



THE INDIANA ACADEMY
FOR SCIENCE, MATHEMATICS, AND HUMANITIES

COURSE CATALOG 2021-2022



academy.bsu.edu/catalog

TABLE OF CONTENTS

Introduction	i
Definitions	i
Dual Credit Courses	ii
What is an AP Class?	iv
Ball State University Course Substitution	iv
Audit Credit to BSU Credit	iv
Graduation Requirements	v
Indiana Graduation Pathways.vii
Humanities	
English	1
Social Studies	6
World Languages	9
Mathematics	14
Computer Science	18
Science	
Physics	20
Chemistry	23
Life Science	25
Ball State Science Courses	28
Academy/Burris	
Fine Arts	29
Publications.	31
Music.	32
Interdisciplinary Studies	
General	33
Colloquium	33
Individual Study	
Internships	34
Directed Study.	34

Introduction

Whenever minimum enrollment requirements are satisfied and Academy resources allow, the courses described in this catalog are offered. Information contained in course descriptions is subject to change in accord with the procedures for curriculum revision outlined in **Curriculum and Academic Policies and Procedures** of the Indiana Academy for Science, Mathematics, and Humanities.

Definitions

Course Title Codes Refers to the type of course:

- CL** College Level – Uses a college textbook and syllabus
- CP** College Prep – Uses a high school textbook and syllabus
- DC** Dual Credit – available for Ball State University credit (see page ii)
- XC** Exploratory Course – studies a specific topic and is a mixture of high school and college levels

Prerequisite refers to a course or demonstrated knowledge that is required prior to course enrollment.

Co-requisite refers to courses that are required concurrently.

Credit refers to the successful completion of a one-semester course that meets as a class a minimum of one hundred and fifty minutes per week.

Permission of Instructor refers to enrollment after review of transcripts and other relevant information by the course instructor.

Placement refers to enrollment after review of transcripts and other relevant information by the Director of Academic Affairs, the appropriate academic division chair, or their designees.

DUAL CREDIT COURSES

Dual Credit Courses (designated as “DC” in the course catalog descriptions) are Indiana Academy courses taught by Academy instructors and have been recognized as equivalent to a Ball State University course. Students who enroll for dual credit may request a transcript from Ball State University which can be transferred to any college or university that accepts BSU credits. Students are responsible for the special dual credit tuition fee. The tuition fee for dual credit varies according to the course. In the list on page iii, all courses **underlined** will cost \$25 per college credit hour. These courses are on the state core library list for automatic transfer between Indiana colleges and universities. The tuition for all courses listed *in italics* is \$250.00 per course. These courses are NOT on the core library list for automatic transfer between Indiana colleges and universities. All tuition fees are waived for students who are on free and reduced lunch. Students should check with a receiving college for their policy on the transfer of Ball State University courses. Students can also check for transfer of credits through the **Transfer Evaluation System** from CollegeSource at tes.collegesource.com. Applications, directions for enrollment, and other information on dual credit courses can be obtained from the Guidance Office.

Important items to keep in mind

1. **Actual courses available for dual credit are subject to change. Check with the Guidance Office for the most current list of courses.**
2. Fall semester enrollment will take place the first week of the semester and lasts approximately 5 days. Enrollment for spring dual credit courses will start in December and finish the opening week of classes in January. **You must enroll during these times if you wish to receive dual credit. Ball State University does not allow late or retroactive enrollments.**
3. Dual credit courses indicated with an asterisk (*) are the second course in a two-semester sequence. Students must enroll in the fall semester course of the sequence in order to qualify for dual credit in the spring semester. Students must enroll and pay another tuition fee for the second course in the sequence during the spring semester. Some courses may have prerequisite requirements. Check with the Guidance Office for an updated and complete list of all prerequisites for dual credit classes.
4. Courses labeled “enroll in spring only” are the fall **and** spring semesters of the Academy class. The two semesters together are equal to one semester of the BSU equivalent class. The dual credit grade is an average of the two semester grades of the Academy class.
5. Enrollment for these courses is done in the enrollment period in December and early January.

