ADDENDUM NO. 3

TO

2018-2019
KEISER UNIVERSITY UNDERGRADUATE CATALOG
VOLUME 18, NO. 3, February 1, 2019

Effective May 1, 2019
Keiser University continually reviews, improves and updates its programs, courses and curricula. It is incumbent on the University to reflect these revisions in its publications. The following Addendum No.3 represents additions, changes and deletions to the 2018-2019 Keiser University Undergraduate Catalog, Volume 18, No. 3, February 1, 2019, and is effective May 1, 2019.

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Philosophy
In today's society, there is a genuine need for a university that offers its students a quality, engaging, and supportive academic and career orientated educational experience in an atmosphere of personalized attention. Too often, contemporary collegiate students find themselves treated as mere numbers in a computer and therefore fail to receive the support necessary to assist them as they strive to complete programs of study.

At Keiser University, each student is considered an individual, and the University strives to be aware of the needs of each member of its student body on an ongoing basis. Career-focused education is an interactive process that produces academically prepared technicians, professional practitioners, and clinicians who are critical for future economic growth. The faculty of Keiser University believe that career orientated educational instruction is an art as well as a science, requiring dynamic and engaging processes that develop both the skill set and intellect of career-minded students.

Keiser University's goal is to develop career prepared individuals by providing an educational program that produce employable, skilled, educated, and responsible future citizens. Consequently, Keiser University students are prepared to provide professional, technical and marketable skills necessary to meet the projected needs of society. Inherent in the goals established for Keiser University is the belief that learning takes place through multiple delivery methods and in various settings. For this reason, Keiser University curricula are flexible, individualized, experiential, and instructional, and are structured in a sequential and cumulative fashion.

Keiser University affirms that all members of the academic community share responsibility for establishing, implementing and evaluating its educational programs. Further, Keiser University believes that members of business, professional and medical communities must also participate in and contribute to this process.

Strategic Directions and Goals
The following strategic directions and goals are integral to the mission of Keiser University:

I. Promote academic excellence and achievement through quality educational programs.
   a. To actively be involved with the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) and such programmatic accreditation agencies as are desired and appropriate.
   b. To assess the effectiveness of and consequentially enhance the educational and academic service programs of the university.
   c. To provide academic support services designed to enhance student learning and prepare graduates for successful occupational choices.
   d. To continue to improve the competencies of students in the basic skills areas, especially writing, mathematics, communication, and analytical skills.
   e. To cultivate analytical and critical thinking at all educational levels, especially in the area of applied research among graduate students.

II. Attract and retain quality faculty and staff.
   a. To employ and further develop a diverse faculty and academic staff personnel that are well qualified; possess current academic, technical, and specialized professional knowledge and skill-sets; reflect appropriate professional or educational experience; and evidence high quality teaching, student support, and appropriate research abilities.
b. To encourage and further develop qualified support staff and faculty who evidence an interest in, and proclivity for, engaging students, addressing learning and developmental challenges, and responding to the needs of a broad spectrum of University students in a variety of programs at multiple educational levels.

III. Develop and maintain high-demand educational programs that are distinctive, accessible, and responsive to the needs of campus communities, disciplinary and accreditation requirements, student needs, and aspirational goals.
   a. To provide and enhance a variety of educational delivery systems that respond to current and future student, community, and professional occupational needs and expectations.
   b. To review all degree programs to ensure currency, relevancy, and cost-effectiveness with respect to content, delivery, and outcomes.
   c. To review university population, technological, and societal developments and propose new programs or programmatic modifications that respond thereto.

IV. Develop and support initiatives designed to enhance faculty instruction, student learning, and program-appropriate research at all program levels.
   a. To provide appropriate resources to support service and academic programs in the achievement of student learning and programmatic outcomes.
   b. To cultivate and enhance an educational atmosphere that fosters academic freedom, the open exchange of ideas, and programmatic academic inquiry.
   c. To develop strategies that support the implementation of program and degree-appropriate academic research.

V. Expand the domestic and international development of Keiser University through the addition of new locations, collaborative agreements, and programmatic initiatives.
   a. To attract qualified students possessing diverse backgrounds at all levels and for all programs.
   b. Pursue educational initiatives appropriate for a variety of domestic and global locations and cultural settings.
   c. To pursue the expansion of planned physical facilities of the university to more effectively implement the institutional mission and vision.

VI. Continue the implementation of appropriate fiscal, budgetary, and managerial strategies to provide adequate resources with which to support Keiser University and its future development.
   a. To continue to develop a Governing Board approved annual budget that supports the annualized planned activities, programs, and services of the university.
   b. To provide and analyze the ongoing financial operations of the various units of the university to ensure that the budgetary operations of the institution are being implemented.
   c. To ensure that the Governing Board continues to provide appropriate oversight of the financial and budgetary operations and conditions of the University through the following actions.

