

## Section 10.3 Guidance for Fourth Science Requirement – REVISED 11/02/09

### General Information about the Fourth Science

Under the new graduation rule, students who enter ninth grade in 2008-2009 and thereafter are required to complete four units of science. It is important to remember:

- **The fourth science course does not necessarily need to be taken in the student's fourth, or senior, year.**
- **The student's postsecondary plans should be discussed before fourth science courses are selected.**
- **Fourth science courses will count in the student's Hope Scholarship GPA calculation.**

Students have some flexibility in meeting the fourth science requirement for high school graduation. Courses can be selected from academic science courses or from approved career technology courses that meet science standards, listed below. Students focused on completion of a career pathway may use the approved courses to meet both the pathway AND the fourth science requirement.

In some cases, courses selected for the fourth science unit may be used to meet both the science and elective requirements, as illustrated in the examples below. Courses can be used to meet both science and elective requirements but they DO NOT earn two credits. Students cannot earn two credits for one course.

### Board of Regents Information

**The Board of Regents made changes in undergraduate admissions to require four units of science, rather than three, for students who graduate from Georgia high schools in 2012 or later.**

**The Board of Regents is in the process of identifying DOE courses that meet their admissions requirements for science. Students should consult their college for details about admissions. It is important that the student's postsecondary plans be discussed before a fourth science course is selected to assure that the student will meet the necessary admission requirements to the postsecondary institution of choice.**

**Some courses that meet BOR admission requirements are indicated with an asterisk (\*) on the list below. Additional courses will be added by the BOR on subsequent updates.**

### Fourth Science Course List

The list below includes academic and CTAE courses that meet the fourth science requirement for graduation. Additional courses may be included on subsequent updates.

**FOURTH SCIENCE COURSE OPTIONS**

<b>Course Number</b>	<b>Course Name</b>
01.46100 *	General Horticulture and Plant Science
02.42100 *	Animal Science Technology/Biotechnology
02.42200 *	Equine Science
02.42400	Veterinary Science
02.44100 *	Plant Science and Biotechnology
02.47100	Basic Agricultural Science and Technology
02.47500	Biotechnology
03.41100	Natural Resources Management
03.45100	Forest Science
03.45300	Wildlife Management
11.01600 *	AP Computer Science A
20.41710 *	Food & Nutrition Through the Lifespan
20.41810 *	Food Science
21.45100 *	Energy and Power Technology
21.45200	Foundations of Electronics
21.45300	Advanced AC and DC Circuits
21.45400	Digital Electronics
21.45700 *	Appropriate and Alternative Energy Technologies
21.47200	Engineering Applications
25.52100	Introduction to Healthcare Science
25.52200	Application of Therapeutic Services
25.56400	Emergency and Disaster Preparedness
25.56200	Concepts of Emergency Medicine
25.58000	Principles of Physical Medicine
25.58100	Concepts of Physical Medicine
25.58200	Rehabilitation in Physical Medicine
26.01300 *	Biology II
26.01400 *	Advanced Placement Biology
26.01500 *	Genetics
26.01800 *	International Baccalaureate Biology SL
26.01900 *	International Baccalaureate Biology HL
26.03100 *	Botany
26.05100 *	Microbiology
26.06100 *	Ecology
26.06110 *	Environmental Science
26.06200 *	Advanced Placement Environmental Science
26.06400 *	Advanced Genetics/DNA Research
26.07100 *	Zoology
26.07200 *	Entomology
26.07300 *	Human Anatomy and Physiology
40.02100 *	Astronomy
40.04100 *	Meteorology

