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Subject: Proposal to establish a Bachelor of Arts/Bachelor of Science Dual Degree with Bluffton University and Ohio State
Date: Sunday, January 12, 2025 2:17:57 PM
Attachments: [image001.png](#)

David, Meg and Rosie:

The proposal from OSU Lima and Bluffton University, facilitated through the Office of Academic Affairs, to establish a Bachelor of Arts/Bachelor of Science Dual Degree between Bluffton University and The Ohio State University was approved by the Council on Academic Affairs at its meeting on January 8, 2025. Thank you for attending the meeting to respond to questions/comments. This action will be included in the Council's next Annual Activities Report to the University Senate (July 2025).

The Council asks for two amendments:

1. Clarify the correct ABET Accrediting Commission.
2. Add a clause that notes that while technically the program can be completed in 4 years, students may need 5 years to complete it.

The proposal will now be sent to the Ohio Department of Higher Education for review/action.

Implementation issues remain to be addressed before the dual degree can be offered. There have been periodic discussions of them over the past year, but I am immediately establishing a work group that includes colleagues from OSU Lima, Undergraduate Admissions, Advising, Student Financial Aid, Office of the University Registrar and Business and Finance, to resolve them. I will remain actively involved, as will the academic leadership at Bluffton University.

We are very grateful for the collegial, collaborative spirit and visionary input of President Jane Wood and Alex Sider, Academic Dean and Vice President of Academic Affairs from Bluffton University.

Similarly, Dean Meggie Young and Associate Dean, Mark Kleffner, at OSU Lima, have shown strong commitment to, and leadership in, the development of this proposed dual degree over the past two years.

Please keep a copy of this message for your file on the proposal and I will do the same for the file in the Office of Academic Affairs.

If you have any questions please contact the Chair of the Council, Professor Sue Sutherland (.43), or me.

I wish you success with this important program development.

Randy



W. Randy Smith, Ph.D.

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Bluffton – OSU Lima BA in Applied Engineering Science and BS in Engineering Technology Dual-degree Articulation

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Purpose

This agreement (“Agreement”) between Bluffton University (“Bluffton”) and The Ohio State University Lima Campus (“OSU-Lima”) articulates the BA/BS dual degree program. The goal of this cooperative effort is to address regional workforce development demands by offering an engineering program grounded in broad liberal arts educational principles.

BA in Applied Engineering Science/BS in Engineering Technology

The BA/BS dual degree program requires a minimum of 150.5 semester hours of course work from math, science, engineering, and Bluffton University and OSU Lima general education courses.

Bluffton University is a four-year, liberal arts institution. In this proposed dual degree program, students remain degree-seeking Bluffton students throughout their four years and participate in the faith-based, liberal arts education, embodied in Bluffton’s general education program. For instance, students will continue to learn through the upper-level Bluffton Blueprint (general education) courses, including a cross-cultural experience and a capstone course that integrates the entire Bluffton experience. This broad learning provides an enriched experience for students, as they receive a liberal arts education along with a specific engineering degree from OSU.

In addition, students would have the opportunity to take advantage of Bluffton’s four-year residential and athletic programs while also pursuing a degree from OSU-Lima. These opportunities are not available through OSU-Lima.

Admission Requirements

Admission to the dual degree program requires that students meet one of these two criteria:

- a. High school GPA of 3.0 or higher (ACT/SAT test scores not required)
- OR
- b. High school GPA between 2.3 and 2.99 and a minimum 19 ACT/990 SAT.

Standardized test results may be requested for class placements and are required for competitive academic scholarships.

ABET Accrediting Requirements

To satisfy accreditation requirements of the Engineering Accrediting Commission (EAC) of ABET, the BA/BSET program includes:

- a. a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences with experimental experience appropriate to the program.
- b. a minimum of 45 semester credit hours (or equivalent) of engineering topics appropriate to the program, consisting of engineering and computer sciences and engineering design, and utilizing modern engineering tools.
- c. a broad education component that complements the technical content of the curriculum and is consistent with the program educational objectives.
- d. a culminating major engineering design experience that
 - a. incorporates appropriate engineering standards and multiple constraints, and
 - b. is based on the knowledge and skills acquired in earlier course work.¹

The BA/BSET program includes 13 hours of calculus, 11 hours of physics, and at least 8 hours of additional science. Science courses are restricted to chemistry, biology, and physical sciences per EAC criteria. Also, the BA/BSET major courses provide more than 45 hours of engineering topics. The Bluffton University general education sequence of Blueprint and Competency courses provides a broad educational complement of non-technical content, and the two-semester ENGTEC 4900/4150-4910/4251 Capstone sequence provides a culminating major engineering design experience. It is important to keep in mind that each graduation plan must satisfy both ABET accreditation, Bluffton University BA and OSU Lima BSET requirements.

General Education Program Exchange

Bluffton University General Education Requirements

The BU General Education requirements and program considerations are described below.