VII. Develop and implement a multifaceted institutional development/advancement program with which to further enhance the university's relationship with its alumni, supporting global constituencies, service communities, and the professions it serves.
   a. To plan, develop, and implement a Keiser University fundraising program for institutional support and advancement.
   b. To further plan, develop, support, and implement the Keiser University alumni development program with which to enhance its relationship with its former and current student constituencies.
c. To enhance the community outreach initiatives of the various extended Keiser University locations to support its community service, public relations, and institutional advancement campaigns.

Page 66, AS Histotechnology
Replace the text as follows:

*Students enrolled in the Histotechnology program are required to complete BSC2085C, BSC2086C, MAT1033 and CHM2045 prior to entering the program core requirement.

**Students enrolled in the Histotechnology program are required to complete all general education coursework with a minimum cumulative grade average of 2.5 prior to beginning core course sequence (exceptions only by approval of Program Director)

Pages 115-116, Programs Offered at Each Campus
Add the following programs at the Flagship Campus:
AS  Applied Engineering
BS  Applied Engineering

Update the concentrations for the following program at the Flagship Campus per markup:
BS  Information Technology Management (Track2) (Concentrations in Software Engineering, Web and Mobile Development, Cybersecurity, Network Security, Multimedia Technology, or General)

Pages 118-120, Programs Offered at Each Campus
Add the following programs at the Fort Lauderdale eCampus:
AS  Applied Engineering online only
BS  Applied Engineering online only

Page 185, Program Description, BS Applied Engineering
Add the following section to the catalog before BS Biomedical Sciences:

Applied Engineering

Bachelor of Science Degree

Program Description
Keiser University's Bachelor of Science degree in Applied Engineering prepares students for entering the work force as skilled and highly trained technicians and problem solvers with an understanding of advanced engineering principles and technical skills in support of engineers and other professionals engaged in developing, installing, calibrating, modifying and maintaining electrical, mechanical, aerospace, agricultural, transportation, and biomedical systems. This includes instruction in Field Programmable Gate Arrays (FPGA); computer systems; electronics and instrumentation; programmable logic controllers (PLCs); electric, hydraulic and pneumatic control systems; actuator and sensor systems; process control; robotics; applications to specific industrial tasks; and report preparation.

Program Goals
The Applied Engineering program prepares students to be successful professionals recognized for their:

- Critical thinking and problem solving skills based on a fundamental knowledge of humanities, social sciences, mathematics, physics, chemistry, engineering science and a broad range of applied engineering technical areas;
- Knowledge of global and societal concerns, ethics, and sustainability when making engineering decisions;
- Leadership and effective communication;
- Civic engagement and contributions to society; and
- Lifelong learning and professional development.

Program Educational Objectives
The educational objectives of the Bachelor of Science in Applied Engineering program are to produce engineering graduates whom:

- Diagnose failures at the device, component, assembly, sub-system and system levels in hardware and software.
• Repair failures including documentation of completed analysis.
• Demonstrate skills using industry-level tools and equipment used for test, measurement, diagnostics, and repair.
• Dissect how systems work based on how said systems fail.
• Diagnose complex systems and how the hardware and software are integrated.
• Apply empirical analyses in verifying theoretical results of systems failures.
• Research current tools and techniques in the field.

Student Learning Outcomes
Graduates of the Bachelor of Science in Applied Engineering program will be able to:
• Setup, calibrate, operate, and interpret results from industry-level tools and equipment.
• Apply knowledge of math, physics, chemistry, and engineering to diagnosing and repairing systems.
• Collect, organize, analyze, and interpret data to produce meaningful conclusions and recommendations.
• Present test results and “repair” recommendations while demonstrating leadership with confidence as part of multidisciplinary teams.
• Build in multi-level solution contingencies considering time, cost, safety, reliability, compatibility, and quality.
• Behave professionally and ethically with colleagues, customers, and the public.
• Expand their knowledge and understanding of failures at device, component, assembly, sub-system, and system levels.
• Extend learned skills to project and program management and bottom-line improvements.
• Pursue advanced degree in engineering, business, or related field.

Prerequisites for Major Courses
• Completion of all general education coursework with a minimum cumulative grade average of 2.0 (exceptions only by approval of Program Director)

Program Outline
To receive a Bachelor of Science degree in Applied Engineering, students must complete 122 credit hours as described below. The length of this program is approximately 35 months (this will vary if a student transfers in credits).

Applied Engineering Major Courses (27.0 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGN1001</td>
<td>Introduction to Engineering</td>
<td>3.0 credit</td>
</tr>
<tr>
<td>EET1082C</td>
<td>Introduction to Electronics</td>
<td>4.0 credit</td>
</tr>
<tr>
<td>ETI1185C</td>
<td>Reliability and Failure Analysis</td>
<td>4.0 credit</td>
</tr>
<tr>
<td>ETM1010C</td>
<td>Mech Measurements &amp; Instrumentation</td>
<td>4.0 credit</td>
</tr>
<tr>
<td>ETI1420C</td>
<td>Engineering Materials and Processes</td>
<td>4.0 credit</td>
</tr>
<tr>
<td>ETS1700C</td>
<td>Hydraulics and Pneumatics</td>
<td>4.0 credit</td>
</tr>
<tr>
<td>EML2017C</td>
<td>Mechanical Systems</td>
<td>4.0 credit</td>
</tr>
</tbody>
</table>

Note: All major courses must be completed with a grade of “C” or higher to advance to the next course.