DUAL CREDIT COURSES (Continued)

Academy course number and title	Ball State University course
<i>ENG05111S1</i>	<i>Linguistics</i> 3 cr. hrs. in ENG 320 (fall only)
<u>FRN1A/1B</u>	<u>Accelerated French 1</u> 4 cr. hrs. in FR 102 (enroll spring only)
<u>FRN2A/2B</u>	<u>Intermediate French 2</u> 3 cr. hrs. in FR 201 (enroll spring only)
<u>FRN3A/3B</u>	<u>Advanced French 3</u> 3 cr. hrs. in FR 202 (enroll spring only)
<u>GER1A/1B</u>	<u>Accelerated German 2</u> 3 cr. hrs. in GER 102 (enroll spring only)
<u>GER2A/2B</u>	<u>Intermediate German 2</u> 3 cr. hrs. in GER 202 (enroll spring only)
<u>GER3A/3B</u>	<u>Advanced German 3</u> 3 cr. hrs. in GER 302 (enroll spring only)
<u>JAP1A/1B</u>	<u>Accelerated Japanese 1</u> 4 cr. hrs. in JP 101 (enroll spring only)
<u>JAP2A/2B</u>	<u>Intermediate Japanese 2</u> 4 cr. hrs. in JP 102 (enroll spring only)
<u>LAT1A/1B</u>	<u>Accelerated Latin 1</u> 4 cr. hrs. per semester in LAT 101 and 102*
<u>LAT2A/2B</u>	<u>Intermediate Latin 2</u> 3 cr. hrs. per semester in LAT 201 and 202*
<u>SPN2A/2B</u>	<u>Intermediate Spanish 2</u> 3 cr. hrs. in SPN 201 (enroll spring only)
<u>SPN3A/3B</u>	<u>Advanced Spanish 3</u> 3 cr. hrs. in SPN 202 (enroll spring only)
<u>SOC203</u>	<u>American History 1492-1876</u> 3 cr. hrs. in HIST 201: US 1492-1876
<u>SOC204</u>	<u>American History 1877-Present</u> 3 cr. hrs. in HIST 202: US 1877-Present
<i>SOC05130</i>	<i>The West in the World</i> 3 cr. hrs. in HIST 150 (spring only)
<i>MAT04005</i>	<i>Calculus</i> 3 cr. hrs. in MATH 132 (fall only)
<u>MAT04123/04124</u>	<u>AP Calculus AB</u> 4 cr. hrs. in MATH 165 (enroll spring only)
<u>MAT04133</u>	<u>AP Calculus BC 1</u> 4 cr. hrs. in MATH 165 (available fall or spring)
<u>MAT04134</u>	<u>AP Calculus BC 2</u> 4 cr. hrs. in MATH 166 (spring only)
<i>MAT04514</i>	<i>Statistics</i> 3 cr. hrs. in MATH 181 (available fall & spring)
<u>MAT04515</u>	<u>Quantitative Reasoning</u> 3 cr. hrs. in MATH 125 (spring only)
<i>MAT04825</i>	<i>AP Statistics</i> 3 cr. hrs. in MATH 181 (spring only)
<i>MAT04832</i>	<i>Linear Algebra</i> 4 cr. hrs. in MATH 217 (fall only)
<i>MAT04833</i>	<i>Multivariable Calculus</i> 4 cr. hrs. in MATH 267 (spring only)
<i>MAT04834</i>	<i>Differential Equations</i> 3 cr. hrs. in MATH 374 (spring only)
<i>CMP04202</i>	<i>Visual Programming</i> 4 cr. hrs. in CS 120 (spring only)
<i>CMP04501/4502</i>	<i>AP Computer Sci. A 1, 2</i> 4 cr. hrs. in CS 121 (enroll spring only)
<i>BUS0110</i>	<i>Personal Finance</i> 3 cr. hrs. in FIN 110
<i>SCI03201/03202</i>	<i>General Chemistry 1, 2</i> 3 cr. hrs. in CHEM 100 (enroll in spring only)
<i>SCI04204/04205</i>	<i>AP Chemistry</i> 4 cr. hrs. per semester in CHEM 111 and 112*
<i>SCI04301/04302</i>	<i>AP Biology</i> 4 cr. hrs. per semester in BIO 111 and 112*
<i>SCI04304</i>	<i>Microbiology</i> 5 cr. hrs. in BIO 113 (fall only)
<i>SCI04328</i>	<i>AP Environmental Science</i> 3 cr. hrs. in NREM 101 (enroll in spring only)
<u>SCI03101/03102</u>	<u>General Physics 1, 2</u> 3 cr. hrs. in PHYC 100 (enroll in spring only)
<i>SCI03111/03112</i>	<i>AP Physics I</i> 4 cr. hrs. in PHYC 110 (enroll in spring only)
<i>SCI03113/03114</i>	<i>AP Physics II</i> 4 cr. hrs. in PHYC 112 (enroll in spring only)
<i>SCI04102/04103</i>	<i>AP Physics C</i> 5 cr. hrs. per semester in PHYC 120 and 122*
Academy course number and title	Ivy Tech Community College course
MAT03101/03102	Precalculus 1, 2 3 cr. hrs. in MATH 136 (enroll spring only)
MAT03311/03312	Precalculus for AP 1, 2 3 cr. hrs. per semester in MATH 136 and 137*

*Enrollment in the first course is a prerequisite for enrollment in the second course.