Blueprint Courses (13 hours total):

- a. One first-year seminar course (3 hours): BENV 100 Becoming a Scholar
- b. One experiential learning course (5 hours): BENV 200 Learning in Community
- c. One inter-cultural immersion course (3 hours): BENV 300 Cross Cultural (requirement may also be met by 6 hours of modern language study + Bluffton-certified cross-cultural components)
- d. One senior seminar course (2 hours): BENV 400 Enduring Values Capstone

Competency Courses (33-34 hours total)

- a. Creative Expression (3 hours)
- b. Critical Analysis (as satisfied by MAT 135 Calculus) (5 hours)
- c. Exploring the Past (3 hours)
- d. Living Well (2-3 hours)
- e. Reading the Bible (3 hours)
- f. Religious Understanding (3 hours)
- g. Scientific Inquiry (as satisfied by CEM 121 General Inorganic Chemistry) (5 hours)
- h. Speaking and Listening (3 hours)
- i. Understanding Self and Society (3 hours)

¹ See <https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2022-2023/>.

- j. Writing Well (3 hours)
- Arts & Lecture Credit (2 hours total)

Ohio State University General Education Requirements

The Ohio State University General Education requirements and program considerations are described below.

Bookends (2 hours total) Bookends seminars use folio pedagogy to support students in developing and articulating their academic identity and pathway.

- a. Launch Seminar (1 hour)
- b. Reflections Seminar (1 hour)

Foundations (22-25 hours total). Students gain awareness of the major academic disciplines and approaches through the Foundations component of the GE program. The seven universal categories within Foundations integrate these disciplinary approaches in the context of topical Themes.²

- a. Race, Ethnicity and Gender Diversity (3 hours)
- b. Social and Behavioral Sciences (3 hours)
- c. Historical and Cultural Studies (3 hours)
- d. Writing and Information Literacy (3 hours)
- e. Literary, Visual, and Performing Arts (3 hours)
- f. Math, Quantitative Reasoning, or Data Analysis (3-5 hours)
- g. Natural Sciences (4-6 hours)

Themes (8-12 hours total). Theme courses address broad areas of inquiry through interdisciplinary approaches. Students typically take two 3-hour courses in each of two Themes to meet the requirements of this aspect of the General education but may take a single, 4+ credit course to satisfy a particular GE Theme requirement if that course involves key practices that are recognized as integrative and high impact. All students complete the Citizenship for a Diverse and Just World Theme and choose one other Theme to complete. The Traditions, cultures, and Transformations theme is expected to have overlap with the Bluffton curriculum so is used as an example here³

- Launch Seminar (1 hour)
- a. Theme: Citizenship for a Diverse and Just World (4-6 hours)
- b. Theme: Traditions, cultures, and Transformations (4-6 hours)

Students in the dual degree program will take all of Bluffton's general education requirements as well as OSU-Lima's Launch Seminar, Citizenship for a Diverse and Just World, Reflection Seminar, and Race, Ethnicity and Gender Diversity requirements. The Traditions, Cultures, and Transformations Theme coursework is understood to overlap with the Bluffton degree requirements. The table below shows the transfer articulation for the Bluffton Blueprint general education program to the OSU Lima general education program. The OSU-Lima requirements on the left will be met by the corresponding Bluffton University courses on the right. This transfer pathway accounts for all the Bluffton University general education courses except for the Speaking and Listening Competency (3 hours), the Living Well Competency (2-3 hours), and the Reading the

² See <https://oaa.osu.edu/ohio-state-ge-program>.

³ See <https://oaa.osu.edu/ohio-state-ge-program>.

Bible Competency (3 hours), each of which will be taken at Bluffton as part of the BA in Applied Engineering Science.

Ohio State University General Education requirements	Bluffton University General Education requirements
Theme: Traditions, Cultures, and Transformations (4-6 hours)	BENV 200 Learning in Community + BENV 300 Cross-Cultural
Foundations (3-5 hours each)	Competencies (3-5 hours each)
Social and Behavioral Sciences	Understanding Self & Society Competency
Historical and Cultural Studies	Exploring the Past or Religious Understanding Competency
Writing and Information Literacy	Writing Well Competency
Literary, Visual and Performing Arts	Creative Expression Competency
Natural Sciences	CEM 121 General Inorganic Chemistry (Scientific Inquiry Competency)
Mathematical and Quantitative Reasoning	MAT 135 Calculus (Critical Analysis Competency)

Dual Degree BA/BSET Course Offerings/Descriptions

Courses in the degree program, their place in the curriculum map, and the campus on which the course is offered are detailed in the schedule below:

Course (name/number)	No. of credit hours (q/s)	Major/ Core/ Technical	General Education	Elective	New/Existing Course	Offered at
BENV 100 Becoming a Scholar	3s		X		Existing	Bluffton
BENV 200 Learning in Community	5s		X		Existing	Bluffton
BENV 300 Cross Cultural	3s		X		Existing	Bluffton
BENV 400 Enduring Values Capstone	2s		X		Existing	Bluffton
LAS 101 Arts & Lecture 1	0.5s		X		Existing	Bluffton