General Education Courses (35.0 credit hours)
Credit hours in parentheses indicate the required number of credit hours in each discipline.

<table>
<thead>
<tr>
<th>Behavioral/Social Science (3.0 credit hours)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AMH1010</td>
<td>American History Pre 1877</td>
</tr>
<tr>
<td>AMH1020</td>
<td>American History Post 1876</td>
</tr>
<tr>
<td>POS1041</td>
<td>Political Science</td>
</tr>
<tr>
<td>PSY1012</td>
<td>Introduction to Psychology</td>
</tr>
<tr>
<td>SYG1000</td>
<td>Sociology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communications (3.0 credit hours)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SPC1017</td>
<td>Speech</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Computers (3.0 credit hours)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CGS1000C</td>
<td>Introduction to Computers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English (6.0 credit hours)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC1101</td>
<td>English Composition I</td>
</tr>
<tr>
<td>ENC2102</td>
<td>English Composition II</td>
</tr>
</tbody>
</table>
### Humanities/Fine Arts (3.0 credit hours)
- AML1000 American Literature 3.0 credit hours
- ENL1000 English Literature 3.0 credit hours
- PHI1010 Introduction to Philosophy 3.0 credit hours

### Mathematics (6.0 credit hours)
- MAC2105 College Algebra 3.0 credit hours
- MAC2114 Trigonometry 3.0 credit hours

### Natural Science (11.0 credit hours)
- PHY2001C General Physics I/Lab 4.0 credit hours
- PHY2002C General Physics II/Lab 4.0 credit hours
- CHM2045 General Chemistry 3.0 credit hours

Note: All lower division major and general education courses must be successfully completed before upper division courses are undertaken.

### Upper Division Applied Engineering Major Courses (39.0 credit hours)
- EGN3000C Foundations of Engineering 4.0 credit hours
- EML3018C Advanced Electrical/Mechanical Systems 4.0 credit hours
- EEL3111C Circuits 4.0 credit hours
- EGN3420C Manufacturing Processes 4.0 credit hours
- EEL3552C Signal Analysis and Communications 4.0 credit hours
- EGN3373C Electrical Systems 4.0 credit hours
- EGN3610 Engineering Economic Analysis 3.0 credit hours
- EML4312C Design & Analysis of Control Systems 4.0 credit hours
- ETI4843C Motors & Controls 4.0 credit hours
- EGN4417C Senior Design Project 4.0 credit hours

### Computer Courses (9.0 credit hours)
- COP1270 Programming in C for Engineers 3.0 credit hours
- COP3301 Modeling and Simulation 3.0 credit hours
- CDA3317 Rapid Prototyping with FPGA 3.0 credit hours

### General Education Courses (9.0 credit hours)

#### Mathematics (9.0 credit hours)
- STA2023 Statistics 3.0 credit hours
- MAC2140 Pre-Calculus 3.0 credit hours
- MAC2311 Calculus I 3.0 credit hours

#### Elective Course (3.0 credit hours)
Select from any course offered at Keiser University

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**Page 219, Bachelor of Science Degrees, Imaging Sciences**

Add the following course to the Electives
- RTE4941 Internships/Practicums/Clinical Practice 3.0 credit hours

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**Page 221, Program Description, BS Information Technology (Track 2)**

Replace the text with the following:

**Information Technology Management (Track 2)**

**Bachelor of Science Degree**

**Program Description**
Keiser University’s Bachelor of Science degree in Information Technology Management prepares students with the knowledge and practical skills to function in the information technology and related industries. The program seeks to provide the theoretical fundamentals of information technology
coupled with an appreciation and understanding of practical aspects and competencies required by
the industry. This program is designed to foster innovation by emphasizing flexibility in the discipline
of information technology management as a business problem-solving discipline. Students may
Technology, or (v) General.

Program Objectives
The following objectives are designed to meet Keiser University's mission and its goals:
- To provide students with a comprehensive background in information technology.
- To instruct students in requirements gathering, knowledge elicitation, the validation and verification of software
  artifacts, and other aspects of the development life cycle
- To provide the theoretical foundations of: (i) software and mobile applications development and deployment, (ii)
  networking security, (iii) multimedia technology.
- To instruct students in security governance and to help students effectively manage enterprise computing assets
- To provide students with practical experience of new and innovative technologies that will enhance the theoretical
  foundations covered in class.

Program Outline
To receive a Bachelor of Science degree in Information Technology Management, students must
complete 120 credit hours as described below. The length of this program is approximately 40
months (this will vary if a student transfer in credits).

