last two years have been an exciting period for the college as its staff, faculty and administrative team have worked diligently to develop and implement BTC's first-ever Bachelor of Applied Science degrees. The full launch of these programs, related internal marketing and communications efforts, and the recent graduation of the college's first BAS students, have all helped raise enthusiasm and awareness about these degrees on the part of the internal BTC community. For example, many two-year professional technical program faculty members are now planning to review their programs in order to enhance their students' ability to transfer into BTC's new BAS degree programs.

Based on its initial experiences over the past two years, the college understood that it needed to create and resource a more robust leadership and student support structure for its BAS programs. We anticipate enrollment growth for these programs as these resources are put into place and as students and regional residents become increasingly aware of and interested in the availability of these advanced pathways. The college is pleased to be able to offer both its current student body and the wider regions general population educational pathways which will result in broader employment and enhanced workplace promotional opportunities.

We deeply appreciate the support and guidance of the NWCCU in the ongoing development and implementation of our BAS programs.

## Appendix A: BASOPS Course Descriptions

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### **ENGL 310, Business Communication**

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.

#### Learning Outcomes:

- 1) Explain how different organizational cultures, business practices, and social norms affect communication in a broad range of business contexts.
- 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.
- 3) Produce effective, grammatically-correct business letters, reports, memos and/or emails appropriate to a given situation paying attention to both the writer's objectives and the readers' needs.
- 4) Working as part of a team, design and deliver a persuasive presentation using appropriate electronic presentation software and systems whilst adhering to a specified time limit.

### **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.

#### Learning Outcomes:

- 1) Distinguish between ethical and other types of values.
- 2) Define corporate responsibility, corporate compliance, and social responsibility.
- 3) Compare differences in ethics in international communities.
- 4) Evaluate the ethics of business decisions and general practices in business and the professions using systematic ethical reasoning.
- 5) Communicate the resolution of ethical dilemmas effectively in oral and written forms.

### **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.

#### Learning Outcomes:

- 1) Explain the meaning of the terms “time value of money”, “internal rate of return”, and “cost-benefit ratio”.
- 2) Explain cash flows, their estimation, and how to graphically represent them.
- 3) Perform calculations involving simple and compound interest, and rate of return.
- 4) Develop spreadsheets to solve common managerial economics problems.
- 5) Compare alternatives using net present worth, equivalent annual worth, internal rate of return, and cost-benefit analysis.
- 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.

### **PSYC 310, Industrial 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.

#### Learning Outcomes:

- 1) Write job descriptions for positions in a typical organization that follow best practices and comply with applicable laws.
- 2) Develop a workforce training strategy for a typical organization including training needs assessment, consideration of modality of training, and evaluation methods.
- 3) Analyze the skills that are generally considered to be essential for effective leadership.
- 4) Discuss the legal issues that must be considered during a typical recruitment process.
- 5) Carry out a mock interview, and document the results.
- 6) Develop specific, measureable and achievable goals for employees in a typical organization

### **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.

Learning Outcomes:

- 1) Develop a project plan using Gantt charts and networks.
- 2) Compare the advantages and disadvantages of different project estimating techniques.
- 3) Design an appropriate Work Breakdown Structure (WBS) for a project.
- 4) Evaluate make or buy, and source selection decisions.
- 5) Identify different kinds of risk including schedule, cost, and quality risk.
- 6) Recommend a risk management strategy for a project

**OPM 311, Mathematical Techniques for Operations Managements**

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.

Learning Outcomes:

- 1) Compare and contrast single- and multiple-sampling plans
- 2) Construct a decision tree and use it to analyze a business problem
- 3) Conduct sensitivity analysis of a simple decision problem
- 4) Perform reliability calculations for a system
- 5) Describe the type of problem that would lend itself to solution using linear programming
- 6) Formulate a linear programming model from a description of a business problem

**OPM 312, Forecasting and System Design**

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.

Learning Outcomes:

- 1) Outline the steps involved in the forecasting process.
- 2) Compare and contrast quantitative and qualitative approaches to forecasting.
- 3) Apply averaging techniques, trend and seasonal techniques, and regression analysis to solve typical problems.
- 4) Discuss some of the legal, ethical and sustainability considerations that arise in product and service design.

5) Explain the purpose and goal of life cycle assessment.

### **OPM 313, Quality Management**

Equips students with the tools used to plan, implement and manage quality management programs with special emphasis on process documentation, staff training, and communication of results to management and auditors.

#### Learning Outcomes:

- 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.
- 2) Discuss quality requirements specific to regulated industries such as biomedical devices and aerospace.
- 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.

### **OPM 314, Logistical Planning and Supply Chain Management**

Introduces students to the complexities of domestic and global supply chains including consideration of make/buy and outsourcing decisions. Explores the importance of the inventory control and procurement functions, and discusses the use of materials resource planning (MRP), manufacturing resource planning (MRPII) and enterprise resource planning (ERP) systems.

#### Learning Outcomes:

- 1) Discuss the differences between supply chain management and logistics management..
- 2) Explain how inventory management strategies relate to overall business strategy.
- 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.
- 4) Apply modern inventory management techniques, including mathematical approaches, to solve typical problems.
- 5) Compare and contrast the uses of materials resource planning (MRP), manufacturing resource planning (MRPII) and enterprise resource planning (ERP) systems.



### **OPM 315, Lean Concepts and Applications**

Introduces students to the complexities of domestic and global supply chains including consideration of make/buy and outsourcing decisions. Explores the importance of the inventory control and procurement functions, and discusses the use of materials resource planning (MRP), manufacturing resource planning (MRPII) and enterprise resource planning (ERP) systems.

#### Learning Outcomes:

- 1) Analyze a business process using SIPOC diagrams, process mapping, and value stream mapping.
- 2) Design and execute DMAIC projects and Kaizen events.
- 3) Use statistical analyses to determine the relationship between process inputs and outputs.
- 4) Apply cause-effect diagrams and FMEA to identify process failure modes.
- 5) Apply Lean concepts including 5S, waste reduction, and source inspection/mistake proofing to real business problems.

### **OPM 411, Facility Layout and Materials Handling (ELECTIVE)**

Introduces students to the complexities of domestic and global supply chains including consideration of make/buy and outsourcing decisions. Explores the importance of the inventory control and procurement functions, and discusses the use of materials resource planning (MRP), manufacturing resource planning (MRPII) and enterprise resource planning (ERP) systems.

#### Learning Outcomes:

- 1) Discuss the 10 CIMHE Principles of Materials Handling.
- 2) Compare and contrast the different types of material handling equipment – including transport, storage, unitizing, and identification/tracking systems – found in typical manufacturing organizations.
- 3) Develop a material handling plan for a typical manufacturing organization.
- 4) Discuss how the layout of a plant is affected by factors such as the production quantity, and the variety of production.
- 5) Determine the optimum location for a manufacturing organization giving due consideration to proximity to suppliers and customers, availability of skilled labor force, transportation and labor costs, and tax incentives and grants.

### **OPM 412, Workplace Health and Safety Management (ELECTIVE)**

Introduces students to the complexities of domestic and global supply chains including consideration of make/buy and outsourcing decisions. Explores the importance of the inventory control and procurement functions, and discusses the use of materials resource

planning (MRP), manufacturing resource planning (MRPII) and enterprise resource planning (ERP) systems.

Learning Outcomes:

- 1) Define the elements of an effective workplace health and safety program.
- 2) Identify local, state, federal and international agencies and organizations concerned with workplace safety and health (e.g. OSHA, EPA, DOT, L&I) including their levels and limits of authority.
- 3) Determine the financial and social impact of common workplace injuries and illnesses, using quantitative measures wherever appropriate.
- 4) Develop written policies and procedures for use in a typical manufacturing environment.
- 5) Prepare a detailed workplace health and safety training plan, including refresher training, for a typical manufacturing organization.

**OPM 413, Measurement and Statistical Process Control (ELECTIVE)**

Introduces key tools used in Statistical Process Control including control charts, continuous improvement, acceptance sampling, and the design of experiments. Also covers 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.

Learning Outcomes:

- 1) Describe the DMAIC process (define, measure, analyze, improve, and control).
- 2) Design, use, and interpret control charts for variables and attributes.
- 3) Construct sequential and continuous acceptance sampling plans.
- 4) Design statistical experiments.
- 5) Explain, and differentiate between, the terms 'accuracy', 'error', 'precision', and 'uncertainty'.
- 6) Create a calibration plan for a typical manufacturing organization

## Appendix B: BASET Course Descriptions

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### **ENGT 301, Introduction to Engineering Technology**

This course introduces students to the Bachelor of Applied Science in Engineering Technology (BASET) program at Bellingham Technical College. It is designed to develop student ability to function effectively on teams; identify, analyze and solve technical problems; make effective written and oral communications and presentations; understand professional, ethical and social responsibilities; recognize contemporary professional, social and global issues; and commit to lifelong learning and continuous improvement. The course includes a technology orientation that includes design, programming, and application software packages, such as SolidWorks, Excel with VBA, and Canvas. A workshop and laboratory safety and skills module will prepare students to work safely and effectively on future program related projects.

### **ENGT 311, Fundamental Principles of Manufacturing Processes**

This course is designed to provide a basic understanding of traditional methods of materials processing used in product manufacturing. The fundamental principles behind various manufacturing processes will be discussed with the intent of providing students with the skills to assess process capabilities and limitations. A wide range of manufacturing processes will be introduced, including casting, extruding, forging, molding, forming, joining, machining, heat treating, injection molding, and 3D printing.

### **ENGT 312, Applied Electricity and Electronics**

This course covers the fundamental principles of electricity and electronics including electric circuit theory, the nature of electricity, electronic instrumentation and measurement systems, signals, sensors, and transformations. Topics include alternating current (AC) and direct current (DC) components, circuit analysis techniques, semiconductors, electromagnetism, sources, energy conversion, microcontrollers, and electrical instruments. Weekly laboratories will be held during which students will layout, test, and troubleshoot various electronic circuits and devices—laboratories may utilize electronics kits or software simulation.

### **ENGT 313, Applied Statics**

This course examines the principle forces, moments, resultants & static equilibrium of force systems, center of gravity, friction, and free body diagram analysis. Problem disentanglement, setup, and development of solution paths are emphasized. Additional topics may also cover the concepts of stress and strain, shear, bending moments, torsion, bending stresses in beams and stress resolution and shear. The course includes a laboratory component.

**ENGT 314, Applied Strength of Materials**

This course examines both the theory and experimental techniques common in materials engineering with analysis of the relationship between externally applied forces and internal reactions in materials. Topics covered include strength, deformation, fracture, creep, stress-strain relations, and cyclic fatigue properties of engineering materials, such as wood, metals, plastics, composites, and ceramics. Additional topics may include the design and analysis of mechanical components subject to static and fatigue loading conditions, deformation, and buckling. Emphasis will be placed on interpretation of experimental data, comparison of measurements to numerical/analytical predictions, finite element analysis, and engineering report writing. The course includes a laboratory component.

**ENGT 316, Applied Fluid Mechanics and Heat Transfer**

This course explores the fundamental concepts of fluid mechanics and heat transfer and their applications in engineering. Fluid mechanics and heat transfer are key to the understanding and improvement of mechanical systems. Topics include analysis of static fluid bodies, fluid dynamics, the effects of viscous and thermal boundary layers, fluid conservation equations, fluid flow through piping systems and external flow analysis, the concept of boundary layer behavior to heat transfer, conduction and convection, the design of heat exchangers, and introduction to process thermodynamics. The course includes a laboratory component.

**ENGT 352, Process Safety**

The main focus of this course is to cover the broad scope of process safety engineering. An emphasis is placed on how process safety engineering fits into the broader context of risk management and process safety management. Examples will be drawn from a variety of manufacturing industries and production facilities. Topics covered may include, risk analysis, inherently safer design, process hazards analysis, historical incident databases, equipment layout and spacing, monitoring and control, safety instrumented systems, and fire and explosion principles.

