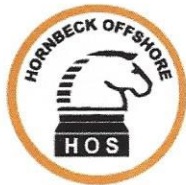


# Saint Paul's Succeeds with...



*Project Lead the Way*

## SPONSORED BY



Hornbeck Offshore Services

Gateway to Technology for Pre-freshman  
Pathway to Engineering

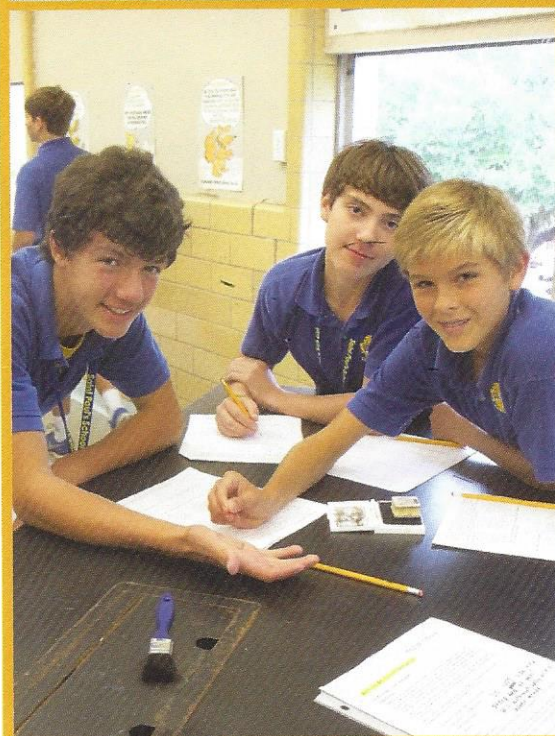
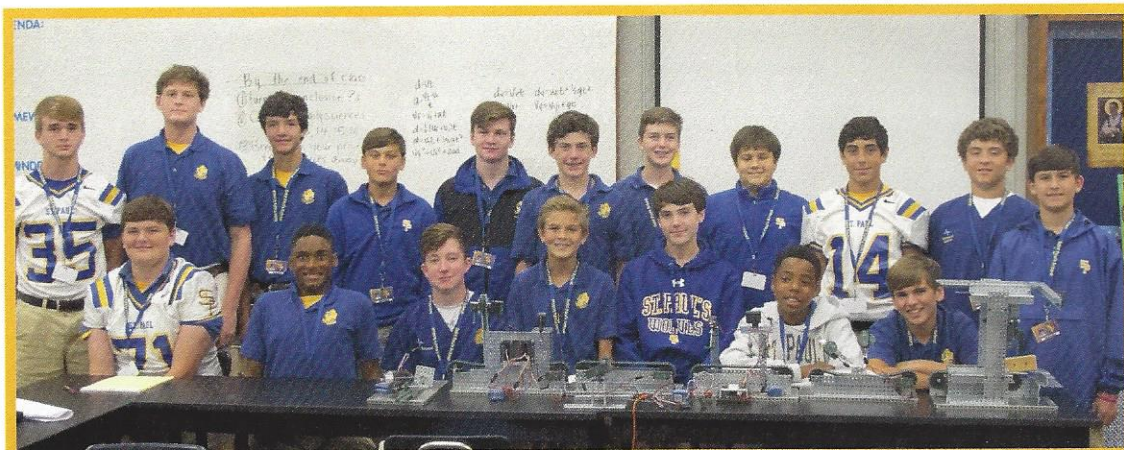
AND

The Dr. David and Mrs. Oubre  
Biomedical Sciences Program

# Saint Paul's School

*Classes that engage students in rigorous and relevant hands-on problems in conjunction with traditional math and science courses.*



