Gordon A. Cain Center
For Scientific, Technological, Engineering & Mathematical Literacy

LSU STEM PATHWAYS

Goals. The LSU STEM Pathway Program is a national model partnership between Lee High School in Baton Rouge (Lee HS), Louisiana State University (LSU), the Louisiana Department of Education, and Louisiana school districts in the Greater Baton Rouge area. The goals of this program are as follows.

- Deliver a comprehensive set of college readiness and advanced professional development programs in STEM-focused areas through the framework of STEM Pathways.
- Provide students with the opportunity to enroll in a specialized progression of project-based courses called pathways to attain industry-promulgated and valued credentials, university issued certificates of course completion, or dual enrollment credit in order to graduate with either a career-tech diploma or to enhance their university-prep diploma,
- Require teachers who instruct the pathway courses to further their academic credentials by completing six graduate-level professional development courses that, if taken for credit, lead to a customized "Professional Graduate Certificate" issued by the LSU Colleges of Science or Engineering.

LSU STEM Pathway Courses				
	Pre-Engineering Statewide Rollout 2017-18	**Digital Media & Arts Statewide Rollout 2018-19**	**Computational Thinking & CS (Draft) Statewide Rollout 2019-20**	**Biomedical Sciences (Draft) Statewide Rollout 2020-21**
9th Grade	*Intro to Engineering Design*	*Digital Storytelling*	*Exploring Computer Science*	*Introduction to Biomedical Sciences & Science Foundations and Ethics*
	Intro to Computational Thinking	*Digital Image*	*Intro to Computational Thinking*	*Intro to Computational Thinking*
10th Grade	*Introduction to Robotics*	*Photography, Motion Graphics & Video*	*Computer Science I*	*Comparative Anatomy Physiology, Forensic Science*
	Programming for Engineers	*Programming for Digital Media*	*Modeling and Simulations*	*Modeling and Simulations*
11th Grade	*Principles of Engineering*	*Sound Design, Video Game Design*	*Computer Science II*	*Animal Behavior or Ecology/Lab*
	Data Manipulation and Analysis	*Web Design & Structure*	*Data Manipulation and Analysis*	*Data Manipulation and Analysis*
12th Grade	*Engineering Economy*	*Film & Television*	*Computer Science III*	*Biochemistry or Microbiology*
	Engineering Design and Development	*Interactive Digital Media Capstone*	*Ubiquitous Computing*	*Research Methodology or Coastal Studies*

Pathway Courses. The curricula for the LSU STEM Pathway courses first took shape at Lee HS in collaboration with LSU faculty. All students at Lee HS are encouraged to participate in one of the following STEM pathways: (1) Pre-Engineering, (2) Digital Media & Arts, (3) Computational Thinking

& Computer Science, or (4) Biomedical Sciences. The statewide rollout[1] of these pathways is a joint effort of the Louisiana Department of Education, the LSU College of Engineering and Gordon A. Cain Center for STEM Literacy, and Lee HS.

Common Objectives. Common themes reflected in all pathway courses are:

- Computational thinking and computer science.
- Data management and analysis,
- Development of 21st-century skills such as critical thinking, problem solving, communication, collaboration, and appropriate use of technology.
- Cultivation of acumen in areas that contribute to success in STEM-related fields such as research & analysis, innovation & creativity, and professional ethics.

These common threads give students, and especially 9th and 10th grade students, a substantial exposure to a critical set of transferable skills that allows them to switch pathways between school years with only a minimal dose of required online summer remediation.

Jump Start. Jump Start is Louisiana's premier career and technical education program that prepares students to lead productive adult lives in high-wage sectors. Students enroll in a specialized progression of courses called pathways in order to graduate with a career diploma or to enhance their university-preparatory diploma.

In June 2017, the Louisiana Board of Elementary and Secondary Education (BESE) decided to approve the LSU Pre-Engineering Pathway as one of the 40+ Louisiana Jump Start Career Pathway options. The LSU Digital Media & Art Pathway courses will go up for approval for the 2018-19 school year, followed by the Computational Thinking and Computer Science Pathway courses in 2019 – 20, and a Biomedical Sciences Pathway in 2020-21.

The LSU STEM Pathways offer a first-of-its-kind hybrid curriculum that can be applied to either diploma track. In 2017-18, the Pre-Engineering Pathway is being offered to over 200 freshmen at eight high schools in school district within easy driving distance to LSU and will be expanded from 2018-19 on by adding each year another eight high schools (at least two teachers per high school).[2] From 2018-19 on, an additional 16 Digital Media & Arts Pathway teachers will be recruited and trained each year from the schools that are already offering the Pre-Engineering Pathway. Then, starting in 2019-20, the Computational Thinking and Computer Science Pathway will be added. This RET program will be recommended to participating teachers as an additional training opportunity beyond the two required Pathway summer training institutes.

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[1] The statewide expansion of (1) began in 2017-18 at eight high schools in: Central, City of Baker, East Baton Rouge, Iberville, Pointe Coupee and West Feliciana. Pathway (2) will be piloted statewide in 2018-19, followed by (3) in 2019-20 and (4) in 2020-21 (the courses and syllabi for Pathway (4) will be available in 2018-19).

[2] From 2019-20 on, we will also include 8th grade middle school teachers and adjust our 9th grade pathway courses accordingly.