

Courses & Days

Monday

CAD & Lego Designs
Critical Thinking
Honors Algebra A
Introduction to JAVA Programming
Neuroscience for Kids
Pre-Algebra A
Writing for Literature

Tuesday

Arduino Programming
Cool Chemistry
Do You Love to Debate?
Mega History
Non-Routine Problem Solving

Wednesday

Honors Algebra B
The Incredible Human Body
Intermediate Java Programming
MathCounts Training Camp
Pre-Algebra B
Worlds of Science

Thursday

3D Modeling and Animation
Crazy Biology
Honors Geometry
Super Smart Machines

Friday

Lincoln Douglas Debate

Saturday

Create Your Own Business
Creative Writing
Mock Trial
Programming 101 with Python 3



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ACADEMY
After
HOURS
...thinking for the future...

Fall Session, 2018
October 8th to December 15th

Russell Davis
Principal

3D Modeling and Animation

Thursdays (Grades 5-8)

This course uses techniques in modeling, material generation, and key framing with 3D Studio Max. Components of the course include modeling (deformations), material generation, key framing (morphing), and rendering with video output for playback on a computer. 3D Studio Max (sometimes called 3DS Max or just MAX) is a 3D computer graphics and animation software program.

Arduino Programming

Tuesdays (Grades 5-8)

Students will learn the basics of programmable electronics using Arduino. Students apply techniques and tools for building with Arduino for DIY electronics projects, and they explore the fields of engineering, Internet of Things, robotics, art, and design. Through these hands-on projects, students will learn basic programming along with useful constructs; in particular, they will learn about program flow and control, basic serial communication, inputs and outputs, and variables and memory.

CAD & Lego Designs

Mondays (Grades 5-8)

Students will use solid modeling, an efficient method, as an introduction to the design process. Students learn basic sketching skills to develop designs, drafting techniques, and use Autodesk Inventor Professional software to design and model a Lego piece. Students will also utilize sophisticated software features and descriptive geometry to increase design efficiency that will optimize design editing. Students will create their own Lego design and will learn about 3D printing technologies.

Cool Chemistry

Tuesdays (Grades 6-8)

This laboratory hands-on course will excite students when they learn how and why various chemical phenomena work. They will perform mini experiments to see why fireworks display so many colors, investigate what colors make up ordinary ink, experience the power of atmospheric pressure, learn what makes light sticks work, watch how you can boil water at room temperature or in a paper cup, and many others! Each session will begin with a brief lesson describing the scientific principles that will be witnessed that day before conducting the fascinating experiments. This chemistry class will be sure to create a reaction! Materials Fee: \$10.00

Crazy Biology

Thursdays (Grades 5-8)

In this course we will take a look at the wild world of biology, looking at the basics of this life science as it pertains to the world of the most bizarre and interesting organisms on the planet! Materials Fee: \$10.00

Create Your Own Business

Saturdays (Grades 6-8)

Students will work collaboratively in cooperative groups to create their own businesses. Students will acquire understanding of the cost, licensing and advertising aspects of entrepreneurship. Students will design a product or create the service for their business. Students will tackle issues pertaining to name, location and type of business. They will also identify the best method to sell their products and services. Participants will enhance writing, analytical, speaking, public presentation, marketing, interviewing, Microsoft Office Suite and general business skill sets.

Creative Writing

Saturdays (Grades 5-8)

This introductory writing workshop focuses on the reading, discussion and revision of students' short fiction and poetry. Students will be introduced to models of fiction and poetry and will use these models to develop their own creative pieces. Students will enhance their storytelling skills and learn how to capture a reader's attention while finding their own, unique voice. Topics covered will include character, setting, point of view, imagery, and poetic forms. Students will collaborate to compile an anthology of student writing composed during the course. No prior creative writing experience is necessary.

Critical Thinking: Reading, Writing, and Games

Mondays (Grades 5-7)

Critical thinking is important for everyone. We all use thinking processes constantly and we should be able to consider problems, reason and debate in a logical way. Students will practice reading and writing techniques to help them to problem solve and think more critically, plus learn ways to do so while playing games.

Do You Love to Debate?

Tuesdays (Grades 5-6)

This course develops the debate skill sets which include public speaking, note taking, research and listening. Students will learn how to execute impromptu and persuasive speeches. Debate has the potential to impact most aspects of a student's life as it provides an exceptional chance for students to cultivate and become proficient at life skills of oral communication and critical thinking.

Honors Algebra A

Mondays (Grades 6-8)

This course emphasizes the development of problem solving skills, all of which are important for the SAT. Topics covered include linear and quadratic equations, inequalities, exponents, radicals, and polynomials. Knowledge of pre-algebra, including operations with positive and negative numbers, is expected.