What is an AP Class?

A number of Indiana Academy classes have been approved through an audit process by The College Board to use the label AP or Advanced Placement. These courses are designated as “AP” in the course catalog descriptions. The Academy offers all available AP Science and AP Math courses. Further information about the AP Program can be obtained at <http://apcentral.collegeboard.com>.

Note – sign-up for the AP exams occurs the fall for most AP courses. There is a penalty charge assessed to the student for changing their AP exam status by dropping the exam or adding the exam. Watch for announcements on specific dates and deadlines.

AP and College Credit

Students who take an AP exam and earn a score of 3 or higher shall receive college credit in that discipline towards their degree if they attend any Indiana public institution of higher education; this includes all two- and four-year schools and any accompanying satellite campuses.

Ball State University Courses

Substitutions

Students are expected to complete their graduation requirements by enrollment in Academy classes whenever possible. When an Academy class for a graduation requirement cannot be scheduled due to a conflict, the student may request permission to substitute the credit by auditing an appropriate Ball State University course. All BSU course substitutions must be approved by the Assistant Director of Academic Guidance and Director of Academic Affairs. The audit fee and textbook fee for courses that fall in this category will be covered by the Academy.

Electives

Indiana Academy students are also provided an opportunity to apply for enrollment in elective Ball State University classes. The student may enroll for college (and Academy) credit at the full BSU tuition rate, or they may audit the course for high school credit only. The student is responsible for all fees and course expenses for BSU elective courses. See the Student Handbook for more detailed information about taking Ball State University courses.

Questions concerning enrolling in Ball State University classes or Audit Fee procedures should be directed to the Guidance Office.

Credit

The following conversion rates will be used for the purpose of converting college level credit to Indiana Academy credit:

University Credit Hours	Academy Credits
1	0.50
2	0.75
3 (3 days/week)	1.00
3 (4 days/week)	1.25
4	1.25
5	1.50

GRADUATION REQUIREMENTS

Graduating Classes of 2021-2022 and 2022-2023 (26.5 Academy Credits)

Students must carry a minimum of 5.5 credits each semester.

High School Substitutions

Courses that are not taught at the Indiana Academy which would have traditionally been taken by students as 9th or 10th graders may be taken during summer school or through other arrangements. These classes include but are not limited to: PE, Health, Fine Arts, Geometry, Algebra 2, and World Civilization/World History. Approval for these substitutions should be arranged with the Assistant Director of Academic Guidance.

Science: 6 Credits Required

- Two credits in each two-semester sequence of General Biology, General Chemistry, and General Physics, or equivalent college-preparatory courses as determined by the Science Division Chair.
- Integrated Chemistry/Physics courses taken prior to coming to the Academy are not accepted for either Chemistry or Physics requirements by the Academy.
- Four credits in Laboratory Sciences must be from the Academy.
- A student may petition to have a previous laboratory science course accepted to replace a laboratory science course that would otherwise be taken here.

Math: 8 Credits Required

- Two credits in Algebra 1, two in Geometry, two in Algebra 2, and two in courses beyond Algebra 2.
- Three credits must be from the Academy.
- At least one credit in mathematics must be earned each year.
- Any math credits taken in grades 7 or 8 must be shown for high school credit on the home school transcript in order to count for graduation requirements.

English: 8 Credits Required

- Three credits must be from the Academy:
 - One credit in American Literature (**Fall semester of junior year**),
 - One credit in World Literature (**Spring semester of junior year**), and
 - One elective credit from the Academy.

Social Studies: 6 Credits Required

- Three credits must be from the Academy:
 - One credit in American History 1 (Fall semester of junior year) and one credit in American History 2 (Spring semester of junior year) **OR** AP US History from the home school with a score of 4 or 5 on the AP US History exam before enrolling.
 - One credit in American Government.
 - One credit in Economics.

World Languages: 6 or 8 Credits Required

- **If taking one language**, a student must successfully complete six credits in that language. If courses in that language are taken at the Academy to meet this requirement, the credits must include the successful completion of the Academy Intermediate 2B course.

GRADUATION REQUIREMENTS (Continued)

- **If taking two languages**, a student must earn a total of eight credits with four credits in each language. For languages taken at the Academy to meet this requirement, the credits must include the successful completion of the Academy Intermediate 2B course.

Fine Arts: 2 Credits Required

Can be obtained from home high school, online high school course providers, BSU, or the Academy.

Health: 1 Credit Required

Can be obtained from home high school, online high school course providers, or BSU (Health Science – HSCI 160). The Academy does not offer a health course.

