



# STEM/BMAH MAGNET HIGH SCHOOL PROGRAM OF STUDY AND PROGRAM REQUIREMENTS

## FOR NCHS STUDENTS ENTERING GRADE 9 IN THE 2019-2020 SCHOOL YEAR:

### Course Credit STEM/BMAH Program Graduation Requirements:

- **English** – 4.0 credits (Honors or AP Level Grades 9-12)
- **Social Studies** – 4.0 credits (Honors US History Hybrid, Honors or AP US Government, AP Human Geography, Honors or AP World History, or Social Innovation)
- **Science** – 3.5 credits\* (Systems Science A & B (Credits for Honors STEM Physics, Honors STEM Biology, Honors STEM Chemistry), and Science Research III)
- **Math** – 4.0 credits (Honors or AP Level Grades 9-12 increasing in this progression through the Calculus level)
- **Physical Education/Health** – Fitness for Life, PE Elective – 1.0 credits, Health – 0.5 credits
- **Technology Education** – 1.0 credits (STEM Principles of Engineering)
- **Foreign Language** – 3.0 credits in the same language
- **AP Computer Science Principles** – 1.0 credits
- **Art** – 1.0 credits (Foundations of Art & Digital Photography)
- **Elective Credits**
  - Problem/Project-Based Learning Explorations I & II/Community Challenge (STEM Policy, Science Research III, Community Challenge) Course Sequence - 2.0 credits
- **STEM/BMAH Pathway of Study** (Pathway I, Pathway II, Capstone) – 3.0 credits\*
- **Business Education** – 1.0 Credits (STEM/BMAH Internship)

### ADDITIONAL STEM/BMAH PROGRAM GRADUATION REQUIREMENTS:

- Mandatory STEM Summer Programs (must attend the entire time) – Entering Grade 9: STEP Up to STEM - 2 weeks, Entering Grade 10: STEM Summer Summit - 1 week, Entering Grade 11: STEM Summer of Service – 24 hours
- Mandatory STEM/BMAH Summer Reading Assignments – Every summer entering Grades 9 - 12
- Participation in TWO STEM/BMAH-related competitions (Congressional App Design Challenge & others)
- Students and Families must attend STEM/BMAH Family Night Events OR Saturday Weekend Events.
- These events occur in the evenings and on weekends. Dates will be communicated in advance.
- Mandatory Participation and Completion of the off campus STEM/BMAH Job Shadowing Experiences Program (Grade 9 – 6 required, Grade 10 – 4 required, Grade 11 – 1 required, Grade 12 – 1 required)
- Mandatory Completion of a STEM/BMAH Internship (Summer after Grade 11 or Fall of Grade 12)
- **Students are expected to carry a FULL COURSE SCHEDULE AT THE STEM/BMAH SCHOOL, IN THE STEM/BMAH PROGRAM for all four years of high school.** If students have fulfilled all STEM/BMAH and HS graduation requirements:
  - They have the opportunity to complete their internship during the fall semester of Grade 12 during the school day if scheduling allows AND/OR
  - Students also have the opportunity to attend an institution of higher education to take classes not offered at the high school level
- Students must maintain a 2.8 GPA and good citizenship to remain in the STEM/BMAH Program. Students will be placed on academic probation and/or good citizen contracts if they are not maintaining these standards and then be exited from the program. Students MUST complete all academic and additional requirements noted above. Students will be exited from the program at the conclusion of any academic year for non-compliance with program requirements. Students may be exited immediately for serious violations including those resulting in suspension and/or charges being filed with the criminal justice system.
- Students exiting the magnet program MUST return to their home school. They are not eligible to apply for an out of area transfer to remain at the STEM/BMAH school.
- Students must fully participate in the STEM/BMAH Success Mentorship Program. Juniors & Seniors will serve as mentors and Freshmen - Sophomores will serve as mentees.

**NOTE: Students are committed to the four year program of study in the STEM/BMAH Magnet School & Program and should consider this upon accepting their seat in the program.** Before you make your commitment, please consider: your desire to remain at your home school (your school assigned by address), your desire to remain with friends, the rigorous workload of the STEM/BMAH programs, magnet bus transportation, and the required program of study, including the additional requirements of the program BEFORE making your commitment to the STEM/BMAH High School Program. Students will not be transferred out of the program unless there are extenuating circumstances including but not limited to family relocation, medical circumstances, or other qualifying considerations. As noted, students must also maintain academic and good citizenship standing to remain in the program.