**ENGT 390, Project Planning and Management**

This course examines the engineering design process and teaches students techniques necessary to develop realistic and comprehensive project plans. Topics include how to effectively manage resources, coordinate multiple tasks associated with design projects, conflict resolution, and the use of software to develop and manage project plans.

**ENGT 391, Introduction to Analysis and Design**

This course explores the role of engineering design and collaborative problem-solving in the context of small scale design projects. Students work in teams to develop their problem-solving and teamwork skills. This course serves as a foundational engineering design experience and leads directly to the year-long Engineering Technology Capstone Project.

**ENGT 395, Field-Based Experience/Internship (ELECTIVE)**

Engineering internships are not required but serve as a critical experience for students to apply classroom learning to real world experiences and potentially help them to secure full-time positions upon graduation. The aim of this course is to enable students to gain skills needed to negotiate, plan, undertake and communicate the results of an engineering project while working in an industry placement. The project topic will be based on the needs of the industry. The project will be completed under the supervision of an industry professional (preferably with a degree in Engineering, Engineering Technology, or closely related field). The course requires placement of the student in an industry or research internship. Variable credit can be earned for periods of 3-12 weeks of full-time equivalence.

**ENGT 415, Technical Dynamics (ELECTIVE)**

This course focuses on the study of kinematics, dynamics, and vibrations of particles and rigid bodies, such as mechanical components. Topics include principles of motion of mechanical systems, inertia, work and energy, linear and angular momentum, vibrational analysis, and impact. Emphasis will be placed on 1) kinematic analysis and synthesis of mechanisms, with applications to linkages, cams, and gears, 2) dynamics of reciprocation and rotating machinery, and 3) mechanical vibrations. A laboratory component will focus on computer-aided design and analysis of kinematic and kinetic models.

**ENGT 441, Applied Process Control (ELECTIVE)**

This course introduces dynamic processes and the engineering tasks of process operations and control. Subject covers modeling the static and dynamic behavior of processes; control strategies; design of feedback, feedforward, and other control structures; and applications to process equipment. Laboratory exercises will reinforce the major concepts, and students will be expected to use and write computer programs.

**ENGT 465, Applied Environmental Engineering (ELECTIVE)**

This course develops and utilizes analytic solutions for environmental process models that can be used in a) reactor design for processes used in the treatment of water, wastewater and hazardous waste and b) process analysis of natural systems, such as streams and groundwater flow. Models facilitate the tracking of contaminants in engineered and natural systems. Includes a laboratory component.

**ENGT 481, Special Topics in Engineering Technology**

A special topics Engineering Technology course in lieu of or supplementary to a 400-level course as arranged by a Bellingham Technical College faculty member. The course must be approved by the BASET Program Lead in advance of the quarter in which it will be offered. No more than two such courses may be used in satisfaction of requirements of the program electives.

**ENGT 490, Engineering Technology Capstone I**

Senior Project: This is the first in a yearlong, 3-course sequence in which students will work in teams to design, build, and test systems with real world applications. The focus of this

course will be on selecting and identifying a project and then developing and documenting a comprehensive plan for completing the project.

### **ENGT 491, Engineering Technology Capstone II**

Senior Project: This is the second in a yearlong, 3-course sequence in which students will work in teams to design, build, and test systems with real world applications. The focus of this course will be on applying engineering design processes including defining functional requirements, conceptualization, analysis, identifying risks, materials selection, and fabrication. An emphasis will be placed on student teams designing and building a working prototype.

### **ENGT 492, Engineering Technology Capstone III**

Senior Project: This is the third in a yearlong, 3-course sequence in which students will work in teams to design, build, and test systems with real world applications. The focus of this course will be on applying engineering design processes including defining functional requirements, conceptualization, analysis, identifying risks, materials selection, and fabrication. An emphasis will be placed on student teams developing a simulation model, fully documenting their solution with a technical report, and giving a final project presentation.

### **ENGT 495, Field-Based Experience/Internship (ELECTIVE)**

Engineering internships are not required but serve as a critical experience for students to apply classroom learning to real world experiences and potentially help them to secure full-time positions upon graduation. The aim of this course is to enable students to gain skills needed to negotiate, plan, undertake and communicate the results of an engineering project while working in an industry placement. The project topic will be based on the needs of the industry. The project will be completed under the supervision of an industry professional (preferably with a degree in Engineering, Engineering Technology, or closely related field). The course requires placement of the student in an industry or research internship. Variable credit can be earned for periods of 3-12 weeks of full-time equivalence.

### **ENGT 499, Special Problems (ELECTIVE)**

This course is designed as an individual research or design project directly related to engineering technology and carried out under the supervision of a member of the Bellingham Technical College faculty. Students electing this course will be required to carry out preliminary reading and complete a scope of work that includes deliverables during the preceding quarter. Students are expected to manage all aspects of their individual project from conceptualization through the planning phase and to the ultimate achievement of the deliverables. A major written report and oral presentation will be submitted for review at the completion of the project.

### **AMAT 301, Programming for Technologists**

This course introduces concepts and techniques for creating computational solutions to problems in engineering and science. The essentials of computer programming are

developed using Excel with VBA and other selected languages, with the goal of enabling the student to use the computer effectively in subsequent courses. Programming topics include problem decomposition, control structures, recursion, arrays and other data structures, file I/O, graphics, and code libraries. Examples will be drawn from relevant engineering fields and may include, root finding, matrix operations, searching and sorting, simulation, and data analysis. “Best practices” programming style and computational efficiency are emphasized.

### **AMAT 312, Applied Linear Algebra**

This course presents the fundamental concepts and applications of linear algebra with emphasis on developing structured algorithms and numerical solutions to problems in engineering and science. Topics include systems of linear equations, linear transformations, matrix operations, vector spaces, eigenvalues and eigenvectors, and determinants. Examples may be drawn from areas such as electrical engineering, process optimization, and statistics. This course includes introductions to Excel with VBA and other selected languages.

### **AMAT 313, Technical Calculus**

This course is designed to develop the topics of differential and integral calculus with the aim of improving student intuition and skill sets associated with advanced engineering problem solving. Emphasis is placed on limits, continuity, derivatives, and integrals of algebraic and transcendental functions of one variable. Additional topics include multivariable functions, vector calculus, and evaluation methods. Examples may be drawn from areas such as structural engineering, mechanics of materials, and electrical engineering. Scientific computing applications, including Excel with VBA and other selected languages, will be utilized to visualize and solve engineering problems.

### **AMAT 314, Applied Differential Equations**

This course is a survey of important applications and solution methods for differential equations, both linear and non-linear, related to engineering technology. Topics include the study of systems of ordinary differential equations using eigenvectors and eigenvalues, numerical solutions of first- and second-order equations and systems of equations, initial value problems, Laplace Transformations, separation of variables, and the solution of elementary partial differential equations using Fourier series. Emphasis will be placed on examples including structural analysis, material properties, vibrations, and fluid dynamics. Scientific computing applications, including Excel with VBA and other selected languages, will be utilized to visualize and solve engineering problems.

### **AMAT 316, Numerical Methods for Technologists**

A study and analysis of important numerical and computational methods for solving engineering and scientific problems. This course will include methods for solving linear and nonlinear equations, polynomial interpolation and extrapolation, evaluating integrals, solving ordinary differential equations, and determining eigenvalues and eigenvectors of matrices. The student will be required to write and run computer programs using Excel with

VBA and other selected languages. Examples will be drawn from a variety of engineering fields and disciplines, including an emphasis on fluid mechanics and heat transfer.

**AMAT 490, Statistical Methods for Technologists**

This course covers the role of statistics in engineering and emphasizes the application of statistical techniques and concepts to maximize the amount and quality of information resulting from analysis of process data. Course topics include descriptive statistics, probability theory, probability distributions, confidence intervals, hypothesis testing, linear regression, ANOVA, design of experiments, and collection and handling of data. The student will be required to write and run computer programs using Excel with VBA and other selected languages.



# Bachelor of Applied Science in Operations Management (BASOPS)



## What is Operations Management?

Operations Management is the leadership of people and the management of systems and processes to create goods and provide service in a wide range of industries from aerospace to food processing.

## About BTC’s BAS Operations Management

BTC’s Bachelor of Applied Science in Operations Management (BASOPS) degree has been designed to meet the needs of students who want to advance their careers and train for roles that range from facilities supervisors and managers to managers and VPs of operations. During the BASOPS degree, students will learn about operations management tools and techniques, develop their business skills, and apply them to solve practical problems in their chosen industry.

**First year:** Focus on core Operations Management coursework related to topics such as Lean Concepts and Applications, Forecasting and System Design and Workplace safety Management.

**Second year:** Students will engage in a three-course sequence of focused study that is customized to their specific field of interest in cooperation with their instructor. Students will participate and apply knowledge in both a group capstone project as well as an individual capstone project prior to completing the BASOPS program.

## What Do You Need to Apply?

|   |                                     |   |
|---|-------------------------------------|---|
| <b>Minimum Requirements Needed to Apply to the Program</b><br>Students must complete an accredited associate degree or higher, and if necessary take these additional courses before applying to the BASOPS program | ----                                | Completed Accredited Associate Degree or Higher   |
|   | ENGL& 101                           | English Composition I   |
|   | MATH 099                            | Intermediate Algebra  |
|   | HUMANITIES OR SOCIAL SCIENCE        | Any 5 credit course in humanities or social science   |
| <b>Bridge Courses – Up to 25 credits; Required for Entry into the Technical Core Courses</b><br>Students must complete these courses before being admitted to the 300-level Technical Core courses                  | MATH& 146                           | Introduction to Statistics  |
|   | NATURAL SCIENCES with LAB           | Any 5 credit course in natural sciences with lab  |
|   | HUMANITIES                          | Any 5 credit course in humanities   |
|   | SOCIAL SCIENCE                      | Any 5 credit course in social science   |
|   | ADDITIONAL GENERAL EDUCATION COURSE | Any additional 5 credit general education course in communications, math (college level), natural sciences, humanities, or social science |

## When Does It Start?

The program will be offered starting Fall Quarter 2018.