LAS 102 Arts & Lecture 2	0.5s		X		Existing	Bluffton
LAS 103 Arts & Lecture 3	0.5s		X		Existing	Bluffton
LAS 104 Arts & Lecture 4	0.5s		X		Existing	Bluffton
Reading the Bible Competency (one of REL 100 Introduction to Biblical Worldview or HON120 Honors Seminar in Biblical Worldview and Hermeneutics)	3s		X		Existing	Bluffton
Writing Well Competency (one of CMP 110 College English or CMP 120 Advanced College English)	3s		X		Existing	Bluffton
Speaking and Listening Competency (one of COM 120 Communication for the Common Good, COM 185 Public Speaking and Persuasion, COM 195 Interpersonal Communication, HFS 170 Sport Communication, or HON 200 Honors Seminar in Rhetoric and Argumentation)	3s		X		Existing	Bluffton
Living Well Competency (one of HFS 120 Team and Individual Sports 1, HFS 130 Team and Individual Sports 2, HFS 155 Adventures in Outdoor Recreation, HFS 205 Leadership, HFS 220 Personal and Community Health, HFS 255 Competitive Strength Training, HFS 266 Personal Wellness and Exercise, HON 260 Personal Finance, MED 242 Social Media, NTR 105 Introduction to Foods, NTR 225 Fundamentals of Nutrition)	2-3s		X		Existing	Bluffton
Exploring the Past Competency (one of ART 327 Art History 1, ART 328 Art History 2, ENG 240 Survey	3s		X		Existing	Bluffton

<p>of American Literature, ENG 256 Survey of English Literature 1, ENG 257 Survey of English Literature 2, HIS 200 Foundations of American Civilization, HIS 210 World History 1, HIS 221 World History 2, HIS 252 Ohio and the Old Northwest, HIS 301 Studies in American History, HIS 302 Studies in European History, HIS 305 African American History, HIS 312 European Women’s History, HIS 320 Civil War and Reconstruction, HIS 325 The Great Depression and WWII, HIS 329 WWI and the Rise of Extremism, HIS 331/HON 320 Nazi Germany and the Holocaust, HIS 332 Gold War Germany and Europe, HIS 345 Food: A History, HON 210 Honors Seminar in the Humanities</p>						
<p>Religious Understanding Competency (one of HON 270 Faith and Fiction, HON 313 Whither the Sacred? Sociology of Religion, REL 115 World Religions, REL 242 Spiritual Disciplines, REL 250 Introduction to Old Testament, REL 252 Introduction to New Testament, REL 273 Christian Theology, REL 275 History of Christianity, REL 359 Mennonite History and Thought)</p>	3s		X		Existing	Bluffton
<p>Creative Expression Competency (one of ART 135 Introduction to Visual Art, ART 204 Drawing, ART 214 Watercolor, ART 217 Ceramics 1, ART 225 Printmaking 1, ENG 202 Introduction to Fiction Writing, ENG 203 Creative Writing: Poetry,</p>	3s		X		Existing	Bluffton

ENG 205 Creative Writing: Non-Fiction, HON 130 Art as Transformation, THE 135 Introduction to Theatre, THE 136 Theatre for Social Change, THE 257 Performance Studies, THE 258 Acting)						
GenEd Bookend: Launch Seminar	1s		X		Existing	OSU Lima
GenEd Bookend: Reflection Seminar	1s		X		Existing	OSU Lima
GEN Foundation: Race, Ethnicity, and Gender Diversity (one of RELSTDS 2370 Introduction to Comparative Religion, ESPHE 3206 School and Society, THEATRE 2700 Criticizing Television, AFAMAST 1101 Introduction to African American and African Studies, WGSST 1110 Gender, Sex and Power, SOCWORK 1140 Issues in Social Justice: Race, Gender and Sexuality, PSYCH 1375 I am. The Psychology of Identity and Culture, PHILOS 1420 Philosophical Approaches to Racism and Sexism, HISTORY 3642 Women and Gender in Modern Europe (1750-1950), HISTORY 2001 Multiple Americas: US History from Colonialism to Reconstruction)	3s		X		Existing	OSU
Critical Analysis Competency (MAT 135 Calculus)	5s	X	X		Existing	Bluffton
Scientific Inquiry Competency (CEM 121 General Inorganic Chemistry)	5s	X	X		Existing	Bluffton
CPS 108 Computer Programming	3s	X			Existing	Bluffton

MAT 136 Calculus 2	5s	X			Existing	Bluffton
MAT 225 Multivariate Calculus	3s	X			Existing	Bluffton
PHY 150 Engineering Seminar	1s	X			Existing	Bluffton
PHY 211 Physics for Science/Engineering	5s	X			Existing	Bluffton
PHY 212 Physics for Science/Engineering	5s	X			Existing	Bluffton
PHY 385 Physics Internship	3s	X			Existing	Bluffton
BUSOBA 3320 Operations Management	3s	X			Existing	OSU Lima
BUSOBA 4250 Lean Six Sigma	3s	X			Existing	OSU Lima
CSE 2111 Spreadsheets & Databases	3s	X			Existing	OSU Lima
ENGR 1181 Fundamentals of Engineering 1	2s	X			Existing	OSU Lima
ENGR 1182 Fundamentals of Engineering 2	2s	X			Existing	OSU Lima
ENGR 2301 Exploring DEI in Engineering Contexts	4s	X			Existing	OSU Lima
ENGRTEC 1600 AutoCAD for Engr Tech	3s	X			Existing	OSU Lima
ENGR 1500 Manufacturing Process 1	3s	X			Existing	OSU Lima
ENGRTEC 2300 Electric Circuits	3s	X			Existing	OSU Lima
ENGRTEC 2500 Manufacturing Process 2	2s	X			Existing	OSU Lima
ENGRTEC 3100 Material Science Lab	0.5s	X			Existing	OSU Lima
ENGRTEC 3600 Tech Structure and App	3s	X			Existing	OSU Lima

