



Pre-Engineering

For incoming freshmen 2024-2025

Overview

The Louisiana pre-engineering pathway provides a pre-engineering program for both TOPS University and TOPS Tech diploma-seeking high school students. Through hands-on projects and interaction with industry professionals, the curriculum prepares students to compete in the 21st century by engaging them in understanding the fundamentals of engineering in the classroom as well as in the workplace. Students will understand the careers available to them in the field of engineering as well as learn key skills such as teamwork, oral and written technical communication, and work ethic that will serve them well whether they pursue an advanced degree or immediately join the workforce.

College and Career Connections

Finding high-wage career opportunities directly out of high school can be challenging. It typically requires advanced capstone credentials accompanied by work experience and/or apprenticeships in the field of study.

High School to Career	Community/Technical College to Career	University to Career
Automotive Technician	Architectural and Civil Drafter	Biomedical Engineering
Outboard Marine Technician	Computer Integrated Manufacturing	Chemical Engineering
Solar Panel Installer	Computer Engineering Programmer	Civil/ Construction Engineering
Wind Turbine Technician	Mechanical Drafter	Petroleum Engineering

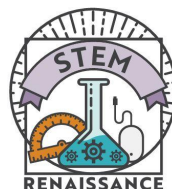
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Capstone Credentials

In order to graduate, Jump Start students must earn at least one credential from the options below.

*Please contact the individual providers to confirm if provider specific courses are structured to offer the credential.

Autodesk Certified User AutoCAD	CIW Javascript Specialist	COMP TIA IT Fundamentals
Autodesk Inventor Certified User	CIW Perl Specialist	Fundamentals of Javascript, Functional Programming, and Web Development Level 1
CIW Data Analyst	CIW Web Site Design Specialist	

STEM Renaissance Pre-Engineering Pathway Structure

To earn the **Silver STEM Diploma Seal** students must pass one course from each of the four following concentration areas: an Introductory Engineering course, an Engineering Design course, a Principles of Engineering course, and a Silver Engineering Focal course. (These course options are listed on the following chart.)

To earn the **Gold STEM Diploma Seal** students must complete the requirements for the Silver STEM Diploma Seal, pass two Pre-Engineering courses, pass one Computer Science course from the approved STEM Pathway listing and pass an additional Math or Science course. (These course options are listed on the following chart.)

To complete the **TOPS Tech Diploma** students must complete the Gold STEM Diploma Seal requirements and one course from the approved Career Readiness Course list.

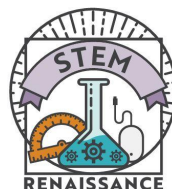
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Concentration Area	Course Name	Course Code	Credit
<p>To earn the Silver STEM Diploma Seal students <u>must</u> pass one course from each of the four following concentration areas: an Introductory Engineering course, an Engineering Design course, a Principles of Engineering course, and a Silver Engineering Focal course.</p>			
Introductory Engineering Course (Select 1)	Intro to Engineering (LSU Partnership) OR	110801	1
	PLTW Intro to Engineering Design	110802	1
Engineering Design Course (Select 1)	Engineering Design and Development (LSU Partnership) OR	110861	1
	PLTW Engineering Design and Development	110862	1
Principles of Engineering Course (Select 1)	PLTW Principles of Engineering OR	080109	1
	Principles of Engineering (LSU Partnership)	110864	1
Silver Engineering Focal Course (Select 1)	AP Computer Science Principles OR	061177	1
	Computer Integrated Manufacturing OR	110850	1
	First Robotics I OR	150740	1
	Intro to Computational Thinking (LSU Partnership) OR	061140	1
	PLTW Civil Engineering and Architecture OR	110841	1
	Robotics (LSU Partnership)	150780	1

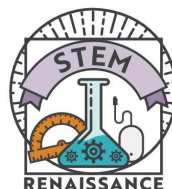
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Concentration Area	Course Name	Course Code	Credit
<p>To earn the Gold STEM Diploma Seal students <u>must</u> complete the requirements for the Silver STEM Diploma Seal, pass two Pre-Engineering courses, pass one Computer Science course from the approved STEM Pathway listing and pass an additional Math or Science course.</p>			
Approved STEM Pathway Pre-Engineering Course Options (Select 2)	Aerospace Engineering OR	110830	1
	Automotive Technician I OR	310300	1
	Basic Technical Drafting OR	110560	1
	CDF Qualifying CTE Internship I OR	080198	1
	Data Manipulation and Analysis (LSU Partnership) OR	080530	1
	Engineering Economy(LSU Partnership) OR	144200	1
	First Robotics I OR	150740	1
	First Robotics II OR	150750	1
	Marine Engineering OR	110020	1
	PLTW Aerospace Engineering OR	110831	1
	PLTW Civil Engineering and Architecture OR	110841	1
	PLTW Digital Electronics OR	110821	1
	Principles of Engineering (LSU Partnership) OR	110864	1
	Robotics (LSU Partnership) OR	150780	1
Robotics: Advanced (1 Credit)	150730	1	

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Concentration Area	Course Name	Course Code	Credit
Approved STEM Pathway Computer Science Course Options* (Select 1) *Options continue on the next page.	AP Computer Science A OR	061177	1
	AP Computer Science Principles OR	061175	1
	Advanced Javascript, Programming, and Web Development OR	080520	1
	CIW Database Design OR	080505	1
	CIW E-Commerce Site Design and Development OR	040519	1
	CIW Essentials of Web Design OR	040517	1
	CIW Internet Business OR	040405	1
	CIW Introduction to Javascript OR	061125	1
	CIW Network Security OR	061121	1
	CIW Networking Technology OR	061120	1
	CIW Pearl Fundamentals OR	061126	1
	CIW Website Development OR	040415	1
	COMP TIA+ Fundamentals of Computer Installation and Configuration OR	061130	1
	COMP TIA+ Networking Fundamentals OR	061122	1
	COMP TIA+ Programming with PL/SQL OR	061127	1