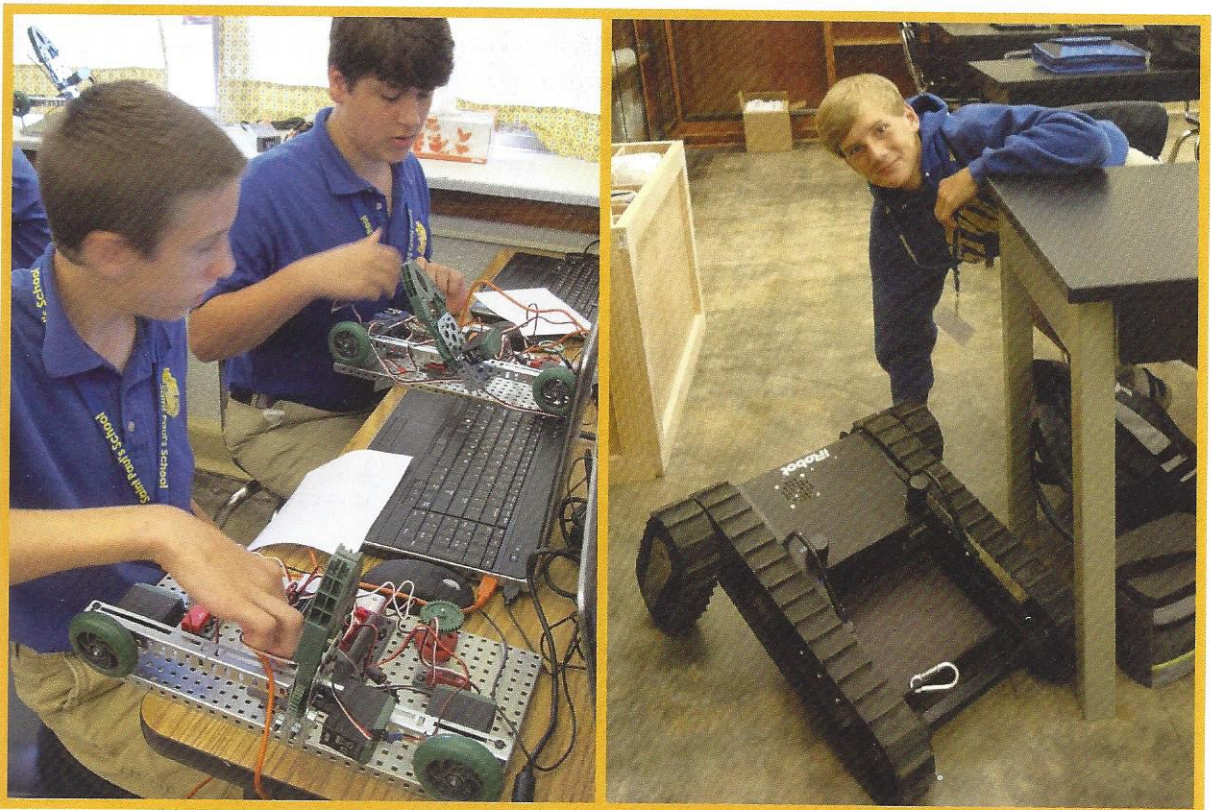


Project Lead the Way (PLTW) is a not-for-profit national organization that promotes a rigorous science curriculum that enhances traditional math and science offerings, with elective tracks in the biomedical sciences, computer sciences, and engineering. The program emphasizes hands-on experiences using state of the art software in Science, Technology, Engineering, Mathematics (STEM) to prepare students for academic and professional success in these disciplines. Critical thinking, collaboration, and problem solving all vital skills in our challenging economy are infused throughout the PLTW curriculum. Saint Paul's begins exploration into the amazing PLTW program with prefreshmen in the Gateway to Technology class. **Saint Paul's is one of only three schools in Louisiana to earn PLTW Engineering certification, allowing our students to earn college credit for their high school engineering work.**

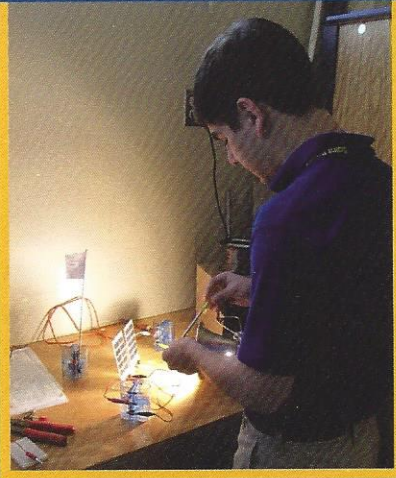
# The Hornbeck Offshore Gateway to Technology Program