ENGRTEC 3700 Mechanical Processes	3s	X			Existing	OSU Lima
ENGRTEC 3800 Project Management for Engr Tech	3s	X			Existing	OSU Lima
ENGRTEC 3900 Indus Automation PLC1	3s	X			Existing	OSU Lima
ENGRTEC 4200 Indus Automation PLC2	3s	X			Existing	OSU Lima
ENGRTEC 4300 Facility Layout Integration	3s	X			Existing	OSU Lima
ENGRTEC 4400 Leader/Change Management	3s	X			Existing	OSU Lima
ENGRTEC 4500 Robotics & Automation	3s	X			Existing	OSU Lima
ENGRTEC 4600 Elect Power & Drives	3s	X			Existing	OSU Lima
ENGRTEC 4700 Networks, Security & Data	3s	X			Existing	OSU Lima
ENGRTEC 4900/4150 Capstone 1	3s	X			Existing	OSU Lima
ENGRTEC 4910/4251 Capstone 2	3s	X			Existing	OSU Lima
ISE 2040 Engineering Economics	2s	X			Existing	OSU Lima
MATSCIEN 2010 Intro to Engineering Materials	3s	X			Existing	OSU Lima
STATS 3440 Applications in Quality	3s	X			Existing	OSU Lima

Total Number of credits in the program 150.5

Course Descriptions

A brief description of each course in the proposed program as it appears in the course catalog is included below. Refer to the appendix for syllabi for each course in the Applied Engineering Science/BSET major.

Bluffton University Course Descriptions

BENV 100 BECOMING A SCHOLAR (3)

This course will help students learn and embody the practices of being a scholar in the context of Bluffton's academic and faith community. Students will develop essential elements of their academic identity through readings and conversations about Bluffton's four enduring values and by constructing a course project. This course is required of all first-year students during the fall semester of the first year. All students who earn an E must retake the course during the following spring semester. Those who earn a D may retake it during the spring semester. Course material fee: \$150.

BENV 200 LEARNING IN COMMUNITY (5)

This interdisciplinary course offers students the opportunity to combine classroom instruction, engagement with community resources and project-based learning. A team of instructors provides students the context to understand the community with which they are engaging; significant portions of class time will be spent with community leaders and community organizations. Though the particular disciplinary focus will vary based on the instructors of the course, each version of the course includes a focus on data analytics as a tool for understanding communities. Students will also learn how to best obtain accurate and up-to-date information. Student teams undertake a significant project that responds to their learnings regarding a community issue. This course is typically completed in the sophomore year, though it may be taken in junior year. Prerequisite: BENV 100. Offered every semester.

BENV 300 CROSS-CULTURAL EXPERIENCE (3)

This course develops a framework for understanding and appreciating diversity and different cultures and provides a cross-cultural learning experience. Through this experience of immersion in another geographic and cultural setting, students are expected to 1) more fully understand and appreciate a culture other than their own and then reflect critically upon their own location within their cultural context, and 2) examine what it means to be a responsible citizen in the global community and grow in developing an ethic of justice, service and peacemaking. Normally completed during the student's sophomore or junior year. International students meet the cross-cultural requirement by completing [SOC 162 Anthropology](#). Prerequisite: BENV 100. An additional program fee, which varies depending on the experience, will be charged to the student account at the time of spring semester registration. Financial assistance is available.

BENV 400 Enduring Values Capstone (2)

Enduring Values Capstone provides a context for students to examine how their discoveries from the Enduring Values General Education curriculum connect to global themes of poverty and environmental injustice. Using design thinking tools, students will work collaboratively with their peers to consider how their reflections on their college education might impact their future commitments as they continue their lives and vocations. Prerequisites: BENV 200, BENV 300, and Senior standing. Offered every semester.

CEM 121 GENERAL INORGANIC CHEMISTRY 1 (5)

The year-long sequence [CEM 121](#) and [CEM 122](#) comprise the standard “freshman chemistry”

course for science majors and students pursuing medicine or other health-related fields. Topics in CEM 121 include: chemical formulas and equations, stoichiometry, energy relationships, atomic structure, periodicity, bonding and properties of solids, liquids, gases and solutions. Four lectures, one three-hour laboratory per week. Prerequisite: placement into College Algebra [MAT 100](#) or higher. Most students will have completed high school chemistry. Satisfies Scientific Inquiry competency. Offered every fall semester. Course fee \$50.

CMP 110 COLLEGE ENGLISH (3)

Designed to help students improve writing and critical thinking skills needed in college. Students analyze and critique written texts in the process of writing several analytical essays. Students work through the research process and write a research essay. Satisfies Writing Well competency.

