AGRICULTURAL COURSES
AT CASTLE HIGH SCHOOL

<table>
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<tr>
<th>Course</th>
<th>Code</th>
<th>Credits</th>
<th>Grade Level</th>
<th>Description</th>
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| Introduction to Agriculture, Food and Natural Resources | 5960/5960-2 | 2       | 9-12        | Introduction to Agriculture, Food and Natural Resources is highly recommended as a prerequisite to and a foundation for all other agricultural classes. The nature of this course is to provide students with an introduction to the fundamentals of agricultural science and business. Topics to be covered include: animal science, plant and soil science, food science, horticultural science, agricultural business management, landscape management, natural resources, agriculture power, structure and technology, leadership development, supervised agricultural experience and career opportunities in the area of agriculture, food and natural resources.  
• Recommended Grade Level: Grade 9  
• Recommended Prerequisites: None  
• Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas |
| ANIMAL SCIENCE                              | 5980/5980-2 | Dual-Credit | 10-12       | Animal Science is a two semester program that provides students with an overview of the field of animal science. Students participate in a large variety of activities and laboratory work including real and simulated animal science experiences and projects. All areas that the students study can be applied to both large and small animals. Topics to be addressed include: anatomy and physiology, genetics, reproduction, nutrition, common diseases and parasites, social and political issues related to the industry and management practices for the care and maintenance of animals while incorporating leadership development, supervised agricultural experience and learning about career opportunities in the area of animal science.  
• Recommended Grade Level: Grade 10-12  
• Recommended Prerequisites: Introduction to Agriculture, Food and Natural Resources  
• Fulfills a Life Science or Physical Science requirement for the General Diploma only or counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas |
| HORTICULTURE SCIENCE                        | 5981/5982   | 2       | 10-12       | Horticulture Science is a two semester course designed to give students a background in the field of horticulture and its many career opportunities. It addresses the biology and technology involved in the production, processing and marketing of plants and its products. Topics covered include: reproduction and propagation of plants, plant growth, growth media, management practices for field and greenhouse production, marketing concepts, production of plants of local interest and pest management. Students participate in a variety of activities to include extensive laboratory work usually in a school greenhouse, leadership development, supervised agricultural experience and learning about career opportunities in the area of horticulture science. |
Recommended Grade Level: Grade 10-12
Recommended Prerequisites: Introduction to Agriculture, Food and Natural Resources
Fulfills a Life Science or Physical Science requirement for the General Diploma only or counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas
This course is aligned with postsecondary courses for Dual Credit
  IVY Tech
    AGRI 116 – Survey of Horticulture

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<tr>
<th>ADVANCED LIFE SCIENCE, PLANT AND SOIL (L) 5983/5983-2 Dual-Credit</th>
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<td><strong>GRADES 11-12</strong></td>
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<td><strong>2 semesters</strong></td>
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Advanced Life Science, Plants and Soils, is a standards-based, interdisciplinary science course that integrates the study of advanced biology, chemistry, and earth science in an agricultural context. Students enrolled in this course formulate, design, and implement agriculturally-based laboratory and field investigations as an essential course component. These extended laboratory and literature investigations focus on the chemical reactions of matter in living and nonliving materials while stressing the unifying themes of chemistry and the development of physical and mathematical models of matter and its interactions. Using the principles of scientific inquiry, students examine the internal structures, functions, genetics and processes of living plant organisms and their interaction with the environment. Students completing this course will be able to apply the principles of scientific inquiry to solve problems related to both biology and chemistry in the context of highly advanced agricultural applications of plants and soils.