Lower Division Information Technology Management Major Courses (18.0 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COT1405</td>
<td>Introduction to Algorithms/Java</td>
<td>3.0</td>
</tr>
<tr>
<td>CEN2010</td>
<td>Software Engineering I</td>
<td>3.0</td>
</tr>
<tr>
<td>CIS2350C</td>
<td>Principles of Information Security</td>
<td>3.0</td>
</tr>
<tr>
<td>COP2104</td>
<td>Discrete Mathematics and Probability</td>
<td>3.0</td>
</tr>
<tr>
<td>CTS2304C</td>
<td>Internetworking Technologies</td>
<td>3.0</td>
</tr>
<tr>
<td>MAC2105</td>
<td>College Algebra</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Lower Division Information Technology Management Electives (6.0 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COP1810C</td>
<td>Internet/Web-Based Program I (HTML 5, CSS)</td>
<td>3.0</td>
</tr>
<tr>
<td>COP1811C</td>
<td>Internet/Web-Based Program II (PHP, JavaScript)</td>
<td>3.0</td>
</tr>
<tr>
<td>COP1805C</td>
<td>Java Programming II</td>
<td>3.0</td>
</tr>
<tr>
<td>COP2891</td>
<td>Python Programming</td>
<td>3.0</td>
</tr>
<tr>
<td>GRA1100C</td>
<td>Graphic Design Theory</td>
<td>3.0</td>
</tr>
<tr>
<td>COP2224C</td>
<td>C++ Programming II</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Lower Division General Education Requirements (36.0 credit hours)
Credit hours in parentheses indicate the required number of credit hours in each discipline.

Behavioral/Social Science (3.0 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY1012</td>
<td>Introduction to Psychology</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Communication (3.0 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>SPC1017</td>
<td>Speech</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Computers (3.0 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGS1000C</td>
<td>Introduction to Computers</td>
<td>3.0</td>
</tr>
</tbody>
</table>

English (6.0 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENCI101</td>
<td>English Composition I</td>
<td>3.0</td>
</tr>
<tr>
<td>ENCI2102</td>
<td>English Composition II</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Economics (6 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO1023</td>
<td>Microeconomics</td>
<td>3.0</td>
</tr>
<tr>
<td>ECO2013</td>
<td>Macroeconomics</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Humanities/Fine Arts (3.0 credit hours)
HIS3319 History of Civil Rights and Civil Liberties 3.0 credit hours

Mathematics (6.0 credit hours)
MAC2140 Pre-calculus 3.0 credit hours
STA2023 Statistics 3.0 credit hours

Natural Science (6.0 credit hours)
BSC1005 General Biology 3.0 credit hours
BSC1006 Advanced Biology 3.0 credit hours
CHM1045 General Chemistry 3.0 credit hours
CHM1046 Advanced Chemistry 3.0 credit hours
PHY2001 General Physics I 3.0 credit hours
PHY20002 General Physics II 3.0 credit hours

NOTE: All lower division major and general education courses should be successfully completed before upper division courses are undertaken.

Upper Division Information Technology Management Major Courses (39.0 credit hours)
ISM3116 Introduction to Business Intelligence 3 credit hours
ISM4403 Advanced Business Intelligence 3 credit hours
ISM3112 System Analysis 3 credit hours
ISM3483 E-Business Infrastructure Management 3 credit hours
CGS3269 Computer Architecture Concepts OR DIG3110 Fundamentals of Multimedia 3 credit hours
ISM4130 Information Systems Implementation OR MAR4721 E-Marketing 3 credit hours
CEN4086 Cloud Computing 3 credit hours
ISM4212 Database Management Systems 3 credit hours
CIS3050 Security Architecture and Controls OR RTV3260 Video Production 3 credit hours
MAN3025 Intro to Management and Organizational Behavior 3 credit hours
CIS4253 Ethics in Information Technology 3 credit hours
MAN4583 Project Management 3 credit hours
CIS4891 Information Technology Capstone 3 credit hours

Upper Division Concentration Courses (18.0 credit hours)
Software Engineering
CEN3011 Software Engineering II 3 credit hours
CIS352C Ethical Hacking 3 credit hours
COP3650 Mobile Application Development 3 credit hours
COT3205 Theory of Computation 3 credit hours
CDA4115 Concepts of Parallel & Distributed Processing 3 credit hours
CEN3410 Software Testing (Quality Assurance) 3 credit hours

Web and Mobile Development
COP3650 Mobile Application Development 3 credit hours
CEN4721 Visual Frameworks 3 credit hours
CEN3725 Visual Interface Design 3 credit hours
CEN3410 Software Testing (Quality Assurance) 3 credit hours
CIS4667 Android Mobile Development 3 credit hours
COP4664 iOS Mobile Development (Apple Swift) 3 credit hours

Network Security
CIS3000 Cybersecurity in Business and Industry 3 credit hours
CIS3010 Cybersecurity Processes and Technologies 3 credit hours
CFI4477 Computer System Forensic Analysis 3 credit hours
CIS3040 Business Continuity & Operations Security 3 credit hours
Network Defense and Countermeasures 3 credit hours
Advanced Network Security 3 credit hours

Interactive Multimedia 3 credit hours
Introduction to Game Programming 3 credit hours
Computer Animation 3 credit hours
3D Modeling and Animation 3 credit hours
Visualization, Virtual and Augmented Reality 3 credit hours
Social Media and Social Computing 3 credit hours

Any 18.0 credits from concentrations listed above
Upper Division General Education Courses (3.0 credit hours)
3.0 credits from any upper 3000/4000 general education courses offered by the university

Page 272, Program Description, AS Applied Engineering
Add the following section to the catalog before AS Baking and Pastry Arts:

Applied Engineering

Associate of Science Degree

An Associate of Science degree is considered a terminal degree. The decision on course transferability rests with the receiving institution.