CMP 120 ADVANCED COLLEGE ENGLISH (3)

Designed to help students improve writing and critical thinking skills needed in college. Students analyze and critique challenging written texts in the process of writing several analytical essays. Students work through the research process and write a research essay. Placement in this class is based on college entrance scores and high school record. Satisfies Writing Well competency.

CPS 108 COMPUTER PROGRAMMING (3)

This course is an introduction to computer programming which emphasizes the application of fundamental principles to problem solving and programming techniques. Structured programming concepts using the Python programming language are stressed. Some familiarity with computers is assumed. Offered every fall semester.

LAS 101, 102, 103, 104 ARTS AND LECTURE CREDIT (.5 each)

The Bluffton University Arts and Lecture program provides an opportunity for shared academic and cultural experiences among faculty, staff and students across departments and disciplines. Lectures present ideas, issues and problems significant for general education and society at large. All undergraduate students are expected to earn a total of 2 credits by graduation. Students earn 0.5 of an academic credit for every 15 unique Arts and Lecture events they attend. At least one-third of the Arts and Lecture credit earned must be from attendance at Tuesday morning Forums. Students do not register for Arts and Lecture credit, nor will they be charged for this credit. Students accumulate event credit by scanning into and out of an event with their own student I.D. cards. Students on semester-long off-campus cross-cultural experiences receive credit for seven Arts and Lecture events. Seniors need to complete this requirement two weeks before graduation in order to receive their diploma at graduation.

MAT 135 CALCULUS 1 (5)

A study of fundamental concepts and applications of the differential calculus of one variable, as well as introductory integral calculus. Polya's problem-solving methods are used to solve mathematical problems that model real-world situations, and which require methods of differential calculus for their solution. The historical roles of Newton and Leibniz are discussed. Graphing calculators are required and are used extensively. Projects that require use of computer algebra systems such as Mathematica or Maple are included. prerequisites: [MAT 114](#) or four years of high

school math and qualification for placement. Satisfies Critical Analysis competency. Offered every semester.

MAT 136 CALCULUS 2 (5)

A study of fundamental concepts and applications of the differential calculus of one variable, as well as introductory integral calculus. Polya's problem-solving methods are used to solve mathematical problems that model real-world situations and which require methods of differential calculus for their solution. The historical roles of Newton and Leibniz are discussed. Technology (spreadsheets, graphing calculators and online resources) are used extensively. Prerequisites: [MAT 135](#) or its equivalent. Offered every spring semester.

MAT 225 MULTIVARIATE CALCULUS (3)

A development of vector calculus, partial derivatives and multiple integrals, properties of vectors and transformations on coordinate systems, line and surface integrals, and projects that make use of systems such as Mathematica or Maple for three-dimensional display is included throughout the course. Prerequisite: [MAT 136](#). Offered every spring semester.

PHY 211 PHYSICS FOR SCIENCE AND ENGINEERING 1 (5)

The sequence PHY 211 and [212](#) form the standard year of calculus-based physics for science and engineering students. Topics include Newtonian mechanics, heat, electricity, magnetism, oscillations and waves, sound and light. Four lectures, two-hours of laboratory work per week. Students who have not had high-school physics, calculus or [CEM 121](#) may wish to consult with the professor before attempting this course. Satisfies Scientific Inquiry competency. Offered every fall semester. Course fee \$50.

PHY 212 PHYSICS FOR SCIENCE AND ENGINEERING 2 (5)

The continuation of PHY 211. Four lectures, two-hours of laboratory work per week. Prerequisite: [CMP 110](#) or [CMP 120](#) and [PHY 211](#). Offered every spring semester. Course fee: \$50.

PHY 385 PHYSICS INTERNSHIP (1-3)

Supervised work experience applying principles and theory from student's major courses. Internship objectives, contact hours and specific requirements are to be arranged with supervising faculty prior to the course. May be repeated for a maximum of 9 internship credit hours within the mathematical and natural sciences.

REL 100 INTRODUCTION TO BIBLICAL WORLDVIEW (3)

An introduction to each of the four main ways that modern theologians have attempted to understand the Bible (biblical studies, ethics, theology and spirituality) through the exploration of the biblical foundations of each approach. Students consider the distinctiveness and the relationships between these different approaches to the biblical text in an Anabaptist context. The course emphasizes the ability to read and understand biblical texts in a discerning way and to explore the text's potential for shaping a contemporary worldview. The Sermon on the Mount provides a focal text for the course. Satisfies Reading the Bible competency.

OSU Lima Course Descriptions

BUSOBA 3230 INTRODUCTION TO OPERATIONS MANAGEMENT (3)

Introduction to operations and supply chain management to improve manufacturing and service organizations; analyzing, controlling and improving resources and processes to increase productivity, generate value-added output and meet business goals. Prereq: Econ 2001.01 or 2002.01, and Stat 1430 or equiv.; or Math 1151 or 1154, and enrollment in BSET program. Not open to students with credit for 3130, or to students enrolled in UExp or PreBSBA-PR.

CSE 2111 MODELING AND PROBLEM SOLVING WITH SPREADSHEETS AND DATABASES (3)

Spreadsheet and database modeling/programming concepts and techniques to solve business related problems; efficient/effective data handling, computational analysis and decision support. Additional topics: computer concepts, networking, project integration.

