

# **Jackson River Governor's School for Science, Mathematics, and Technology**

Dabney S. Lancaster Community College

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<http://jrjs.dslcc.edu/>

## **Application for Admission 2008-2009**

**Mission Statement:** The Jackson River Governor's School gives motivated high school juniors and seniors in seven school divisions the opportunity to participate in an innovative and challenging program of studies in mathematics, science, and technology. The school provides an opportunity to work with faculty who have distinguished themselves as college teachers in an environment that nurtures and stimulates students with a genuine interest in science and mathematics. Research projects, internships, visiting professors, and field trips make students aware of the connection of the curriculum to the "real world."

## Overview

The Jackson River Governor's School is a regional public school for motivated high school students, primarily in grades 11 and 12, who want to go beyond the traditional high school offerings in science, mathematics, and technology.

Students come from five school divisions in western Virginia: Alleghany County, Bath County, Botetourt County, Buena Vista City, and Covington City.

Governor's School students come to the Dabney S. Lancaster Community College campus for morning classes in math, science, and technology, and return to their home high school for afternoon classes in English, social studies, and electives. They also have opportunities to participate in extra-curricular activities such as clubs, athletics, and performing arts at their high schools.

Governor's School differs in many ways from a traditional high school. Some of the differences include daily schedule, pace of work, group work, grading, equipment availability, collegiate atmosphere, and collegial relationships with faculty members. Students develop a peer group whose members have high intellectual abilities and aptitude which creates a level of challenge and camaraderie not available in their home schools. Students use sophisticated laboratory and computer equipment at DSLCC, the cost of which is prohibitive to their home schools.

## Curriculum Overview

The curriculum of the Jackson River Governor's School emphasizes the connections between disciplines.

The JRGS experience begins with the junior-year Advanced Chemistry course which incorporates many aspects of Chemistry, including traditional General Chemistry topics, and topics from Physical Chemistry and Organic Chemistry. Students gain a strong background in research by using advanced instrumentation available at DSLCC and completing rigorous laboratory experiments. Statistical analysis is an integral part of the studies. Technology, particularly as it relates to field studies and presentations is woven into the curriculum. The required mathematics course work prepares students for the rigorous study of physical science in the senior year.

The senior year curriculum approaches calculus and physics as an integrated curriculum. Again, technology is tightly interwoven into the course of study, with emphasis on computer programming.

Brief course descriptions are given below. The detailed DSLCC "Course of Study" for all courses is available upon request, as it is revised each semester.

## Prerequisites

Before entering the Jackson River Governor's School all students should have completed Algebra I and II, Geometry, and Biology with a grade of A or B.

## Orientation

All entering students participate in two orientation sessions. An evening session in June introduces both students and parents to the campus, the program, and the academic expectations of the Governor's School. During an all-day session in August, incoming students participate in orientation activities with the intent of building group cohesiveness and internalizing the purposes/objectives of the Jackson River Governor's School. They also analyze their learning styles and develop an Individualized Education Plan.

## Junior Year Courses

### Advanced Chemistry

CHM 111-112 (4+4 DSLCC credits)  
1 high school credit ("advanced")

Advanced chemistry is an advanced college level chemistry course. This course explores the fundamental laws, theories, and mathematical concepts of chemistry, particularly those of interest to fields of other sciences and of engineering. This course includes laboratory experience to introduce and apply those concepts. Topics studied include: structure and states of matter, atomic theory, types of reactions, thermodynamics, equilibrium, gas laws, and descriptive chemistry. The chemistry SOL will be given at the end of the GSC course. This course also includes stoichiometry, equilibrium, acid-base chemistry, kinetics, oxidation-reduction reactions and electrochemistry.

### Statistics

MTH 240 (3 DSLCC credits)  
1/2 high school credit ("advanced")  
AP Exam (Statistics) optional

This course presents an overview of statistics, including descriptive statistics, elementary probability, probability distributions, estimation, hypothesis testing (one-sample and two sample case for mean and proportion), correlation, and simple linear regression. It also introduces selected nonparametric testing procedures.

### Precalculus

MTH 163-164 (3+3 DSLCC credits)  
1 high school credit

This course provides an interdisciplinary look at mathematics. Precalculus topics include: college algebra topics, matrices, trigonometric and circular functions, trigonometric identities, exponents and logarithms, mathematical modeling, conic sections, higher degree polynomials, rational and irrational algebraic functions, and sequences and series. Emphasis

will be given throughout Precalculus to demonstrating the connections between academic disciplines as they relate to math.

### **Introduction to Scientific Research**

NAS 195 (2 DSLCC credits)

No high school credit

Students will conduct an original science research project and present the results as a formal scientific paper, an oral presentation, and a science fair project.

### **Senior Year Courses**

#### **College Physics**

PHY 201-202 (4+4 DSLCC credit)

1 high school credit ("advanced")

This course teaches fundamental principles of physics including mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics.

#### **Calculus**

MTH 173-174 (5+5 DSLCC credits)

1 high school credit ("advanced")

This is a modern unified course in analytic geometry and calculus including functions, limits, derivatives, differentials, indefinite integrals, definite integrals, and applications.