- Recommended Grade Level: Grade 11-12
- Recommended Prerequisites: Chemistry and Biology
- Credits: A two semester course, one credit per semester
- Fulfills a Core 40 Life Science requirement for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas or counts as an Elective or Directed Elective for any diploma
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas

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<tr>
<th>ADVANCED LIFE SCIENCE, ANIMALS (L) 5984/5985 Dual-Credit</th>
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<td><strong>GRADES 11-12</strong></td>
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Advanced Life Science, Animals, is a standards-based, interdisciplinary science course that integrates biology, chemistry, and microbiology in an agricultural context. Students enrolled in this course formulate, design, and carry out animal-based laboratory and field investigations as an essential course component. Students investigate key concepts that enable them to understand animal growth, development and physiology as it pertains to agricultural science. This course stresses the unifying themes of both biology and chemistry as students work with concepts associated with animal taxonomy, life at the cellular level, organ systems, genetics, evolution, ecology, and historical and current issues in animal agriculture. Students completing this course will be able to apply the principles of scientific inquiry to solve problems related to biology and chemistry in highly advanced agricultural applications of animal development.

- Recommended Grade Level: Grade 11-12
- Recommended Prerequisites: Biology and Chemistry due to course content standards
- Credits: A two semester course, one credit per semester
- Fulfills a Core 40 Life Science requirement for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas or counts as an Elective or Directed Elective for any diploma

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<tr>
<th>Natural Resources</th>
<th>5969/5969-2</th>
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<td>GRADES 10-12</td>
<td>2 semesters</td>
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Natural Resources is a two semester course that provides students with a background in natural resources. Hands-on learning activities encourage students to investigate areas of environmental concern. Students are introduced to the following areas of natural resources: soils, the water cycle, air quality, outdoor recreation, forestry, rangelands, wetlands, animal wildlife, safety, careers, leadership, and supervised agricultural experience programs.

Course Specifications
- DOE Code: 5180
- Prerequisites: Introduction to Agriculture, Food and Natural Resources
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas
- Pathway Assessment: Dual credit course final exam
- This course is aligned with postsecondary courses for Dual Credit
  - Ivy Tech
    - AGRI 115 – Natural Resources Management

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<tr>
<th>Plant and Soil Science</th>
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<td>GRADES 10-12</td>
<td>2 semesters</td>
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Plant and Soil Science is a two semester course that provides students with opportunities to participate in a variety of activities including laboratory work. Topics covered include: the taxonomy of plants, the various plant components and their functions, plant growth, plant reproduction and propagation, photosynthesis and respiration, environmental factors affecting plant growth, diseases and pests of plants and their management, biotechnology, the basic components and types of soil, calculation of fertilizer application rates and procedures for application, soil tillage and conservation, irrigation and drainage, land measurement, cropping systems, precision agriculture, principles and benefits of global positioning systems, harvesting, and career opportunities in the field of plant and soil science.

Course Specifications
- DOE Code: 5170
- Prerequisites: Introduction to Agriculture, Food and Natural Resources
- Fulfills a Life Science or Physical Science requirement for the General Diploma only or counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas

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<tr>
<th>SUPERVISED AGRICULTURAL EXPERIENCE</th>
<th>5970</th>
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<tr>
<td>GRADES 10-12</td>
<td>Summer</td>
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Supervised Agricultural Experience (SAE) is designed to provide students with opportunities to gain experience in the agriculture field(s) in which they are interested. Students should experience and apply what is learned in the classroom, laboratory, and training site to real-life situations. Students work closely with their agricultural science and business teacher(s), parents, and/or employers to get the most out of their SAE program. This course can be offered each year as well as during the summer session. SAE may be offered as a Cooperative Education Program. Curriculum content and competencies should be varied so that school year and summer session experiences are not duplicated.
- Recommended Grade Levels: 10-12
- Recommended Prerequisite: Fundamentals of Agricultural Science and Business
- Credits: A maximum of eight credits may be earned in this course when offered as a “non-co-op,” one hour course over eight semesters, some of which can be earned during summer sessions. Curriculum content and competencies should not be duplicated when multiple credits are being earned.
- Credits: A maximum of twelve credits may be earned in this course when offered as an SAE Cooperative Education course (one credit for related instruction and two credits for on-the-job training – over four semesters = 12 credit hours). On the job training credit hours may be increased in approved situations.
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas