



CAROL MARTIN GATTON ACADEMY OF MATHEMATICS AND SCIENCE IN KENTUCKY



2010-11 SCHOOL PROFILE

Learn more about our atypical approach to education online at www.wku.edu/academy.



YOU WILL NOTICE THESE QR-CODES (QUICK READER) THROUGHOUT THIS YEAR'S PROFILE. THESE CODES CAN BE SCANNED WITH AN APP FOR YOUR MOBILE PHONE THAT WILL PROVIDE YOU WITH ADDITIONAL INFORMATION ABOUT THE GATTON ACADEMY AND THE EXCITING THINGS TAKING PLACE HERE. SCAN THE CODE AT LEFT FOR A COMPREHENSIVE OVERVIEW OF OUR SCHOOL AS SHARED BY STAFF AND STUDENTS.

OVERVIEW

The Carol Martin Gatton Academy of Mathematics and Science in Kentucky is a public, residential high school for juniors and seniors who have demonstrated a desire to pursue advanced careers in science, technology, engineering, and mathematics (STEM) fields in addition to exceptional educational performance.

Instead of spending their junior and senior years in traditional high schools, students enroll in the Gatton Academy and live in Schneider Hall, a uniquely dedicated residence hall. Taking courses offered by Western Kentucky University, their classmates are fellow Gatton Academy students and WKU undergraduate students.

The program, which began in 2007 with 120 students and now numbers 126, is Kentucky's only full tuition-paid, residential program for students who are gifted in mathematics and science. The Gatton Academy is one of sixteen state-supported residential high schools with an emphasis in STEM subjects in the United States. The Gatton Academy is an institutional member of the National Consortium of Specialized Secondary Schools of Mathematics, Science, and Technology.

MISSION

Western Kentucky University houses the Carol Martin Gatton Academy of Mathematics and Science in Kentucky. The mission is to offer an appropriately challenging education in a residential program for bright, highly motivated Kentucky high school students who have demonstrated interest in pursuing careers in science, technology, engineering, and mathematics.

The Gatton Academy also seeks to provide its students with the companionship of peers; to encourage students to develop the creativity, curiosity, reasoning ability, and self-discipline that lead to independent thought and action; and to aid students in developing integrity that will enable them to benefit society.

The goal is to enable Kentucky's exceptional young scientists and mathematicians to learn in an environment which offers advanced educational opportunities, preparing them for leadership roles in the Commonwealth of Kentucky.

A STRATEGIC PARTNERSHIP WITH WKU

Western Kentucky University is uniquely positioned to host the Gatton Academy on its campus. WKU's vision is to become a leading American university with international reach. WKU prepares students to be productive, engaged leaders in a global society.

A Gatton Academy transcript includes grades earned during a student's first two years of high school at a traditional institution and two years of coursework at the Gatton Academy through WKU. To determine a cumulative GPA, both unweighted and weighted, we use the following guidelines: One hour of high school credit is assigned for every three hours college hours.; After determining the quality points from both the previous high school and WKU, a cumulative GPA is calculated on a 4.0 scale; To create a weighted GPA, a quality point is added for each course taken through the Gatton Academy via WKU that is part of the core curriculum (mathematics, science, social studies, English, or foreign language).



GATTON ACADEMY NAMED TO NEWSWEEK'S LIST OF 20 "PUBLIC ELITE" HIGH SCHOOLS

Each spring, *Newsweek* recognizes the top six percent of public schools as measured by the Challenge Index ratio devised by Washington Post Education Columnist Jay Matthews. The ratio is the number of Advanced Placement and/or International Baccalaureate tests taken by all students at a school in the previous year divided by the number of graduating seniors. This year, *Newsweek* recognized 1,600 schools from across the country. The Challenge Index is designed to recognize schools that challenge average students. Top-performing schools, such as The Gatton Academy, were excluded from the regular list of well-performing high schools because of their exceptional quality. Specialized schools are, instead, acknowledged by The Public Elites. The Gatton Academy marks the only occasion in which a Kentucky high school has been recognized as a member of The Public Elites, and is one of only twenty schools nationwide on the list for 2010.