# GRADE 9

## Summer I

*Summer Program I experience for Rising 9<sup>th</sup> Graders Accepted into STEM Magnet High School – 1 week  
Summer I Reading Assignment (3 assignments with reading Getting Things Done for Teens by David Allen*

## 9<sup>th</sup> Grade

### Fall Semester

PD	A Day	B Day
1 A1	Problem/Project Based Learning Explorations I [STEM] (Global Citizen)	Principles of Engineering [STEM]
1 A2	H US History Hybrid (w/online component) [STEM]	
2	<b>World Language I</b> TEACHER: French I - TEACHER: French II - AP - Spanish I - Spanish II - Spanish III - German I- AP -	<b>Honors or AP Math I</b> TEACHER: Alg I - Kelly Guarnieri TEACHER: Daily Geo Alg II Camuse TEACHER: Alg. 2 / geo hybrid - M. Hymowitz and M. Smith TEACHER: Pre Calc - Reddan or Dobry TEACHER AP Calc 1: TEACHER AP Calc 2:  *open algebra 2/geometry hybrid*
3	Honors Systems Science A [STEM] (5 sections)	AP Computer Science Principles [STEM]
4	Honors English 9	<b>Elective Period (Band, Orchestra, Chorus, AVID, etc.)</b>

## 9<sup>th</sup> Grade

### Spring Semester

PD	A Day	B Day
1 A1	Problem/Project Based Learning Explorations I [STEM]	Principles of Engineering [STEM]
1 A2	H US History Hybrid (w/online component) [STEM]	
2	World Language I French I - AP Spanish I - Spanish II - Spanish III - German I - AP	Honors or AP Math I Daily Geo/Alg. 2 Pre Calc - AP Calc -
3	Honors Systems Science A [STEM]	AP Computer Science Principles [STEM]
4	Honors English 9	Elective Period (Band, Orchestra, Chorus, AVID, etc.)

**NOTE:** In the academic schedules that follow, [STEM] denotes a course for which students are cohorted.

# GRADE 10

## Summer II

*Summer Program II experience for Rising 10<sup>th</sup> Graders – 1 Week & Summer II Reading Assignment*

## 10<sup>th</sup> Grade

### Fall Semester

PD	A Day	B Day
1 A1	Problem/Project Based Learning Explorations II [STEM]	Honors or AP US Government NON COHORTED <i>(H) -</i> <i>AP -</i>
1 A2	Photo Dig [STEM]	
2	World Language II <i>French II -</i> <i>Spanish II -</i> <i>German II -</i>	Honors or AP Math II <i>(H) Pre-Calc: Reddan or Dobry</i> <i>AP Calc 1:</i> <i>AP Calc 2:</i>
3	(H) Systems Science B [STEM] <i>(5 sections)</i>	STEM Pathway Class I [STEM] STEM Pathway Class I [STEM] <i>(H) Earth/Planetary Systems - z</i> <i>(H) CS Math/Science Modeling -</i> <i>(H) Nanotech/Material Science -</i> <i>(H) Digital Electronics or (digital design) - *</i> <i>AP Env. Science -</i>
4	Honors English 10 NON COHORTED	Elective Period (Band, Orchestra, Chorus, AVID, etc.)

## 10<sup>th</sup> Grade

### Spring Semester

PD	A Day	B Day
1 A1	Problem/Project Based Learning Explorations II [STEM]	Honors or AP US Government
1 A2	Photo Dig [STEM]	
2	World Language II	Honors or AP Math II
3	Honors Systems Science B [STEM]	STEM Pathway Class I [STEM]
4	Honors English 10	Elective Period (Band, Orchestra, Chorus, AVID, etc.)

**NOTE:** In the academic schedules that follow, [STEM] denotes a course for which students are cohorted.

# GRADE 11

## Summer III

*Summer Program III experience for Rising 11<sup>th</sup> Graders – 1 Week & Summer III Reading Assignment*

## 11<sup>th</sup> Grade

### Fall Semester

PD	A Day	B Day
1	Honors or AP World History [STEM] NON COHORTED <i>AP -</i> <i>(H) -</i>	Honors or AP Math III <i>(H) Pre-Calc:</i> <i>AP Calc 1:</i> <i>AP Calc 2:</i>
2	World Language III or Elective <i>French III -</i> <i>AP French -</i> <i>Spanish III -</i> <i>Spanish IV -</i> <i>AP Spanish -</i> <i>German III -</i> <i>AP German -</i>	STEM Pathway Class II [STEM] [Green Tech] <i>H. Environment and Society -</i> <i>[Engineering] CAT North</i> <i>[Nanotechnology] AP Physics I and II -</i> <i>[Computer Science] AP Computer Science A -</i> <i>[Earth Space] (H) Earth and Space Missions -</i>
3	AP Science <i>AP Chemistry -</i> <i>AP Biology -</i> <i>AP Environmental Media</i> <i>AP Environmental Science -</i> <i>AP Physics -</i>	<b>BLOCK SCHEDULED:</b> [STEM] <i>Problem/Project Based Learning Explorations III:</i> <i>Community Challenge [STEM] - Comm II -</i> <i>STEM Policy [STEM] - Policy -</i>
4	Honors or AP English 11 <i>AP Lang -</i> <i>(H) English 11 -</i>	

## 11<sup>th</sup> Grade

### Spring Semester

PD	A Day	B Day
1	Honors or AP World History [STEM]	Honors or AP Math III
2	World Language III or Elective	STEM Pathway Class II [STEM]
3	AP Science	Elective Period (Band, Orchestra, Chorus, AVID, etc.)
4	Honors or AP English 11	STEM Elective Period ( addtl STEM Pathway Class , addtl Science, addtl Math, etc.)