Phys. Ed.: 2 Credits Required

Can be obtained from home high school, online high school course providers, or BSU (PFW classes with activity component). The Academy does not offer any PE courses.

Computing: 0.5 Credit Required

Must take CMP03301(Computer Applications) at the Academy or TEST OUT on the Computer Apps placement test given at New Junior Orientation.

Colloquium: 1 Credit Required (Required of ALL students attending the Academy – Residential, NECP, and International)

- .5 credit Junior year (taken Fall semester).
- .5 credit Senior year (taken Spring semester).

May Term: 1 Credit Required

- .5 credit Junior year.
- .5 credit Senior year.
- Must be obtained while attending the Academy.

Additional Requirements for the Academic Honors Diploma

Earn a grade of a “C” or better in courses that will count toward the diploma.

Complete one of the following:

- A. Earn 4 credits in 2 or more AP courses and take corresponding AP exams.
- B. Earn 6 verifiable transcribed college credits in dual credit courses from the approved dual credit list.
- C. Earn two of the following:
 1. A minimum of 3 verifiable transcribed college credits from the approved dual credit list,
 2. 2 credits in AP courses and corresponding AP exams,
 3. 2 credits in IB standard level courses and corresponding IB exams.
- D. Earn a composite score of 1250 or higher on the SAT and a minimum of 560 on math and a 590 on the evidence-based reading and writing section.
- E. Earn an ACT composite score of 26 or higher and complete the written essay component.
- F. Earn 4 credits in IB courses and take corresponding IB exams.

INDIANA GRADUATION PATHWAYS

Public Law 192-2018 amended the graduation requirements for students in the graduating classes (cohorts) of 2022 and 2023 to allow these students to meet graduation requirements by successfully completing a series of Graduation Pathways.

You may complete this option by successful completion of the three parts of the Graduation Pathway. Please note that these parts will be completed as part of the graduation requirements for the Indiana Academy.

The three parts of the Graduation Pathway are:

1. **High School Diploma** - all students at the Indiana Academy complete an Academic Honors diploma.
2. **Learn and Demonstrate Employability Skills** - students at the Indiana Academy are required to complete hours of Service-Based Experience through Community Service, Academy Service or Internships as part of the Academy's graduation requirements.
3. **Postsecondary-Ready Competencies** - students can meet these competencies in any one of the following ways:
 - Dual Credit courses
 - AP Courses
 - SAT scores above 480 for Evidence-Based Reading and Writing (ERW) and 530 in Math.
 - ACT scores of 18 in English, 22 in Reading, 22 in Math, and 23 in Science. Students must meet at least 2 of the 4 score requirements.

If you want more information about the Graduation Pathway, see the following link:

<https://www.doe.in.gov/graduation-pathways>

Please contact Mr. Michael D. McClure, Assistant Director of Academic Guidance, at mmcclure@bsu.edu (ph. 765-285-8108) if you have any questions.

REQUIRED COURSES

Every junior must take **American Literature** the fall semester and **World Literature** the spring semester.

ENG03101 – American Literature (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall

The American Literature course begins with literature of the New World and ends with contemporary period literature. There is an emphasis on critical thinking, close reading, and the development of writing skills. The course is organized by theme, by genre, or by literary and historical period, depending on the approach of the teacher. Students will have a wide variety of writing assignments, opportunities for oral participation, and other activities connecting literature, history, and culture.

ENG04221 – World Literature (CL)

Prerequisite: ENG03101
Credit: 1 credit
Offered: Spring

This course focuses on the study of poetry, drama, and prose produced by authors of various nationalities of the Western and Eastern worlds from the ancient period to the present. Students explore literary movements and intellectual trends with a continuing emphasis on critical thinking, close reading, and the development of writing skills. They also develop essays and projects that call upon the processes of analysis, synthesis, and evaluation and have opportunities for oral participation. The course is organized by theme, by genre, or by literary and historical period depending on the approach of the teacher.

ELECTIVES

Dramatic Literature

ENG05139 – Introduction to Theater and Dramatic Literature (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall

Introduction to Theater and Dramatic Literature begins with a study of ancient Greek Theater with particular stress on the nature of tragedy and the principles for tragedy (and drama) proposed by Aristotle in *The Poetics*. The plays *Agamemnon*, *Antigone*, and *The Trojan Women* represent the three major Greek playwrights. The course continues with Roman Theater, primarily the development of Farce and Senecan tragedy. *Everyman* is a major work of the Medieval Period, followed by *Doctor Faustus* as the representative work of the Renaissance. Molière (French comedy) and English Restoration Comedy are considered. The course then takes a short leap to consider the Norwegian playwright Henrik Ibsen, the Russian playwright Anton Chekov, and two British writers, G.B Shaw and Oscar Wilde. The American triumvirate of Eugene O'Neill, Arthur Miller, and Tennessee Williams are represented, followed by works of Samuel Beckett, Athol Fugard, August Wilson, and David Mamet. In addition to studying the plays as literature, the course includes an emphasis on staging and performance practices of each era and the cultures that helped inspire the plays. Although not an acting or a production course, some acting and some attention to stage design (setting and costumes) are included.