SEE THE OTHER SCHOOLS NAMED AMONG THE NATION'S MOST ELITE IN 2010.

STUDENT SELECTION

The Gatton Academy admits approximately 60 Kentucky residents each year with equal division between male and female students for a total of 126 students. Gatton Academy applicants are high school sophomores who have completed at least Geometry, Algebra I, and Algebra II by the end of their sophomore year. Approximately one-quarter of students admitted to the Gatton Academy have completed coursework in Trigonometry, Calculus, or more advanced mathematics. Close to 200 students apply for the limited number of available openings in each class. On average, students admitted to the Gatton Academy have ACT scores eight points higher than graduating Kentucky high school seniors.

Students are selected through a competitive admissions process based upon several criteria. SAT and/or ACT scores complement a student's academic grades from ninth and tenth grades to demonstrate preparedness for university-level study at WKU. Since the Gatton Academy is a residential school environment, family support of a student's decision to apply is also considered.

In a holistic approach to selecting students who will benefit from an advanced living/learning environment, the admissions committee seeks students who possess maturity, passion, and individuality—key characteristics in creating a vibrant community of learners. Interest in advanced careers in science, technology, engineering, and math as well as personal experiences are shared through student responses to application essay questions, recommendations from teachers, administrators, and community members, and interviews.

Gatton Academy and WKU staff members as well as educators, business leaders, and other program stakeholders from throughout Kentucky work together to evaluate the annual pool of applicants. Reviewers examine both statistical and anecdotal data from the academic and personal accomplishments of each applicant in order to determine the potential for success in the academic and social communities the Gatton Academy affords. In order to assist school districts from throughout the state and to create a student body representative of Kentucky's diversity, the admissions committee also considers extenuating circumstances, geographic, and other demographic variables in its review process.



STANDARDIZED TEST PERFORMANCE

ACT Composite Scores

Class of 2008
Class of 2009
Class of 2010
Class of 2011
Class of 2012

Sophomore Admission

27.1*
26.5
28.8
28.8
29.0

Junior Assessment

n/a**
28.2
29.9
30.0

Senior Exit

29.2
29.2
31.1

ACT statistics are compiled using the best composite score reported for each student.

**Members of the Class of 2008 were admitted during their junior year.*

***Kentucky began administering the ACT to all public high school juniors in 2008.*

NATIONAL MERIT PERFORMANCE

Class of 2008
Class of 2009
Class of 2010
Class of 2011

Semifinalists

6
4
12
11

The merit status is based upon the PSAT, which students complete in October of the junior year.



KENTUCKY'S MOST RIGOROUS LEARNING ENVIRONMENT

Most students enrolling at the Gatton Academy bring with them very high grade points averages (typically 3.9 on a 4.0 scale) from their traditional high schools. As expected with taking more rigorous coursework at WKU, their average GPA tends to drop by a small measure. Gatton Academy graduates will compete with students from traditional high schools for admission (and scholarships) into four-year colleges and universities. The Gatton Academy calculates an unweighted GPA based on a combination of a student's prior high school grades and those grades earned while studying at the Gatton Academy. A weighted GPA is also calculated, giving Gatton Academy courses in math, science, social studies, language arts, and foreign language an additional quality point.

ACADEMIC PERFORMANCE

The Gatton Academy uses a number of academic success indicators to track the overall academic performances of students during their program of study. Some of these indicators include student GPA, scores on the Commonwealth Accountability Testing System, and post-admissions ACT/SAT/PSAT scores.

Gatton Academy students generally outperform their high school peers in all categories. Gatton Academy students received the highest average ACT score on the 2008 Kentucky state assessment of public high school juniors with a composite of 29.9--exceeding their peers by over ten points. They also generally outperform their traditional college peers taking the same coursework. This level of excellence occurs while the students participate in authentic college research as well as service learning expectations students are expected to meet.