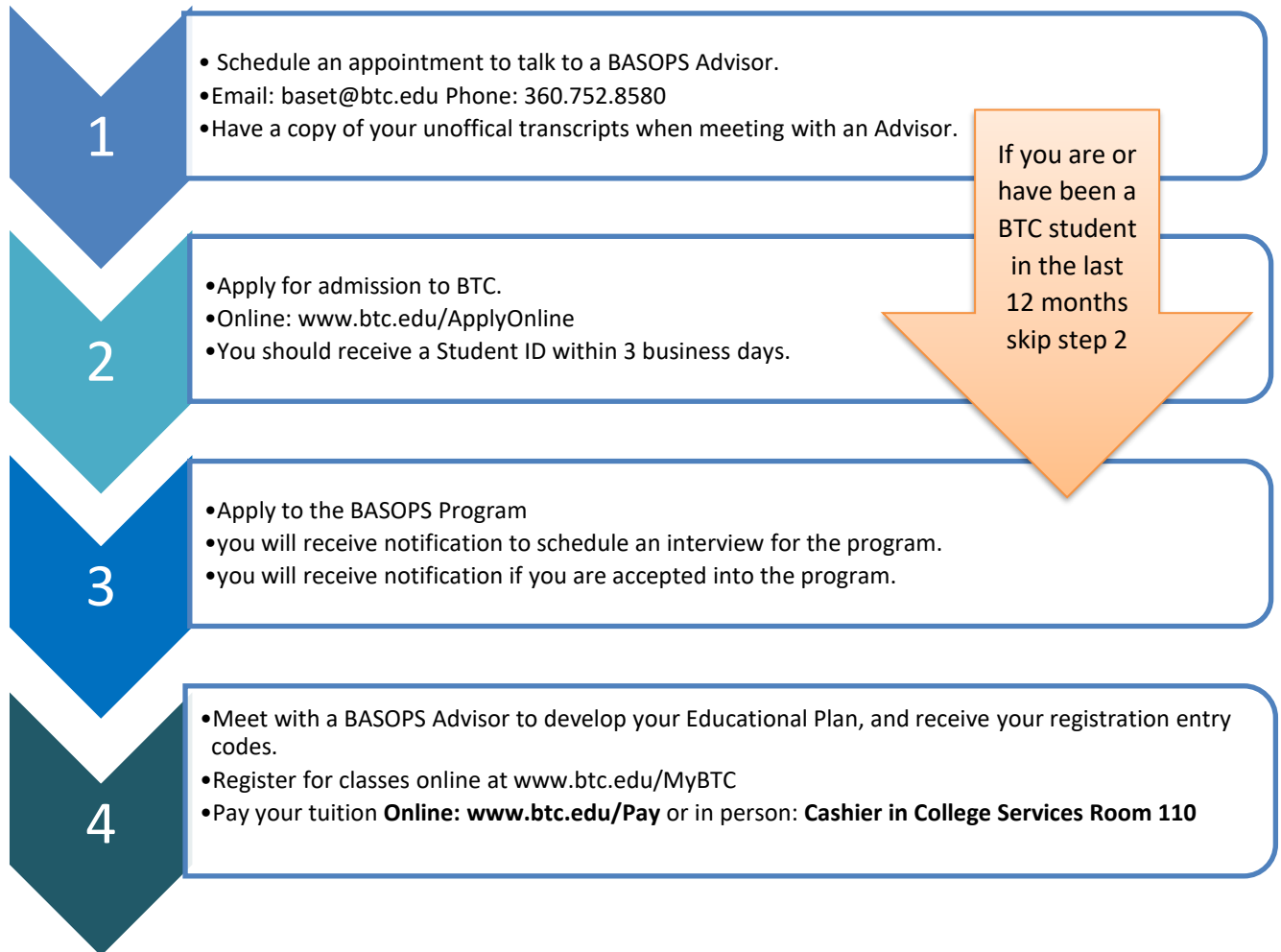
## For More Information:

Contact Andrea Schuman at 360.752.8580 or [aschuman@btc.edu](mailto:aschuman@btc.edu)

## APPLICATION DEADLINE: July 25 by 4:30 PM

Applications for Fall Quarter must be submitted by Wednesday, July 25, at 4:30 PM; after July 25, applications are considered on a space-available basis.

## ADMISSION STEPS BASOPS PROGRAM



Bellingham Technical College does not discriminate against any person on the basis of race, color, national origin, disability, sex, genetic information, or age in admission, treatment, or participation in its programs, services and activities, or in employment. All Inquiries regarding compliance with access, equal opportunity and/or grievance procedures should be directed to the Associate Director of Human Resources, Bellingham Technical College, 3028 Lindbergh Avenue, Bellingham, WA 98225, or call 360-752-8354

# Bachelor of Applied Science in Engineering Technology (BASET)



## What is Engineering Technology?

Engineering Technology is the practical application of math and science to the solution of real world problems. By applying engineering principles and implementing technological advances, engineering technologists work to benefit society. Graduates with an Engineering Technology degree often seek employment in fields such as engineering production, design, manufacturing, and operations.

## About BTC's BAS in Engineering Technology

BTC's Bachelor of Applied Science in Engineering Technology (BASET) degree has been designed to meet the needs of students who want to work in the engineering field. The program focuses on providing hands-on technical education that prepares graduates to be productive technologists who make meaningful contributions to the engineering industry. Our curriculum balances theoretical content, robust applied laboratory work, and engaging classroom experiences. Intensive engineering design projects provide students with a strong foundation of engineering knowledge and skills that align with traditional and emerging careers in the engineering field.

**First year:** Focus on core engineering coursework related to topics such as materials and manufacturing processes, electricity and electronics, structural analysis, vibration, and heat transfer.

**Second year:** Participate in a year-long capstone project experience that builds design and conceptualization abilities and allows for development of teamwork and project management skills and knowledge of engineering economics, ethics, communication, and the design and analysis process.

## What Do You Need to Apply?

|  |                                     |  |
|--|-------------------------------------|--|
| <b>Minimum Requirements Needed to Apply to the Program</b><br>Students must complete an accredited associate degree or higher, and if necessary take these additional courses before applying to the BASET program | ----                                | <b>Completed Accredited Associate Degree or Higher</b>                   |
|  | ENGL& 101                           | English Composition I  |
|  | HUMANITIES                          | VAR - Any Humanities Course  |
|  | MATH& 141                           | Precalculus I  |
| <b>Bridge Courses – Up to 15 credits; Required for Entry into the Technical Core Courses</b><br>Students must complete these courses before being admitted to the 300-level Technical Core courses                 | ENGR& 114 or ENGT 180 or Equivalent | Engineering Graphics or Parametric Modeling or Program Director approval |
|  | MATH& 142                           | Precalculus II   |
|  | PHYS& 114 or PHYS& 221              | General Physics I w/lab or Engineering Physics I w/lab                   |
|  | CHEM& 161                           | General Chemistry w/lab I  |

## When Does It Start?

The program will be offered starting Fall Quarter 2018.

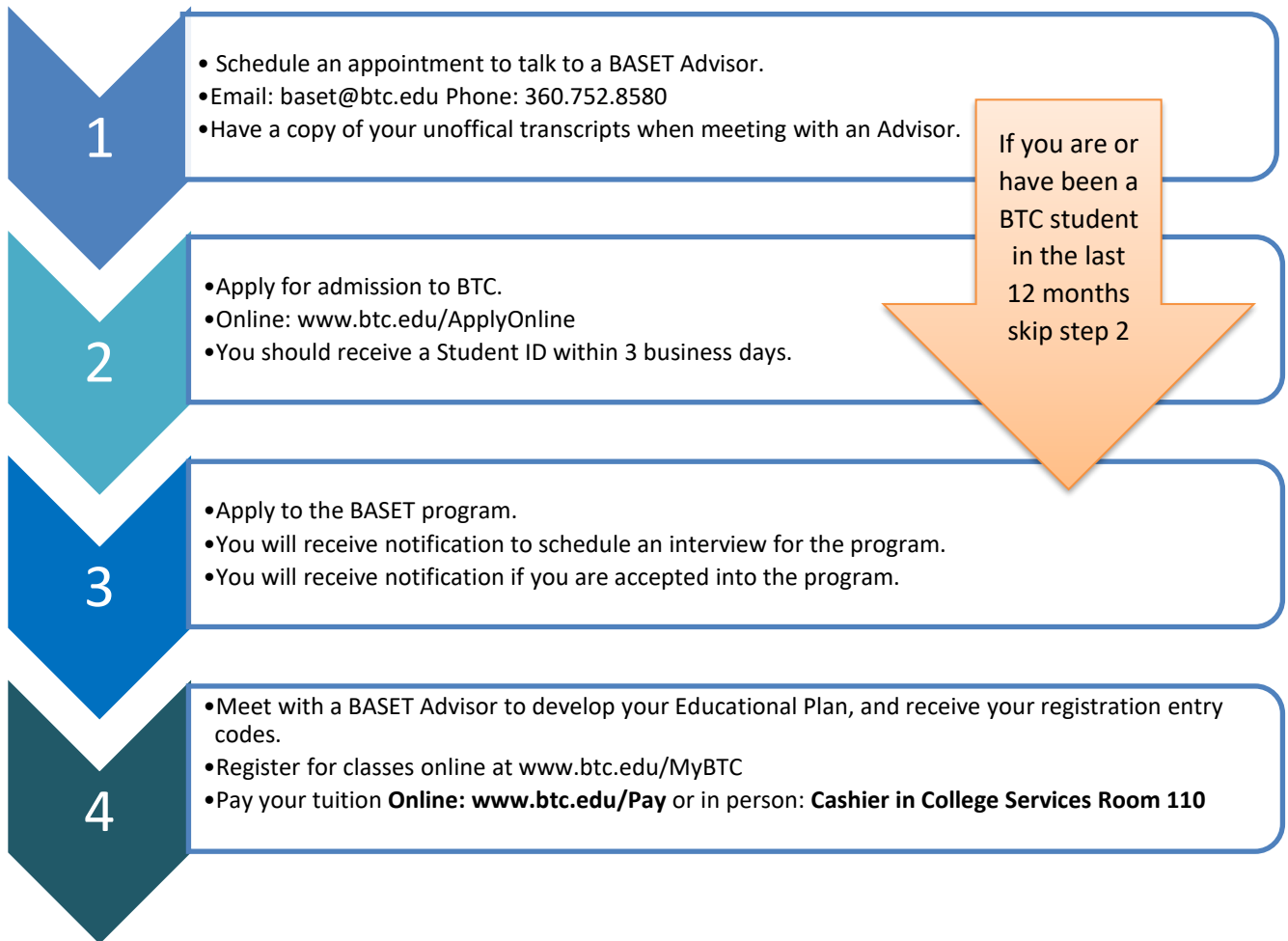
## For More Information:

Contact our program office coordinator, Andrea Schuman, at 360.752.8580 or [baset@btc.edu](mailto:baset@btc.edu).

## APPLICATION DEADLINE: July 25 by 4:30 PM

Applications for Fall Quarter must be submitted by Wednesday, July 25, at 4:30 PM; after July 25, applications are considered on a space-available basis.

## ADMISSION STEPS FOR THE BASET PROGRAM



Bellingham Technical College does not discriminate against any person on the basis of race, color, national origin, disability, sex, genetic information, or age in admission, treatment, or participation in its programs, services and activities, or in employment. All Inquiries regarding compliance with access, equal opportunity and/or grievance procedures should be directed to the Associate Director of Human Resources, Bellingham Technical College, 3028 Lindbergh Avenue, Bellingham, WA 98225, or call 360-752-8354

**Appendix E: Sample Syllabi, BASOPS**

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INSTRUCTOR NAME: Ali Ostadfar, PhD

EMAIL: aostadfar@btc.edu

OFFICE: [Click here to enter text.](#)

PHONE: 7789183310

DEPT/COURSE #: Professional Technical Education.

QTR/YEAR: Fall/2017

MEETING TIMES/DAYS: online

CREDITS: 5

Theory Hours: online

Guided Practice Hours: Field Based Experience  
## Hours: ##

**COURSE TITLE:**

Project Management, BUS 310

**COURSE DESCRIPTION:**

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.

**COURSE PREREQUISITE:**

N/A

**LEARNING OUTCOMES:**

At the end of this course, the student should be able to:

| Learning Outcomes  | Methods of Assessment                              |
|--|--|
| Recognize the project management elements, procedures and role of the project manager  | Quiz, Assignment and Exam                          |
| Identify topics and issues in a realistic project scenario   | Quiz, Assignment, Exam, Final Project presentation |
| Apply the project management knowledge areas, tools & techniques to initiate, plan, design, perform, control, and close projects | Quiz, Assignment and Exam                          |
| Utilize project management software to efficiently manage projects   | Quiz, Assignment and Exam                          |
| Produce and develop a project proposal   | Final Project and Presentation                     |

**COURSE SCHEDULE:**

| COURSE OUTLINE |   |                                    |
|----------------|---|------------------------------------|
| Week           | Topics  | Assignment and Assessment          |
| 1              | OVERVIEW<br>CONCEPTS AND DEFINITIONS  | Assignment #1                      |
| 2              | ORGANIZATIONAL STRUCTURES<br>ORGANIZING AND STAFFING THE PROJECT OFFICE AND TEAM  | Assignment #2                      |
| 3              | MANAGEMENT FUNCTIONS AND COMMUNICATIONS   | Assignment #3                      |
| 4              | MANAGEMENT OF YOUR TIME AND STRESS<br>CONFLICTS<br>SPECIAL TOPICS<br>THE VARIABLES FOR SUCCESS<br>WORKING WITH EXECUTIVES | Quiz #1                            |
| 5              | PLANNING<br>NETWORK SCHEDULING TECHNIQUES<br>MS Project   | Assignment #4                      |
| 6              | PROJECT GRAPHICS<br>PRICING AND ESTIMATING<br>MS Project  | Quiz #2                            |
| 7              | COST CONTROL<br>TRADE-OFF ANALYSIS IN A PROJECT ENVIRONMENT<br>MS Project   | Assignment #5                      |
| 8              | RISK MANAGEMENT<br>LEARNING CURVES<br>MS Project  | Quiz #3                            |
| 9              | CONTRACT MANAGEMENT<br>QUALITY MANAGEMENT<br>MS Project   | Assignment #6                      |
| 10             |   | Final Exam<br>Project Presentation |

## METHODS OF INSTRUCTION:

online Lecture

## REQUIRED STUDENT TEXT(S), SUPPLIES, AND MATERIALS:

>>Required Textbook:

Title: Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 12th ed.