HUMANITIES: ENGLISH (Continued)

ENG05140 – Global Cinema (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall or Spring

Global Cinema provides students with the opportunity to explore the art of film in a global context. Students will analyze the preoccupations and methodologies of filmmakers and their films from nations like France, Germany, Taiwan, Sweden, India, the Czech Republic, and Mexico. Studying the moving image is akin to studying poetry, and students will be asked to challenge and expand their visual literacy and critical thinking skills. We will study materials in film and art theory, philosophy, and cultural studies, and write thesis-based analytical papers in which we apply theory to film analysis and confront the fictions and non-fictions of worlds beyond our own. In doing so, we will have the chance to see and to understand ourselves better. The course may have guest lecturers from other departments, like language and history, and, when possible, we will screen films in a BSU screening room.

ELECTIVES

Themes in Literature

ENG05103 – Literature of the Holocaust (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

This course offers students the opportunity to investigate a selection of Holocaust literature, including the genres of non-fiction, fiction, poetry, theory and philosophy, and film. Over the course of the semester, we will discuss the question of why the Holocaust should still have relevance to those growing up in the new Millennium, despite the fact that those who witnessed and experienced it have nearly all died. Through an investigation that begins with Hitler's rise to power, we will analyze the structures of power and subjugation that allowed over six million people to be murdered. We will discuss at length the questions of memory, forgetting, and forgiveness. We will seek to negotiate the very troubling issue of the appropriation of someone else's experience and motivations for doing so. Group viewings and discussions of films will generate further conversation and ideally lead us to a better understanding of the Holocaust and our individual responsibilities in remembering, forgetting, and passing on the stories of its victims.

ENG05106 – African-American Literature (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall

This course explores the roots of African-American literature and the literary portrayal of the African-American experience in the 19th and 20th Centuries. Through the themes of the African-American struggle for voice, identity and power, the course examines various writers and genres using written composition, oral participation, and critical thinking to engage in ongoing investigation and inquiry. Students analyze folktales, slave narratives, poetry, short stories, and novels by such authors as Frederick Douglass, Harriet Jacobs, Zora Neale Hurston, Ralph Ellison, and Toni Morrison. Literary works are contextualized in sociology and politics, and themes of representation and protest are analyzed in the context of broader human, spiritual, and intellectual themes. Attention to visual arts and music may enhance understanding of African-American history and culture.

HUMANITIES: ENGLISH (Continued)

ENG05117 – Critical Approaches to Literature, Freudian and Jungian (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

This literary criticism course uses Freudian and Jungian psychology to analyze literature that focuses on the theme of the dual personality. Students delve into what is often labeled as true self vs. the false self, the concept of the “double,” ego vs. alter ego or mirroring personalities, and id, ego, and super-ego. Through psychological and archetypal analysis, the course examines different writers and genres using written composition, oral participation, and critical thinking to engage in ongoing investigation and inquiry. The theories of Freud and Jung are employed to analyze such literary works as *Grimm’s Fairy Tales*, *Dr. Jekyll and Mr. Hyde*, *Frankenstein*, *Winesburg, Ohio*, *A Doll’s House*, *The Metamorphosis*, *Lord of the Flies*, *Heart of Darkness*, *Faust*, *The Picture of Dorian Grey*, *Demian*, and *Beloved*. Students investigate psychological motives, unconscious desires and anxieties, myths and dreams as symbolic projections of people’s hopes, fears, and aspirations as they analyze the underlying human behavior of classical literary characters.

ENG05133 – Poetry (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

In this course, students read and analyze poems written in English from the seventh through the twenty-first centuries, organized around such themes as family, nature, love, death, religious experience, and the imagination. Through discussion, formal and informal writing assignments, oral presentations, and a major project, students should develop as analytic and imaginative thinkers and writers while they learn to read poetry with greater understanding and pleasure. Traditional poetic themes are used with written composition, oral participation, and critical thinking for investigation and inquiry.

ENG05138 – Studies in the Novel (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall

In this course, students will learn about the development of the novel, while sharpening their critical thinking, analytical writing, and close-reading skills. We will examine the way writers from a variety of backgrounds and literary periods transform the novel by exploring new subject matter and form and subverting or building on existing literary traditions. Oral participation, daily reading responses, and literary analysis papers will challenge students to read closely, identify important themes and concepts, assert thesis claims, and prove their arguments through detailed analysis of textual evidence.