**T**hrough topics such as robotics, flight and space, and DNA and crime scene analysis, students will find their natural curiosity and imagination engaged in creative problem solving. The Gateway to Technology (GTT) program provides a strong foundation for further STEM learning in high school and beyond, challenging students to solve real-world problems like cleaning oil spills and designing sustainable housing solutions. Using the same advanced software and tools as the world's leading companies, students see the application of math, science, technology, and engineering to their everyday lives.

Designed for pre-freshmen students, GTT introduces students to a variety of concepts in science, math, engineering and technology as preparation for further development throughout high school. Students use design software and robotics to solve real-world problems as well as develop communication and collaboration skills. Topics in biology, chemistry and physics are covered through problem-based learning about diseases, the human body, atoms, and electricity.



# The Hornbeck Offshore Services Pathway to Engineering Program:



**T**he PLTW Pathway To Engineering (PTE) program is a sequence of courses which follows a proven hands-on, real-world problem-solving approach to learning. Throughout PTE, students learn and apply the design process, acquire strong teamwork and communication proficiency, and develop organizational, critical-thinking, and problem-solving skills. They discover the answers to questions such as: "How are things made?" and "What processes go into creating these products?"

Students use the same industry-leading 3D design software used by Intel and Lockheed Martin. Students apply biological and engineering concepts related to biomechanics – they think robotics. They design, test, and actually construct circuits and devices including smart phones, and tablets. They work collaboratively on a culminating capstone project. This is STEM education, and it is at the heart of today's high-tech, high-skill global economy. PTE courses complement traditional mathematics and science courses. The program is designed to prepare students to pursue a post-secondary education and careers in STEM-related fields.

## FOUNDATION COURSES

### Introduction to Engineering Design (IED)

The major focus of IED is the design process and its application. Through hands-on projects, students apply engineering standards and document their work. Students use industry standard 3D modeling software to help them design solutions to solve proposed problems, document their work using an engineer's notebook, and communicate solutions to peers and members of the professional community.

### Principles of Engineering (POE)

This survey course exposes students to major concepts they will encounter in a post-secondary engineering course of study. Topics include mechanisms, energy, statics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.

## SPECIALIZED COURSES

### Civil Engineering and Architecture (CEA)

Students learn about various aspects of civil engineering and architecture and apply their knowledge to the design and development of residential and commercial properties and structures. In addition, students use 3D design software to design and document solutions for major course projects. Students communicate and present solutions to their peers and members of a professional community of engineers and architects.

## Digital Electronics (DE)

Digital electronics is the foundation of all modern electronic devices such as mobile phones, MP3 players, laptop computers, digital cameras and high-definition televisions. Students are introduced to the process of combinational and sequential logic design, engineering standards and technical documentation.



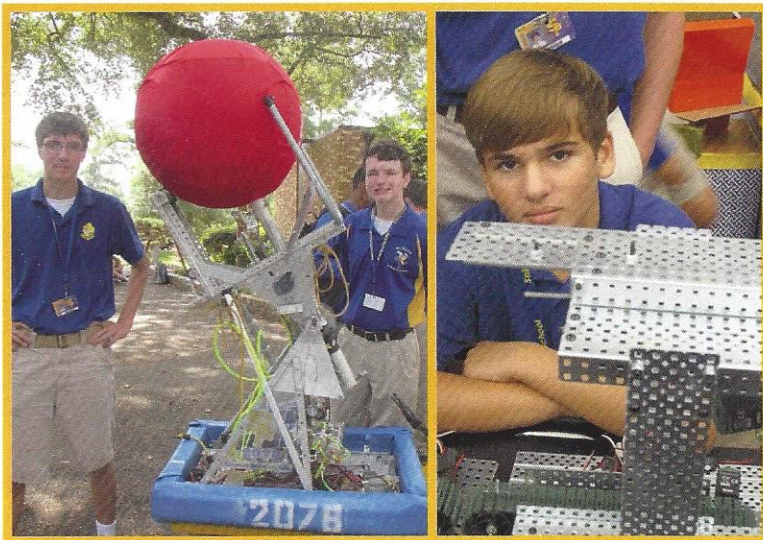
## Engineering Design and Development (EDD)

In this capstone course, students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, build, and test their solutions while working closely with industry professionals who provide mentoring opportunities. Finally, student teams present and defend their original solution to an outside panel.