Author: Harold Kerzner, PhD

Hardcover: 848 pages

Publisher: Wiley; 12 edition (April 3, 2017)

Language: English

ISBN-10: 1119165350

ISBN-13: 978-1119165354

>> Optional Textbook:

Title: Operations Management (McGraw-Hill Series in Operations and Decision Sciences) 12th Edition

Author: William J Stevenson, PhD

Series: McGraw-Hill Series in Operations and Decision Sciences

Hardcover: 944 pages

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

Language: English

ISBN-10: 0078024102

ISBN-13: 978-0078024108

## STUDENT REQUIREMENTS/EXPECTATIONS:

Students are expected to follow online class rules. Students must complete the class activities to get the assigned activity marks. Students are expected to demonstrate professional behavior and attitude.

## ASSIGNMENTS, EVALUATION, AND GRADING STANDARDS:

Learning in this course results from all activities. Students will be evaluated as individual and as team when team work is assigned. For team work, all team members share the same grade adjusted by peer evaluation. The final grade will be calculated as follows:

Grading:

|                      |     |
|----------------------|-----|
| Quizzes              | 20  |
| Assignment           | 20  |
| Final Exam           | 20  |
| Project presentation | 40  |
| Total                | 100 |

Grade Conversion

| Grade (Points) | Percentages |
|----------------|-------------|
| A+ (12)        | 90-100      |
| A (11)         | 85-89       |
| A- (10)        | 80-84       |
| B+ (9)         | 75-79       |
| B (8)          | 70-74       |
| B- (7)         | 60-69       |
| F (0)          | 00-59       |

#### ADDITIONAL STUDENT RESOURCES:

**Accessibility:** BTC and your instructor are committed to the principle of universal learning. This means that our classroom, our virtual spaces, our practices, and our interactions be as inclusive as possible. Mutual respect, civility, and the ability to listen and observe others carefully are crucial to universal learning.

If you have difficulty reading, hearing or seeing content, or any other difficulties that might negatively impact your potential to succeed in this course, you may be eligible to receive help from our Accessibility Resources Office. If you feel you may benefit from an accommodation, contact Accessibility Resources ideally at the start of the quarter. (You may contact them at any time during the quarter.) This office is located in the **Admissions and Student Resource Center, Room 106. Call 360-752-8450 or email [ar@btc.edu](mailto:ar@btc.edu).** If you qualify for academic accommodations, the Accessibility Resources Office will forward a letter of accommodation to your instructor, who will, with you, work out the details of any accommodations needed for this course.

**Campus Emergencies:** If an emergency arises, your instructor may inform you of actions to follow. You are responsible for knowing emergency evacuation routes from your classroom. If police or university officials order you to evacuate, do so calmly and assist those needing help. You may receive emergency information alerts via the building enunciation system, text message, email, or BTC's webpage, Facebook and Twitter. Refer to the emergency flipchart in your room for more information on specific types of emergencies.



**Tutoring:** Drop-in tutoring is available at no cost to students when classes are in session. Tutors are recruited in all subjects where tutoring assistance is requested. The Tutoring Center is located in Building H, Rooms 9 and 15. To request tutoring or to apply to be a tutor, please contact the Tutoring Center at 360.752.8499 or visit [www.btc.edu/tutoring](http://www.btc.edu/tutoring) for additional information and to access the Tutoring Request Form and the current drop-in tutoring schedule.

**Advising & Career Services:** Academic & Career Advisors are available to assist with: Exploring and choosing the career that fits you best; Developing an educational plan and selecting the courses to get you started and progress toward your goals; Assistance with academic success strategies; Job and internship searching resources including resume and cover letter development, mock interviews and more; Connecting with employers to explore job opportunities. This office is located in the Admissions and Student Resource Center, Room 106. Call 360-752-8345 or email [advising@btc.edu](mailto:advising@btc.edu).

**Financial Aid:** Students seeking Financial Aid should begin by completing a FAFSA at [FAFSA.ed.gov](http://FAFSA.ed.gov). Students who have completed a FAFSA can check their status by logging in to their student Financial Aid Portal on the BTC website. Visit the Financial Aid office in CSB 101, call at 360-752-8351, or email at [finaid@btc.edu](mailto:finaid@btc.edu) for assistance or additional resources. You may also qualify for additional funding support through Workforce Funding & Student Support. Apply at <http://www.btc.edu/workforcefunding> or stop by Campus Services, Room 102 for more information.

**Library:** The BTC Library is located on the third floor of the Campus Center Building with an inviting atmosphere that includes a view of Bellingham Bay. The Library offers a variety of services and technology to meet the educational needs of students by providing professional, high-quality service and assistance.

The Library houses a physical collection of 12,000 books and media as well as online resources that include access to 120,000 eBooks and 20+ databases (8,000 full-text online journals) to use for research in prerequisite classes and specific programs; one-on-one assistance is offered for reference and research needs. The Library also is the open computer lab on campus and consists of 80 computers with 40+ software programs. A variety of equipment is available for check out that includes laptops and iPads. Assistance is offered with hardware and software questions, online learning and any technology-related question during all open hours; there is also a HelpDesk with specific hours to help with technology needs. Media-enhanced rooms are available for group study.

Contact the Library by phone at 360.752.8383 or via email at [Library@btc.edu](mailto:Library@btc.edu), or visit the website: [www.btc.edu/library](http://www.btc.edu/library).

## Appendix F: Faculty Qualifications

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### **Timothy Ewing, PhD**

3028 Lindbergh Ave, Bellingham WA 98225

Phone: 360-752-8317

E-mail: tewing@btc.edu

### **OBJECTIVE**

Experienced, motivated, and responsive engineering educator looking to promote life-long learning and to advocate extensively on behalf of all students at Bellingham Technical College

### **EDUCATION AND TRAINING**

**Ph.D. in Chemical Engineering**, Washington State University, Pullman, WA (2014).

**M.S. in Biological Systems Engineering**, Washington State University, Pullman, WA (2013).

**B.S. in Chemical Engineering**, Washington State University, Pullman, WA (2007).

**A.A. with emphasis in Chemistry**, Whatcom Community College, Bellingham, WA (2004).

### **AWARDS AND HONORS**

2016 Outstanding Teaching Award for Non-Tenured Faculty (student nominated), School of Chemical Engineering and Bioengineering, Washington State University

2016 Finalist for the Reid Miller Excellence in Teaching Award for Non-Tenured Faculty, The College of Architecture and Engineering, Washington State University

### **TEACHING EXPERIENCE**

**Bachelor of Applied Science in Engineering Technology**, Program Lead and Instructor, Bellingham Technical College, 2018 – Present

**Engineering faculty**, Pure & Applied Sciences Division, Highline College, 2017 to 2018

#### **Courses as Instructor of Record:**

- ENGR 100 – Orientation to Engineering Careers (Fall 2017)
- ENGR& 114 – Engineering Graphics [**Introduction to SolidWorks**] (Fall 2017)

#### **Additional skills, duties, and employed technologies:**

- Employed active learning strategies
- Employed the Canvas online learning management system
- Developed assignments to expose students to 3D printing and laser cutting
- Actively participated in faculty meetings and volunteered for committee positions
- Participated in the Fall Washington Council for Engineering and Related Technical Education (WCERTE) meeting
- Encouraged students to collaborate and work in small groups both inside and outside of the classroom
- Introduced students to laboratory safety practices
- Collaborated with colleagues on development, review, and iteration of innovative course material

**Instructor/Clinical Laboratory Supervisor**, School of Chemical Engineering and Bioengineering, Washington State University, July 2014 to August 2016.

**Courses as Instructor of Record:**

- ChE 110 – Introduction to Chemical Engineering (Spring 2016)
- ChE 201 – Chemical Process Principles and Calculations [**Introduction to MATLAB**] (Summer 2015, Fall 2016, Summer 2016)
- Bio\_Eng 322 – Mechanics of Biological Materials Lab [**Writing in the major course; Introduction to COMSOL; Introduction to 3D CAD**] (Fall 2015, Fall 2016)
- Bio\_Eng 330 – Bioinstrumentation Lab [**Circuits lab; Introduction to design**] (Spring 2015, Spring 2016)
- Bio\_Eng 340 – Unified Systems Bioengineering I Lab [**Model development course; MATLAB/Simulink course**] (Spring 2015, Spring 2016)
- Bio\_Eng 499 – Special Problems in Bioengineering [**Project/product development course**] (Spring 2015, Fall 2016, Spring 2016)

**Courses as Laboratory Supervisor (laboratory and equipment support):**

- Bio\_Eng 210 – Bioengineering Analysis [**Introduction to MATLAB**] (Spring 2015, Spring 2016)
- Bio\_Eng 440 – Unified Systems Bioengineering II [**Control systems course**] (Fall 2015, Fall 2016)
- Bio\_Eng 410 – Bioengineering Capstone Project I [**Design course**] (Fall 2015, Fall 2016)
- Bio\_Eng 411 – Bioengineering Capstone Project II (Spring 2015, Spring 2016)
- Provided laboratory support as necessary for other departmental courses and individual student projects

**Additional skills, duties, and employed technologies:**

- Employed active learning strategies and flipped classroom techniques
- Actively engaged feedback from and collaborated with students to refine and clarify course material
- Developed assignments to emphasize the importance of competent technical writing and problem solving
- Evaluated students on writing, presentation of results, and engineering competency
- Employed the ANGEL and Blackboard online learning management systems
- Developed assignments to expose students to 3D CAD tools and 3D printing
- Developed assignments to familiarize students with microcontrollers (Arduino) and single board computers (Raspberry Pi)
- Integrated simulation, design, and computation tools, such as COMSOL, MATLAB, and Wolfram Programming Lab into course and laboratory work
- Encouraged students to collaborate and work in small groups both inside and outside of the classroom and laboratory
- Introduced students to laboratory safety practices
- Periodically held office hours in the teaching laboratory to facilitate meeting with multiple student groups to discuss projects and writing assignments
- Served as faculty mentor for (varied by semester, but approximately) twenty-four first and second year bioengineering and chemical engineering students

- Served as faculty mentor for three diverse multicultural senior bioengineering capstone groups (one group went on to win two major business plan competitions and has since earned nearly \$1M in grants and awards)
- Collaborated with senior faculty on education research projects using desktop learning modules
- Collaborated with colleagues on development, review, and iteration of innovative course material
- Actively participated in faculty meetings and volunteered for committee positions
- Actively participated in annual ABET accreditation meetings and workshops
- Took part in undergraduate recruitment activities and provided tours to prospective graduate students
- Worked as a strong advocate for students by proactively suggesting research and education opportunities
- Wrote strong letters of support advocating for a number of diverse and talented students looking at opportunities from summer internships and fulltime employment to graduate school and medical school.

**Graduate Teaching Assistant**, School of Chemical Engineering and Bioengineering, Washington State University, January 2010 to May 2010.