ENGR 1181 FUNDAMENTALS OF ENGINEERING 1 (2)

Engineering problem solving utilizing computational tools such as Excel and MATLAB; hands-on experimentation; modeling; teamwork; written, oral and visual communications.

ENGR 1182 FUNDAMENTALS OF ENGINEERING 2 (2)

Introduction to 3D visualization and CAD; engineering design-build process; teamwork; written, oral and visual communications; project management.

ENGR 2301 EXPLORING CITIZENSHIP IN ENGINEERING (4)

Students will use the engineering design and writing processes to define a meaningful problem within specific local or global communities and formulate and propose a solution to that problem. Students will explore various themes around engineering and citizenship through a comprehensive, semester-long proposal project.

ENGRTEC 1600 AUTOCAD FOR ENGR TECH (3)

Develop skills in graphic design and visualization through experience creating and interpreting 2D Computer Aided Drawings in AutoCAD. Explore various forms of technical graphics used in the field of Engineering Technology including facility layouts, piping and instrumentation diagrams, and electric schematics. Emphasis on utilizing technical graphics to solve Engineering Technology problems.

ENGR 1500 MANUFACTURING PROCESS 1 (3)

History of manufacturing, tools and machines, and operations of the machine shop equipment. Opportunity to function individually and on teams, and communicate effectively to learn to work in groups to accomplish a task. The skills learned from this class are transferable to all areas of day to day professional life which makes it valuable in other contexts.

ENGRTEC 2300 ELECTRIC CIRCUITS (3)

Fundamentals of electrical circuits, measuring & analyzing data, & troubleshooting those circuits. Analysis of Direct Current (primarily) & Alternating Current circuits (less content) & effects of different components- resistors, capacitors, inductors, and other components in electrical circuits. DC/AC circuit dynamics that will be used in studies of industrial & electronic control applications.

ENGRTEC 2500 MANUFACTURING PROCESS 2 (2)

Modern manufacturing processes. Design, create, and assembly of structure/objects by combining the manufacturing and graphical design knowledge. Opportunity to function individually and on teams and communicate effectively to learn to work in groups to accomplish a task. The skills are transferable to all areas of day-to-day professional life which makes it valuable in other contexts.

ENGRTEC 3100 MATERIAL SCIENCE LAB (0.5)

Supplemental course for BSET students that should be taken along with MatScEn 2010. This course will provide hands-on exposure to common manufacturing materials physical and chemical characteristics (like electrical and heat conductance) as well as testing methods (like stress, strain, hardness, brittleness, and microstructure.)

ENGRTEC 3600 TECH STRUCTURE AND APP (3)

This course communicates the structure of a manufacturing organization, the technology and systems in each level of the organization and the roles in the automation, control, and monitoring of automation manufacturing systems. It provides insight in the types of manufacturing systems, equipment/ machinery, sensors/ control devices and how to develop code for these systems for an integration.

ENGRTEC 3700 MECHANICAL PROCESSES (3)

Mechanical Processes is a 3-hr course designed to help students become familiar with modern mechanical processes as well as hydraulics/pneumatics and mechanical systems in manufacturing applications. The fundamentals and applications of mechanical systems included include pneumatics and hydraulics, cams, gears, bearings, gears, rotary and linear actuation.

ENGRTEC 3800 PROJECT MANAGEMENT FOR ENGINEERING TECHNOLOGY (3)

Project Management is a course that focuses on waterfall (PMBOK) and Agile methodologies for managing projects in the manufacturing industry. Emphasis is placed on project initiation, planning, executing, monitoring & controlling, and closing processes. This course will provide students with an overview of leadership roles and responsibilities, as well as interpersonal skills, conflict resolution.

ENGRTEC 3900 INDUSTRIAL AUTOMATION PLC1 (3)

Industrial Automation PLC1 is a 3-credit hour course designed as the first of two courses intended to provide the students with skills in industrial automation that can be applied in a variety of technical fields related to manufacturing.

ENGRTEC 4200 PLC2 INDUS AUTOMATION (3)

Industrial Automation PLC2 is designed as the second of two courses to provide the students with skills in industrial automation for manufacturing. The course is designed to provide students with the comprehensive review of functions, operation, and communication of automated industrial systems including PID loops, HMIs, data transfer, troubleshooting PLC networks for equipment/process integration.

ENGRTEC 4300 FACILITY LAYOUT AND INTEGRATION (3)

Facility Layout and integration is a 3-hr course designed to give student skills needed to create effective layouts considering people, technology, process, throughput, and support systems. The class will build upon skills gained in previous classes in AutoCAD and Manufacturing Processes as well as use skills in analysis and design skills.

ENGRTEC 4400 LEADERSHIP AND CHANGE MANAGEMENT (3)

In-depth evaluation of the concepts and principles of effective leadership, the characteristics of leaders and followers, and the principles of change management. Course work will emphasize written and verbal communication skills, in addition to presentation skills and exposure to real-world case examples.

ENGRTEC 4500 ROBOTICS AND AUTOMATION (3)

Intelligent Manufacturing and Automation is a 3-credit course in advanced robotics and automation designed to teach students complex integrated manufacturing systems to solve industry-related issues. Along the way, this course will provide you with opportunities to work individually as well as in teams to accomplish tasks using the Connected Smart Manufacturing system cell.

