

Biotechnology and Engineering Pathway (STEM Diploma)



Through the Biotechnology and Engineering program of study, students gain valuable experience through meaningful projects which combine academic learning and real-world laboratory skills. Topics covered include DNA Fingerprinting, Cloning, Human DNA Sequencing, and Forensics. This program provides students strong preparation for careers within medical and scientific fields, and is supported by a number of research institutions including the University of Washington Genome Project, Fred Hutchison Cancer Research Institute, and Amgen. This program is an excellent option for students interested in pursuing Medical Science and related studies in college.

Required Courses for STEM Diploma – Biotechnology & Engineering Pathway

Course	Credits	College Credits Available
Algebra 1	1.0	
Geometry	1.0	
Biology	1.0	
Algebra 2	1.0	
Chemistry	1.0	
Pre-Calculus	1.0	
Intro to Engineering Design	1.0	Lake WA Institute of Tech (5)
AP Biology	1.0	AP credit available
Biotechnology	1.0	Shoreline CC (5)
AP Chemistry, Physics, or Anatomy and Physiology	1.0	AP credit available
English 12 STEM Bioscience	1.0	



Program Spotlight

Students in this program have opportunity to compete in skill challenges through the FIRST Robotics club and competitions.

The job demand for skilled Computer Science and Engineering workers continues to be extremely high.

Sample High School and Beyond Plans for MTHS STEM Diploma Students

The following are sample STEM Diploma schedules for students who wish to pursue the Biotechnology and Engineering program of study. These plans are designed to serve as helpful starting guides for students in their planning for high school and beyond. Required STEM Diploma courses are listed in *red italics*.

District Graduation Requirements 2017-2020	
English	4.0
Math	3.0
Science	2.0
Social Studies	3.5
Health	.5
P.E.	1.5
Art	1.0
Personal Finance	.5
Career/Technical Electives	1.5
Total Credits	22
District Graduation Requirements 2021 & Beyond:	
Additional 1.0 credit of Science and additional 1.0 credit of Electives required.	
Total Credits	24
Graduation and Minimum 4-Year College/University Entrance Requirements:	
English	4.0
Math	3.0
Science (Lab)	2.0
Social Studies	3.5
Health	.5
P.E.	1.5
Art	1.0
Personal Finance	.5
Career/Technical Electives	1.5
World Language	2.0
Sr. Math/Science	1.0
Total Credits	22

"I Plan to Enroll in a Community/Technical College"	
Grade 9	
English 9/English 9 Honors	English 9/English 9 Honors
<i>Algebra 1</i>	<i>Algebra 1</i>
<i>Biology</i>	<i>Biology</i>
World Hist. 9/Honors WH 9	Health
Elective	Elective
Robotics	Computer Science Found.
Grade 10	
English 10/Eng10 Honors	English 10/Eng10 Honors
World Hist. 10/AP Euro Hist.	World Hist. 10/AP Euro Hist.
<i>Geometry</i>	<i>Geometry</i>
<i>Chemistry</i>	<i>Chemistry</i>
Art Elective	PE
<i>Intro to Engineering Design</i>	<i>Intro to Engineering Design</i>
Grade 11	
English 11/AP Eng. 11	English 11/AP Eng. 11
US History	US History
<i>Algebra 2</i>	<i>Algebra 2</i>
<i>Biotechnology</i>	<i>Biotechnology</i>
PE	Art Elective
Elective	Elective
Grade 12	
<i>English 12 STEM</i>	<i>English 12 STEM Biosci</i>
Social Studies 12	Social Studies 12
Personal Finance	PE
<i>Pre-Calculus</i>	<i>Pre-Calculus</i>
<i>AP Biology</i>	<i>AP Biology</i>
<i>AP Chem/Physics/Anatomy</i>	<i>AP Chem/Physics/Anatomy</i>
Regional Community/Technical College Programs	
<u>Shoreline Community College</u>	
<ul style="list-style-type: none"> ▪ Biotechnology Technician (Associate Degree, Certificates) * 	
* Indicates college programs which articulate directly with this high school program for college credit.	

