

**2010-2011**  
**North Carolina School of Science and Mathematics**  
**Distance Education Course Descriptions**

**SCIENCE**

**Honors Forensic Science** (Fall & Spring semesters)

This course focuses on the application of basic biological, chemical and physical science principles and technological practices to the purposes of justice in the study of forensic science as it relates to judicial and civil issues. The class is designed around authentic performance assessments with students working in teams to solve crimes using scientific knowledge and reasoning. Through lab work, students will apply inference and deductive reasoning to the investigation and potential solving of crimes. It involves all areas of science including biology, anatomy, chemistry, physics, and earth science with an emphasis in complex reasoning and critical thinking. In addition, students must incorporate the use of technology, communication skills, language arts, art, family and consumer science, mathematics and social studies.

**Prerequisite:** Completion of Biology I and completion of Algebra II; passing score on the course entrance examination covering topics in Biology I and Algebra II.

**Materials requirements:** A \$25 per student consumable materials fee will be invoiced at the start of the semester. Each student must have a graphing calculator (TI-83 or TI-84 ) that they may take home.

**Materials:** Books must be supplied by your school

Some equipment on loan from NCSSM; schools are responsible for materials. A list of additional needed materials will be provided.

**Site requirements:** Students must have computer access to Internet in DL classroom and Facilitator assistance to set up labs.

**Recommended weight:** Honors

**Honors Genetics and Biotechnology** (Fall & Spring semesters)

What do crime scene investigations, agriculture, medicine, conservation biology and manufacturing have in common? They have all been revolutionized by biotechnology! Almost every day we read about new developments in the rapidly changing fields of genetics and DNA-based biotechnology. In this course, students will first explore classical genetics and then move onto examining the structure and function of DNA and proteins. With state-of-the-art laboratory experiments, students will analyze DNA fingerprints from a crime scene, genetically transform bacteria and investigate their own DNA! Finally, they will survey the applications of biotechnology in many diverse fields and discuss in depth how biotechnology is changing our daily lives and our future. With the decline of traditional manufacturing in North Carolina, biotechnology is positioned to become a vital part of North Carolina's 21<sup>st</sup> century economy.

**Prerequisite:** Completion of Biology I with a B or higher and completion of Algebra II.

**Materials requirements:** A \$20 per student consumable materials fee will be invoiced at the start of the semester. Books and curricular materials on loan from NCSSM

**Site requirements:** Students must have computer access to Internet in DL classroom and Facilitator assistance to set up labs.

**Recommended weight:** Honors

**Honors Physics** (Fall semester only)

This course is a hands-on, inquiry based introductory course which combines both "conceptual" and "mathematical" approaches to learning physics. The course covers the laws of mechanics and their applications. Students will learn to solve real problems by investigating real systems. Investigations will cover physics topics that are fun and engaging for the students. Students will design experiments, use accurate measuring equipment and construct and test conclusions based on accurate data.

**Prerequisite:** Completion of Algebra II with a C or higher

**Materials:** A \$20 per student consumable materials fee will be invoiced at the start of the semester. Each student must have a graphing calculator (TI-83, TI-84 or TI-89) that they may take home. Books and curricular materials on loan from NCSSM

**Site Requirements:** Students must have computer access to Internet in DL classroom

**Recommended weight:** Honors

## MATHEMATICS

### **Honors Calculus/AP Calculus AB Course (year-long)**

This course is rich in technology and applications, and prepares students for the AP Calculus AB Exam. AP Calculus develops the student's understanding of the concepts of calculus (functions, graphs, limits, derivatives and integrals) and provides experience with methods and applications. The course encourages the geometric, numerical, analytical, and verbal expression of concepts, results, and problems.

**Prerequisite:** Completion of Precalculus with an "A" and the recommendation of the math teacher. Students should have a strong background in algebra and functions, including polynomial, exponential, logarithmic, and trigonometric. Students should also have knowledge of basic graphing calculator functions ... graphing an equation, determining a Window, use of the built-in Intersect, Zero, & Value functions. A summer assignment will be sent to those students that NCSSM feels will be successful and recommend to the course. The completion of the summer assignment is mandatory.

**\*\*Schools will be asked to supply the following student information: PSAT score, EOC Algebra II (raw or adjusted score), Precalculus teacher recommendation**

**Material requirements:** Each student must have a graphing calculator (TI Inspire, TI-89 preferred, TI-83+, TI-84 acceptable) that they may take home. Books and curricular materials on loan from NCSSM

**Site requirements:** Students must have computer access to Internet in DL classroom

**Recommended weight:** Honors first semester, AP second semester

### **Honors Precalculus Algebra (Fall semester only)**

In conjunction with the Honors Precalculus Trigonometry, this course is designed to provide skill development in order to prepare students for NCSSM Distance Education year-long Honors Calculus/AP Calculus course sequence. Precalculus topics include: (functions power, polynomial, rational, radical, exponential and logarithmic) and their transformations, data analysis as it applies to functions, iteration, sequences and series and parametric equations. A heavy emphasis will be placed on problem solving.