ELECTIVES

Other

ENG05111S1 – Linguistics (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: One year of world languages with a minimum grade of B or above.
Credit: 1 credit
Offered: Fall

This one semester course is an introduction to the nature of language and analysis of language structures and patterns. The course surveys major areas of linguistics such as semantics, syntax, and morphology. It also explores the social, psychological, and cultural aspects of language and engages students in creative and analytical writing. By the end of the course, the students should develop a sharper ear for language, a deeper understanding of its nature, and a livelier interest in all of its manifestations. Students are acquainted with the basic concepts necessary to further their linguistic studies.

*Ball State University offers 3 college credit hours in ENG 320 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

HUMANITIES: ENGLISH (Continued)

ENG05113S1/05113S2 – Creative Writing (CL)

Prerequisite:	None
Note:	Students may enroll in Writing Fiction or Creative Writing at the Academy, but not both.
Credit:	1 credit
Offered:	Fall or Spring

Students in this one-semester class write poetry, short stories, plays, and creative non-fiction with opportunities for oral participation. The concept of manipulation of language to convey ideas, feelings, moods, and visual images is the basis of the course. The students become familiar with the standard literary elements through the reading and study of published prose and poetry and are taught to use those elements in their own writing. They learn strategies for evaluating their own writing and the writing of others. Students who are interested in an audience for their creative work and suggestions for improvement and development of their literary styles are encouraged to sign up for this course.

ENG05123/05124 – AP English Language and Composition (CL)

Prerequisite:	Permission of English Department. In keeping with College Board policy, this course is open to students who are academically prepared for it. Students prepared to benefit from this rigorous course have already shown an excellent work ethic and strong analytic and academic writing ability.
Credit:	1 credit
Offered:	Fall/Spring Sequence

This year-long course, which prepares students to take the AP English Language and Composition exam, requires students to compose timed, evidence-based analytic and argumentative essays, written in response to College Board prompts, as well as to complete many informal writing exercises. Students will also conduct research, work on grammar and style, and learn to analyze the rhetorical strategies in visual texts and in non-fiction writing from many disciplines and historical periods.

ELECTIVES

English Quarter Courses

ENG05118 – The Short Story (CL)

Prerequisite:	None
Credit:	.5 credit
Offered:	Quarter 3

The short story is sometimes an under-appreciated art form. Within the space of a few pages, an author must weave a story that is compelling, create characters readers care about and drive the story to its ultimate conclusion. This short story quarter course will include many of the best short story writers of all time, authors who have mastered the art of the short story, turning condensed pieces into memorable works of literature. Students will read, analyze, and discuss short stories written in English or famous works that have been translated into English including major authors such as Hawthorne, Melville, Twain, Cather, Ellison, Hughes, Hemingway, Faulkner, Anderson, O'Conner, Salinger, Vonnegut, Munro, Mansfield, Erdrich, Alexie, Conrad, Joyce, Tolstoy, Chekhov, Borges, Garcia, Kafka, and many more.

ENG05141 – Speculative Fiction (CL)

Prerequisite:	None
Credit:	.5 credit
Offered:	Quarter 4

Speculative Fiction will engage with prevailing questions of society, identity, history and technology through the lens of science fiction, fantasy, horror and other genres. It will explore how literature uses provocative premises to engage in thought experiments and social critique. It will focus on key topics which will be addressed through a sequence of works, emphasizing comparative analysis and a variety of perspectives. Throughout the class we will engage in discussion and debate about the daily readings and their subject matter, produce analytical work about the material, and develop our own speculative topics which reflect the experiences and concerns which are most relevant to us.

THIS COURSE IS COUNTED AS AN ACADEMY ELECTIVE COURSE.

HUM02999 – Writing Lab (CP)

Prerequisite: Teacher Recommendation

Credit: .5 credit

Offered: Quarter 1 or 2

This course emphasizes essential structural and stylistic elements of composition, especially the formulation of a thesis statement, development of a theme and argument, and relevant use of logic, detail, textual illustration, and persuasive language. Issues of clarity, grammar, and form will be incorporated. *This course does not count as an English credit but may be used for elective credit.*

HUMANITIES: SOCIAL STUDIES

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

REQUIRED AMERICAN HISTORY COURSES

All students must successfully complete **American History, 1492-1876** and **American History, 1877-Present**. Normally taken junior year.

SOC203 – American History, 1492-1876 (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: None
Credit: 1 credit
Offered: Fall

This course surveys the American historical experience through 1876. Students will examine key events, ideas, personalities and movements from before European exploration to the end of Reconstruction.