**NOTE:** In the academic schedules that follow, [STEM] denotes a course for which students are cohorted.

# GRADE 12

## Summer IV

### STEM Internship & Summer IV Reading Assignment

## 12<sup>th</sup> Grade

### Fall Semester

PD	A Day	B Day
1	<b>AP Social Studies</b> <i>AP Human Geo -</i> <i>Hon. Social Innovation -</i> <i>Hon. Social Issues -</i>	Honors or AP Math IV ( <u>must take Calculus</u> by Grade 12) <i>AP Calc 1:</i> <i>AP Calc 2:</i> <i>Diff Eq/Linear Algebra/ Calc III</i>
2	World Language IV or Elective <i>AP French -</i> <i>Spanish IV -</i> <i>AP Spanish -</i> <i>AP German -</i>	STEM Capstone [STEM] <i>[Green] RDA Green Tech -</i> <i>[Computer Science] RDA CS -</i> <i>[Nanotech] RDA Nano/Earth Space -</i> <i>RDA Engineering - CAT North or RDA</i>
3	<b>AP Science or Honors Science Elective</b> <i>AP Chemistry -</i> <i>AP Biology -</i> <i>AP Environmental -,</i> <i>AP Physics -</i>  *student option is to take Honors pathway science choices instead of an AP course	Elective Period (Band, Orchestra, Chorus, AVID, etc.)
4	Honors or AP English 12 <i>AP Lit -</i> <i>(H) English 12 -</i>	STEM Elective Period (Higher Ed, addtl STEM Pathway Class etc.)  *STEM capstone seminar*

## 12<sup>th</sup> Grade

### Spring Semester

PD	A Day	B Day
1	AP Social Studies	Honors or AP Math IV (must take Calculus by Grade 12)
2	World Language IV or Elective	STEM Capstone [STEM]
3	AP Science or Honors Science Elective	Elective Period (Band, Orchestra, Chorus, AVID, etc.)
4	Honors or AP English 12	STEM Elective Period (Higher Ed, addt'l STEM Pathway Class etc.)
<b>STEM Choice</b>	Hon. Social Innovation -	Hon. Social Innovation -

**NOTE:** In the academic schedules that follow, [STEM] denotes a course for which students are cohorted.

# NCHS STEM Pathways of Study

Pathway	Grade	Pathway Sequence	Course Name
<b>Earth &amp; Space Systems</b> Elective Suggestions: <ul style="list-style-type: none"> <li>• Mathematical Modeling</li> <li>• Robotics</li> <li>• Engineering CAD</li> <li>• AP Physics I &amp; II</li> <li>• Social Innovation</li> </ul>	10	Pathway I	Honors Astronomy
	11	Pathway II	Advanced Earth & Space Missions
	12	Pathway III	STEM Earth & Space Systems Capstone – Research & Data Analysis (RDA)
<b>Computer Science &amp; Theoretical Applied Mathematics</b> Elective Suggestions: <ul style="list-style-type: none"> <li>• Robotics</li> <li>• Digital Design</li> <li>• Social Innovation</li> </ul>	10	Pathway I	Honors Mathematical & Scientific Modeling
	11	Pathway II	AP Computer Science A (STEM)
	12	Pathway III	STEM Computer Science & Applied Mathematics Capstone
<b>Materials Science &amp; Nanotechnology</b> Elective Suggestions: <ul style="list-style-type: none"> <li>• Robotics</li> <li>• Social Innovation</li> </ul>	10	Pathway I	Honors Materials Science & Honors Nanotechnology Explorations
	11	Pathway II	AP Physics I or AP Physics C
	12	Pathway III	STEM Materials Science & Nanotechnology Capstone – Research & Data Analysis (RDA)
<b>Engineering</b> Elective Suggestions: <ul style="list-style-type: none"> <li>• Robotics</li> <li>• Engineering CAD</li> <li>• Social Innovation</li> </ul>	10	Pathway I	Digital Design & Intro. to Robotics
	11	Pathway II	CATN Level I (CAD/Elec/PrecMachine/NRM) Environmental Engineering - NRM
	12	Pathway III	CATN Level II (CAD/Elec/PrecMachine/NRM) OR STEM Engineering Capstone – Research & Data Analysis (RDA)
<b>Green Technologies</b> Elective Suggestions: <ul style="list-style-type: none"> <li>• Robotics</li> <li>• Social Innovation</li> </ul>	10	Pathway I	AP Environmental Science - cohorted
	11	Pathway II	Advanced Environment & Society - cohorted
	12	Pathway III	STEM Green Technologies Capstone – Research & Data Analysis (RDA)

### After School Opportunities

Walking Wellness | Fitness for Life | Foundations of Art |  
Health SM1 or SM2 | STEM College and Scholarship Seminar