

Introduction to Engineering LSU Pre- Engineering Pathway

Instructor

High School Teacher Name: First Last

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LSU Pathways Instructor of Record: vbegat@lsu.edu

Course Description

This course is designed to introduce the profession, ethics, and diversity of the field of engineering to students in their first year of high school. The course will allow students to explore the 10 primary concentrations within engineering by listening to guest speaker lectures, working on an interactive project with a team, and presenting the results of their project to the class. The majors are: Biological Engineering, Civil Engineering, Environmental Engineering, Chemical Engineering, Computer Engineering/ Electrical Engineering, Computer Science, Construction Management, Industrial Engineering, Mechanical Engineering, and Petroleum Engineering. Specifically, this course will emphasize that the engineer is a team worker who needs strong skills in technical problem solving, engineering design, ethical decision making, and communicating to diverse audiences.

Course Objectives

- Demonstrate an understanding of academic honesty and ethics pertaining to the profession of engineers
- Demonstrate effective communication skills, through team working, oral presentations, and written lab reports
- Demonstrate an awareness of the connections between engineering and the wider world
- Use the engineering design process and critical thinking skills to create, test, and redesign discipline specific projects to gain a better appreciation of the diverse engineering fields

Credits

This course provides a full JumpStart and TOPS University credit on the LSU Pre-Engineering Pathway, which can lead to a STEM endorsement on a high school diploma provided students meet all of the additional requirements. Course code: 110801

Course Materials

1. Course Website: INSERT YOUR SCHOOL LMS will contain most of the materials used in the classroom including syllabus, class notes, handouts, assignments, etc. Please regularly check INSERT YOUR SCHOOL LMS. Students will submit their work through INSERT YOUR SCHOOL LMS.
2. Supplies: Materials required for design project / presentation will be supplied or requested as project go along.
3. Textbook: None required.

Assessment of Student Performance

1. A Work Ethic grade will be assigned to each student for this course. The Work Ethic grade consists of class attendance, participation and class citizenship whether this be virtual or face to face. This is an interactive, project based class, and your attention and participation in class is required. Tardiness, use of cell phone, or any distracting element in class is poor demonstration of citizenship. Absenteeism will also affect your performance in this class as much of the work will be done in class.
2. One Bell Ringer and one Engineering Notebook check will be given for each unit.
3. Group Assignments will be given throughout the course to develop the student's team working skills and understanding of the lecture material. These assignments will take the form of brief design projects to be completed both inside and outside of the classroom. Each group will be given approximately one week to complete the assignment and submit a lab report in Moodle. Each group will briefly present their project in class and all students outside the group will be asked to grade the presentations according to a pre-established rubric to be provided by the instructor. All students in the group will receive the same grade for the lab report and presentation unless deemed otherwise by the instructor. The following penalty system will apply to any late, unexcused submissions:
 - 10% loss of assignment credit for each day the assignment is overdueAssignment solutions must be submitted in a legible and organized format and all team member names must be present to receive proper credit.
4. Peer Evaluation of team member will be given at the end of each unit.
5. Quizzes must be given face-to-face or be provided in a secure proctored virtual environment as defined by the Instructor of Record. If proctoring the exam virtually, please email the instructor of record with your secure protocol. The practice of copying quiz solutions is strictly prohibited and will result in grade disqualification of that quiz and/or referral to the Dean of Students Office. Quizzes will be given 1-3 days after the project is complete.
6. There will be one Final Exam required for this course. The form of the final exam will be communicated to the students in advance so students can better prepare for it. A make-up examination may be given only under very strict conditions and will require submission of official documents by the student for justification of absence. Documents must be presented before the exam date to receive proper consideration. A make-up exam will be subject to approval by the instructor of record and the undergraduate coordinator. Quizzes must be given face-to-face or be provided in a secure proctored virtual environment as defined by the Instructor of Record. If proctoring the exam virtually, please email the instructor of record with your secure protocol.

