

ENGINEERING DESIGN (EDES)

EDES 120 - INTRODUCTION TO ENGINEERING DESIGN

Short Title: INTRO TO ENGINEERING DESIGN

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: Students learn the engineering design process and use it to solve meaningful problems drawn from the community and around the world. Teams of students evaluate design requirements and construct innovative solutions in the Oshman Engineering Design Kitchen. Students develop teaming and communication skills. Only first year students may enroll. Non-first year students wishing to take introductory engineering design may enroll in EDES 220. EDES 120 does not fulfill the FWIS requirement or carry D3 credit.

EDES 200 - ENGINEERING DESIGN STUDIO

Short Title: ENGINEERING DESIGN STUDIO

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Lecture/Laboratory

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Prerequisite(s): EDES 120 or FWIS 188 or EDES 220 or ENGI 120 or ENGI 220 or FWIS 288

Description: Graduates of EDES 120 and EDES 220 will have the opportunity to gain a more in-depth knowledge of the engineering design process by furthering progress on specific engineering design projects. Students may extend their project work by completing advanced prototyping for their designs and conduct testing. Students will be held accountable through technical mentorship, weekly meetings, and prototype evaluations. Students will only work in design teams. Student teams wishing to continue their projects from EDES 120/220 may apply.

EDES 210 - PROTOTYPING AND FABRICATION

Short Title: PROTOTYPING & FABRICATION

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Lecture/Laboratory

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: Students in EDES 210 will learn and practice advanced prototyping and fabrication skills useful in the construction of physical objects for engineering design projects. The course is structured as lecture and demonstration of basic and advanced prototyping techniques and out-of-class work practicing and honing the application of these techniques. Example techniques include low fidelity prototyping, 2D and 3D Computer Aided Design, electronics, foam cutting, laser cutting, plasma cutting, 3D printing, and molding/casting methods. Students will individually apply these techniques to create physical objects. Graduate/Undergraduate Equivalency: BIOE 555. Recommended Prerequisite(s): ENGI 120 or FWIS 188 or ENGI 220 or EDES 120 or EDES 220 or FWIS 288 Mutually Exclusive: Cannot register for EDES 210 if student has credit for BIOE 555.

Course URL: engi210.blogs.rice.edu (<http://engi210.blogs.rice.edu>)

EDES 220 - INTRODUCTION TO ENGINEERING DESIGN II

Short Title: INTRO TO ENGINEERING DESIGN II

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Lecture/Laboratory

Credit Hours: 3

Restrictions: Students with a class of Freshman may not enroll. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Lower-Level

Description: Students learn the engineering design process and use it to solve meaningful problems drawn from the community and around the world. Teams of students evaluate design requirements and construct innovative solutions in the Oshman Engineering Design Kitchen. Students develop teaming and communication skills. Students may not be in their first year of school. First year students wishing to take introductory engineering design may enroll in EDES 120. EDES 220 is taught as the same time as EDES 120.

EDES 300 - ENGINEERING DESIGN WORKSHOP

Short Title: ENGINEERING DESIGN WORKSHOP

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Independent Study

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): (EDES 120 or FWIS 188 or FWIS 288 or ENGI 120) and ((EDES 210 or ENGI 210) and (EDES 200 or ENGI 200))

Description: Advanced design students will have the opportunity to further their design projects in an independent study course. Students will work with faculty to develop their own schedule, set their own deadlines, goals, and expectations to be met for grading purposes. Students may complete advanced prototyping for their designs, conduct tests, perform safety evaluations with external committee and/or write up their work for publication. The specific tasks that will be completed are dependent on the project needs. Students will be held accountable through technical mentorship, weekly meetings, and prototype evaluations. To be eligible for EDES 300 students must have taken EDES 120 (or equivalent), EDES 210, and EDES 200. Instructor Permission Required. Repeatable for Credit.

EDES 301 - INTRODUCTION TO PRACTICAL ELECTRICAL ENGINEERING

Short Title: INTRO TO PRACTICAL EE

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Students will acquire intermediate-level proficiency in the tools (both physical and software) used to design, build and debug embedded hardware designs. Students will learn the basics of electronic components and how to use those components in a successful embedded hardware design.

EDES 350 - NEEDS IDENTIFICATION AND DESIGN IMPLEMENTATION

Short Title: NEEDS ID & DESIGN IMPLEMENT

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Lecture

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Prerequisite(s): ENGI 120 or EDES 120 or FWIS 188 or FWIS 288 or ENGI 220 or EDES 220 or ENGI 200 or EDES 200

Description: Students in this course will identify needs situated in two or more environments, and learn to ask questions that elucidate the problem, needed features and criteria for success. Students also develop implementation plans and conduct testing for refined design solutions that may include standards and safety compliance, patent applications, and manufacturing and user documents.

EDES 355 - DIGITAL DESIGN AND VISUALIZATION

Short Title: DIGITAL DESIGN & VISUALIZATION

Department: Engineering Design

Grade Mode: Standard Letter

Course Type: Lecture/Laboratory

Credit Hours: 3

Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.

Course Level: Undergraduate Upper-Level

Description: Students will acquire intermediate-level proficiency in the creation of virtual models and engineering drawings using computer aided design. Emphasis will be placed on best modeling practices including efficient part creation, dimensioning, tolerancing, and formatting of engineering drawings. Students will use a number of programs to format data and create models.