Honors Algebra B

Wednesdays (Grades 6-8)

This course emphasizes the development of problem-solving skills within the context of mathematics applied to science. Topics covered include graphing, linear and quadratic equations, inequalities, logarithms, algebraic trigonometry, and polynomials. Knowledge of pre-algebra, including operations with positive and negative numbers, is expected.

Honors Geometry

Thursdays (Grades 6-8)

This is a formal Geometry course offered to students who have a strong aptitude in mathematics. Topics covered include angles, parallel lines and transversals, triangles, polygons, circles, perimeter and area, similarity and congruence, trigonometry, solids, surface area, and volume. The emphasis of this course is the development of problem-solving skills related specifically to problems in two or three-dimensional space.

Scholarships Available

Please visit our website to learn about scholarship opportunities:

<http://www.bergen.org/aah>

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<http://www.bergen.org/aah>

The Incredible Human Body

Wednesdays (Grades 5-8)

Does the human body fascinate you? We'll learn common anatomy terminology, examine the body's structure and function, and discover a greater appreciation and understanding of the marvelous complexity of the human body. We'll dive into hands-on experiences like mapping out our muscles, building our own skeleton, and simulating the circulatory and nervous systems. You'll also learn about how keep each system healthy, including how your immune system fights sicknesses.

Intermediate Java Programming

Wednesdays (Grades 6-8)

Intermediate Java teaches the object-oriented paradigm of the Java programming language. Prerequisite: Students must have successfully completed Introduction to Java.

Introduction to Java Programming

Mondays (Grades 6-8)

Introduction to Java Programming introduces students to computer programming techniques using the Java Programming language. Students will learn the structure, syntax, and the object-oriented programming paradigm of Java.

Lincoln-Douglas Debate

Fridays (Grades 7-8)

Lincoln-Douglas debate (LD Debate, or LD) is a one-on-one debate. Sometimes also called values debate, it places a heavy emphasis on logic, ethical values, and philosophy. LD is an excellent pathway to learn argumentation, logic, and research skills. This course is designed to provide comprehensive preparation for competitive debate. It carefully balances instruction, activities, practice rounds, and case studies. Students develop solid foundations in both debate and philosophy. Activities focus on implementing concepts. Expertly critiqued practice rounds play a key role, and students will receive personalized coaching.

PLEASE VISIT:
<http://www.bergen.org/aah>

MathCounts Training Camp

Wednesdays (Grades 5-8)

MATHCOUNTS® is a math enrichment and competition program for middle school students involving a series of fun and engaging contests up to the national level. This course motivates and challenges students as they develop strong math skills for the competitions. The class will cover team-building, communication, and rapid response, as well as the MATHCOUNTS® topics: Counting, Probability, Statistics (Mean, Median, Mode), Patterns, Pythagorean Theorem, Area, Three-Dimensional Geometry, Proportions/Ratios/ Percents, Algebraic Equations, and Number Theory.

Mega History

Tuesdays (Grades 6-8)

Today people face dramatic new challenges on a global scale, just as science offers new tools with exciting potentials. Both the problems and the solutions are complicated, complex and connected across the sciences. This course invites students on an epic journey from the Big Bang to the future. Weaving together the social and physical sciences, the course gives students a framework for studying the really big picture in high resolution. Students will examine the connections between past, current, and future events. They will learn to put together the tools to help them tackle the opportunities emerging in a world that is changing at an accelerating rate.

Mock Trial

Saturdays (Grades 6-8)

Students in the Mock Trial course develop a greater understanding of the law and of the trial system in the United States. The course prepares them for middle school mock trial tournaments based on criminal cases. Topics include: basic knowledge of an attorney's responsibilities and of court procedures, preparing an assigned case from both the prosecution and defense positions, assuming the roles of witnesses and attorneys, and presenting the case in the mock trial during the final class.

Neuroscience for Kids

Mondays (Grades 5-8)

This course will take students on a tour of the brain, spinal cord, neurons and the senses, exploring neuroscience through the anatomy and physiology. Aided by brain models and computer-generated demonstrations, students will learn through experiments, simulations, and games in order to understand the relationship between the brain and specific behaviors and experiences that humans share.

Non-Routine Problem Solving

Tuesdays (Grades 5-8)

Students learn how to solve problems in number theory, logic, algebra, and geometry. Students work with experienced coaches and instructors in small, collaborative teams. They improve their problem-solving abilities by tackling challenges that involve creative thinking; they also learn strategies that can be applied to any kind of research. They are prepared to proceed beyond MathCounts to local, state, national, and international math competitions.

Pre-Algebra A

Mondays (Grades 5-7)

In this course we will explore mathematical concepts to prepare for algebra studies, including algebraic expressions, integers, equations, inequalities, decimals, fractions, ratios, proportions, percents, probability, area, and volume.