Course Number	Course Name
40.05100 *	Chemistry I
40.05200 *	Chemistry II
40.05300 *	Advanced Placement Chemistry
40.05500 *	International Baccalaureate Chemistry SL
40.05600 *	International Baccalaureate Chemistry HL
40.06300 *	Geology
40.06400 *	Earth Systems
40.07100 *	Oceanography
40.08100 *	Physics I
40.08200 *	Physics II
40.08300 *	Advanced Placement Physics B
40.08410 *	Advanced Placement Physics C: Mechanics
40.08420 *	Advanced Placement Physics C: Electricity and Magnetism
40.08500 *	International Baccalaureate Physics SL
40.08600 *	International Baccalaureate Physics HL
40.08900 *	Advanced Physics Principles/Robotics
40.09100 *	Advanced Scientific Internship
40.09200 *	Advanced Scientific Research
40.09300	Forensic Science
40.09400 *	Chemical & Material Science Engineering
40.09500 *	International Baccalaureate Design Technology SL
40.09600 *	International Baccalaureate Design Technology HL
47.46600	Aviation Meteorology

Below are three scenarios to model how students can gain credit and meet requirements.

Student A takes the following courses in the areas of science and CTAE. Student A is taking the Engineering Career Pathway.

Science Requirement	Science Course	Requirement Met	Credit Awarded	CTAE Course	Requirement Met	Credit Awarded
1st Requirement	Biology	X	1	Foundations of Engineering and Technology	X	1
2nd Requirement	Physics	X	1	Engineering Concepts	X	1
3rd Requirement	Chemistry	X	1	<i>Engineering Applications</i>	X	0
4th Requirement	<i>Engineering Applications</i>	X	1	Research, Design, and Project Management	X	1
<b>Totals</b>		<b>4</b>	<b>4</b>		<b>4</b>	<b>3</b>

Student A has met the requirements for all four sciences and for the Engineering and Technology pathway utilizing *Engineering Applications*. This course met the requirements in both areas; however, only one credit was awarded to the student – in the area of science. No credit was awarded for Engineering Applications in the career pathway.

Note: The *Engineering Applications* course meets the high school fourth science graduation requirements for students enrolling in ninth grade for the first time in 2008-09 or later, but it does not meet Board of Regents science admission requirements for students who graduate from high school in 2012 or later.

Student B takes the following courses in the areas of science and CTAE. Student B is taking the Therapeutic Nursing Essentials Career Pathway.

Science Requirement	Science Course	Requirement Met	Credit Awarded	CTAE Course	Requirement Met	Credit Awarded
1st Requirement	Biology	X	1	Introduction to Health Science	X	1
2nd Requirement	Physical Science	X	1	Application of Therapeutic Services	X	1
3rd Requirement	Chemistry	X	1	Nursing Essentials	X	1
4th Requirement	<i>Human Anatomy &amp; Physiology</i>	X	1	<i>Human Anatomy &amp; Physiology</i>	Supports Area of Interest	0
<b>Totals</b>		<b>4</b>	<b>4</b>		<b>3</b>	<b>3</b>

Student B has met the requirements for all four sciences and for the Therapeutic Nursing Essentials Career Pathway. *Human Anatomy & Physiology* relates to the career pathway selected by the student.

Note: The *Human Anatomy & Physiology* course meets the high school fourth science graduation requirements for students enrolling in ninth grade for the first time in 2008-09 or later and also meets Board of Regents science admission requirements for students who graduate from high school in 2012 or later.

Student C takes the following courses in the areas of science and CTAE. Student C is taking the Agriscience Career Pathway.

Science Requirement	Science Course	Requirement Met	Credit Awarded	CTAE Course	Requirement Met	Credit Awarded
1st Requirement	Biology	X	1	Animal Science Technology/ Biotechnology	X	1
2nd Requirement	Physics	X	1	<i>Plant Science and Biotechnology</i>	X	0
3rd Requirement	Earth Systems	X	1	Basic Agricultural Science and Technology	X	1
4th Requirement	<i>Plant Science and Biotechnology</i>	X	1			
<b>Totals</b>		<b>4</b>	<b>4</b>	<b>3</b>		<b>2</b>

Student C has met the requirements for all four sciences and for the Agriscience Career Pathway utilizing *Plant Science and Biotechnology*. This course met the requirements in both areas; however, only one credit was awarded to the student – in the area of science. No credit was awarded in the career pathway. The student will now need one additional elective in their program of study in order to meet the 23 total credits needed for graduation.

**OR**

Student C takes the following courses in the areas of science and CTAE. Student C is taking the Agriscience Career Pathway.