"I Plan to Enroll in a 4-Year College/University"	
Grade 9	
English 9/English 9 Honors	English 9/English 9 Honors
<i>Algebra 1</i>	<i>Algebra 1</i>
<i>Biology</i>	<i>Biology</i>
World Hist. 9/Honors WH 9	Health
World Language	World Language
Robotics	Computer Science Found.
Grade 10	
English 10/Eng10 Honors	English 10/Eng10 Honors
World Hist. 10/AP Euro Hist.	World Hist. 10/AP Euro Hist.
<i>Geometry</i>	<i>Geometry</i>
<i>Chemistry</i>	<i>Chemistry</i>
World Language	World Language
<i>Intro to Engineering Design</i>	<i>Intro to Engineering Design</i>
Grade 11	
English 11/AP Eng. 11	English 11/AP Eng. 11
US History	US History
<i>Algebra 2</i>	<i>Algebra 2</i>
<i>Biotechnology</i>	<i>Biotechnology</i>
Art Elective	Art Elective
Elective	Elective
Grade 12	
<i>English 12 STEM Biosci</i>	<i>English 12 STEM Biosci</i>
Social Studies 12	Social Studies 12
Personal Finance	PE
<i>Pre-Calculus</i>	<i>Pre-Calculus</i>
<i>AP Biology</i>	<i>AP Biology</i>
<i>AP Chem/Physics/Anatomy</i>	<i>AP Chem/Physics/Anatomy</i>
Regional 4-Year College/University Programs	
<u>University of Washington:</u>	
<ul style="list-style-type: none"> ▪ Biotechnology/Molecular and Cellular Biology (Bachelor degree programs) 	
<u>Seattle Pacific University:</u>	
<ul style="list-style-type: none"> ▪ Biotechnology/Molecular and Cellular Biology (Bachelor degree programs) 	
* Indicates college programs which articulate directly with this high school program for college credit.	

Note: STEM Students will still need to complete .5 PE and .5 Personal Finance. This may need to be done through alternative means such as Running Start, summer school, eLearning, or BYU



Through the Biotechnology and Engineering program of study, students gain valuable experience through meaningful projects which combine academic learning and real-world laboratory skills. Topics covered include DNA Fingerprinting, Cloning, Human DNA Sequencing, and Forensics. This program provides students strong preparation for careers within medical and scientific fields, and is supported by a number of research institutions including the University of Washington Genome Project, Fred Hutchison Cancer Research Institute, and Amgen. This program is an excellent option for students interested in pursuing Medical Science and related studies in college.

Required Courses for STEM Honors Diploma – Biotechnology and Engineering Pathway

Course	Credits	College Credits Available
Honors Geometry	1.0	
Honors Biology	1.0	
Honors Algebra 2	1.0	
Chemistry	1.0	
Honors Pre-Calculus	1.0	
AP Statistics	1.0	Advanced Placement Credit
Intro to Engineering Design	1.0	Lake WA Institute of Tech (5)
AP Biology	1.0	Advanced Placement Credit
Biotechnology	1.0	Shoreline CC (5)
AP Chemistry, AP Physics, or Anatomy & Physiology	1.0	Advanced Placement Credit
English 12 STEM Bioscience	1.0	

Program Spotlight

Students in this program have opportunity to showcase their research skills and knowledge through the regional Bio-Expo competition.

The job demand for Health Science workers continues to be extremely high.

Sample High School and Beyond Plans for MTHS STEM Honors Diploma Students

The following are sample college-preparatory STEM Honors Diploma schedules for Music and Non-Music students pursuing the Biotechnology and Engineering program of study. These plans are designed to serve as helpful starting guides for students in their planning for high school and beyond. Required STEM Honors Diploma courses are listed in *red italics*.