Grading Scheme:

	Intro to Eng		Group	Indiv.	Peer Graded	Teacher Graded	Rubric/ Key
	Points per Units	Percent of Category					
Units 1-3							
Presentation	10	10%	x			x	x
Lab Report	25	25.0%	x			x	x
10 Engineering Disciplines							
Lab Report OR Presentation	35	35.0%	x			x	x
Every Unit							
Engineering Notebook	10	10.0%		x		x	x
Work Ethic	10	10.0%		x		x	x
Peer Group Evaluation	10	10.0%		x	x		x
Quiz	15	15.0%		x		x	x
Bell Ringer	5	5.0%		x		x	
Total per Unit	85	6.5%					
Number of Units	13						
Total for All Units	1105	85.0%					
Final Exam	195	15.0%					
Core Content Point Total	1300	100.0%					

Students will complete 13 core units (listed in red in the schedule section below) in addition to several supplemental units (Units 4-8) as time permits. Units 4-8 are suggested units and are not included in this grading structure. It is suggested to follow a similar structure to that of the 13 core units. A final exam will be given at the end of the year worth 15% of your final grade.

*Group grades--meaning EVERY student in the group receives the SAME grade unless discussed prior to project

Grading System (Update per your school policy):

Highest	100.00%	96.49%	92.49%	89.49%	86.49%	82.49%	79.49%	76.49%	72.49%	69.49%	66.49%	62.49%	59.49%
Lowest	96.50%	92.50%	89.50%	86.50%	82.50%	79.50%	76.50%	72.50%	69.50%	66.50%	62.50%	59.50%	0.00%
Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

General Insert High School Name Policies

- Class attendance and punctuality are required. Anyone missing class for whatever reason is responsible for notes, assignments, or announcements missed.
- All materials submitted by students must adhere to academic honesty policies. Simply put, cheating of any kind is not permitted. Please see **Insert High School Name Code of Student Conduct and Academic Integrity Expectations**. Academic dishonesty will be dealt with in strict accordance with school regulations.
- If anyone has need for additional services to accommodate specific learning or physical abilities, please contact me as soon as possible so we can coordinate your paperwork and your accommodations.

Accommodations for students with disabilities

Accommodations for tests and quizzes will be provided per each student's IEP or IAP. Students with extended time may have to finish tests and/or quizzes during lunch or after school. The affected student must schedule the time with the teacher prior to the test/quiz date.

Course Schedule

I have provided a tentative course schedule. This syllabus and accompanying course schedule is a working contract between the instructor and the student. Students registered for this course are responsible for reviewing the syllabus regularly and checking in with the instructor about any changes that the instructor makes. The instructor reserves the right to make adjustments as deemed practical and necessary and will communicate them as quickly as possible in class.

Week Dates	Project
Week 1: Aug 17	Intro & Ethics: Ethics skits
Week 2: Aug 24	Work Ethic and Teamwork: Team building exercise and work ethic scenarios
Week 3: Aug 31	Engineering Design Process:

Week 4: Sept 8 (Labor Day)	Super Slinger
Week 5: Sept 14	How to write a Lab Report
Week 6: Sept 21	Drafting: Blocks project
Week 7: Sept 28	
Week 8: Oct 5	Arduino introduction: One week electrical and one week programming
Week 9: Oct 12 (Fall Break)	
Week 10: Oct 19	Math and Graphing Project: Sail Car Project
Week 11: Oct 26	
Week 12: Nov 2	Fluor Challenge: Ball Launch
Week 13: Nov 9	
Week 14: Nov 16	Fluor Challenge: Go with the flow Thanksgiving
Week 15: Nov 23	
Week 16: Nov 30	Career Test, Project Project Proposal, Interview with an Engineer, and 3D printing project
Week 17: Dec 7	
End of Fall Semester	
Week 1: Jan 11	Construction Management: Request for Information
Week 2: Jan 18 (MLK)	Mechanical Engineering: Conveyor
Week 3: Jan 25	
Week 4: Feb 1	Biological Engineering: Prosthetic Hand
Week 5: Feb 8	Electrical and Computer Engineering: Series of blinking lights
Week 6: Feb 15 (Mardi Gras)	
Week 7: Feb 22	Computer Science: Arduino project of your choosing
Week 8: Mar 1	
Week 9: Mar 8	Petroleum Engineering: Jello Fracturing

Week 10: Mar 18	Environmental Engineering: Oil Spill Clean Up
Week 11: Mar 22	
Week 12: Mar 29	Industrial Engineering: Time and Motion Study
Week 13: Apr 5	Spring Break
Week 14: April 12	Chemical Engineering: Gourmet Production
Week 15: April 19	Civil Engineering: Bridge
Week 16: April 26	
Week 17: May 3	Review time, Exam Week

*Units in red are core content