



Center for Advanced Professional Studies  
(CAPS)  
Medicine and Bioscience Strand

**Curriculum Committee Members**

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# Hazelwood School District

## Mission Statement

In a culture of **high expectation** and **excellence**, our students will become lifelong learners equipped with 21<sup>st</sup> Century skills for success as global citizens.

## Core Value Statements

- High student achievement based on multiple measures as we prepare students to become global citizens.
- A diverse staff that is caring, culturally competent, well trained, and highly effective in their roles.
- Holding ourselves accountable for a culture of excellence with high standards in both academics and behavior.
- Maintaining fiscal responsibility of the district's assets and resources while utilizing best financial practices.
- A supportive learning environment that fosters healthy socio-emotional development for all students.
- Preparing students with global thinking and skills to make them productive in college, career, and life in the 21st century.
- Community involvement that drives high parental and community/stakeholder engagement, effective partnerships, and positive relationships with informative communication.

## Goals

Goal 1 – Improve Student Achievement

Goal 2 – Differentiate and Expand Resources and Services for Students

Goal 3 – Enhance Professional Growth

Goal 4 – Maintain Fiscal Responsibility

Goal 5 – Increase Parent and Community Involvement

## Curriculum Overview

In order to increase the college and career readiness of our students, the Hazelwood School District and Christian Hospital are working in partnership to establish real world, workplace experiences in the medical field for students to be exposed to careers in which they may be interested and/or careers of which they are not currently aware. The Center for Advanced Professional Studies (CAPS) Medicine and Bioscience course provides students with the opportunity to gain real-world, hands-on work experience in a professional work environment related to their academic and career interests. With the CAPS program, the district intends to immerse students into a professional culture with a personalized learning experience in high skill, high demand careers to prepare them for their post-secondary future and help them make better informed career choices.

The course will follow the Project Lead the Way Biomedical Science curriculum but will also include training in professional skills for students and hands-on work experiences in the medical field. The first semester of the course is designed to develop the skills and knowledge the students will need to successfully navigate a professional setting in the medical field in their second semester of the course. First semester, students will learn the soft skills necessary to operate in a professional environment, learn terminology related to the medical field, explore case studies in the medical field, and engage with guest speakers from medical related careers. In second semester, students will participate in internships and job shadowing with medical professionals and research to solve a real world problem presented to them by medical professionals.

COURSE TITLE: CAPS

GRADE LEVEL: 11<sup>th</sup> and 12<sup>th</sup> Grade

**Course Description:**

The CAPS course provides students with the opportunity to gain real-world, hands-on work experience in a professional work environment related to their academic and career interests. The course will follow the Project Lead the Way Biomedical Science curriculum but will also include training in professional skills for students and hands-on work experiences in the medical field. For the first semester of the course, students will learn skills they need to navigate a professional setting, learn terminology related to the medical field, explore case studies in the medical field, and engage with guest speakers from medical related careers. In second semester, students will participate in internships and job shadowing with medical professionals and research to solve a real world problem presented to them by medical professionals.

**Course Rationale:**

CAPS will immerse our students into a professional culture with a personalized learning experience in high skill, high demand careers in the medical field to prepare them for their post-secondary future and help them make better informed career choices.

<b>Course Scope and Sequence</b>		
<u>Unit 1</u>  <b>Professionalism</b> 10 sessions of 120 minutes	<u>Unit 2</u>  <b>Design of an Effective Emergency Room</b> 15 sessions of 120 minutes	<u>Unit 3</u>  <b>Exploring Human Physiology</b> 17 sessions of 120 minutes
<u>Unit 4</u>  <b>Design of a Medical Innovation</b> 12 sessions of 120 minutes	<u>Unit 5</u>  <b>Investigating Environmental Health</b> 18 sessions of 120 minutes	<u>Unit 6</u>  <b>Combating a Public Health Issue</b> 13 sessions of 120 minutes
<u>Unit 7</u>  <b>Molecular Biology in Action</b> 14 sessions of 120 minutes	<u>Unit 8</u>  <b>Forensic Autopsy</b> 9 sessions of 120 minutes	<u>Unit 9</u>  <b>Independent Project</b> Varies based on student choice of project

## Unit Objectives

### Unit 1

1. Students will be able to act as a responsible and contributing citizen and employee.
2. Students will be able to consider the environmental, social, and economic impact of decisions.
3. Students will be able to utilize critical thinking to make sense of problems and persevere in solving them.
4. Students will be able to model integrity, ethical leadership and effective management.
5. Students will be able to work productively in teams while using cultural/global competence.
6. Students will be able to illustrate how personal qualities transfer from school to the workplace.
7. Students will be able to describe appropriate time management techniques and their application/ transference to the workplace.
8. Students will be able to describe the positive and negative impacts of technology/social networking on the workplace.
9. Students will be able to demonstrate appropriate interpersonal skills for working with and for others.
10. Students will be able to explain the importance of maintaining professionalism in work relationships.
11. Students will be able to listen actively when communicating.
12. Students will be able to use the communication process.
13. Students will be able to prepare clear, complete, concise, correct, and courteous written messages for personal and professional uses.

### Unit 2

1. Students will solve a problem using analytical and critical thinking skills.
2. Students will explain the value of diverse perspectives in the problem-solving process.
3. Students will explain why scientists must have the courage to take a calculated risk.
4. Students will design a medical space that is conducive to patient wellness and improves patient outcomes.
5. Students will create or improve a medical innovation using a design process.
6. Students will analyze health and disease data to inform public health decisions.
7. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
8. Students will demonstrate awareness of the societal impacts of biomedical science professionals.
9. Students will use project management to successfully and efficiently complete tasks as scheduled.
10. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
11. Students will communicate effectively with a specific audience.