**Prerequisite:** Students should have the following: an "A" in Algebra II (a 4 on the EOC), recommendation by the Algebra II teacher

**Material requirements:** Students must have a graphing calculator (TI Nspire, TI-89 preferred, TI-83+, TI-84 acceptable) that they may take home. Books and curricular materials on loan from NCSSM

**Site requirements:** Students must have computer access to Internet in DL classroom

**Recommended weight:** Honors

### **Honors Precalculus Trigonometry (Spring semester only)**

In conjunction with the Honors Precalculus Algebra this course is designed to provide skill development in order to prepare students for NCSSM Distance Education year-long Honors Calculus/AP Calculus course sequence. Precalculus topics include: the six trigonometric functions and their inverses, transformations, sinusoids, equation solving, identities, solving triangles, both right and oblique, polar graphs and parametric equations. A heavy emphasis will be placed on problem solving.

**Prerequisite:** Students should have the following: an "A" in Algebra II (a 4 on the EOC), recommendation by the Algebra II teacher

**Material requirements:** Students must have a graphing calculator (TI Nspire, TI-89 preferred, TI-83+, TI-84 acceptable) that they may take home. Books and curricular materials on loan from NCSSM

**Site requirements:** Students must have computer access to Internet in DL classroom

**Recommended weight:** Honors

### **Honors Statistics/AP Statistics (year-long)**

This year long course covers the content of a typical introductory college course in statistics. In colleges and universities, the number of students who take a statistics course is almost as large as the number of students who take a calculus course. (At least one statistics course is typically required for majors such as engineering, psychology, sociology, health science, mathematics, and business.) This course will be taught as two one-semester courses. The first semester will provide an overview and introduction to statistics, and introduce students to the major concepts and the tools for collecting, analyzing, and drawing conclusions from data. The second semester will extend the development of first

semester topics and prepare students for the AP exam. . **\*\*Schools will be asked to supply the following student information: PSAT scores- both Verbal and Mathematical, EOC Algebra II (raw or adjusted score), Algebra II teacher recommendation**

**Prerequisite:** Students must have completed a course beyond Algebra II with a C average or better and have satisfactory algebra skills. They must also possess strong verbal skills as well as sufficient mathematical maturity and quantitative reasoning ability.

**Material requirements:** Each student must have a TI-83+ or TI-84 (preferred) graphing calculator that they may take home. Books and curricular materials on loan from NCSSM

**Site requirements:** Access to a computer lab is required.

**Recommended weight:** Honors first semester, AP second semester

## HUMANITIES

### **Honors African American Studies (Spring semester only)**

This interdisciplinary course provides an introduction to African American history, literature, and culture. Students examine significant social, political, economic, and religious issues as well as issues of identity in the lives of African Americans from the sixteenth century to the present. In addition to readings in historical backgrounds and documents, students explore texts ranging from slave narratives, folktales, and spirituals to the works of writers, artists, and musicians during the Harlem Renaissance to contemporary works by such writers as Alice Walker and Henry Lewis Gates and filmmaker Spike Lee. Through a variety of assignments and activities, students continue to develop their skills in reading, speaking, and research, with special emphasis on the writing process.

**Prerequisite:** None

**Materials:** Books must be supplied by your school

**Site requirements:** Occasional student access to computer with Internet during class time

**Recommended weight:** Honors

### **Honors American Conflict: Cultural Studies and Composition (To be determined)**

Americans love their country. They see her potential and want her to be the best she can be—for in her success lies their own. Conflict arises when definitions of success diverge—studying and understanding these internal hostilities and differing opinions in history and accepting them helps them understand who they are as Americans and the conflicts which still swirl around them in the 21<sup>st</sup> Century.

Through readings, art, cartoons and film students will work together to develop an understanding of how conflict and the methods of addressing that conflict have shaped the American identity. How internal conflict and power struggles have been more transformative than wars in the understanding of what it means to live, work and exist in contemporary America. Some topics will include:

- Contact between the Native Americans and Puritans (it wasn't all pumpkin pie and Thanksgiving)
- The Debate Over Slavery (How you defend the indefensible?)
- The "Woman's Sphere" (Where exactly is a "woman's place"? Why?)
- Wealth, Work and Class Conflict (The Haves and the Have Nots)
- Japanese Internment and Cultural Identity (American Concentration Camps in the land of the free)
- Policy and Protest in the Vietnam War (What are we fighting for? Don't ask me...)