ENGRTEC 4600 POWER AND DRIVES (3)

ENGRTEC 4600, Power and Drives, is a 3-hour course designed to introduce the student to high-voltage power generation/transmission to production facilities and distribution within the facility. Further the course will focus on applications related to motors and variable frequency drives. Applications for power (12,000 volts to 120 volts) are found in typical production facilities.

ENGRTEC 4700 NETWORKS, SECURITY, AND DATA (3)

This course will provide you with an understanding of the basics of networking devices and systems along with the cyber security considerations and technology required for the deployment of these solutions. The cyber security materials will include a study of the human elements that impact this space. The course will provide an introduction to the safety control systems deployed in manufacturing.

ENGRTEC 4900/4150 CAPSTONE 1 (3)

This course is designed to provide students the opportunity to test their level of acquired knowledge, experience, and leadership in an actual, well-defined customer project environment.

Students will be provided an assigned project of interest, work in project teams, interacting with an engineering client leadership/people, to define, design, test and implement an actual working product, service.

ENGRTEC 4910/4251 CAPSTONE 2 (3)

This is the second course of the series designed to provide students the opportunity to test their level of acquired knowledge, experience, and leadership in an actual, well-defined customer project environment. Students will be provided an assigned project of interest, work in project teams, interacting with an engineering client.

ISE 2040 ENGINEERING ECONOMICS (2)

Economic Analysis of engineering project alternatives. Cash flow modeling; time value of money; techniques for comparing project alternatives and making solid business recommendations; influence of financial accounting and cost accounting on cash flow models. Course uses MS Excel as primary business tool for modeling.

MATSCIEN 2010 INTRO TO ENGINEERING MATERIALS (3)

Introduction to the properties (mechanical, electrical, thermal, diffusive, degradative, magnetic, optical), structure, and processing of engineering materials, including ceramic, metals, polymers, biological, and composite materials.

STAT 3440 APPLICATIONS IN QUALITY (3)

Descriptive statistics; introduction to probability; Bayes theorem; discrete and continuous random variables, expected value, probability distributions; interval estimation for means and proportions; hypotheses tests for means and proportions; least squares regression; one- and two-way anova; control charts; process capability indices.

Program Sequence

The intended/ideal course sequence is shown in the table below. Courses required for the majors are in **boldface**; courses delivered at OSU Lima are in *italics*.

Time period	Curriculum component	Time period	Curriculum component
Year 1 Fall Semester	BENV100 Becoming a Scholar REL 100 Introduction to Biblical Worldview CEM 121 General Inorganic Chemistry 1 MAT 135 Calculus I	Year 1 Spring Semester	Writing Well Competency PHY 150 Engineering Seminar MAT 136 Calculus 2 Speaking and Listening Competency

	ENGR 1181 Fundamentals of Eng 1		ENGR 1182 Fundamentals of Eng 2 ENGRTEC 1600 AutoCAD for Engr Tech
Year 1 Summer	Religious Understanding Competency, <i>GenEd Bookend: Launch Seminar</i>		
Year 2 Fall Semester	PHY 211 Physics for Science/Engineer. 1 CPS 108 Computer Programming GEN Foundation: Race, Ethnicity, and Gender Diversity ENGRTEC 1500 Manufacturing Process 1	Year 2 Spring Semester	PHY 212 Physics for Science/Engineering 2 MAT 225 Multivariate Calculus Living Well Competency CSE 2111 Spreadsheets & Databases ENGRTEC 2500 Manufacturing Process 2 ISE 2040 Engineering Economics
Year 2 Summer	PHY 385 Physics Internship , Exploring the Past Competency		
Year 3 Fall Semester	ENGRTEC 3800 Manufacturing Process 1 ENGRTEC 2300 Electric Circuits ENGRTEC 3100 Material Science Lab STATS 3440 Applications in Quality MATSCIEN 2010 Intro to Engineering Materials BUSOBA 3230 Operations Management	Year 3 Fall Semester	ENGRTEC 3700 Mechanical Processes ENGRTEC 3900 Indus Automation PLC1 ENGRTEC 4300 Facility Layout Integration BUSOBA 4250 Lean Six Sigma ENGRTEC 2100 Intro to Robotics ENGR 2301 Exploring Citizenship in Engineering: Integrative Designation

Year 3 Summer	Creative Expression Competency, PHY 385 Physics Internship		
Year 4 Fall Semester	BENV200 Learning in Community Understanding Self and Society Competency ENGRTEC 4900/4150 Capstone 1 ENGRTEC 3600 Technology Structure & App ENGRTEC 4200 Indus Automation PLC2 GenEd Bookends Connection	Year 4 Spring Semester	BENV300 Cross-cultural Experience ENGRTEC 4910/4251 Capstone ENGRTEC 4500 Robotics & Automation ENGRTEC 4700 Networks, Security & Data ENGRTEC 4600 Elect. Power & Drives ENGRTEC 4400 Leader/Change Management
Year 4 Summer	BENV 400 Enduring Values Capstone		

Total Number of credits in the program 150.5

Term, Termination, Renewal

The term of this Agreement shall commence on the day of final signature and remain in effect until terminated as provided herein. Either party may terminate the Agreement by giving written notice at least 90 days in advance of the next academic term, or at commencement of full merger agreement between the two institutions. Termination would not affect students already participating in a course.