Program Description
Keiser University’s Associate of Science degree in Applied Engineering prepares students for entering the workforce as entry level technicians and problem solvers with an understanding of basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, installing, calibrating, modifying and maintaining electrical, mechanical, aerospace, agricultural, transportation, and biomedical systems. This includes instruction in computer systems; electronics and instrumentation; programmable logic controllers (PLCs); electric, hydraulic and pneumatic control systems; actuator and sensor systems; process control; robotics; applications to specific industrial tasks; and report preparation.

Program Goals
The Applied Engineering program prepares students to be successful professionals recognized for their:

- Critical thinking and problem solving skills based on a fundamental knowledge of humanities, social sciences, mathematics, physics, chemistry, engineering science and a broad range of applied engineering technical areas;
- Knowledge of global and societal concerns, ethics, and sustainability when making engineering decisions;
- Leadership and effective communication;
- Civic engagement and contributions to society; and
- Lifelong learning and professional development.

Program Educational Objectives
The educational objectives of the Associate of Science in Applied Engineering program are to produce engineering graduates whom:

- Diagnose failures at the device, component, assembly, sub-system and system levels in hardware and software.
- Repair failures including documentation of completed analysis.
- Demonstrate skills using industry-level tools and equipment used for test, measurement, diagnostics, and repair.
- Dissect how systems work based on how said systems fail.

Student Learning Outcomes
Graduates of the Associate of Science in Applied Engineering program will be able to:

- Setup, calibrate, operate, and interpret results from industry-level tools and equipment.
- Apply knowledge of math, physics, chemistry, and engineering to diagnosing and repairing systems.
- Collect, organize, analyze, and interpret data to produce meaningful conclusions and recommendations.
• Present test results and repair recommendations while demonstrating leadership with confidence as part of multidisciplinary teams.
• Build in multi-level solution contingencies considering time, cost, safety, reliability, compatibility, and quality.
• Behave professionally and ethically with colleagues, the customer, and the public.
• Reference technology magazines, periodicals, news articles, patents, and publications to stay current with contemporary and future technologies and issues.

Prerequisites for Major Courses
• Completion of all general education coursework with a minimum cumulative grade average of 2.0 (exceptions only by approval of Program Director)

Program Outline
To receive an Associate of Science degree in Applied Engineering, students must complete 62 credit hours as described below. The length of this program is approximately 18 months (this will vary if a student transfers in credits).

Applied Engineering Major Courses (27.0 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGN1001</td>
<td>Introduction to Engineering</td>
<td>3.0</td>
</tr>
<tr>
<td>EET1082C</td>
<td>Introduction to Electronics</td>
<td>4.0</td>
</tr>
<tr>
<td>ETI1185C</td>
<td>Reliability and Failure Analysis</td>
<td>4.0</td>
</tr>
<tr>
<td>ETM1010C</td>
<td>Mech Measurements &amp; Instrumentation</td>
<td>4.0</td>
</tr>
<tr>
<td>ETI1420C</td>
<td>Engineering Materials and Processes</td>
<td>4.0</td>
</tr>
<tr>
<td>ETS1700C</td>
<td>Hydraulics and Pneumatics</td>
<td>4.0</td>
</tr>
<tr>
<td>EML2017C</td>
<td>Mechanical Systems</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Note: All major courses must be completed with a grade of “C” or higher to advance to the next course.

General Education Courses (35.0 credit hours)

Credit hours in parentheses indicate the required number of credit hours in each discipline.

Behavioral/Social Science (3.0 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMH1010</td>
<td>American History Pre 1877</td>
<td>3.0</td>
</tr>
<tr>
<td>AMH1020</td>
<td>American History Post 1876</td>
<td>3.0</td>
</tr>
<tr>
<td>POS1041</td>
<td>Political Science</td>
<td>3.0</td>
</tr>
<tr>
<td>PSY1012</td>
<td>Introduction to Psychology</td>
<td>3.0</td>
</tr>
<tr>
<td>SYG1000</td>
<td>Sociology</td>
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Communications (3.0 credit hours)

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<tr>
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<tr>
<td>SPC1017</td>
<td>Speech</td>
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Computers (3.0 credit hours)

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<th>Course</th>
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<tbody>
<tr>
<td>CGS1000C</td>
<td>Introduction to Computers</td>
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English (6.0 credit hours)