- ChE 211 – Process Simulation (Spring 2010)
- ChE Special topics – Biomass Conversions (Spring 2010)

**Learning Center Tutor**, Whatcom Community College, September 2002 to June 2004.

- Writing Center – Student reader with special interest in supporting ESL students
- Math (and Science Center) – Supported students in multiple mathematics courses and also physics and chemistry courses (Senior tutor 2003-2004)

## RESEARCH AND PROFESSIONAL EXPERIENCE

**Research Engineer**, Center for Sustaining Agriculture & Natural Resources, Washington State University, August 2016 to September 2017.

**Associate in Research**, Department of Biological Systems Engineering, Washington State University, August 2013 to July 2014.

**Graduate Research Assistant**, School of Chemical Engineering and Bioengineering, Washington State University, August 2007 to August 2013.

**Management Consultant**, Self-employed, January 1997 to August 2012.

**Respiratory Therapy Technician**, United States Army Reserve, December 1993 to February 2002.

**Forklift driver/dock worker**, Sea K Fish Company, Blaine, WA, June 1991 to November 2006.

## PROFESSIONAL ACTIVITIES

- Collaborator and co-principal investigator on development of grant opportunities (\$550k awarded across three projects)
- Research engineer acting as liaison between academia, industry, and governmental agencies to develop and communicate project findings
- Reviewer for WSU proposals and extension reports
- Invited peer-reviewer for scientific journal articles

- Invited judge for FFA Spring Science Fair

## **PUBLICATIONS**

1. G.G. Yorgey, C.E. Kruger, S. Hall, E. Allen, E. Whitefield, N. Embertson, V.P. Jones, B.R. Saari, K. Rajagopalan, G. Roesch-McNally, B. Van Horne, J. Abatzoglou, H.P. Collins, L. Houston, C. Seavert, and T.W. Ewing. (In-press) Building Resilience to Climate Change in Cereal Production Systems: agroecosystem components and integrative approaches. *Frontiers in Ecology and Evolution* (1-6)
2. Mohamed, A., Ewing, T., Lindemann, S., Fredrickson, J., and Beyenal, H. (2017) Autonomous Device for Evaluating the Field Performance of Microbial Fuel Cells in Remote Areas. *Journal of The Electrochemical Society*, 164 (3) H1-H0.
3. Ewing, T., Ha, P.T., Beyenal, H. (2016) Evaluation of long-term performance of sediment microbial fuel cells and the role of natural resources., *Applied Energy* Available online 12 September 2016, <http://dx.doi.org/10.1016/j.apenergy.2016.08.177>
4. Heo, D., Tang, N., Hong, W., Beyenal, H., Ewing, T., Kim, J., (2015) A Self-Sustainable Power Management System for Reliable Power Scaling Up of Sediment Microbial Fuel Cells, *Power Electronics, IEEE Transactions on* (Early Access) <http://dx.doi.org/10.1109/TPEL.2015.2397931>
5. Ewing, T., Ha, P.T., Babauta, J.T., Tang, N., Heo, D., Beyenal, H. (2014) Scale-up of sediment microbial fuel cells, *Journal of Power Sources* 272: 311-319, ISSN 0378-7753, <http://dx.doi.org/10.1016/j.jpowsour.2014.08.070>.
6. Ewing, T., Babauta, J.T., Atci, E., Tang, N., Orellana, J., Heo, D., Beyenal, H. (2014) Self-powered wastewater treatment for the enhanced operation of a facultative lagoon, *Journal of Power Sources* 269: 284-292, ISSN 0378-7753, <http://dx.doi.org/10.1016/j.jpowsour.2014.06.114>.
7. Babauta JT, Atci E, Ha PT, Lindemann SR, Ewing T, Call DR, Fredrickson JK and Beyenal H (2014) Localized electron transfer rates and microelectrode-based enrichment of microbial communities within a phototrophic microbial mat. *Front. Microbiol.* 5:11.
8. Frear, C., Ewing, T., Yu, L., Ma, J., and Chen, S. (2012). Two novel floor-scale anaerobic digester systems for processing food waste. Part 1: Multi-reactor, liquid recycle system for high solids. Part 2: Moderate solids system. Washington State Department of Ecology. Publication no. 12-07-036.
9. Zaher, U., Khachatryan, H., Ewing, T., Johnson, R., Chen, S. & Stockle, C.O. (2010). Biomass assessment for potential bio-fuels production: simple methodology and case study. *Journal of Solid Waste Technology and Management* (36) 182-192.
10. Zaher, U., Chen, S., Li, Chenlin, Yu, Liang, & Ewing, T. (2009). Producing Energy and Fertilizer from Organic Municipal Solid Waste: Enhancing hydrolysis and bacterial populations and mixing and thermodynamic modeling of new solid waste treatment technology. Washington State Department of Ecology. Publication Number 09-07-064.
11. Zaher, U., Ewing, T. & S. Chen. (2008). Biochemical and spatial based selection of anaerobic digestion feedstock California and Washington case study. *Proceedings of the International Conference on Solid Waste Technology and Management 23rd* 422-432.

### **PRESENTATIONS AND INVITED FORUMS:**

- Agricultural Technology Innovation Partnership Foundation, “Addressing the Challenges & Opportunities of Advancing the Billion Ton Bioeconomy”, Timothy Ewing invited as a representative of Academia (WSU), Conference Center at Seattle-Tacoma International Airport, WA, October 03, 2016.
- US Biochar Initiative, 2016 Conference Presentation, Timothy Ewing, Washington State University, “From Dairy Farm To Bio-Refinery: Developing Technologies To Produce Environmentally Friendly Fuels, Power, And Value Added Products”, Corvallis, OR, August 22-25, 2016.
- Anaerobic Digestion Webinar Series: Emerging Technologies to Improve Environmental and Economic Impact, Hosted by: Center for Sustaining Agriculture & Natural Resources, Washington State University, Speaker: Dr. Timothy Ewing, “Dairy Nutrient Recovery Technologies within an Anaerobic Digestion Bio-refinery”, February 10, 2016, <http://csanr.wsu.edu/webinars/anaerobic-digestion/signup/feb10/>.

### **SYNERGISTIC ACTIVITIES**

Organized research discussions and site tours between WSU and Washington State Anaerobic Digestion Companies

#### **Collaborators:**

Washington State University: Beyenal, H., Garcia-Pérez  
Regenis, an Andgar Company: Frear, C., Powel, E.

#### **Graduate and Postdoctoral Advisors and Advisees:**

*Investigator’s graduate advisor (MS).* Ndegwa, P; Washington State University  
*Investigator’s graduate advisor (PhD).* Beyenal, H; Washington State University  
*Investigator’s postdoctoral advisor.* Kruger, C; Washington State University

Curriculum Vitae  
**Cameron Farrington, MBA**

**EDUCATION:**

**M.B.A. (2013)** University of Maryland University College, Adelphi, MD 20783  
**B.S. Biology (2006)** University of North Carolina at Greensboro, Greensboro, NC 27402  
Chemistry minor, Environmental Biology concentration

**TEACHING EXPERIENCE:**

**Principles of Managerial Accounting (ACCT A202) University of Alaska Anchorage Kodiak College**

Delivered distance education to Undergraduate students with a focus on the generation and analysis of accounting information and its use by managers as they engage in planning, control, and decision-making activities in business and non-business organizations. Course topics focused on product costing, cost-volume-profit analysis, profit planning, variance analysis, relevant costs for decision-making, and capital budgeting decisions. Administered all course activities.

**Personal Finance (BA A131) University of Alaska Anchorage Kodiak College**

Delivered distance education to Undergraduate students with a focus on consumer finance. Course topics focused on family budgeting, income tax fundamentals; consumer credit, home buying, home financing, auto financing, insurance, investment fundamentals, estate planning, and retirement planning. Administered all course activities.

**Business Law I (BA A241) University of Alaska Anchorage Kodiak College**

Delivered distance education to Undergraduate students with a focus on Business Law. Course topics focused on the American legal system, dispute resolution, constitutional and government regulation of business, torts, contract laws and theory, international law, and business ethics. Administered all course activities.

**Business Law II (BA A242) University of Alaska Anchorage Kodiak College**

Delivered distance education to Undergraduate students with a focus on the continuation of Business Law I. Course topics focused on sales and leases, negotiables, debtor-creditor relations, agency, business organizations, and property protection. Administered all course activities.

**PUBLICATIONS:**

Deshpande, A., Dockum, B., Cleary, T., **Farrington, C.**, & Wieczorek, D. (2013, July). Bioaccumulation of polychlorinated biphenyls and organochlorine pesticides in young-of-the-year bluefish (*Pomatomus saltatrix*) in the vicinity of a superfund site in New Bedford Harbor, Massachusetts, and in the adjacent waters. *Marine Pollution Bulletin* 72(1), 146-164. <http://dx.doi.org/10.1016/j.marpolbu.2013.04.008>

**ACADEMIC AWARDS:**

- Phi Kappa Phi Honor Society, University of Maryland University College (2013)
- Graduate GPA: 4.0 out of 4.0, University of Maryland University College (2013)

## **EMPLOYMENT HISTORY:**

### ***Faculty***

**(2013-2015)**

**University of Alaska Anchorage Kodiak College, Business Department** Kodiak, Alaska

Delivered distance education to Undergraduate students. Courses taught: Principles of Managerial Accounting, Personal Finance, Business Law I, and Business Law II. Administered all course activities. Graded all assignments. Gained experience developing course content, evaluating course performance, and choosing appropriate texts for an undergraduate population while teaching from an established syllabus. Served as Adjunct Representative on the Kodiak College Instructional Council. Provided representation and support to Adjunct Faculty members by facilitating communication with faculty in the oversight of instructional programs and linking Kodiak curricula to faculty governance processes.

### ***Substitute Teacher***

**(2013-2014)**

**Kodiak Island Borough Adjunct School District** Kodiak, Alaska

Maintained direct supervision of students. Utilized appropriate, effective classroom management strategies, such as: completing attendance procedures and providing documentation; implementing lesson plans prepared by the teacher utilizing District teaching methods and materials, including extra assignments such as bus duty, lunch duty, and recess duty; correcting assignments given during the substitute's work day in the classroom, upon request.

### ***Biological Science Technician***

**(2008-2009)**

**National Oceanic and Atmospheric Administration (NOAA)** Highlands, New Jersey

**National Marine Fisheries Service, James J. Howard Marine Sciences Lab**

**Marine Chemistry Branch, Organic Chemistry Lab**

Contract position. Conducted Polychlorinated Biphenyl (PCB) analysis of bluefish, bluefin tuna, giant squid, and mako shark utilizing accelerated solvent extraction (ASE), glass column chromatography, high performance liquid chromatography (HPLC), and gas chromatography-electron capture detector (GC-ECD). Conducted fatty acid analysis and silver-ion chromatography to separate cis- and trans-fatty acids. Supervised and trained Doctoral, Graduate, Undergraduate students and volunteers in government lab procedures and policies. Prepared work schedules and assigned duties to students and volunteers. Observed employees, students, and volunteers to ensure compliance with occupational, health and safety standards.

### ***Research Assistant***

**(2008)**

**Virginia Institute of Marine Science, College of William & Mary** Highlands, New Jersey

Contract position through NOAA James J. Howard Marine Sciences Lab. Conducted Polychlorinated Biphenyl (PCB) analysis of Atlantic Bluefin Tuna utilizing accelerated solvent extraction (ASE), glass column chromatography, high performance liquid chromatography (HPLC), and gas chromatography-electron capture detector (GC-ECD).



**Research Assistant** (2006)  
**University of North Carolina at Greensboro** North Slope, Alaska  
**Toolik Lake Biological Field Station**

Contract position through UNCG Aquatic Ecology Lab's Geomorphic Trophic Hypothesis (GTH) project. Collaborated with Dr. Anne Hershey as a field Research Assistant for the GTH project conducting research at a remote Biological Field Station located on the North Slope of Alaska. Conducted benthic invertebrate sampling using an Eckman, water column sampling using a Van Dom, YSI and Hydro Lab, soil sampling and pH analysis using a pH meter, and stream delineation. Utilized basic invertebrate taxonomy. Performed zooplankton sampling using plankton net.