Students will explore these topics through analytical discussion, research and composition in a hybrid environment (IVC and online). Students should be self-motivated and interested in arguing with the teacher!

**Prerequisites:** Students must have taken civics. It would be helpful but not mandatory if they have taken U.S. History.

**Site requirements:** Computers with Internet access available during class. Access to *Ning.com*, *Pbwiki.com*, *Twitter.com*, *Blogger.com* or a social media classroom.

### **Mandarin Chinese I/ Mandarin Chinese II (year-long)**

Chinese I is designed to provide students with the fundamentals for learning to understand, speak, and begin to read and write Mandarin Chinese. During the first semester (Mandarin I), the course focuses on developing accurate pronunciation and tones, learning to understand the spoken language in context and developing a foundation of basic sentence patterns, questions and every day vocabulary. The writing system (radicals and stroke order) is introduced and computers are used to help students develop their character recognition skills.

The following link is to a newsletter that has an article about the value of studying Chinese. Students may find it valuable when making their course decisions.

<http://asiasociety.org/education-learning/chinese-language-initiatives>

**Prerequisite:** Recommendation by school counselor for Mandarin Chinese I; C or better in the first semester Chinese I course to continue to the Chinese II level in second semester

**Materials:** A small fee per **student** will be assessed for those schools that do not have their own calligraphy supplies. NCSSM will invoice the site. A fee of **\$20 per student** will be assessed for their consumable workbook and for the students' online account (NCSSM is picking up the majority of the cost for the online account.)

**Site requirements:** Student access to computer with Internet during class time. Computers must be installed with the following software **PRIOR** to the start of the school year: Microsoft's East Asian language support in Windows so as to enable simplified Chinese characters typing recognition, and Pinyininput typing pinyin with tone marks:

**Recommended weight:** General

### **Honors Ethics and Leadership (Fall semester only)**

This course is ideal for students interested in careers in Medicine, Business, or Psychology. Students will explore introductory philosophical ethical frameworks and their relationships to morality and decision making. Students will apply leadership and ethical theory to small scale issues of importance in schools (cheating, lying, stealing, and plagiarism) along with large scale modern ethical dilemmas such as euthanasia, organ donation, cloning and animal rights. Case studies in areas such as research policies involving humans, business practices, racism, genetics and global stewardship will help students develop a personal ethical framework.

**Prerequisite:** None

**Materials:** Books must be supplied by your school

**Site requirements:** Students must have computer access to Internet in DL classroom

**Recommended weight:** Honors

### **Honors Psychology (Fall & Spring semesters)**

This introductory course includes topics such as: developmental psychology, neuroscience of the human body, learning and memory, perception, stress and conflict, abnormal behavior, family interactions, how to understand and manage emotions, the nature of consciousness, and exploring the meaning of dreams. This course requires active class participation, and students are encouraged to relate the material in the course with their own life experiences. Guest lecturers will present topics of their particular expertise.

**Prerequisite:** None

**Materials:** Books must be supplied by your school

**Site requirements:** Occasional student access to computer with Internet during class time

**Recommended weight:** Honors

### **Honors US History/AP US History (year-long)**

This course examines critical issues in American history from the Colonial Era to the present such as race relations, ethnic tensions, conflict (both domestic and foreign), management-worker relations, the role of government in the economy and the lives of its citizens, and the meaning of democracy. Students are expected to analyze and critically review a variety of materials including texts, print and non-print primary sources, and interpretive readings. Emphasis is placed on developing writing and rhetoric skills. Preparation for the US History EOC test is also emphasized.

**Prerequisite:** **\*\*Schools will be asked to supply the following student information: PSAT score, EOC Civics test (raw or adjusted score), Social studies teacher recommendation**

**Materials:** Books and curricular materials on loan from NCSSM

**Site requirements:** Students must have computer access to Internet in DL classroom

**Recommended weight:** Honors first semester, AP second semester

# THE NORTH CAROLINA SCHOOL OF SCIENCE AND MATHEMATICS



## Distance Education **Fall 2010** Course Request Form

Name of School: \_\_\_\_\_ Date \_\_\_\_\_

Contact Person: \_\_\_\_\_ email \_\_\_\_\_ Phone \_\_\_\_\_

To earn course credit, students must be scheduled to attend the entire period. If your students cannot attend the entire scheduled time for a class, please do not select that class. Select the time period that best fits your school's schedule.