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<tr>
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<tr>
<td>ENC1101</td>
<td>English Composition I</td>
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<tr>
<td>ENC2102</td>
<td>English Composition II</td>
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Humanities/Fine Arts (3.0 credit hours)

<table>
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<tr>
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<tbody>
<tr>
<td>AML1000</td>
<td>American Literature</td>
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<tr>
<td>ENL1000</td>
<td>English Literature</td>
<td>3.0</td>
</tr>
<tr>
<td>PHI1010</td>
<td>Introduction to Philosophy</td>
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Mathematics (6.0 credit hours)

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<tr>
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<tbody>
<tr>
<td>MAC2105</td>
<td>College Algebra</td>
<td>3.0</td>
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<tr>
<td>MAC2114</td>
<td>Trigonometry</td>
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Natural Science (11.0 credit hours)

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<thead>
<tr>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>PHY2001C</td>
<td>General Physics I/Lab</td>
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<tr>
<td>PHY2002C</td>
<td>General Physics II/Lab</td>
<td>4.0</td>
</tr>
<tr>
<td>CHM2045</td>
<td>General Chemistry</td>
<td>3.0</td>
</tr>
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</table>
CIS4352C (3.0 credit hours)

**Ethical Hacking**
This course provides an in-depth understanding of how to effectively protect computer networks. Students will learn the tools and penetration testing methodologies used by ethical hackers. Students will learn updated computer security resources that describe new vulnerabilities and innovative methods to protect networks. This course provides a structured knowledge base for preparing security professionals to discover vulnerabilities and recommend solutions for tightening network security and protecting data from potential attackers.

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Page 363, Course Descriptions, Information Technology

Please remove the following two courses:

- **CTS1184C (4.0 credit hours)**
  **Managing and Maintaining Server Operating Systems**
  Introduces systems administration or systems engineering for Microsoft networks. Topics include knowledge and skills required to manage accounts and resources, maintain server resources, monitor server performance and safeguard data in a Microsoft Windows server environment.

- **CTS1321 (3.0 credit hours)**
  **Advanced Linux Administration**
  This is an advanced course covering the Linux operating system. Emphasis is placed on kernel configuration and an in-depth look at Linux networking services. It stresses securing the Linux OS in a networking environment. Topics include Linux server roles, interconnecting with Windows OS and hardening Linux servers. Prerequisite: CTS2106

Replace the text under the heading as follows:

- **CTS1328C (3.0 credit hours)**
  **Managing and Maintaining Server Operating Systems**
  Introduces systems administration and configuration for Microsoft networks. Upon completion of this course, students will have knowledge and skill in the installation, file and storage services, and virtualization in a Microsoft Windows server environment.

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Page 365, Course Descriptions, Information Technology

Add the prerequisite as follows:

- **CTS4321C (3.0 credit hours)**
  **Advanced Linux Administration**
  This is an advanced course covering the Linux operating system. Emphasis is placed on kernel configuration and an in-depth look at Linux networking services. It stresses securing the Linux OS in a networking environment. Topics include Linux server roles, interconnecting with Windows OS and hardening Linux servers. Prerequisite: CTS2106C

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Page 379, Course Descriptions, AS/BS Applied Engineering, AS Graphic Arts and Design

Insert the following in alphabetical order:

- **COP 2891 (3 credits)**
  **Python Programming**
  This course presents students with the tools and techniques to identify, characterize, define and solve real world problems in Python. Students will be provided with strategies to design, write, and debug programs using the Python programming language.
  Prerequisite: COT1405

- **MMC3711 (3 credits)**
  **Interactive Multimedia**
  This course introduces interactive multimedia production with the emphasis on exploring interactive media approaches to express and challenge social, cultural and technical ideas. By the end of the course, students will advance their visual skills,
improve their coding mastery and enhance their creative and aesthetic abilities.
Pre-requisites: GRA 1100C and COP2222C

CAP4028 (3 credits)
Introduction to Game Programming
Game development is a high valued discipline that evolves continuously. This course introduces students to concepts and practical applications in game programming. Students will be pitching game ideas, writing design documents, and use programming languages such as Python and JavaScript to produce playable interactive computer games.
Pre-requisites: GRA 1100C and COP3891

DIG3305C (3 credits)
Computer Animation
This course introduces students to the tools, techniques and algorithms for designing and implementing computer animation and simulation applications. Topics covered include designing characters for 2D and 3D animations, motion capture, path-planning, modeling and animating human figures, facial and behavior-based animation.
Pre-requisites: GRA 1100C and COP2222C

DIG2321C (3 credits)
3D Modeling and Animation
In this course, students will develop an understanding of the concepts, theories, and practical applications relating to three-dimensional (3D) modeling and animation. Topics covered include pose-based animation, non-linear animation, paint-based animation, texturing, mapping, animation, lighting and rendering.
Pre-requisites: GRA 1100C and COP2222C

DIG3772 (3 credits)
Visualization, Virtual and Augmented Reality
This course covers the architecture and design of current generation systems for creating virtual and augmented reality. Students will explore and utilize virtual reality technologies and next generation algorithms to implement applications in areas such as business, gaming, marketing, education, health and automotive.
Pre-requisites: GRA 1100C and COP2222C