**Lab Assistant** (2005-2006)  
**University of North Carolina at Greensboro** Greensboro, North Carolina  
Student position in an Aquatic Ecology lab working for the Geomorphic Trophic Hypothesis project. Conducted isotope signature analysis, basic invertebrate taxonomy, and data analysis, with experience using a dissecting microscope, as well as routine identification and enumeration.

**SERVICE:**

**Alumni Mentor** (2015 - present)  
**UMUC Alumni Career Mentor Program, University of Maryland University College**  
Mentored UMUC students and alumni looking for career guidance and mentorship by sharing expertise and unique insights into the workplace, exchanging ideas and perspectives on issues within the field of higher education, and motivating others to pursue a heightened level of professional success.

**Adjunct Faculty Representative** (2013-2014)  
**Kodiak College Instructional Council, University of Alaska Anchorage Kodiak College**  
**Kodiak, Alaska**  
Provided representation and support to Adjunct Faculty members at Kodiak College by facilitating communication with faculty in the oversight of instructional programs and linking Kodiak curricula to faculty governance processes.

**Lifeguard Volunteer** (2008)  
**U.S. Coast Guard MWR Program, USCG Station Sandy Hook** Sandy Hook, New Jersey  
Ensured the safety of aquatic facility patrons by preventing and responding to emergencies; enforced aquatic facility policies, rules, and regulations.

**Oyster Restoration Program Volunteer** (2007)  
**NY/NJ Baykeeper** Keyport, New Jersey  
Aquaculture: Utilized remote setting technology to grow oysters in support of restoration efforts for the NY/NJ Baykeeper Oyster Restoration Program.

**Salmon Trout Enhancement Program Volunteer** (2006-2007)  
**Oregon Department of Fish and Wildlife** Charleston, Oregon Fisheries  
Restoration/Conservation: Collaborated with the Oregon Department of Fish & Wildlife in education projects for 5th to 12th grade students at Morgan Creek Hatchery & Millicoma

Hatchery; salmon/trout brood stock collection, spawning, egg incubation, rearing, fin clipping, as well as basic anatomy demonstrations.

#### **COMPUTER SKILLS / TRAINING / CERTIFICATIONS:**

- **Quality Matters (QM):**Applying the QM Rubric Certification (2014)
- **Learning Management Systems:**
  - *Blackboard* (Training and experience with: course development and delivery according to QM standards; course design and architecture; Blackboard Collaborate web conferencing; Grade Center; and VoiceThread)
  - *Moodle* (Training with course development and delivery according to QM standards)
- **Web-based tools: *Google Apps for Education*** (training and experience)
- **Microsoft Office:** Mastery of MS Office programs, including: Word, PowerPoint, Excel, and Outlook.
- **Operating Systems:**Ability to work with Windows and Mac OSX operating systems.

#### **PROFESSIONAL AFFILIATIONS:**

- Phi Kappa Phi Honor Society, Lifetime Member (2013-present)
- University of Maryland University College Alumni, Lifetime Member (2013-present)
- University of North Carolina at Greensboro Alumni, Lifetime Member (2006-present)

#### **RELEVANT GRADUATE-LEVEL COURSES:**

Managing Strategy in the Global Marketplace; Managing Global Business; Marketing Management & Innovation; Managing Projects, Operations, and Information Systems; The Economics of Management Decisions; Managing People & Groups in the Global Workplace; The Manager in Organizations and Society; MBA Fundamentals

## ALI OSTADFAR, PhD, P.Eng.

### SUMMARY

- More than 20 years professional work experience in industry and academic fields
- Background in Biomedical Engineering, Biomechanics, Mechanical Engineering, HVAC &R.
- Experienced in design, maintenance and repair of related engineering projects
- More than 12 years of professional work experience as a Mechanical Engineer
- More than 8 years of professional work experience as a researcher and engineer in
- Biomedical Engineering

➤ **Citizenship Status:** Canadian

### EDUCATION

- Sep 2008- Dec 2013 **Ph.D. Engineering Sciences (Biomedical Eng.),** Simon Fraser University, Greater Vancouver, Canada
- Thesis: Design and experimental proof of selected functions in implantable artificial kidney
- Sep 2001- Jan 2004 **M.Sc., Biomechanical Engineering,** Tehran Azad Science and Research University, Tehran, Iran
- Thesis: Car seat design to reduce whiplash injury
- Sep 1992- Aug 1996 **B.Sc., Mechanical Engineering,** Tehran Azad University, Tehran, Iran
- Thesis: Design of cooling system for electronics devices

### Graduate Coursework (PhD, MSc)

|                                       |                               |
|---------------------------------------|-------------------------------|
| Finite Element Analysis               | Continuum Mechanics           |
| Fluid Mechanics in Biological Systems | Robotic                       |
| Orthopedic Systems Design             | Artificial limbs and organs   |
| General Biomechanics                  | Electronics and Digital + lab |
| Physiology + lab                      | Anatomy                       |
| Advance Heat Transfer                 | Biomedical Micro Devices      |
| Reliability in Implantable Devices    | Micro Sensors and Actuators   |
| Blood Flow in Implantable Devices     |                               |

### RESEARCH INTERESTS

1. Implantable Artificial Organs, Bio fluids, Biomechanics, Tissue Engineering, Micro Electro Mechanical Systems (MEMS), Bio Particles Separation
2. Mechanical engineering systems
3. Biomaterial, Filter and Membrane Technology, Nano Technology

## TEACHING INTERESTS

| Biomedical Engineering |                             | Mechanical Engineering                             |                   |                          | Management              |
|------------------------|-----------------------------|--|-------------------|--------------------------|-------------------------|
| Biofluids Mechanics    | Orthopedic Systems Design   | Strength of Materials                              | Statics           | Heat Transfer            | Project Management      |
| Biomechanics           | Assistive Devices           | Materials Science                                  | Dynamics          | HVAC                     | Quality Management      |
| Rehabilitation         | Artificial Limbs and Organs | Measurement and Experimental Methods for Engineers | Thermodynamics    | Mechanical Eng. Graphics | Mathematical Techniques |
| Medical Devices        | Bio Engineering Labs        | Machine Design                                     | Vibrations        | Mechanical Eng. Labs     | Professional Ethics     |
| Reliability            | Sensors and Actuators       | Robotic  | Control Automatic | Related Courses          | Related Courses         |

## RESEARCH EXPERIENCE

Jan 2017- Mar 2018 **Research Associate**, University of British Columbia, Vancouver, Canada

- Clinical research on neural disabilities, neural habilitation and rehabilitation for children and youth with neuro developmental disabilities.

May 2017- Present **Project Manager**, Optinity Systems, Vancouver, Canada

- Research on 3D Goniometer for medical and industrial purposes (Provisional US patent)

Sep 2008 - Dec 2013 **Project Manager**, Simon Fraser University. Vancouver, Canada

- Leadership in following fields:

### Biofluid mechanics:

- Biofluids characterization
- Blood formed elements separation
- Pore shape 3D modeling
- MEMS and microfluidics
- Design and fabrication of implantable pump
- Cardiovascular pumps
- Bio sensors and actuators
- Drug delivery
- Blood flow regurgitation

### **Implantable devices:**

- Design, simulation and optimization of filter pores to separate blood cells from plasma
- Pore shape 3D modeling to decrease pressure drop
- Reliability analysis for medical devices
- Increasing permeate flow rate by backwash method
- Electrophoresis for ions and proteins separation
- Design and modeling of filter for implantable artificial kidney
- Design and fabrication of implantable pump
- Drug delivery for vivo conditions
- Implantable bio sensors and actuators
- Hospital monitoring system
- Analyzing and separation of ions (by flame photometer) and proteins (by fluorometer) in blood
- Biomaterials selection

Jan 2001- Jan 2004 **Research Associate**, Tehran Science and Research University, Tehran, Iran

### **Biomechanics:**

- Car seat design (backset and head restraint) to reduce Whiplash injury (Rear crash)
- Modeling and stress simulation of cervical vertebrae during crash
- Rear impact (crash) simulation
- Whiplash injury characterization

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## **TEACHING EXPERIENCE**

Apr 2018- Present **Adjunct Faculty**, Clover Park Technical College, Greater Seattle, Washington

- Developed and managed syllabus materials
- Facilitated class instruction and evaluated student performance
- Managed grade determination served on faculty panel in an administrative role
- Designed assignments and tests
- Established positive classroom relationships and incorporated higher level learning

Sep 2017- Present **Adjunct Faculty**, Bellingham Technical College, Bellingham, Washington

- Developed and managed syllabus materials
- Facilitated class instruction and evaluated student performance
- Managed grade determination served on faculty panel in an administrative role
- Designed assignments and tests
- Established positive classroom relationships and incorporated higher level learning

Feb 2017- Present **Online Tutor**, Global SPi – Chegg

- Mechanical Engineering courses
- Biomedical Engineering courses

Sep 2009- May 2013 **Teaching Assistantship**, Simon Fraser University

- Capstone Engineering Science Project, ENSC 440 in the following areas:
  - Mechanical engineering design
  - Biomedical engineering systems
  - Project management
  - Creating and manufacturing
- Project Documentation, ENSC 305
  - Technical documentations (Proposal, functional specification, design specification)

2001-2006 **Industrial tutor**, Tehran subway Co (Metro)

- Technical materials (mechanical courses) to new engineers and technicians

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## INDUSTRIAL EXPERIENCE

- **Jan 2017- Mar 2018, Research Associate, University of British Columbia, Vancouver, Canada**

- Clinical research on neural disabilities, neural habilitation and rehabilitation for children and youth with neuro developmental disabilities.

- **2014 - Present, Optinity Systems, Founder/Managing Director Vancouver, BC, Canada**

- Research and development of Bio/Mechanical devices including drug delivery systems, clinical, medical pumps and measurement tools.

- **Jan 2000 - Sep 2006, Senior Manager/Mechanical Engineer Tehran Subway Co (Metro), Tehran, Iran**

The Tehran Metro is a rapid transit system serving Tehran, the capital of Iran. The Tehran Metro carries more than 3 million passengers per day.

- Emergency maintenance (EM) and preventive maintenance (PM) of rolling stock vehicles
- Maintenance and repair of subway cars, including; control and lubrication of axel box and its bearing, lubrication of gearbox and changing damaged gears and pinions, maintenance and repair of primary and secondary suspension system, controlling bogie and frame, Sabwabco and Knorr brake modules and brake valves, disassembling and assembling of brake cylinders also lubrication and changing parts, maintenance and repair of

cylindrical and rotary-screw air compressors, air driers maintenance, IFE pneumatic door systems, couplers, etc.

- Maintenance and repair of diesel locomotive, including; maintenance and repair of Perkins diesel engines, maintenance and repair of hydraulic torque converters and transmission, maintenance and repair of engine cooling system (water and air cooling), air compressors and driers, gearbox and axle box, power transmission system and maintenance and repair of brake cylinders and their parts.
  - Design and fabrication of mechanical parts (related to workshops) for lathe machines and mechanical parts shops.
  - Staff supervising.
  - Commissioning and test
  - Quality assurance and control according to UIC and UITP standards
  - Budget and strategy
  - Material estimation
  - Project schedules
- **May 2003 – August 2003 , Biomedical Engineer  
Javaheri Hospital (University Hospital), Tehran, Iran**
    - Maintenance and repair of Infusion pumps, autoclaves, oxygenators, cardiovascular pumps, incubators, lab instruments and measurement devices, etc.
- **May 2000 – 2008, Head of committee and Mechanical Engineering, Co-Founder  
PS Co, Tehran, Iran**
    - Calculation, analysis and design of heating, cooling loads and plumbing for residential projects
    - Selection of project components and devices, including boilers, pumps, expansion tanks, fan coils, package units, radiators and convectors, etc.
    - Providing technical drawing and documents for HVAC & R projects
    - Material estimation
    - Project schedules
    - Budget and strategy
    - Quality assurance and control according to ASHRAE and national standards
- **Feb 1998- Jan 2000, Mechanical Engineer  
Ebtekar Co, Manufacturer of plastic injection machines, Tehran, Iran**
    - Design and fabrication of mechanical elements including; hydraulic press system, actuators, moving elements and linkages, plastic injection system, main frame and structures
    - Material estimation
    - Project schedules and control
    - Quality control

- **Apr 1996 – Feb 1998, Mechanical Engineer**  
**Logistic department of Tehran police (military service), Tehran, Iran**
  - Maintenance and repair engineer for building systems and facilities including, heating, ventilating and air condition systems, plumbing, and etc.