*Ball State University offers 3 college credit hours in HIST 201 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SOC204 – American History, 1877-Present (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: None
Credit: 1 credit
Offered: Spring

This course surveys the American historical experience since 1877. Students will examine key events, ideas, personalities and movements since the end of Reconstruction.

*Ball State University offers 3 college credit hours in HIST 202 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

REQUIRED GOVERNMENT COURSE

All students must successfully complete ONE government course from the options listed below. Normally taken fall of senior year.

SOC301 – Exploring United States Government: Political Theory and Practice (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

An exploration of United States government, with particular reference to past and present political theory. Students will be exposed to a wide variety of thinkers and ideas, as both the sources of American law and government and as comparative examples. Connections will be made between theory and practice, and students will be encouraged to think creatively about the nature, history, and present course of American government and politics. Critical thinking and productive civil discourse will be consistently emphasized. (Only one credit can be earned from the Exploring United States Government course series.)

SOC302 – Exploring United States Government: Search for Democracy (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall

An exploration of United States government, with particular reference to the history and experience of creating and sustaining a democratic system and way of life for all. What is a democracy, and what does it mean to live in a democratic country? Topics may include diversity, equality, equity, political power, and similar pressing questions of past and present. Critical thinking and productive civil discourse will be consistently emphasized. (Only one credit can be earned from the Exploring United States Government course series.)

HUMANITIES: SOCIAL STUDIES (Continued)

REQUIRED ECONOMICS COURSE

All students must successfully complete ONE economics course from the options listed below. Normally taken spring of senior year.

ECON116 – Survey of Economics (CL)

Prerequisite: Senior only except with permission of Social Studies Department Head
Credit: 1 credit
Offered: Fall or Spring

An introduction to important and influential economic theories and circumstances, with specific examples chosen by the instructor. Course topics will include the study of scarcity and economic reasoning, supply and demand, market structures, the role of government, national economic performance, the role of financial institutions, economic stabilization, and trade.

ECON201 – Elementary Microeconomics (CL)

Prerequisite: Senior only except with permission of Social Studies Department Head
Credit: 1 credit
Offered: Spring

A study of why people specialize as producers and exchange what they produce with others. Includes analysis of how market structure affects prices. Discusses the issue of whether self-interested economic behavior promotes or hinders society. Recommended for students interested in pursuing economics, business or related studies in college

ELECTIVES

Topics in History

SOC05101 – Indiana History (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall

This course will examine the history of Indiana through the present day. Major personalities and important events in the political, economic, literary, philosophical, intellectual, educational, and social realms will be explored. Hoosier hospitality will be the norm for discussion—even when asking the age-old question: what exactly is a “hoosier?”

SOC05130 – The West in the World (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: None
Credit: 1 credit
Offered: Fall

The West in the World is a survey of the development of Western Civilization since its origins emphasizing key problems, turning points, and recurring themes, especially in the past two centuries. The course emphasizes the civilization that emerged and developed in Europe and spread to the Americas during the past two millennia. The West in the World also focuses on the way peoples around the globe helped to shape Western Civilization and how they felt its influence. Non-Western civilizations have exercised a powerful influence on Western Civilization, and the West has interacted with the rest of the world throughout its history.

*Ball State University offers 3 college credit hours in HIST 150 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

HUMANITIES: SOCIAL STUDIES (Continued)

SOC05140 – History of World Religions (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

This course will explore the development of religions around the world from prehistoric to modern times. The major world religions will be studied, along with religions of the ancient world and of non-literate peoples. Primary sources will be emphasized to understand the key components of various religions. Special emphasis will also be placed on early developments, exploring the interaction between different religions, as well as the relation of religions to the historical time periods through which they develop.

SOC05141 – Appalachian Regional History (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

This course is a survey of the history of Appalachia, with particular focus on Southern and Central Appalachia. The course focuses on Appalachia's three phases of development: traditional society in the 19th century, the industrialization of the region in the early 20th century, and the problems facing contemporary Appalachia, with a specific focus on migration from the region to Indiana and the Midwest after World War II.

SOC05150 – Themes in Ethnic Studies (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall

This course will explore the historical development, lifestyles, and cultural patterns of ethnic groups in the United States and the world. Course themes may include a focus on a particular ethnic group or groups, or may use a comparative approach to study the cultural development, political trends, and economic impact of various ethnic or cultural groups, as well as issues of immigration and assimilation. Literary works emanating from the various ethnic groups may also be subject to scrutiny and discussion.

HUMANITIES: WORLD LANGUAGES

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

Academy students are invited to take Chinese and/or Arabic at Ball State University. Contact the Guidance Office for details.