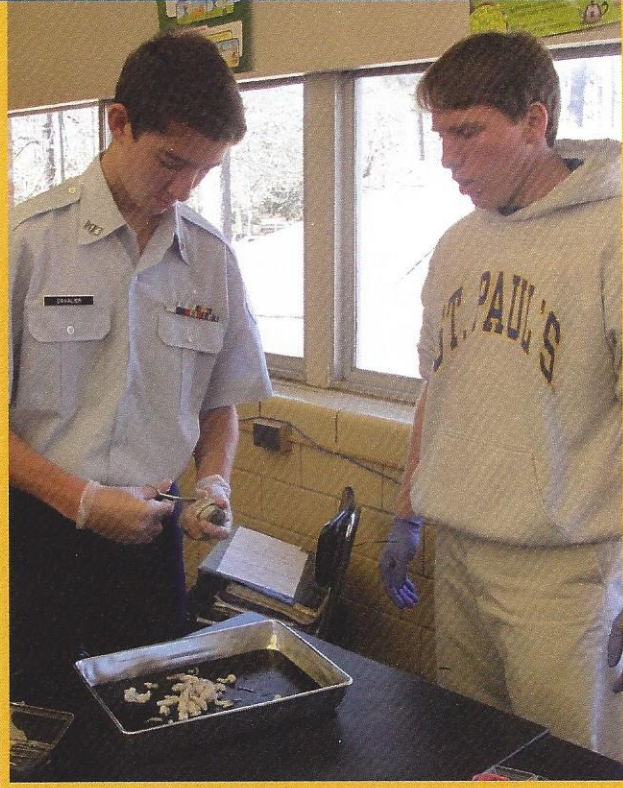


## Advanced Placement Computer Science Principles

Using Python<sup>®</sup> as a primary tool and incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration. Computer Science Principles helps students develop programming expertise and explore the workings of the Internet. Projects and problems include video game and mobile app development, website development, database creation and management, cyber security, and model simulations. PLTW is recognized by the College Board as an endorsed provider of curriculum and professional development for AP<sup>®</sup> Computer Science Principles (AP CSP). This endorsement affirms that all components of PLTW CSP's offerings are aligned to the AP Curriculum Framework standards and the AP CSP assessment.



# The Dr. David and Mrs. Oubre Biomedical Sciences Program



**T**he PLTW Biomedical Sciences Program (BMS), began with a grant from The Harry T. Howard Foundation and Touro Infirmary and is currently funded by Dr. David and Mrs. Oubre. The sequence of courses are all aligned with appropriate national learning standards, and follow a proven hands-on approach to learning.. Students explore the concepts of human medicine and are introduced to topics such as physiology, genetics, microbiology and public health. Through activities, such as dissecting a sheep's heart, students examine the processes, structures and interactions of the human body – often playing the role

of biomedical professionals. They also explore the prevention, diagnosis and treatment of diseases, working collaboratively to investigate and design innovative solutions to the health challenges of the 21st century, such as fighting cancer with nanotechnology. Throughout BMS courses, students acquire strong teamwork and communication practices, and develop organizational, critical-thinking, and problem-solving skills. Students also investigate a variety of careers in biomedical sciences.

## FOUNDATION COURSES

**Principles of the Biomedical Sciences (PBS)** Students investigate various health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They determine the factors that led to the death of a fictional person, and investigate lifestyle choices and medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, medicine, and research processes. This course provides an overview of all the courses in the Biomedical Sciences program and lays the scientific foundation for subsequent courses.