Questions? Call Karl Coleman (919) 416-2658 or Peg Kirk (919) 416-2632

Please use a separate sheet of paper for comments or other information you would like us to know in considering your request.

### Fall 2010

Select only one time slot per block	Select only one course per block	Please indicate the number of students registered for the selected course
<input type="radio"/> 7:45-9:15 <input type="radio"/> 8:00-9:30 <input type="radio"/> 8:15-9:45	<input type="radio"/> <b>Year Long:</b> Honors/AP US History <input type="radio"/> <b>Semester:</b> Honors Ethics & Leadership <input type="radio"/> <b>Semester:</b> Honors Forensic Science	
<input type="radio"/> 9:30-11:00 <input type="radio"/> 9:45-11:15 <input type="radio"/> 10:00-11:30	<input type="radio"/> <b>Semester:</b> Honors Genetics & Biotechnology <input type="radio"/> <b>Year Long:</b> Honors /AP Statistics <input type="radio"/> <b>Semester:</b> Honors Forensic Science <input type="radio"/> <b>Semester:</b> Honors Pre Calculus Algebra	
<input type="radio"/> 11:05-12:35 <input type="radio"/> 11:20-12:50 <input type="radio"/> 11:40-1:10	<input type="radio"/> <b>Year Long:</b> Honors/AP Calculus <input type="radio"/> <b>Semester:</b> Honors Psychology	
<input type="radio"/> 1:20-2:50 <input type="radio"/> 1:30-3:00 <input type="radio"/> 1:45-3:15	<input type="radio"/> <b>Semester:</b> Honors Physics <input type="radio"/> <b>Semester:</b> Honors Genetics & Biotechnology <input type="radio"/> <b>Year Long:</b> Mandarin Chinese I&II	

Requests are based on actual student registrations     YES     NO    (Please select one)

***Email this form to coleman@ncssm.edu or fax to (919) 416-2650  
by April 30, 2010 with the following:***

- 2010-2011 school calendar (or most recent calendar)
- 2010-2011 bell schedule (or most recent bell schedule)

# THE NORTH CAROLINA SCHOOL OF SCIENCE AND MATHEMATICS



## Distance Education **Spring 2011** Course Request Form

Name of School: \_\_\_\_\_ Date \_\_\_\_\_

Contact Person: \_\_\_\_\_ email \_\_\_\_\_ Phone \_\_\_\_\_

To earn course credit, students must be scheduled to attend the entire period. If your students cannot attend the entire scheduled time for a class, please do not select that class. Select the time period that best fits your school's schedule.

Questions? Call Karl Coleman (919) 416-2658 or Peg Kirk (919) 416-2632

Please use a separate sheet of paper for comments or other information you would like us to know in considering your request.

### Spring 2011

Select only one time slot per block	Select only one course per block	Please indicate the number of students registered for the selected course
<input type="radio"/> 7:45-9:15 <input type="radio"/> 8:00-9:30 <input type="radio"/> 8:15-9:45	<input type="radio"/> <b>Year Long:</b> Honors/AP US History <input type="radio"/> <b>Semester:</b> Honors Psychology <input type="radio"/> <b>Semester:</b> Honors African American Studies	
<input type="radio"/> 9:30-11:00 <input type="radio"/> 9:45-11:15 <input type="radio"/> 10:00-11:30	<input type="radio"/> <b>Semester:</b> Honors Genetics & Biotechnology <input type="radio"/> <b>Year Long:</b> Honors /AP Statistics <input type="radio"/> <b>Semester:</b> Honors Forensic Science <input type="radio"/> <b>Semester:</b> Honors Pre Calculus Trigonometry	
<input type="radio"/> 11:05-12:35 <input type="radio"/> 11:20-12:50 <input type="radio"/> 11:40-1:10	<input type="radio"/> <b>Year Long:</b> Honors/AP Calculus <input type="radio"/> <b>Semester:</b> Honors Ethics and Leadership	
<input type="radio"/> 1:20-2:50 <input type="radio"/> 1:30-3:00 <input type="radio"/> 1:45-3:15	<input type="radio"/> <b>Semester:</b> Honors Forensic Science <input type="radio"/> <b>Semester:</b> Honors Genetics & Biotechnology <input type="radio"/> <b>Year Long:</b> Mandarin Chinese I&II	

Requests are based on actual student registrations  YES  NO (Please select one)

***Email this form to coleman@ncssm.edu or fax to (919) 416-2650 by April 30, 2010 with the following:***

- 2010-2011 school calendar (or most recent calendar)
- 2010-2011 bell schedule (or most recent bell schedule)