12. Students will create an effective team environment to promote successful goal attainment.

### Unit 3

1. Students will design an experiment that investigates a research question.
2. Students will collect and analyze data to draw a conclusion.
3. Students will select and use appropriate tools, technology, and/or software for experimental and clinical data collection and analysis.
4. Students will use statistics to solve biomedical science problems.
5. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
6. Students will demonstrate awareness of the societal impacts of biomedical science professionals.
7. Students will use project management to successfully and efficiently complete tasks as scheduled.
8. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
9. Students will communicate effectively with a specific audience.

### Unit 4

1. Students will design an experiment that investigates a research question.
2. Students will collect and analyze data to draw a conclusion.
3. Students will solve a problem using analytical and critical thinking skills.
4. Students will explain the value of diverse perspectives in the problem-solving process.
5. Students will explain why scientists must have the courage to take a calculated risk.
6. Students will create or improve a medical innovation using a design process.
7. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
8. Students will demonstrate awareness of the societal impacts of biomedical science professionals.
9. Students will use project management to successfully and efficiently complete tasks as scheduled.
10. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
11. Students will communicate effectively with a specific audience.
12. Students will create an effective team environment to promote successful goal attainment.

### Unit 5

1. Students will design an experiment that investigates a research question.
2. Students will collect and analyze data to draw a conclusion.
3. Students will solve a problem using analytical and critical thinking skills.
4. Students will explain the value of diverse perspectives in the problem-solving process.
5. Students will explain why scientists must have the courage to take a calculated risk.
6. Students will select and use appropriate tools, technology, and/or software for experimental and clinical data collection and analysis.
7. Students will evaluate the impact of environmental factors on human health.
8. Students will use proper techniques to identify strains of bacteria.

9. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
10. Students will demonstrate awareness of the societal impacts of biomedical science professionals.
11. Students will use project management to successfully and efficiently complete tasks as scheduled.
12. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
13. Students will communicate effectively with a specific audience.
14. Students will create an effective team environment to promote successful goal attainment.

#### Unit 6

1. Students will collect and analyze data to draw a conclusion.
2. Students will solve a problem using analytical and critical thinking skills.
3. Students will explain the value of diverse perspectives in the problem-solving process.
4. Students will explain why scientists must have the courage to take a calculated risk.
5. Students will create or improve a medical innovation using a design process.
6. Students will analyze health and disease data to inform public health decisions.
7. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
8. Students will demonstrate awareness of the societal impacts of biomedical science professionals.
9. Students will use project management to successfully and efficiently complete tasks as scheduled.
10. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
11. Students will communicate effectively with a specific audience.
12. Students will create an effective team environment to promote successful goal attainment.

#### Unit 7

1. Students will design an experiment that investigates a research question.
2. Students will collect and analyze data to draw a conclusion.
3. Students will solve a problem using analytical and critical thinking skills.
4. Students will explain the value of diverse perspectives in the problem-solving process.
5. Students will explain why scientists must have the courage to take a calculated risk.
6. Students select and use appropriate tools, technology, and/or software for experimental and clinical data collection and analysis.
7. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
8. Students will demonstrate awareness of the societal impacts of biomedical science professionals.
9. Students will use project management to successfully and efficiently complete tasks as scheduled.
10. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
11. Students will communicate effectively with a specific audience.



12. Students will create an effective team environment to promote successful goal attainment.

#### Unit 8

1. Students will collect and analyze data to draw a conclusion.
2. Students will solve a problem using analytical and critical thinking skills.
3. Students select and use appropriate tools, technology, and/or software for experimental and clinical data collection and analysis.
4. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
5. Students will use project management to successfully and efficiently complete tasks as scheduled.
6. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
7. Students will communicate effectively with a specific audience.
8. Students will create an effective team environment to promote successful goal attainment.

#### Unit 9

1. Students will design an experiment that investigates a research question.
2. Students will solve a problem using analytical and critical thinking skills.
3. Students select and use appropriate tools, technology, and/or software for experimental and clinical data collection and analysis.
4. Students will demonstrate awareness of the education and skills required for biomedical science professionals.
5. Students will use project management to successfully and efficiently complete tasks as scheduled.
6. Students will apply professional standards, as they apply to the habits and characteristics of a biomedical science professional.
7. Students will communicate effectively with a specific audience.
8. Students will create an effective team environment to promote successful goal attainment.

## Essential Terminology/Vocabulary

### Unit 1

Active listening, citizen, communication process, critical thinking, cultural competence, effective management, ethical leadership, global competence, integrity, interpersonal skills, perseverance, professionalism, social networking, and time management.

### Unit 2

Innovation, abstract, triage, and Gantt Chart.

### Unit 3

Alternative hypothesis, casual relationship, correlation, cross sectional study, experimental study, null hypothesis, observational study, p value, paired t-test, prospective cohort study, retrospective cohort study, statistically significant, and students' t-test.

### Unit 4

Design, design process, criteria, and prototype.

### Unit 5

Coliform, dose response curve, environmental health, Polymerase chain reaction (PCR), threshold, toxicology, and toxin.

### Unit 6

Case control study, casual relationship, cohort study, correlation, epidemiology, grant, incidence, odds ratio, relative risk, and risk factor.

### Unit 7

Clone, DNA ligase, ligation, plasmid, recombinant DNA, restriction enzyme, and vector.

### Unit 8

Autopsy, prosector, and diener.

### Unit 9

Any vocabulary associated with the student's independent project.

## **Course Materials and Resources:**

### **Instructional Resources:**

- CAPS Curriculum and Resources
- Project Lead the Way Learning Management System