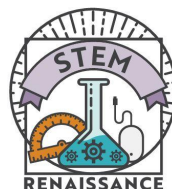
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Concentration Area	Course Name	Course Code	Credit
Approved STEM Pathway Computer Science Course Options Continued			
Approved STEM Pathway Computer Science Course Options (Select 1)	COMP TIA+ Security OR	061138	1
	Computer Integrated Manufacturing OR	110850	1
	Cyber Literacy I (NICERC Partnership) OR	040221	1
	Cybersecurity (Cyber.org Partnership) OR	040224	1
	Cybersecurity (LSU Partnership) OR	040217	1
	Cyber Society (NICERC Partnership) OR	040218	1
	Fundamentals of HTML, CSS, and Javascript OR	080523	1
	Interactive Computing (LSU Partnership) OR	061180	1
	Introduction to Computational Thinking (LSU Partnership) OR	0611140	1
	Programming for Engineers (LSU Partnership) OR	144300	1
	Survey of Computer Science (LSU Partnership)	061179	1

Math OR Science Course List			
Math OR Science Course*(Select 1) *Options continue on the next page.	Advanced Math- Functions and Statistics OR	160347	1
	Advanced Math- Pre-Calculus OR	160346	1

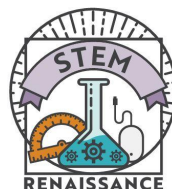
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Concentration Area	Course Name	Course Code	Credit
Math OR Science Course List Options Continued			
Math OR Science Course* (Select 1) *Options continue on the next page.	Advanced Math-Pre-Calculus: DE-CMAT 1223 Trigonometry OR	160501	1
	Biology II: AP Biology OR	150307	1
	AP Calculus AB OR	160327	1
	AP Calculus BC OR	160328	1
	AP Chemistry OR	150410	1
	AP Environmental Science OR	150311	1
	AP Physics C: Electricity and Magnetism OR	150794	1
	AP Physics C: Mechanics OR	150795	1
	Physics I: AP Physics I- Algebra Based OR	150724	1
	Physics: AP Physics II- Calculus Based OR	150725	1
	AP Psychology OR	222004	1
	AP Statistics OR	160352	1
	Astronomy OR	140200	1
	Biology: DE CBIO 1013 General Biology I OR	150321	1
Biology I: DE CBIO 1033 General Biology I (Science Majors) OR	150322	1	

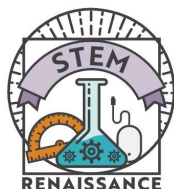
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Concentration Area	Course Name	Course Code	Credit
Math OR Science Course List Options Continued			
Math OR Science Course* (Select 1) *Options continue on the next page.	Biology II OR	150302	1
	Biology II: DE CBIO 1033 General Biology I (Science Majors) OR	150324	1
	Biology II: DE CBIO 1043 General Biology II (Science Majors) OR	150326	1
	Biology II: DE CBIO 2103 Microbiology OR	149995	1
	Calculus DE CMAT 2113-5 Calculus I OR	160506	1
	Calculus DE CMAT 2123-5 Calculus II OR	160507	1
	Chemistry I: DE CCEM 1103 Chemistry I OR	150414	1
	Chemistry I: DE CCEM 1123 General Chemistry I (Science Majors) OR	150322	1
	Chemistry II OR	150402	1
	Chemistry II: DE CCEM 1123 General Chemistry II (Science Majors) OR	150420	1
	Chemistry II: DE CCEM 1133 General Chemistry II (Science Majors) OR	150422	1
	Earth Science OR	150901	1
	Earth Science: DE - CGEO 1103 Physical Geology OR	150909	1

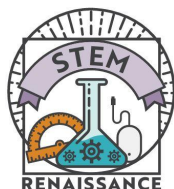
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Concentration Area	Course Name	Course Code	Credit
Math OR Science Course List Options Continued			
Math OR Science Course* (Select 1)	Economics OR	220201	1
	Economics: AP Macroeconomics OR	220603	1
	Economics: AP Microeconomics OR	220605	1
	Economics: DE - CECN 2213 Macroeconomics OR	220608	1
	Economics: DE - CECN 2223 Microeconomics OR	220609	1
	Economics: DE - ECON 2113 Economic Principles OR	220202	1
	Environmental Science DE- CEVS 1103 OR	150914	1
	Introduction to Psychology CPSY 2013 OR	225011	1
	Physics I: DE CPHY 2113 Physics I (Algebra/Trig Based) OR	150726	1
	Physics I: DE CPHY 2113 Physics I (Calculus Based) OR	150728	1
	Physics II OR	150701	1
	Pre-Calculus OR	160348	1
	Probability and Statistics OR	160349	1
	Probability and Statistics: DE CMAT 1303 OR	160356	1
Psychology OR	222001	1	

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Concentration Area	Course Name	Course Code	Credit
Math OR Science Course List Options Continued			
Math OR Science Course* (Select 1)	Psychology: DE CPSY 2013- Introduction to Psychology OR	225011	1
	Statistical Reasoning	165031	1

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