DIG3105 (3 credits)
Social Media and Social Computing
Companies have recognized the potentials and capabilities of processing user-generated-content (UGC) from social media networks. In this course, students are introduced to tools and techniques (e.g., social network graph, search techniques, knowledge extraction) for understanding, processing and mining UGC, and creating new business models from UGC.
Pre-requisites: GRA 1100C and COP2222C

COP1270 (3.0 credit hours)
Programming in C for Engineers
This class introduces students to the C programming language and the Matlab environment to develop programming solutions to small scale scientific and engineering problems. Students will learn how to develop effective C code for embedded systems and rapid prototyping solutions. This course will prepare students to learn more advanced programming languages later such as C++, C#, Python, and Java. Pre-requisites: MAC2105, MAC2114, MAC2311, STA2023, PHY2001C, PHY2002C, & CHM2045

COP3301 (3.0 credit hours)
Modeling and Simulation
This course introduces students to structured simulation and modeling using industry level CAD/CAE tools. This includes tools for simulating and modeling electrical, electronic, mechanical, hydraulic, pneumatic, and biomedical systems, subsystems, assemblies, PCB, components, and devices. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

CDA3317 (3.0 credit hours)
Rapid Prototyping with FPGA
This course provides a unified approach to designing, developing, and rapid-prototyping system level designs on an FPGA evaluation (eval) platform using schematic capture and hardware description language (HDL), such as Verilog or VHDL. The FPGA will be compared with Harvard and von Neumann microprocessor and microcontroller architectures and students will learn how,
when, where, and why FPGAs are used, how to interface to them, the constraints, operational environments (e.g. radiation environments), advantages, and disadvantages. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EGN1001C (3.0 credit hours)
Introduction to Engineering
Students will be introduced to the broad field of engineering covering multiple engineering disciplines including the process of invention to the societal impact of the profession. Practical laboratory exercises and design activities will prepare students for upper division coursework. Students will also explore the role of the modern engineer in the context of current topics such as sustainability, design safety, and energy management through practical examples and hands-on activities. Pre-requisites: MAC2105, MAC2114, PHY2001C, PHY2002C, & CHM2045

EET1082C (4.0 credit hours)
Introduction to Electronics
Students will learn the fundamentals of electronics including logic design, Boolean algebra, binary math, signal flow, impedance, waveforms, timing diagrams, schematics, user manuals, product brochures, tools, equipment, and calculating devices. They will learn about interfacing to, and controlling, sensors and transducers from small scale integration (SSI) to very large scale integration (VLSI) analog, digital, and mixed signal circuits. They will be introduced to electronic systems, subsystems, assemblies, PCB, components, and devices. Pre-requisites: MAC2105, MAC2114, PHY2001C, PHY2002C, & CHM2045

ETI1185C (4.0 credit hours)
Reliability and Failure Analysis
Students will learn the fundamentals of Root Cause Failure Analyses as well as how things work by learning and understanding how things break applying engineering terminology, symbols, tools, and equipment in a diagnostics and repair approach. The course includes common related failure modes and mechanisms of complex systems across multiple engineering disciplines. Pre-requisites: MAC2105, MAC2114, PHY2001C, PHY2002C, & CHM2045

ETM1010C (4.0 credit hours)
Mechanical Measurements and Instrumentation
This course provides the basic foundation for both mechanical and electronic measurement techniques used in manufacturing environments. The course will integrate the concepts, principles, and techniques of mechanical measurement with the use of various types of instruments including micrometers, verniers, calipers, gauges, and other types of test and measurement equipment. The course will also introduce students to the basic measurement techniques employing electronic test equipment including the operation and usage of digital multimeters, function generators, oscilloscopes, and power supplies. Pre-requisites: MAC2105, MAC2114, PHY2001C, PHY2002C, & CHM2045

ETI1420C (4.0 credit hours)
Engineering Materials and Processes
Students learn about the many materials that are used in the manufacturing of a broad range of complex engineering systems, sub-systems, assemblies, components, and devices. This includes ferrous and non-ferrous metals, ceramics, plastics, crystals, semiconductors, and synthetic composites. They will also learn about processes used to manufacture a variety of products using additive and subtractive manufacturing techniques. Pre-requisites: MAC2105, MAC2114, PHY2001C, PHY2002C, & CHM2045

ETS1700C (4.0 credit hours)
Hydraulics and Pneumatics
Students are introduced to hydraulics (working fluids) and pneumatics (working gases) as demonstrated across multiple engineering disciplines. They will learn the language, symbols, effects, and how to control, measure, and integrate systems, sub-systems, and components with related electrical and mechanical systems and sub-systems. They will be introduced to failure modes, failure mechanisms, diagnostics, and repair methods and techniques associated with hydraulic and pneumatic systems. Pre-requisites: MAC2105, MAC2114, PHY2001C, PHY2002C, & CHM2045