### **Human Body Systems (HBS)**

Students examine the interactions of human body systems as they explore and identify, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition

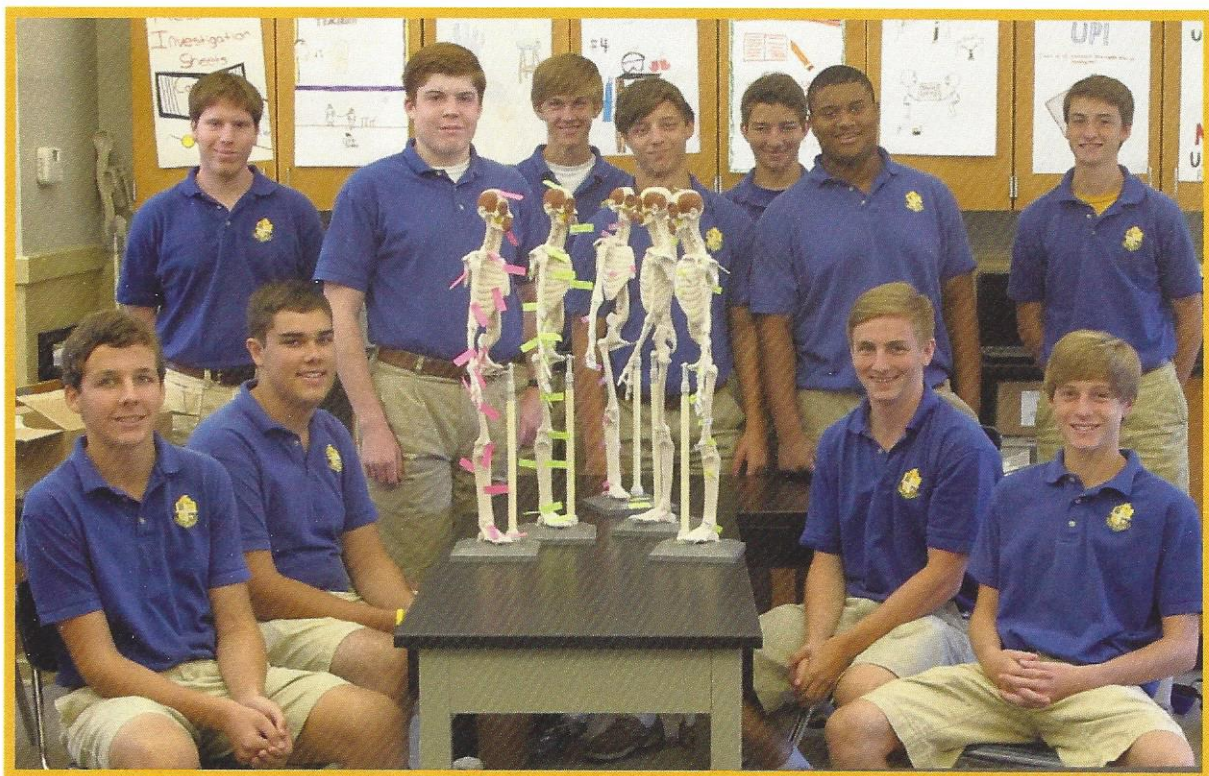
software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal manikin, work through interesting real world cases and often play the roles of biomedical professionals to solve medical mysteries.

### **Medical Interventions (MI)**

Students investigate a variety of interventions involved in the prevention, diagnosis and treatment of diseases as they follow the life of a fictitious family. The course is a "How-To" manual for maintaining overall health and homeostasis in the body. Students explore how to prevent and fight infection; screen and evaluate the code in human DNA; prevent, diagnose and treat cancer; and prevail when the organs of the body begin to fail. Through these scenarios, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

### **CAPSTONE COURSE**

**Biomedical Innovation (BI)** Students design innovative solutions for the health challenges of the 21st century. They work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. They have the opportunity to work on an independent project with a mentor or advisor from a university, hospital, research institution, or the biomedical industry. Throughout the course, students are expected to present their work to an audience of STEM professionals.





# Saint Paul's School

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Lasallian Christian Brothers' Tradition for over 100 years*  
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