Pre-Algebra B

Wednesdays (Grades 5-7)

In this course we will explore mathematical concepts to prepare for algebra studies, including algebraic expressions, integers, exponents and square roots, number theory, decimals, fractions, equations and inequalities, ratios, conversions, rates, and basic statistics.

Programming 101 with Python 3!

Saturdays (Grades 6-8)

Learning to code interesting programs is probably the most fundamental skill of the future. Python, is a great teaching language that is also very useful to professionals. Learn the basics of I/O (Input/Output), flow control (conditional statements and tests), loops and iterations, the use of functions, parameters, and returns, the use of data types. Advanced topics may include exception handling, objects and classes. Students will learn by designing and writing their own programs. No pre-requisites.

Scholarships Available

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Super Smart Machines

Thursdays (Grades 5-8)

Since the first robot story, people have imagined computers that can think for themselves. Today artificial intelligence (AI) is the programming at the cutting edge of robotics, autonomous cars and drones, medical diagnosis, airline scheduling, business decision-making, character and image recognition, stock exchange predictions — and many more! Students will explore the field of artificial intelligence, learning about approaches such as expert systems, neural networks, and path finding algorithms. They will apply AI techniques in programming projects such as designing expert computer game opponents and designing virtual robots that can navigate around obstacles. Basic programming skills in Scratch or Python are recommended as pre-requisites.

Worlds of Science

Wednesdays (Grades 5-8)

In this course, students will explore sciences like biology, chemistry and physics. Each class will begin with an exciting and interesting science demo which is a platform to dramatically “show” a scientific phenomenon and “tell” students about its underlying principles. Each demo prompts students’ curiosity and develops both their critical-thinking and problem-solving skills. Students then design and perform experiments to further explore the scientific phenomenon and analyze data related to the underlying principles. Students will learn about the process of scientific experimentation, research skills, data collection, and analysis, and will gain experience in explaining and presenting their results. Materials Fee: \$10.00

Writing for Literature

Mondays (Grades 7-8)

Using various genres, this class will teach you the skills and techniques for analyzing, discussing, and writing about literature. Students will respond to the works both through class discussion and in-class writing. You will then get individual feedback to improve your writing skills. This is an ideal class for students who want to improve their writing or who want to get some experience with the kind of writing found in the new SAT.

PLEASE VISIT:

<http://www.bergen.org/aah>

The Academy After Hours Program is an outreach to area students seeking to pursue advanced work in pure sciences, humanities, mathematics and technology. Accomplished faculty members instruct the specialized courses. Several emphasize team/project work. In response to student requests, we constantly create new offerings. Proper placement is highly recommended because a few selections are sequential. Each course is designed for optimum student/teacher ratio, and is filled on a first-come, first-served basis. Students study in cutting edge technology facilities.

Course Dates are as follows:

Mondays: (4:30 PM - 7PM)

October 8, 15, 22, 29; November 5, 12, 19, 26.

Tuesdays: (4:30 PM - 7PM)

October 9, 16, 23, 30; November 13, 20, 27; December 11.

Wednesdays: (4:30 PM - 7PM)

October 10, 17, 24; November 7, 14, 28; December 5, 12.

Thursdays: (4:30 PM - 7PM)

October 11, 18, 25; November 1, 15, 29; December 6, 13.

Fridays: (4:30 PM - 7PM)

October 12, 19, 26; November 2, 16, 30; December 7, 14.

Saturdays: (9:30AM - 12PM)

October 13, 20, 27; November 3, 17; December 1, 8, 15.

Courses are **\$300** each

Visit our website for online registration:

<http://www.bergen.org/aah>

Make checks payable to:

Bergen County Technical Schools

Send registration form and payment to:

Dr. Ken Mayers
Bergen County Academies
200 Hackensack Avenue
Hackensack, NJ 07601

Please note: Refunds will be issued only if requested prior to the first day of class, and are subject to a \$50 processing fee.

For further information please call Grace:
201-343-6000 ext. 2286

Courses by STEAM Category

<i>Science courses</i>	Day (Mon-Sat)				
Cool Chemistry		T			
Crazy Biology				R	
Human Body			W		
Neuroscience for Kids	M				
Worlds of Science			W		
<i>Tech & Engineering</i>					
3D Modeling				R	
Arduino Programming		T			
CAD & Lego	M				
Intermediate Java			W		
Introduction to JAVA	M				
Programming 101 Python					S
Super Smart Machines				R	
<i>Arts & Humanities</i>					
Create Your Own Business					S
Creative Writing					S
Critical Thinking	M				
Do You Love to Debate?		T			
Lincoln-Douglas Debate				F	
Mega History		T			
Mock Trial					S
Writing for Literature	M				
<i>Mathematics</i>					
Honors Algebra	M		W		
Honors Geometry				R	
MathCounts Training			W		
Non-Routine Problems		T			
Pre-Algebra	M		W		