#### **Electives**

Other electives are available via distance learning for students who have advanced beyond the typical Junior and Senior Year courses. Students in the 2007-2008 school year are taking Software Design and Vector Calculus.

### **Special Opportunities**

#### **Competitions & Service Projects**

The Governor's School participates in a number of state and national competitions, including the Western Virginia Regional Science Fair, Envirothon, Virginia Junior Academy of Science, and the Team America Rocketry Challenge. Students also participate as volunteers in the Earth Day program at Douthat State Park in April, and help with Tech Prep Career Exploration Day in March.

#### **Internships**

Governor's School students have the opportunity to pursue an internship in May. The purpose of the program is to expose students to the applications of science, mathematics, and technology in area businesses, industries, governmental agencies, health care organizations, and universities. The intern's mentor coordinates and supervises the student's activities during his/her internship. Projects and/or problem-solving situations may be included in the internship experiences. At the conclusion of the internship, the mentor evaluates both the student and the program.

## Independent Studies

Governor's School students have the opportunity to pursue an independent study project under the direction of DSLCC faculty or another advisor who can meet the criteria for community college adjunct faculty. In addition, some students are able to take distance learning courses through other community colleges in Virginia.

## Admission

Participants in the Jackson River Governor's School must complete an application process. A selection committee from each high school reviews the applications and selects finalists and alternates from their school.

Home-schooled and private school students are not eligible to attend the Governor's School unless they enroll full-time in a local public high school. They must apply through the high school they will be attending while participating in the Governor's School.

Application packets are available in each guidance office, and an Adobe Acrobat (".pdf") file is available for downloading on the Internet (see Appendix). Applications are due by March 15 each year. Participants will be notified by April 10 of the same calendar year.

Applicants should

- Be currently enrolled in 10th grade. However, any student who meets the prerequisites for attendance is encouraged to apply.
- Have completed Algebra I and II, Geometry, and Biology with a grade of A or B
- Exhibit above-average performance in most subjects, and superior performance in mathematics and science,
- Exhibit evidence of intellectual curiosity, analytical thinking and imagination
- Show evidence of aptitude, potential, and strong interest in science and mathematics
- Demonstrate the extent to which he/she has taken advantage of opportunities or have overcome lack of opportunities in the local school or community
- Have a sincere desire to attend the Jackson River Governor's School.

Selection criteria considered by the screening committee includes, but is not limited to:

Mathematics course grades	Algebra I, Geometry, Algebra II, Trigonometry (B or above)
Science course grades	Earth Science, Biology, Chemistry (B or above)
Stanford/9 scores (if available)	90th percentile or above
DAT scores (if available)	abstract reasoning score above average
PSAT/SAT scores	90th percentile or above
Attendance	Consistent
Teacher and Counselor recommendations	High praise

# Jackson River Governor's School for Science, Mathematics, and Technology

## How to Apply

This booklet contains all the forms you need to apply to the Jackson River Governor's School.

### Checklist

- 1. Complete the Student Application Form
- 2. Ask your guidance counselor to complete the
  - Student Record Form
  - School Recommendation Form
- 3. Ask three of your teachers to write recommendations for you using the Faculty Recommendation Forms. Complete the designated lines at the top of the form before you give the form to your teacher. Be sure to allow at least one week for the teacher to complete the recommendation.
  - Math Teacher \_\_\_\_\_
  - Science Teacher \_\_\_\_\_
  - Third Teacher \_\_\_\_\_
- 4. Return the application and ask your teachers to return their recommendations to your guidance counselor. Your counselor will forward your completed application packet to the school selection committee.

Completed applications are due to your guidance counselor by

\_\_\_\_\_

# Jackson River Governor's School for Science, Mathematics, and Technology

## Student Application

Name \_\_\_\_\_ Social Security No. \_\_\_\_\_  
Last First Middle

School \_\_\_\_\_ School Division \_\_\_\_\_

Home Address \_\_\_\_\_  
Street/P.O. Box City State Zip

Telephone \_\_\_\_\_ Email \_\_\_\_\_  
Area Code Number

Parent's or Guardian's Name \_\_\_\_\_

Address & Telephone (if different from above)

\_\_\_\_\_ Street/P.O. Box City State Zip

Telephone \_\_\_\_\_  
Area Code Number

Please thoughtfully respond to the following questions. Use a word processor to type your answers on separate sheets of paper and attach them to this application.

1. What past experience have you had in working with mathematics and science? How have you demonstrated your interest in these areas?
2. List any academic awards you have received in science, math, or other area.
3. Describe your life ten years from now.
4. Why do you want to participate in the Governor's School?
5. How do you think you can contribute to the Governor's School program?
6. Who was the greatest mathematician or science? Why do you feel this way?

I, the parent/guardian of \_\_\_\_\_ have  
Name of Participant

read the Jackson River Governor's School admission materials and permit him/her to be nominated for admission to the Jackson River Governor's School. I grant permission for a transcript of my child's school record to be sent to the Jackson River Governor's School as necessary.

\_\_\_\_\_  
Signature of Parent/Guardian

\_\_\_\_\_  
Date

# Jackson River Governor's School for Science, Mathematics, and Technology

## Student Record

To be completed by the student:

Student Name \_\_\_\_\_  
Last First Middle

Social Security No. \_\_\_\_\_ Grade \_\_\_\_\_ Sex \_\_\_\_\_ Birthdate \_\_\_\_\_

Parent's or Guardian's Name \_\_\_\_\_

Home Address \_\_\_\_\_  
Street/P.O. Box City State Zip

Telephone \_\_\_\_\_  
Area Code Number

To be completed by the guidance counselor:

School \_\_\_\_\_ School Division \_\_\_\_\_

Guidance Counselor \_\_\_\_\_ Phone \_\_\_\_\_

*Standardized Test Scores:*

PSAT \_\_\_\_\_  
Date Scores (Please list Math and Verbal separately)

Other\* \_\_\_\_\_  
Date Test Scores

\*such as DAT, SAT, ACT, Stanford/9, AP scores

*Achievement Record:* GPA \_\_\_\_\_ Class Rank \_\_\_\_\_

***Please attach a copy of the student's transcript.***

Courses student is currently enrolled in that do not appear on transcript:

Math \_\_\_\_\_ English \_\_\_\_\_

Science \_\_\_\_\_ Social Studies \_\_\_\_\_

Foreign Language \_\_\_\_\_ Other \_\_\_\_\_

Signature of Guidance Counselor \_\_\_\_\_ Date \_\_\_\_\_

# **Jackson River Governor's School**

## **for Science, Mathematics, and Technology**

### School Recommendation

To be completed by the student:

Student Name \_\_\_\_\_  
Last First Middle

To be completed by the guidance counselor:

School \_\_\_\_\_ School Division \_\_\_\_\_

Guidance Counselor \_\_\_\_\_ Phone \_\_\_\_\_

Summary of student's evaluation:

Recommendation of Principal and Counselor:

Circle response:

Low High  
1 2 3 4 5 6 7 8 9 10

Principal \_\_\_\_\_ Date \_\_\_\_\_

Counselor \_\_\_\_\_ Date \_\_\_\_\_

# Jackson River Governor's School for Science, Mathematics, and Technology

## Faculty Recommendation

Math  Science  Other

To be completed by the student:

Student Name \_\_\_\_\_  
Last First Middle

High School \_\_\_\_\_ Grade \_\_\_\_\_

To be completed by the faculty member making the recommendation:

Please rate the candidate in the following categories by circling the appropriate number based on the following scale

:  
0 = not observed 1 = needs improvement 2 = average 3 = above average 4 = excellent

The student

shows desire and curiosity for learning .....	0	1	2	3	4
has aptitude and potential for successful study in math and science .....	0	1	2	3	4
shows persistence when faced with challenges .....	0	1	2	3	4
is self-disciplined in establishing and reaching goals .....	0	1	2	3	4
interacts well with other students and teachers .....	0	1	2	3	4
has developed problem-solving skills .....	0	1	2	3	4
has acquired laboratory skills .....	0	1	2	3	4
demonstrates skill in asking inquiry-type questions .....	0	1	2	3	4
demonstrates good study skills and work habits .....	0	1	2	3	4
demonstrates acceptable written work .....	0	1	2	3	4

*Comments (use back side):*

What do you think is the student's potential for success at the Governor's School?  
Please add any other comments about this student which will help the selection committee make a decision.

*Recommendation:*

Recommend Highly \_\_\_\_\_ Recommend \_\_\_\_\_ Recommend with Reservations \_\_\_\_\_

\_\_\_\_\_  
Signature Subject Area Date

Please return to the designated counselor by \_\_\_\_\_

# Jackson River Governor's School for Science, Mathematics, and Technology

## Faculty Recommendation

Math  Science  Other

To be completed by the student:

Student Name \_\_\_\_\_  
Last First Middle

High School \_\_\_\_\_ Grade \_\_\_\_\_

To be completed by the faculty member making the recommendation:

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has developed problem-solving skills .....	0	1	2	3	4
has acquired laboratory skills .....	0	1	2	3	4
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\_\_\_\_\_  
Signature Subject Area Date

Please return to the designated counselor by \_\_\_\_\_

# Jackson River Governor's School for Science, Mathematics, and Technology

## Faculty Recommendation

Math  Science  Other

To be completed by the student:

Student Name \_\_\_\_\_  
Last First Middle

High School \_\_\_\_\_ Grade \_\_\_\_\_

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has acquired laboratory skills .....	0	1	2	3	4
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demonstrates acceptable written work .....	0	1	2	3	4

*Comments (use back side):*

What do you think is the student's potential for success at the Governor's School?  
Please add any other comments about this student which will help the selection committee make a decision.

*Recommendation:*

Recommend Highly \_\_\_\_\_ Recommend \_\_\_\_\_ Recommend with Reservations \_\_\_\_\_

\_\_\_\_\_  
Signature Subject Area Date

Please return to the designated counselor by \_\_\_\_\_