Science Requirement	Science Course	Requirement Met	Credit Awarded	CTAE Course	Requirement Met	Credit Awarded
1st Requirement	Biology	X	1	Animal Science Technology/Biot echnology	X	1
2nd Requirement	Physics	X	1	Plant Science and Biotechnology	X	1
3rd Requirement	Environmental Science	X	1	Basic Agricultural Science and Technology	X	1
4th Requirement	<i>Botany</i>	X	1	<i>Botany</i>	Supports Area of Interest	0
<b>Totals</b>		<b>4</b>	<b>4</b>		<b>3</b>	<b>3</b>

Student C has met the requirements for all four sciences and for the Agriscience Career Pathway. Botany relates to the career pathway selected by the student.

Note: Both the *Plant Science and Biotechnology* and *Botany* courses meet the high school fourth science graduation requirements for students enrolling in ninth grade for the first time in 2008-09 or later and also meet Board of Regents science admission requirements for students who graduate from high school in 2012 or later.

Student D is not in a CTAE Pathway. Student D has chosen to take two years of Modern Language.

Science Requirement	Science Course	Requirement Met	Credit Awarded	Elective Course	Requirement Met	Credit Awarded
1st Requirement	Biology	X	1	French I	X	1
2nd Requirement	Physics	X	1	French II	X	1
3rd Requirement	Environmental Science	X	1	<i>Engineering Applications</i>	X	0
4th Requirement	<i>Engineering Applications</i>	X	1			
<b>Totals</b>		<b>4</b>	<b>4</b>		<b>3</b>	<b>2</b>

Student D has met the requirements for all four sciences and for the CTAE/Fine Arts/Modern Language category. *Engineering Applications* met the requirements in both areas; however, only one credit was awarded to the student in the area of science. No credit was awarded in the CTAE/Fine Arts/Modern Language category. The student will now need one additional elective in their program of study in order to meet the 23 total credits needed for graduation.

Note: The *Engineering Applications* course meets the high school fourth science graduation requirements for students enrolling in ninth grade for the first time in 2008-09 or later, but it does not meet Board of Regents science admission requirements for students who graduate from high school in 2012 or later.

In some cases, additional coursework in science may be required for admission at some postsecondary institutions. **The student's postsecondary plans should be discussed before fourth science courses are selected. Consult with the postsecondary institution regarding their specific requirements for admission.**

Student E takes the following courses in the areas of science and CTAE. Student E is taking the Agriscience Career Pathway and plans to attend a university upon graduation.

Science Requirement	Science Course	AREAS OF STUDY (III) Science Requirement Met	(III) Science Credits Awarded/ Required	Courses for AREAS OF STUDY (V) and/or (VII)	AREAS OF STUDY (V) and/or (VII) Requirement Met	AREAS OF STUDY (V) and/or (VII) Credit Awarded/ Required
1st Requirement	Biology	X	1	<i>Animal Science Technology/ Biotech.*</i>	X	0
2nd Requirement	Physics	X	1	Plant Science and Biotechnology*	X	1
3rd Requirement	Environmental Science	X	1	Basic Agricultural Science and Technology*	X	1
4th Requirement	<i>Animal Science Tech./ Biotech.*</i>	X	1	French I	X	1
				French II	X	1
				Math Support I	X	1
				Music Appreciation I	X	1
				Botany		1
<b>Totals</b>		<b>4 of 4</b>	<b>4 of 4</b>		<b>7 of 7</b>	<b>7 of 7</b>

Student E has met the requirements for all four sciences and for the Agriscience Career Pathway utilizing *Animal Science Technology/ Biotechnology*. This course met the requirements in both areas; however, only one credit was awarded to the student. The student fulfilled requirements for both Areas of Study (V) and (VII) in their individual Education and Career Plan in order to meet the 23 total credits needed for graduation and university admission.

Note: The *Animal Science Technology/ Biotechnology* course meets the high school fourth science graduation requirements for students enrolling in ninth grade for the first time in 2008-09 or later and also meets Board of Regents science admission requirements for students who graduate from high school in 2012 or later.