SCHOLARLY RESEARCH

One of the added values of study at the Gatton Academy is the chance to engage in real, undergraduate-level research projects while at WKU. Gatton Academy students are encouraged to participate in research both during the academic year and through internships during the summer months. Research conducted on-campus during the academic year allows students to pursue their specific scientific interests beyond the curriculum, working under the supervision of a university professor. The Gatton Academy's strategic partnership with Western Kentucky University benefits our students by offering abundant research opportunities throughout campus. Gatton Academy students have access to research opportunities in any of the following departments: Agriculture; Architecture and Manufacturing Sciences; Biology; Chemistry; Engineering; Geography and Geology; Mathematics and Computer Science; Physics and Astronomy; and Psychology.

Gatton Academy students are encouraged to use their research experiences as a springboard for scientific competitions and to contribute to the scientific community. Our students are encouraged to enter the Siemens Competition and the Intel Science Talent Search, both STEM-based research competitions for high school students. Furthermore, our students have the chance to present their research at local, regional, and national conferences. Some students have even published scholarly papers with their research professors. Being a part of a university research project, working in a WKU lab, and developing strong relationships with professors is part of the unique value that can be a part of the Academy experience.

Two semesters or more of research, it should be noted, is a requirement for all Gatton students who wish to receive the recognition of Honors or Honors with Distinction at graduation.

JACOB HAVEN HONORED AS DEPARTMENT OF DEFENSE SMART SCHOLARSHIP WINNER

Jacob Haven, a 2010 alumnus from Bourbon County, was named a recipient of the Department of Defense (DoD) SMART Scholarship, a nationally-competitive award valued at over \$300,000. Haven is the second Gatton Academy student to be awarded the SMART Scholarship. The SMART Scholarship (Science, Mathematics, and Research for Transformation scholarship) was established in 2006 by the Department of Defense to support undergraduate and graduate students pursuing degrees in Science, Technology, Engineering, and Mathematics fields and to increase the number of civilian scientists and engineers doing research in Department of Defense laboratories. Haven is continuing his studies at Stanford University during the 2010-11 school year, while researching with the Space and Missile Systems Center during the summer.



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MORE ABOUT
HOW WE ARE
REDEFINING
S.M.A.R.T.

ACADEMIC OVERVIEW

The academic rigor of the Gatton Academy is meant to challenge students to excel at the highest levels, while drawing connections between the classroom and real-world research options. Students are engaged in a core of math and science university courses that are supplemented with additional coursework in arts, humanities, and other elective subjects. The Gatton Academy curriculum provides students with a foundation for future study in a variety of STEM areas. Each entering junior will be required to complete 12 courses in STEM subjects during their Academy study as well as additional classes in the arts, humanities, and social sciences necessary to meet the Kentucky Department of Education's pre-college curriculum. In addition, students are able to explore the academic offerings of WKU through other coursework. Students are required to attend the weekly Gatton Academy seminar, which offer rotating topics each semester and is led by professors, Academy staff members, and other professionals.

CURRICULUM

Mathematics (3-4 Courses)

Students will be assigned their introductory math course based on prior coursework and placement exam scores administered by the WKU Department of Mathematics.

Math 117	Trigonometry (3 Hours)
Math 136	Calculus I (4 Hours)
Math 137	Calculus II (4 Hours)
Math 237	Multivariable Calculus (3 Hours)
Math 307	Introduction to Linear Algebra (3 Hours)
Math 371	Computational Problem Solving (3 Hours)

Core Sciences (5 Courses)

Students must complete a minimum of one course from each core science area and at least one two-course introductory sequence.

Biology 120/121	Biological Concepts: Cells, Metabolism, and Genetics/Lab (4 Hours)
Biology 122/123	Biological Concepts: Evolutions, Diversity, Ecology/Lab (4 Hours)
Comp. Sci. 180	Computer Science I/Lab (4 Hours)
Comp. Sci. 241	Computer Science II (3 Hours)
Chemistry 120/121	College Chemistry I/Lab (5 Hours)
Chemistry 222/223	College Chemistry II/Lab (5 Hours)
Physics 255/256	University Physics I/Lab (5 Hours)
Physics 265/266	University Physics II/Lab (5 Hours)

STEM Electives (3-4 Courses)

Students may complete their four required STEM electives and associated labs in the following areas: agriculture; architecture; astronomy; biology; chemistry; computer science; engineering; geography; geology; health sciences; manufacturing; mathematics; meteorology; physics; and/or psychology.