EML2017C (4.0 credit hours)
Mechanical Systems
Students are introduced to translational and rotational static and dynamic mechanical systems. They will learn terms, symbols, systems, drawings, and interfaces of a broad range of mechanical systems and interconnected engineering systems. Students will learn failure modes and failure mechanisms associated with mechanical systems including trouble shooting, diagnostics, and repair methods and techniques. Pre-requisites: MAC2105, MAC2114, PHY2001C, PHY2002C, & CHM2045

EGN3000C (4.0 credit hours)
Foundations of Engineering
This course delves deeper into engineering than EGN1001 “Introduction to Engineering”. Students are introduced to the tools, symbols, language, equipment, design, and functionality of complex systems, subsystems, assemblies, components, and devices
and how they interact and are interconnected. Emphasis is placed on how these complex systems fail and the diagnostics and repair methods, techniques, and processes used to keep them up and running. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EML3018C (4.0 credit hours)
Advanced Electro/Mechanical Systems
This course delves deeper into EML2018, “Mechanical Systems”, and includes the use of, and interface with, electro/mechanical systems. It provides essential tools for the diagnosis and repair of complex electro/mechanical systems with emphasis on time- and frequency-domain analysis of failure modes and failure mechanisms. Electro/mechanical interface, analog/digital control, sensing, stability, reliability, and (preventive) maintenance will be introduced. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EEL3111C (4.0 credit hours)
Circuits
Students will learn about alternating current (AC) and direct current (DC) circuits operating from milliwatt to megawatt regimes. They will learn how AC/DC voltages and currents behave, are measured, controlled, and used in systems from DC to rf. This includes digital waveforms and polyphase AC at the system, subsystem, assembly, PCB, component, and device levels. Students will be introduced to a broad range of active and passive (non)semiconductor components including sensors and transducers and learn how to diagnose and repair complex systems, subsystems, assemblies, PCB, component, and devices. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EEL3420C (4.0 credit hours)
Manufacturing Processes
This course examines the effect that new technology, engineering, and business strategies have on engineering and technology in industry. Emphasis is placed on state-of-the-art factory automation and computer-integrated manufacturing. Topics include advanced manufacturing processes, rapid prototyping, intelligent manufacturing controls, and cyber-physical system security in manufacturing. Case studies of failure modes and failure mechanisms of actual production systems are used to illustrate how industry is adopting rapid changes in technology to meet customer requirements for quality, low cost, and flexibility. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EEL3552C (4.0 credit hours)
Signal Analysis and Communications
This course introduces students to the electrical communication of signals and information between endpoint systems. Analog and digital modulation formats are covered including AM, FM, PM, and QAM, to name a few. Star, mesh, and hybrid topologies are introduced along with common communication standards such as RS232, RS422, RS485, 802.11, 802.15, and Profinet. Wired and wireless communication protocols are introduced and students learn how to diagnose and repair common failures using standard test and measurement tools and equipment. The material is delivered through lectures and discussions using real-world case studies, videos, tours, demonstrations, and a lab. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EGN3420C (4.0 credit hours)
Electrical Systems
This course builds upon previous courses in electronics and mechanics with emphasis on power generation, distribution, and consumption of AC/DC systems, subsystems, assemblies, PCB, components, and passive/active devices. Students learn about failure modes and failure mechanisms using transient and steady-state analyses of complex electrical and mechanical systems. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EGN3610 (3.0 credit hours)
Engineering Economic Analysis
Students will learn the systematic value of the costs and benefits associated with failure modes and failure mechanisms of complex systems, subsystems, assemblies, PCB, components, and devices. They will learn to make decisions regarding money as capital within a technological or engineering environment based on failure and operational system functionality. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EML4312C (4.0 credit hours)
Design and Analysis of Control Systems
Students will be introduced to complex analog and digital feedback control systems, subsystems, assemblies, PCB, components, and devices. This includes traditional models of sensors/transducers, processing element(s), and algorithms across multiple
Students will learn how to identify failure modes and failure mechanisms of complex systems using sound diagnostics and repair processes. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

ETI4843C (4.0 credit hours)
**Motors and Controls**
Students will learn about operational failure modes and failure mechanisms of AC/DC motors, controls, generators, and transformers used in the industrial trades. This includes operation, maintenance, installation, wiring and wiring diagrams of single- and polyphase end-units, control systems and protocols, PLCs, systems and 3-phase transformers and ac motors, generation of dc and ac, and dc motors. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045

EGN4417C (4.0 credit hours)
**Senior Design Project**
This course focuses on identifying and solving a business problem. Students will design individual projects with realistic constraints. The projects will be focused on providing experience in the practice and process of engineering diagnostics and repair of complex systems, subsystems, assemblies, PCB, components, and devices and will require proficiency in all previous courses. Students will develop a solution to an open-ended engineering problem which will be demonstrated at the end of the course. A project proposal and verbal and written technical and managerial reports are also required. Pre-requisites: MAC2105, MAC2114, STA2023, MAC2140, MAC2311, PHY2001C, PHY2002C, & CHM2045