Obligations of Both Institutions

1. Provide appropriate coursework for students from either institution that aligns with the course needed from the home institution curriculum and graduation requirements.
2. Each institution agrees to accept credit for courses taken at the other institution that fulfill the receiving institution’s requirements for graduation. Credit will only transfer for courses in which the student earns a C or better.
3. Costs either entity incurs associated with the development, administration, or promotion of their academic programs will be borne by the respective institution.
4. Costs associated with the provision of academic programs, including accreditation costs, or costs associated with licensures, will be borne by the institution offering the particular academic program.

5. Each institution agrees to grant transient students appropriate and necessary technological credentials required for successful completion of registered courses.
6. Each institution will provide students with necessary information for course materials; students will not be enrolled in the teaching institutions' bookstore services.
7. Each part agrees to be responsible for any personal injury or property damage caused solely by its negligent acts or omissions as determined by a court of competent jurisdiction, or as the parties may otherwise mutually agree.
8. This Agreement constitutes the entire agreement between the parties with respect to the services designated herein. There are no provisions, terms, conditions, or obligations other than those contained herein, and this Agreement shall supersede all previous communications, representations, or agreements, whether verbal or written, between the parties or their representatives. Any subsequent agreement between the parties is a separate and distinct agreement and not a renewal hereof.
9. The terms and conditions of this Agreement may be altered by mutual consent in writing and signed by both parties.
10. Both institutions acknowledge that this Agreement shall be governed by the laws of the State of Ohio.
11. If any controversy, dispute, or claim arises between the parties with respect to this Agreement, the parties shall make good faith efforts to resolve such matters internally.
12. Each party and its employees are independent in relation to the other party with respect to all matters arising under this Agreement. Nothing herein shall be deemed to establish a partnership, joint venture, association or employment relationship between the parties. Both parties shall remain responsible for the withholdings and payment of all Federal, State and Local personal income, wage, earnings, worker's compensation, social security, unemployment, sickness and disability insurance taxes, payroll levies or employee benefit requirements now existing or hereafter enacted and attributable to themselves and their respective employees.
13. This Agreement constitutes a legal, valid, and binding agreement and obligation of each party hereto.

Financial Aid Blanket Consortium Agreement

This agreement between Bluffton University and OSU-Lima facilitates the awarding and disbursing of financial aid funds.

A. Obligation of home institution (institution where student is regularly enrolled and degree-seeking)

During the period of this agreement, the home school will be:

1. Responsible for processing of student ISIR, verification, and ensuring all student eligibility requirements are met.
2. Responsible for packaging of financial aid funds, disbursing aid to the students account and sending notifications to students of any changes to the students' account.
3. Responsible for processing any financial aid refunds that are due to the student.
4. Responsible for calculating and notifying the student regarding their Satisfactory Academic Progress status.
5. Responsible for processing Return of Title IV calculation and returning funds in the event a student withdraws.

B. Obligation of the host institution (institution where student is taking course(s) to apply toward degree)

During the period of this agreement, the host school will:

1. Agree to not process any financial aid for students in order to prevent any over-award situation.
2. Agree to notify the home school of information that we become aware and that would affect a student's financial aid eligibility (information may include but is not limited to; outside financial resources, notification of non-attendance, etc.).

Tuition and Scholarships

1. The students will pay tuition and all expenses related to the degree to the enrolling school. Tuition will be charged at the rate of the school at which the course is taken. Any financial aid for the student will be provided by the enrolling school.
2. Both institutions agree that discretionary expenses will be managed individually and do not need to be equal.
 - a. Marketing costs will be paid by each school.
 - b. Program expenses, such as printing, testing or library materials will be paid by each school.
 - c. Direct expenses for accreditation will be paid by the school carrying the accreditation.

Contact Information

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Bluffton, OH 45817
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419-358-3317 (o)

Appendix 1: Course Syllabi



OFFICE OF THE PRESIDENT

Dr. Katherine Fell

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August 21, 2024

Dear Dr. Sudkamp, Dr. McCann, and Mr. Exline:

Thank you for the opportunity to let you know that the University of Findlay fully supports Bluffton University and the OSU-Lima's proposed plan to offer Bluffton University students the opportunity to obtain a BSET degree from OSU-Lima in addition to their BA in Applied Engineering Science from Bluffton.

As you know, we are planning to merge our organizations in the next two years, but these endeavors do take significant amounts of time. The partnership between Bluffton and OSU-Lima is positive for Bluffton students, OSU-Lima, and our entire region. Post-merger, the University of Findlay will remain supportive of this partnership.

Again, I appreciate the opportunity to express my support for all the good work that has gone into creating this opportunity for Bluffton students and for the OSU-Lima campus.

Please let me know if there are any other questions that I can answer.

Sincerely,

A handwritten signature in blue ink that reads "Katherine Fell".

Katherine Fell, Ph.D.
President