English (2 Courses)

Students who score 29 or higher on the English portion of the ACT or a 670 on the critical reading portion of the SAT receive three hours of credit for English 100 and begin with English 200.

English 100	Introduction to College Writing (3 Hours)
English 200	Introduction to Literature (3 Hours)
English 300	Writing in the Disciplines (3 Hours)

Seminar (3 Courses)

Academy of Math & Science 175	Junior Seminar (1 Hour)
Academy of Math & Science 175	Senior Seminar (1 Hour)
Academy of Math & Science 175	Senior Seminar (1 Hour)

Pre-College Requirements (As Needed)

Students will complete additional pre-college requirements as mandated by the Commonwealth of Kentucky and their sending institutions based on previous coursework in their freshman and sophomore years.

History 119	Western Civilization to 1649 (3 Hours)
History 120	Western Civilization Since 1649 (3 Hours)
History 241	United States History Since 1865 (3 Hours)
Political Science 110	American National Government (3 Hours)
Physical Education 100	Health and Wellness (3 Hours)
Art 100	Art Appreciation (3 Hours)
Music 120	Music Appreciation (3 Hours)
Foreign Languages	(Chinese, French, German, Ancient Greek, Hebrew, Italian, Japanese, Spanish and Swahili)

Electives

After the first semester, Gatton Academy students in good standing are able to take up to 19 credit hours free of charge, including optional electives. Students wishing to take more than 19 must seek the permission of the Coordinator: Academic Services.

Graduation Requirements

In order to graduate with a diploma from the Gatton Academy students must meet the following requirements:

1. Pass all 12 required STEM courses with a grade of "C" or higher.
2. Pass all other coursework with a grade of "C" or higher.
3. Complete the pre-college curriculum as required by the Commonwealth of Kentucky and their sending institution.
4. Maintain a cumulative WKU/Gatton Academy GPA of 2.75 or higher.

Students wishing to graduate with honors must meet the following requirements:

1. Pass all 12 required STEM courses with a grade of "C" or higher.
2. Pass all other coursework with a grade of "C" or higher.
3. Complete the pre-college curriculum as required by the Commonwealth of Kentucky and their sending institution.
4. Maintain a cumulative WKU/Gatton Academy GPA of 3.4 or higher.
5. Complete 15 hours of service learning each semester.
6. Participate in a two-semester minimum independent or faculty-sponsored research project.

CLUBS AND ORGANIZATIONS

ACADEMY ORGANIZATIONS

Academy Ambassadors and Avatars

Anime Club

Beta Club

Book Club

Chess Club

Coed YMCA

Community Developers

Culinary Club

Film Society

Forensics

Future Business Leaders of America

Gay-Straight Alliance

Green Club

Habitat for Humanity

Math Club

Mock Trial

Odyssey of the Mind

Soccer Club

Spirit Club

Student Government Association

**TEAMS (Tests of Engineering Aptitude,
Mathematics, and Science)**

WKU ORGANIZATIONS

Baptist Campus Ministry

Big Brothers/Big Sisters

Big Red Marching Band/Color Guard

Bowling Green/Western Symphony Orchestra

Campus Activities Board

HOSA

Men's and Women's Chorus

STUDENT LIFE

The Gatton Academy Student Life Team strives to create a nurturing living/learning environment that allows each student to reach their potential in all areas of development. Programming focuses on adult support for students in transition and crises; experiences that support positive growth in personal, social, educational and ethical leadership; healthy lifestyles, responsible decision making, and service to others. This is accomplished through a supportive residential community; residential programming, workshops, retreats, weekend programming and other special events; extra-curricular activities and recreation; and leadership and service opportunities.

Schneider Hall and the community within are designed specifically for academically talented adolescent students. The Gatton Academy Student Life Team lives in the residence hall, where they provide daily, adult support for each student while fostering smaller, community-based experiences that help facilitate student personal growth and social responsibility.

Because an essential feature of the Gatton Academy is its community, all students are required to live in the residence hall even if their homes are within commuting distance. Gatton Academy students are housed in Florence Schneider Hall which serves as a supervised home-away-from-home on the WKU campus. The Gatton Academy features a Student Life Team to student ratio of 1:14-far greater than traditional undergraduate housing. This allows Resident Counselors the opportunity to serve as a surrogate parent, mentor, disciplinarian, confidant, and counselor to their small group of students.

