# Biomedical Sciences Program
# Health and Human Services Academy
# New London High School
# 2016-2017

Project Lead the Way is a national, not-for-profit educational program that assists high-school students in developing strong backgrounds in science and engineering. This dynamic program uses hands-on, real world curriculum to engage and challenge students to achieve their highest potential. The Biomedical Science Program was started in 2010 and we currently offer all four of the available classes at the high school. The teachers, Jennifer Doran and Laura Turner that you will have for these classes have spent 8 weeks training for them during the summer.

These classes are rigorous, challenging, fascinating and fun. These classes will motivate you to work hard, help you learn to work well with others, improve your higher-level thinking skills, and will ultimately result in you having a deep understanding of how the human body is organized, how it works, what can go wrong, and how medical interventions can help. You are able to start taking classes within the Biomedical Science Program during your freshman year of high school. The next few pages provide details about each class that you could take at the high school.

CREDIT OPTION

Three credits from Milwaukee School of Engineering can be earned by passing PBS, HBS or MI at the high school with a B or better and passing an end of course assessment made by PLTW with a score ranging from 7-9.

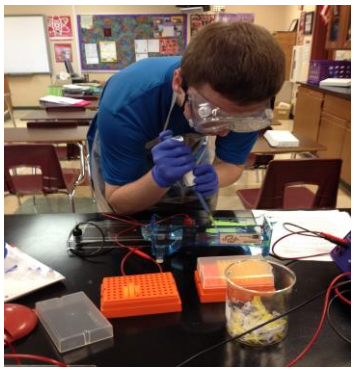
***PBS=Principles of Biomedical Science***

Offered for grades: 9th-12th and students must have taken Biology or be taking it concurrently.

- Student work involves the study of human biology, medicine, and an introduction to research processes.
- Students investigate the human body systems and various health conditions including: heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases.

**TOPICS:**

- Literary research skills
- Human body systems
- Basic chemistry
- Laboratory techniques
- Structure and function of DNA
- Protein structure
- Causes of infectious diseases



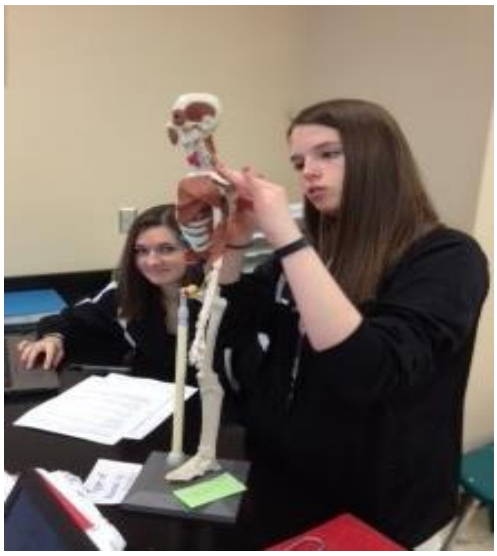
**UNITS:**

- Unit 1 – Human Body Systems
- Unit 2 – Heart Attack
- Unit 3 – Diabetes
- Unit 4 – Sickle Cell Disease
- Unit 5 – Hypercholesterolemia
- Unit 6 – Infectious Diseases
- Unit 7 – Medical Interventions

## ***HBS: Human Body Systems***

Offered for grades: 10th-12th and students must have taken Biology and PBS.

- Students study basic human physiology, especially in relationship to human health. A central theme is how the body systems work together to maintain internal balance and good health.
- Students use data acquisition software to monitor body functions and use the Anatomy in Clay® Manikens ® to study body structure.



**TOPICS:**

- Relationship between structure and function
- Maintenance of health
- Defense against disease
- Communication within the body and with the outside world
- Movement of the body and of substances around the body
- Energy distribution and processing

**UNITS:**

- Unit 1 – Identity
- Unit 2 – Communication
- Unit 3 – Power
- Unit 4 – Movement
- Unit 5 – Protection
- Unit 6 - Homeostasis

## ***MI: Medical Interventions***

Offered for grades: 10th-12th and students must have taken Biology, PBS and HBS. Can take HBS concurrently with MI.

- Students study the variety of medical interventions involved in the prevention, diagnosis and treatment of disease as they follow the lives of a fictitious family.
- Student projects investigate interventions related to diagnostics, immunology, surgery, genetics, pharmacology, medical devices, and lifestyle choices.

**TOPICS:**

- Molecular biology and genetic engineering
- Design process for pharmaceuticals and medical devices
- Medical imaging, including x-rays, CT scans, and MRI scans
- Disease detection and prevention
- Rehabilitation after disease or injury
- Medical interventions of the future

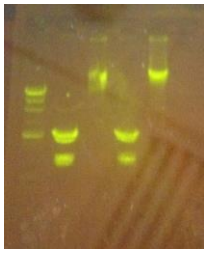
UNITS:

- Unit 1 – How to Fight Infection
- Unit 2 – How to Screen What is in Your Genes
- Unit 3 – How to Conquer Cancer
- Unit 4 – How to Prevail When Organs Fail

## ***BI: Biomedical Innovation***

Offered for grades: 11th-12th and students must have taken Biology, PBS and HBS and MI. Can be taken concurrently with MI.

Instead of topics and units for this class: Students will be given eight different problems that can occur in the medical field. They will have the opportunity to pull together what they have learned from the previous three classes to solve these problems. An example problem is to design an emergency department in a hospital. Another example is to solve the mysterious outbreak of a disease and trace it back to its origin. Students will continue to learn research skills, perform laboratory experiments and design models to solve the problems. The second semester of this course involves an independent project in which the student is paired up with a mentor from the community. The independent project can include but is not limited to a scientific research experiment, internship or community event that is planned and carried out by the student. There is no opportunity for credit from MSOE at this time.

Other Related Courses and Opportunities for the Medical/Health Field:

1. Medical Terminology Class with articulated credit from Fox Valley Technical College. This class consists of 16 exams written by Fox Valley Technical College but taught by an instructor from NLHS.
2. Nursing Assistant Course with articulated credit from Fox Valley Technical College. Students complete 40 hours of independent study at New London High School and then 40 hours of clinical and 40 hours of lab work off site. There is an application process and references required to be considered for this course.
3. Health Science Youth Apprentice Program-Youth apprenticeship is an opportunity for a student to be employed by a local business and receive high school credit at the same time. Currently nursing homes in the area are hiring students after they have completed their nursing assistant courses. There is an application process to become a youth apprenticeship and many prior requirements. A total of 450 hours of work is required as well as taking content related course work at the same time. The content related course work is provided by NLHS in traditional or online courses.
4. HOSA-Health Occupations Students of America-this is a student organization that allows students to participate in competitive events within the medical and health field as well as learn leadership and organizational skills. Students attend state and international conferences to demonstrate their skills. We recently had ten students qualify to attend the 2016 International State Leadership Conference.