District Graduation Requirements 2017-2020	
English	4.0
Math	3.0
Science	2.0
Social Studies	3.5
Health	.5
P.E.	1.5
Art	1.0
Personal Finance	.5
Career/Technical	1.5
Electives	4.5
Total Credits	22
District Graduation Requirements 2021 & Beyond:	
Additional 1.0 credit of Science and additional 1.0 credit of Electives required.	
Total Credits	24
Graduation and Minimum 4-Year College/University Entrance Requirements:	
English	4.0
Math	3.0
Science (Lab)	2.0
Social Studies	3.5
Health	.5
P.E.	1.5
Art	1.0
Personal Finance	.5
Career/Technical	1.5
Electives	2.0
World Language	2.0
Sr. Math/Science	1.0
Total Credits	22

“I am a Music Student”	
Grade 9	
English 9/English 9 Honors	English 9/English 9 Honors
<i>Honors Geometry</i>	<i>Honors Geometry</i>
<i>Honors Biology</i>	<i>Honors Biology</i>
World Hist. 9/Honors WH 9	Health
Music	Music
<i>Intro to Engineering</i>	<i>Intro to Engineering</i>
Grade 10	
English 10/Eng10 Honors	English 10/Eng10 Honors
World Hist. 10/AP Euro Hist.	World Hist. 10/AP Euro Hist.
<i>Honors Algebra 2</i>	<i>Honors Algebra 2</i>
<i>Chemistry</i>	<i>Chemistry</i>
Music	Music
<i>Biotechnology</i>	<i>Biotechnology</i>
Grade 11	
English 11/AP Eng. 11	English 11/AP Eng. 11
US History	US History
<i>Honors Pre-Calculus</i>	<i>Honors Pre-Calculus</i>
World Language	World Language
Music	Music
<i>AP Chemistry, AP Physics, or Anatomy and Physiology</i>	
Grade 12	
<i>English 12 STEM Biosci</i>	<i>English 12 STEM Biosci</i>
Social Studies 12	Social Studies 12
World Language	World Language
Music	Music
<i>AP Statistics</i>	<i>AP Statistics</i>
<i>AP Biology</i>	<i>AP Biology</i>
Regional 2 and 4-Year College/University Programs	
<u>Shoreline Community College</u>	
<ul style="list-style-type: none"> ▪ Biotechnology Technician (Associate Degree, Certificates) * ▪ Computer Science (Transfer Degree) 	
<u>University of Washington, Seattle Pacific University:</u>	
<ul style="list-style-type: none"> ▪ Biotechnology/Molecular and Cellular Biology (Bachelor degree programs) 	
* Indicates college programs which articulate directly with this high school program for college credit.	

“I am not a Music Student”	
Grade 9	
English 9/English 9 Honors	English 9/English 9 Honors
<i>Honors Geometry</i>	<i>Honors Geometry</i>
<i>Honors Biology</i>	<i>Honors Biology</i>
World Hist. 9/Honors WH 9	Health
World Language	World Language
<i>Intro to Engineering</i>	<i>Intro to Engineering</i>
Grade 10	
English 10/Eng10 Honors	English 10/Eng10 Honors
World Hist. 10/AP Euro Hist.	World Hist. 10/AP Euro Hist.
<i>Honors Algebra 2</i>	<i>Honors Algebra 2</i>
<i>Chemistry</i>	<i>Chemistry</i>
World Language	World Language
<i>Biotechnology</i>	<i>Biotechnology</i>
Grade 11	
English 11/AP Eng. 11	English 11/AP Eng. 11
US History	US History
<i>Honors Pre-Calculus</i>	<i>Honors Pre-Calculus</i>
Art Elective	PE
World Language/Elective	World Language/Elective
<i>AP Chemistry, AP Physics, or Anatomy and Physiology</i>	
Grade 12	
<i>English 12 STEM Biosci</i>	<i>English 12 STEM Biosci</i>
Social Studies 12	Social Studies 12
<i>AP Statistics</i>	<i>AP Statistics</i>
Personal Finance	Art Elective
<i>AP Biology</i>	<i>AP Biology</i>
Elective	Elective
Regional 2 and 4-Year College/University Programs	
<u>Shoreline Community College</u>	
<ul style="list-style-type: none"> ▪ Biotechnology Technician (Associate Degree, Certificates) * ▪ Computer Science (Transfer Degree) 	
<u>University of Washington, Seattle Pacific University:</u>	
<ul style="list-style-type: none"> ▪ Biotechnology/Molecular and Cellular Biology (Bachelor degree programs) 	
* Indicates college programs which articulate directly with this high school program for college credit.	

Note: Music STEM Honors Diploma students will still need to complete .5 PE and .5 Personal Finance through alternative means such as Running Start, summer school, eLearning, or BYU online.