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#### TECHNICAL CERTIFICATION

- **CANVAS 101 Introduction Certificate**, Washington SBCTC, Washington 2018
- **AUTO CAD, fundamental and advanced 2D, 3D**, Vancouver Central College 2007, 2008
- **HVAC/R Diploma**, Ashworth University, Atlanta, Georgia 2007
- **ISO 9001-2000**, Documentation and Internal Audition, Tehran /Iran 2005/2006
- **Transportation door system**, IFE/ Knorr-bremse Co., Waidhofen, Austria 2004
- **Graduation certificate for mechanical devices in transportation**, CRC Co., Changchun, China 2004
- **HVAC and plumbing license for design and installation**, Tehran provincial association of construction professional engineers, Tehran 2000
- **Workshop management**, Tehran, Iran 2003
- **Industrial oil and principles of lubricating**, R.A.A.F Institute, Iran 2003
- **Bearing technology**, FAG Co, Germany/Iran branch 2004
- **Brake systems**, Faiveley transport (SabWab) Co, Amiens, France & Turin, Italy 2001
- **Mobile lifting jack**, Beijing Material handling Research Institute 2001
- **Diesel engine (maintenance)**, Changzhou Diesel locomotive 2000
- **Pneumatics systems, fundamental and advanced**, Festo Co., Tehran Branch 1998

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#### HONORS AND AWARDS

- 2008-2013 Educational Grant, Ministry of Advance Education, BC, Canada
- 2010 BCH educational awards
- 2011 Graduate Fellowship (PhD), Simon Fraser University
- 2012 BCH educational awards
- 2012 President's PhD Research stipend, Simon Fraser University

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#### PROFESSIONAL MEMBERSHIPS

- American Society of Heating, Refrigeration and Air conditioning Engineers (ASHRAE)
- Institute for Electrical and Electronics Engineers (IEEE)
- American Society of Mechanical Engineers (ASME)
- Engineers and Geoscientist of BC (PEng of EGBC)
- Canadian Medical and Biological Engineering Society (CMBES)
- Engineers Without Borders (EWB)

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#### PUBLICATION REVIEWER

- 2014 - Present Journal of Medical and Biological Engineering - Springer
- 2015 - Present Book proposal - Elsevier
- 2017 - Present Medical Engineering & Physics - Journal - Elsevier



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## PUBLICATIONS

### Book:

As a sole author of book; "***Biofluid Mechanics, Principle and Application***" Published by "***Elsevier Inc***", ISBN-13: 978-0128024089, June 2016.

### Journal Papers:

1. **Ali Ostadfar**, Will A. Cupples, Andrew H. Rawicz, The effects of filter configuration on ion and protein separation under electric fields in an implantable filter, *American Journal of Biomedical Science and Engineering*, impress 2018.
2. **Ali Ostadfar**, Hemolysis in Medical Devices, *International Journal of Biosensors & Bioelectronics*, 2017, 2(5): 00041
3. **Ali Ostadfar**, Andrew H. Rawicz, Effects of pulsatile flow and back washing on plasma flow rate in an implantable plasmapheresis - II. Experiment, *Biomedical Engineering*, Springer, Volume 49, Issue 2, pp 90-93, 2015.
4. **Ali Ostadfar**, Andrew H. Rawicz, Effects of pulsatile flow and back washing on plasma flow rate in an implantable plasmapheresis - I. Theory and principle, *Biomedical Engineering*, Springer, Volume 49, Issue 1, pp 29-32, 2015
5. **Ali Ostadfar**, Andrew H. Rawicz, John D. Jones, Mohammad Izadi, Pore Geometry Optimization for an Implantable Artificial Kidney, *Biomedical Engineering*, Springer, 48(3): 156-159, 2014.
6. **Ali Ostadfar**, Andrew Rawicz, Characterization of an innovative implantable valve- less pump for bio or drug fluids delivery application - theory and experiment, *Biomedical Engineering*, Springer, 47(1) ,50-55. May 2013
7. **Ali Ostadfar**, Andrew Rawicz, Mojgan Gitimoghaddam, Application of back-washing to increase permeate flux in bioparticle separation, *Journal of medical and biological engineering*, 33(5):478-485, 2013.
8. **Ali Ostadfar**, Andrew Rawicz, Glomerular Plasmapheresis design for an Implantable Artificial Kidney, *Journal of medical and biological engineering*, 32(4): 273-278, 2012.

### Conference:

1. **Ali Ostadfar**, Andrew Rawicz, Reliability Design into Medical Implantable Device: An Artificial Kidney Case, CMBEC 32 nd: Conference of the Canadian Medical and Biological Engineering Society (CMBES), May 2009 Calgary, Alberta.
2. **Ali Ostadfar**, Andrew Rawicz, Design and Optimization of Glomerular Membrane in Implantable Artificial Kidney, CMBEC 33 Conference of the Canadian Medical and Biological Engineering Society (CMBES), June 2010, Vancouver, BC

3. **Ali Ostadfar**, Andrew Rawicz, Back flushing method to maximize membrane flux in an implantable artificial kidney, North West Biomechanics symposium, June 3-4, 2011, Vancouver, BC

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**PATENT**

**Ali Ostadfar**, Provisional Patent, US 62/520,023, 3D Digital Goniometer

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**INTERESTS AND HOBBIES**

Oil color painting, Biking, Photography

## Larry L. Price MBA, M Ed. USMC (Retired)

### **Career Profile:**

I served 20 years as a US Marine Corps Combat Engineer officer and upon retirement, continued my service in the public sector leading organization responsible for the design, construction, operations, maintenance, and sustainability of educational environments. Upon completing my second master's degree in 2009, I have embarked on a career path as teacher and academic program administrator, facilitating the transfer of learning for the knowledge, skills and abilities I used throughout my career.

### **Education:**

- 2009 Masters of Education (Continuing & College Education), Western Washington University: Bellingham, WA
- 2007 Washington Educational Leadership Academy (WELA)
- 2006 Certificate in Community & Technical College Teaching, Western Washington University: Bellingham, WA
- 2004 Master of Business Administration, Columbia College: Marysville, WA campus
- 1994 Graduate work toward an MBA, Strayer College: Arlington, VA
- 1977 Bachelors of Science Cum Laude, Forest Resource Management, West Virginia University: Morganton, WV

### 2015-Present **Faculty: Construction Management and for the Leadership in the Trades Certificate Program at Renton Technical College**

Initiated the instruction for the "Leadership in the Trades" Certificate of Completion program in the winter quarter of 2016.

Drafted the academic schedule changes to move the Construction Management classes from a block schedule/contact hour day and evening delivery method into its current form as an evening hybrid program.

Drafted the Construction Management class sequence from being a 90 credit degree cohort program with all of the Construction Management core classes being taught in 3 quarter to becoming a 90 credit degree cohort program with all of the core classes being spread over two years.

Elected as the Renton Technical College AFT Vice President for Membership.

### 2013 - 2015 **Director of the Academic Programs: Occupational Safety & Health (OSH) and Emergency Management-Business Continuity (EM-BC) at Edmonds Community College & Pierce College**

Provide administrative oversight for the Occupational Safety & Health (OSH), a joint eLearning program, sponsored by both Pierce College and Edmonds Community College. Similar oversight was provided at Edmonds only, for their Emergency Management – Business Continuity (EM-BC) program.

Actively promote and recruited for new student into the OSH and EM-BC programs. Enrollment was strong and improving during my tenure as the program Director.

Advise the incoming and existing student for both programs at both College's.

Coordinate the Advisory Committee activities for both programs.

Trained and certified for "Implemented in the Quality Matters Rubric"

2012 – 2013 **Account Executive: Building Efficiency, Johnson Controls Incorporated**

Manage the existing clients in the Education vertical marked within the Western Washington geographical region while establishing new clients within the same market area.

2009 – 2011 **Director of Facilities Planning & Construction, Bellevue College**

Coordinate Bellevue College's design of a new Health Science facility and was planned for its construction starting in the summer of 2011. Due to State budget constraints this project is on hold; however permits are ready to be issued from the City of Bellevue. This project had a \$43 million budget and was truly a "shovel ready project" incase construction funding was approved by the State.

Awarded \$69,000 in grant funding (spread over three years) from Puget Sound Energy to hire a Recourse Conservation Manager and initiate a conservation management program.

Successfully opened a recently procured commercial building for the College's Continuing Education Program. This \$2.5 million tenant improvement project had only 90 for the construction phase of the project and successfully achieved substantial completions and occupancy from the City of Bellevue.

2005-2009 **Director of Facilities and Grounds, Everett Community College**

Established cooperative working relations with the Boeing Company resulting in cross-training opportunities with their building operations personnel and attended their janitor indoctrination school. Published sustainable cleaning standards which are envisioned to lead to a "Sustainable Cleaning" certification program for public and private janitorial/custodial operations in the State of Washington.

Secured grant funding from Puget Sound Energy enabling Everett Community College to be the first college of the thirty-four colleges in our system to start a Resource Conservation program and hire a Resource Conservation Manager. The grant was worth \$16,250 over three years.

Help plan and coordinated the first Western Regional Research Conference on the Education of Adults hosted by Western Washington University (WWU) in 2007 as member of the logistic sub-committee and on the marketing sub-committee for the conference that was again hosted by WWU in 2009.

Represented the College during construction of Whitehorse Hall (an 88,000 square foot Arts and Sciences building comprised of labs, classrooms, and offices). Managed all project changes and kept the contingency reserves with a sufficient balance so that the first floor could be completed as a bid alternate on this General Contractor/Construction Manager (GC/CM) public works project.

Awarded a scholarship and attended the American Institute of Architects' "Redefining Sustainability – New Directions for Designing Our Future" national conference in September 2007.

Facilitated design input from faculty, staff, students, and the University Center personnel about the design of Greywolf Hall (a 77,000 square foot academic building comprised of classrooms, offices and administrative spaces for the University Center). Designated as the budget authority for this \$51 million General Contractor/Construction Manager (GC/CM) project that opened for classes on March 30, 2009. This project was designed to achieve a Leadership in Energy & Environmental Design (LEED) silver rating from the U.S. Green Building Council.

2002-2005     **Director of Facilities & Construction, Kent School District**

Joined the School District as the Program Manager for the 2002-2006 capital construction bond work (\$69.9 million), which included building three high school additions and 245 other smaller projects.

Selected professional consultants and managed their contracts involving facilities planning and design, construction, site analysis, property acquisition, traffic analysis, material testing, and building commissioning.

Obtained School Board approval on all real estate matters: property acquisitions, sales, and easements.

Chaired the Executive Citizens Bond Committee insuring project information was disseminated to the community concerning, cost, schedule, and status of the projects funded by the 2002-2006 bond.

Obtained \$12.3 million in funding from the Office of the Superintendent Public Instruction (OSPI) for the three high school addition projects and renovating of a junior high school, ensuring maximum State matching funds were allocated to the school district for these projects.

Trained in collective bargaining and was one of the six management representatives that negotiated the 2004-2007 contract with the United Classified Workers Union of Washington, Kent Chapter.

Emphasized professional development for the 180 member of the Facilities Department resulting in moral, confidence and accountability improvements.

Finalized project selection and cost estimates for the 2006-2010 capital construction bond worth \$106 million. Presented the bond package that was approved by the school board in June 2005 and subsequently approved by the School District's voting community in Feb 2006.