The Office of Academic Services provides students with a range of resources to assist them in formulating plans and making decisions during their academic career at the Gatton Academy. Counselors help by meeting with students to support the development of time management, self management, and study skills. Academic counseling also includes helping students find the confidence and the time to take advantage of the built-in academic resources, tutoring, faculty office hours, and group study opportunities.

Personal counseling services are provided by the Assistant Director, Counseling Services. This individual provides confidential counseling for personal issues that affect Gatton Academy students academically, socially, or emotionally. Stress, adjustment to academy life, personal identity and growth, homesickness, and relationship issues are typical concerns. Counselors individually advise and collaborate with students on issues of college admission and scholarships beginning in the spring of the junior year. During the senior year, counselors write individual letters of recommendation for each of their students as requested and support students in the decision-making process.



DISCOVER THE
FUN BEHIND OUR
FIRST HUMAN
CHESS MATCH.

6 GATTON ACADEMY STUDENTS ADMITTED TO PRESTIGIOUS CHINESE LANGUAGE FLAGSHIP



Four current Gatton Academy students and two alumni are participating in a program to facilitate highly-needed, fluent speakers of foreign languages. WKU has received a federal grant from the National Security Education Program's Language Flagship to start an intensive Chinese Language program at WKU. As one of eight funded programs in the country, WKU offers Gatton Academy students the chance to join this incredible language training program that funds students' opportunities to study Chinese intensively at summer workshops, to take Chinese courses on-campus during the academic year, and to travel abroad to China during the university's winter-term. By enrolling students from across all majors and disciplines—including the sciences, economics, business, and literature—Flagship programs mainstream language study into a student's curriculum, ensuring that they will be capable of functioning in their profession in the target language.

GATTON ACADEMY STUDENTS SHAPE POLICY IN NATIONAL YOUTH POLICY SUMMIT

Four Gatton Academy Class of 2011 members participated in the 2010 National Youth Policy Summit held in Keystone, Colorado. Joining thirty of the nation's brightest future leaders in science and math, the student participants addressed the critical issue of energy innovation. The students assembled in Colorado for a week-long discussion to



engage energy representatives from industry, government, and non-profit sectors. These young leaders specifically focused on what economic opportunities exist nationally to address the issue of energy innovation. Students spent the spring semester in preparation for the conference by conducting original research. Students were assigned research topics to address energy innovation. Students were additionally assigned a stakeholder organization to research and represent their point-of-view.

13 GATTON ACADEMY STUDENTS TO PARTICIPATE IN NATIONAL GENOMICS RESEARCH INITIATIVE

Twelve Gatton Academy first-year students have been invited to participate in the Howard Hughes Medical Institute (HHMI) National Genomics Research Initiative this fall at WKU. Students will study under the tutelage of two outstanding WKU faculty members. Dr. Rodney King, associate professor of biology and director of the WKU Biotechnology Center, and Dr. Claire Rinehart, professor of biology and director of the Bioinformatics and Information Science Center (BISC), each have expertise in virology, biotechnology and bioinformatics and will use their experience to engage freshmen students in the yearlong HHMI program in scientific discovery.



OUR CLASS OF 2010 STUDENTS REFLECT ON THE UNIQUENESS OF THEIR ACADEMY EXPERIENCE.

GATTON ACADEMY ADMINISTRATION

Dr. Julia Roberts
Executive Director

Mr. Tim Gott
Director

Mr. Corey Alderdice
Assistant Director
Admissions and Public Relations

Dr. Pokey Bowen
Assistant Director
Counseling Services

Ms. April Gaskey
Coordinator
Academic Services

Ms. Beth Hawke
Coordinator
Residence Life

Mr. Derick Strode
Coordinator
Research, Internships, and
Scholarships

Ms. Meilssa Schultz
Assistant Coordinator
Residence Life

Ms. Keely P'Pool
Coordinator
Study Skills

Mrs. Julie Fryia
Office Associate

Mrs. Nita Rice
Office Associate

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