APPLIED ENGINEERING (AE)

Subject-area course lists indicate courses currently active for offering at the University of Louisville. Not all courses are scheduled in any given academic term. For class offerings in a specific semester, refer to the Schedule of Classes (https://csprd.louisville.edu/psp/ps_class/EMPLOYEE/PSFT_CS/c/COMMUNITY_ACCESS.CLASS_SEARCH./x/?state=62dab551a0d600a5e8237359c50704e59007&duo_code=sjUx2OST[illegible]).

500-level courses generally are included in both the undergraduate- and graduate-level course listings; however, specific course/section offerings may vary between semesters. Students are responsible for ensuring that they enroll in courses that are applicable to their particular academic programs.

Course Fees

Some courses may carry fees beyond the standard tuition costs to cover additional support or materials. Program-, subject- and course-specific fee information can be found on the Office of the Bursar website (https://louisville.edu/bursar/tuitionfee/university-fees/).

AE 111. Fundamentals of Safety **3 Units**
Term Typically Offered: Fall Only
Description: An introduction to safety, health, and environmental issues that impact people and workplaces. Includes the historical development of management's support of employee safety, the impact of accidents on society, a legislative overview, emergency management and basic principles of risk assessment. Restricted to students enrolled in the Speed School of Engineering.
Note: Restricted to students enrolled in the Speed School of Engineering.

For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 121. Computer-Aided Design **4 Units**
Term Typically Offered: Fall Only
Description: Introduction to Computer-aided Design (CAD). Topics include geometric constructions, 2D Multiview projection, dimensioning, sectioning, and an introduction to developing electrical schematics. Restricted to students enrolled in Speed School of Engineering.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 122. Electronic Systems **4 Units**
Term Typically Offered: Spring Only
Description: A survey of electricity and electronics, including typical direct current and alternating current applications, safe practices, and technological impacts. Practical applications include breadboarding, design and problem solving, use of test equipment, and electronic project assembly/troubleshooting. Restricted to students enrolled in Speed School of Engineering.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 123. Solid Modeling & Rapid Prototyping **4 Units**
Term Typically Offered: Spring Only
Prerequisite(s): AE 121 The use of a parametric modeling software for the study of developing threads, gears, standard fasteners, and other related applications.
Description: Geometric dimension and tolerancing (GD&T) is covered along with the use of 3D rapid prototyping techniques and experiences. Restricted to students enrolled in Speed School of Engineering.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 221. Semiconductor Electronics **4 Units**
Term Typically Offered: Fall Only
Prerequisite(s): AE 122 An in-depth study of semiconductor theory.
Description: Discrete devices such as diodes, transistors, and silicon-controlled rectifiers among others are introduced. The major component of the course involves integrated circuits (ICs); both digital and linear ICs will be covered, along with the hybrid IC timer. Surface mount technology (SMT) and emerging technologies, such as nanotechnology and biotechnology, will be presented. Practical applications include prototyping circuits, design and problem solving, use of test equipment and troubleshooting.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 288. Industry Experience Seminar **0 Units**
Grading Basis: Pass/Fail
Term Typically Offered: Fall, Spring
Description: Discussion of the policies and procedures for industry experience / experiential learning component of Applied Engineering program, and instruction in self- directed job search techniques, including interviewing skills, resume preparation, and guidelines for the reporting of industry hours.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 289. Industry Experience Hours Semester 1 **0 Units**
Grading Basis: Pass/Fail
Term Typically Offered: Fall Only
Prerequisite(s): AE 288.
Description: Technical work experience related to the student's Bachelor of Science in Applied Engineering academic program. Students do not need to have accumulated hours prior to enrolling in this course.
Course Attribute(s): CBL - This course includes Community-Based Learning (CBL). Students will engage in a community experience or project with an external partner in order to enhance understanding and application of academic content.

For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 290. Industry Experience Hours Semester 2 **0 Units**
Grading Basis: Pass/Fail
Term Typically Offered: Spring Only
Prerequisite(s): AE 289.
Description: Technical work experience related to the student's Bachelor of Science in Applied Engineering academic program. Students should have accumulated between 250 and 600 hours prior to enrolling in this course.
Course Attribute(s): CBL - This course includes Community-Based Learning (CBL). Students will engage in a community experience or project with an external partner in order to enhance understanding and application of academic content.

For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 313. Quality & Lean Systems **3 Units**
Term Typically Offered: Spring Only
Prerequisite(s): MATH 109 or equivalent.
Description: The history and development of the quality movements; factors influencing the total quality concept; the scope of modern quality systems; management organization and strategies for quality; engineering technology for quality; lean manufacturing systems; and an introduction to the statistical tools for measurement and monitoring of quality. Restricted to students in Speed School of Engineering.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 322. Programmable Logic Controllers **4 Units**
Term Typically Offered: Fall Only
Prerequisite(s): AE 222.
Description: The integration and application of the programmable logic controller (PLC) for process control. Students obtain an introduction to programming relay ladder logic, interfacing sensors and output devices, and solving basic digital and analog control problems.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 323. Programmable Logic Controllers II **4 Units**
Term Typically Offered: Spring Only
Prerequisite(s): AE 223 and AE 322.
Description: The integration and application of the programmable logic controller (PLC) for advanced process control. Course focus will be on industrial networking techniques/protocols, Human-machine Interfaces (HMIs), supervisory control of industrial robots, and PID loop tuning.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 389. Industry Experience Hours Semester 3 **0 Units**
Grading Basis: Pass/Fail
Term Typically Offered: Fall Only
Prerequisite(s): AE 290.
Description: Technical work experience related to the student's Bachelor of Science in Applied Engineering academic program. Students should have accumulated between 500 and 750 hours prior to enrolling in this course.
Course Attribute(s): CBL - This course includes Community-Based Learning (CBL). Students will engage in a community experience or project with an external partner in order to enhance understanding and application of academic content.

For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 390. Industry Experience Hours Semester 4 **0 Units**
Grading Basis: Pass/Fail
Term Typically Offered: Spring Only
Prerequisite(s): AE 389.
Description: Technical work experience related to the student's Bachelor of Science in Applied Engineering academic program. Students should have accumulated between 750 and 900 hours prior to enrolling in this course.
Course Attribute(s): CBL - This course includes Community-Based Learning (CBL). Students will engage in a community experience or project with an external partner in order to enhance understanding and application of academic content.

For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 489. Industry Experience Hours Semester 5 **0 Units**
Grading Basis: Pass/Fail
Term Typically Offered: Fall Only
Prerequisite(s): AE 390.
Description: Technical work experience related to the student's Bachelor of Science in Applied Engineering academic program. Students should have accumulated between 1000 and 1200 hours prior to enrolling in this course.
Course Attribute(s): CBL - This course includes Community-Based Learning (CBL). Students will engage in a community experience or project with an external partner in order to enhance understanding and application of academic content.

For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

AE 499. Industry Experience Hours: Final Semester **1 Unit**
Grading Basis: Pass/Fail
Term Typically Offered: Spring Only
Prerequisite(s): AE 489.
Description: AE 499 Industry Experience (1 credit hour): Certification of 2000 hours of technical work experience completed related to the student's Bachelor of Science in Applied Engineering academic program. Students should have accumulated between 1200 and 1700 hours prior to enrolling in this course.
Course Attribute(s): CBL - This course includes Community-Based Learning (CBL). Students will engage in a community experience or project with an external partner in order to enhance understanding and application of academic content.

For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)