2002 **Anti-Terrorism/Force Protection Instructor, Surgical Shooting Incorporated**

Established personal credibility within a group of former military special operations operatives turned into civilian trainers at a small start-up company that was contracted to train all the U. S. Navy personnel homeported on the West Coast and in Japan.

Taught security operations to U. S. Navy personnel stationed in the Puget Sound Region. Class size ranged from 15 to 25 students. Classes taught in one or two week blocks of instruction.

Coordinated logistics support for training including student transportation, weapons maintenance, ammunition inventory and storage at our contracted facility.

2001-2002 **Fleet & Facilities Manager, The City of Marysville**

Supervised seven employees, six were Teamster Members. Their responsibilities included maintaining 240 City vehicles and all of the City's facilities.

Coordinating all purchasing for the Public Works Department and at times other City agencies.

Supervised the managers who maintained the inventory and distribution of supplies and materials.

Served as a member of the Public Works Director's leadership team.

Coordinate all activity between the City's facilities and Sonitrol Pacific.

1997-2001 **Director of Facilities & Operations, Marysville School District**

Hired and supervised the School District's Security Coordinator and monitored the security programs. Helped the new supervisor convert the District's Emergency Response Plan into the standard format that was published by the Snohomish County Sheriff's office in an attempt to get all of the School Districts in the County into the same format.

Directed changes to bid documents for a high school addition project when the bids came in over budget. Successfully re-bid the project for \$4.2 million and managed the project to completion.

Coordinated the writing of the School District's Capital Facilities Plan and calculated the impact fees in accordance with the Growth Management Act which included formulated the district student generations rate.

Presented the Capital Facilities Plan to the City of Marysville and Snohomish County, and accomplished getting the School District's Capital Facilities Plan adopted into the City's and County's Comprehensive Plan.

Coordinated selection and hiring of a real estate consultant that made site recommendations for implementing the District's long range Facility Master Plan.

Managed the District's fuel facility upgrade project to bring the operation into compliance with Federal underground storage tank regulations. Responded to the Department of Ecology concerning soil and ground water contamination resulting from the fuel facility upgrade. Coordinated a response that achieved avoiding installation of ground water monitoring devices; saving \$15,000 in capital cost and \$8,000 annually in monitoring expenses.

1994-1997 **Engineer & Environmental Compliance Officer, II Marine Expeditionary Force (MEF)**

Planned the engineering training objective and participated in every training exercise conducted by the II MEF organization during my tenure with the Command Element of II MEF. This included 2 to 3 major exercises per year.

Analyzed engineering assignment, equipment needs, logistics considerations and requirements for conducting missions in support of our operating forces deploying to foreign countries.

Conducted reconnaissance in Bosnia a few days after the Dayton Peace Accord took effect in December 1995. Coordinated moving the 26<sup>th</sup> Marine Expeditionary Unit's forces (2000 personnel) ashore from our three ships stationed in the Adriatic Sea on the mission as the Implementation Force's Strategic Reserve.

Facilitated approval of an environmental assessment in compliance with the National Environmental Policy Act for temporary storage of equipment and establishing temporary housing for 1,500 personnel in Puerto Rico. Because of pending hurricanes in the region, successfully negotiated moving the exercise from Puerto Rico to an eastern Virginia site with just 18 days to contract and finalize all of the changes for the move in exercise locations.

1990-1994 **Program and Project Management Officer, Marine Corps System Command**

Facilitated the acquisition and delivery of critical countermine equipment from locations around the United States and in Israel to Saudi Arabia. Equipment arrived in time to be used in the offensive thrust through the extensive minefields at the start of Operation Desert Storm.

Marketed engineering equipment projects to budget decision committees and Service Component Comptrollers achieving four consecutive years of project progression without any budget cuts or project schedule delays.

Designated as Project Management Professional (Acquisition) by the Department of the Navy, after completing the Acquisitions Basic Course at the Defense System Management College,

showing evidence of completing the required college level business administration courses, and successfully working in the field of weapon system project management for at least four years.

**1989-1990 Logistics Officer, Third Combat Engineer Battalion**

During my last year of a three-year assignment on Okinawa Japan, I was promoted to a vice president level rank and selected to serve on the commander cabinet staff as the logistics officer, leading a staff of 4 managers that supervised approximately 29 staff personnel.

Supervised the organization's material asset controls manager and the maintenance management coordinator, who were responsible for tracking all organizational equipments, and ensuring that all corrective and preventative maintenance was completed with correct records/correspondence being kept. Their responsibilities also included the acquisition and distribution of supplies and equipment, while effectively managing the organization's budgets.

Coordination transportation from the unit's home base in Okinawa Japan, to training sites in Thailand, the Philippines, the Republic of South Korea, and around the island of Okinawa.

**1977-1989 Platoon Commander, Company Commander, and Inspector-Instructor**

Led departments ranging in size from 30 to 190 individuals. Their work involved material handling equipment, shipping and receiving, special weapons security, maintenance, administration, printing, food services, utilities, engineering, and construction.

Trained primary and secondary supervisors, resulting in attainment of organizational missions while developing personnel for assignments of greater responsibility.

Successfully counseled employees with drug, alcohol, financial, and performance problems, decreasing attritions and reducing costly personnel turnover.

Reduce illegal drug use in an 85-person company by 14% in three years.

**Adjunct Faculty and Volunteer Instructor:**

2009 – 2010 Lutheran Community Services in Everett

Taught citizenship test preparation classes for community members progressing through U.S. Citizenship and Immigration Services process.

2009 – 2015 Edmonds Community College

Developed the curriculum and currently taught a 3 credit face to face class titled "Energy Accounting" in Edmonds Community College's recently re-active Energy Management program (reactivated in 2009).

2013- Present Edmonds Community College and Pierce College

Teaching the "Safety Training Techniques" and taught/facilitated the "Occupational Safety and Health Internship/Capstone" classes in the combined online program.



2009 – 2014 University of Washington

Taught an on line class in University of Washington's Facilities Management Certificate Program (Within their school of Continuing Education). Upon completion the students also received a college transcript/grade for a 400 level class in the University's Construction Management Division.

2014 – Present Clover Park Technical College

Taught two classes in their Bachelors of Applied Science of Manufacturing Operations: the "Workplace Health and Safety Management" and the Facility Layout and Material Handling" classes. These are hybrid classes with a Saturday meeting once per month.

2015 – Present University of Washington

Teaching a Continuing Education class in their Facilities Management Certificate Program. This class was re-activated as a face to face Saturday program (five class meeting per quarter).

**Professional Organizations Membership:**

American Society of Safety Engineers (Puget Sound Board Member 2015-present)

International Facilities Management Association

Building Owners Management Association (Member of the Education Committee 2012-2013)

Society of College and University Planners

Project Management Institute

Operations & Facilities Council (Assistant Council Chair 2007-2008, Council Chair 2008-2009)

Washington State Cleaning Industry Professional Group

Continuing & College Education Graduate School Advisory Committee at WWU (2008-2009)

Washington Association of Maintenance and Operations Administrators

Washington Association of School Business Officials

The Council of Educational Facilities Planners International

Marine Corps Engineer Association (Lifetime Member)

Society of American Military Engineers

**Certification:**

Occupational Safety and Health Administration (OSHA) 500: an Authorized Construction Safety Trainer

Building Operations Certification Level I

Hazardous Waste Operations & Emergency Response (HAZWOPER)

Department of the Navy Project Management (Acquisition) Professional

## Erwin Swetnam J.D.

### SUMMARY OF QUALIFICATIONS:

Legal education and extensive leadership experience; operational excellence; professional communicator; knowledgeable about general DOT, EPA and OSHA standards;

### EDUCATION:

#### **Western State University College of Law, Fullerton, CA**

Juris Doctor, May 2006

- Law Clerk, Appellate Public Defenders Office
- Certified Student Attorney, WSU Legal Clinic
- Student Bar Association President
- Chair Moot Court Board
- AmJur (top grade in class) Advanced Trial Practice

#### **Idaho State University, Pocatello, ID**

- Bachelor of Arts, Political Science, May 2002
- Full Collegiate Debate Scholarship
- NCAA All-American for Collegiate Debate

### EXPERIENCE:

#### **Bellingham Technical College, Bellingham WA**

*Adjunct Professor, August 2017-Current*

#### **Lautenbach Industries, Mount Vernon WA**

*Director of Operations, June 2015-Current*

Manage all operations within the Company. Plan and implement operational efficiencies between multiple solid waste, recycle, and construction demolition processing facilities. Coordinate communications across multiple departments, including, general site operations, HR, accounting, sales, and office administration. Lead and manage budget expectations of all departments. Delegate duties to capable employees. Manage all progress reporting to ownership. Solve dispute that arise between employees or departments. Make decisions for promotion and know the capabilities of each employee. Work with ownership regarding plans for future business development.

#### **San Juan County, Friday Harbor WA**

*Municipal Solid Waste and Recycle Program Manager, June 2014-March 2015*

#### **Thurston County, Lacey WA**

*Waste And Recovery Center (W.A.R.C.) Manager (contract) March 2015-July 2015*

Provide direction, leadership, and general management oversight to the Counties environmental and solid waste programs, and recycling. Maintain and monitor two closed landfill systems. Manage Transfer Station oversight with contracted vendors. Establish goals, priorities, and procedures for utility operation, maintenance, and

construction. Manage and approve utility finances and budget. Provide strategic and policy direction. Facilitate the development of strategy and policy in collaboration with County Engineer, County Administrator's Office, and other County Departments. Ensure County's mission, Council direction, and core values are incorporated into operational services. Represent the County in community and the region in policy initiatives. Serve as member of County Public Works Leadership team.

**Waste Connection Inc, Vancouver, WA**

*Assistant General Manager, September 2011-September 2014*

I was hired on as an Operations manager, but three months into the job I was promoted to Assistant General Manager. Manage the operations and financial success of three solid waste transfer stations and the company's top recycle material recovery facility, (MRF). Responsible for the efficient and safe production activities of more than 115 district employees. Maintain budgets, with full P&L responsibility, cap ex. cash flow, accounts receivable, and the purchase and sales of recycle commodities. Responsible for the execution, follow up, and sustainability of operating improvements. Improve and maintain communications, timeliness, and accuracy of reporting and collection of data from facilities within the district. Exemplify and uphold company ethics and, operating, regulatory, safety and accounting policies and standards. Ensure positive morale of district employees.

**Law Office of Alan R. Souders, Anacortes, WA**

*Business Development/Civil Litigation Paralegal, March 2008 – September 2011*

Manage and Implement business development programs. Research and interpret federal, state, and local rules, including DOT and OSHA regulations. Draft legal pleadings, manage docket calendar, coordinate discovery, and manage case files. Make ex parte court appearances. Communicate with opposing counsel, court staff and clients. Assist attorney in litigation actions and trial preparation.

**Western State University College of Law (WSU), Fullerton, CA**

*Associate Director of Admissions, April 2004 – May 2008*

Created, coordinated, and administered the following areas for a newly accredited law school: admissions, financial aid, bursar, registrar, housing, and foreign student affairs. Made admissions decisions and coordinated faculty admissions committee meetings; awarded graduate scholarships; prepared tuition bills and admission reports and successfully completed 2 WSBA audits. Worked closely with faculty and Dean to implement special projects involving publications, advertising, enrollment planning, new student orientation, and commencement.

**Darden Corporation, Boise, ID**

*Corporate Trainer, August 1994- August 2002*

Prepare, schedule and perform training of new hires. Offer on-going training to existing employees including, compliance and regulatory training. Responsible for the development, coordination, and implementation of health and safety programs to

assure that all safety programs comply with state and local regulatory agency rules and regulations. Recommends research and develops training courses for supervisors.  
Provide support for mentoring program for new employees.

SKILLS: Lexis, Westlaw, Windows, Word, Excel, PowerPoint, Leader, and Multitasking