FRN1A/1B – Accelerated French 1 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: None
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

This course introduces the fundamental elements of the French language. Emphasis is on the development of basic listening, speaking, reading, and writing skills in the context of cultural exploration of the Francophone world. Using authentic resources, students will learn functional vocabulary, be introduced to different cultures, and discover how the French language and culture connects with their own. Students learn to participate in brief conversations, to read and understand words, phrases and short passages in context, and to respond in writing to various stimuli, all while demonstrating cultural awareness.

*Ball State University offers 4 college credit hours in FR 102 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

FRN2A/2B – Intermediate French 2 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: French 1 (FRN1B) or permission of instructor
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

This course builds upon the fundamental elements of the language through extended vocabulary and the introduction of complex grammatical structures. Students will continue to develop listening, speaking, reading, and writing skills in a cultural context. Using authentic resources, students will expand their vocabulary, be introduced to different cultures, and discover how the French language and culture connects with their own. By the end of the course, students should be able to speak, read, write and comprehend French with increasing proficiency while demonstrating cultural awareness of the Francophone world.

*Ball State University offers 3 college credit hours in FR 201 to students who complete FRN2A and 2B. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

FRN3A/3B – Advanced French 3 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: French 2 (FRN2B) or permission of instructor
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

This course continues to build upon the fundamental elements of the language through extended vocabulary and more complex grammatical structures. Students will refine listening, speaking, reading, and writing skills in a cultural context. Using authentic resources, students will expand their vocabulary and grammar while studying aspects of different cultures. Students will participate in meaningful class discussions in French about a variety of topics. By the end of the course, students should be able to speak, read, write and comprehend French with increased proficiency while demonstrating a cultural understanding of the Francophone world.

*Ball State University offers 3 college credit hours in FR 202 to students who complete FRN3A and 3B. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

HIGHER LEVELS OF FRENCH may be taken at Ball State University. The Academy is not responsible for fees associated with these courses. Questions can be directed to the Guidance Office.

HUMANITIES: WORLD LANGUAGES (Continued)

GER1A/1B – Accelerated German 1 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: None
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

This course is designed to introduce students to the fundamentals of German grammar and to basic vocabulary. Emphasis is on the development of both written and verbal skills. To that end, students participate in activities pertaining to German language and culture in and outside of class. The goal is for students to accomplish the level of proficiency that enables them to communicate accurately and comfortably on a conversational basis and to be able to write in a clear, comprehensible manner in the German language. Students are expected to utilize communication skills such as responding and giving oral directions and commands, making routine requests, understanding and using appropriate forms of address, telling about daily routines and events, asking and answering simple questions and participating in brief conversations, reading isolated words and phrases in a situational context, comprehending words and phrases in appropriate contexts and responding in writing to various topics.

*Ball State University offers 4 college credit hours in GER 102 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

GER2A/2B – Intermediate German 2 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: German 1 (GER1B) or permission of instructor
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

In both semesters of this course, students use the textbook “Stationen,” which focuses on major cities in Germany, Austria, and Switzerland. Each chapter highlights important historical events and characteristics of a particular city and famous people associated with that city. In addition to the cultural aspect, students are introduced to more complex grammar structures and asked to begin incorporating those structures into their writing and speaking in order to achieve the level of proficiency consistent with a second year college level language course. A variety of exercises and activities help to practice the new vocabulary and grammar so that students improve their writing, reading, speaking and listening skills while learning about German culture, history, and literature.

*Ball State University offers 3 college credit hours in GER 202 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

GER3A/3B – Advanced German 3 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: 4 semesters of German or permission of instructor
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

Advanced German 3 is for students who have had the equivalent of four semesters of German. It will cover the grammar and vocabulary necessary to achieve intermediate proficiency. In addition to the grammar instruction, students will learn about the culture and history of major German cities and German-speaking cities in other countries (Austria, Switzerland). In the second semester, students will read German articles and level-appropriate literature, learn to write about pertinent topics with regards to the readings, and continue to work on speaking skills through meaningful discussion.

*Ball State University offers 3 college credit hours in GER 302 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

HIGHER LEVELS OF GERMAN may be taken at Ball State University. The Academy is not responsible for fees associated with these courses. Questions can be directed to the Guidance Office.

HUMANITIES: WORLD LANGUAGES (Continued)

JPN1A/1B – Accelerated Japanese 1 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: None
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

The Japanese I course is designed for beginners to acquire basic working knowledge of spoken as well as written Japanese. Students are expected to be able to make statements, ask and answer questions about basic daily routines and events and to be able to read and write those sentences using the two sets of alphabet, called *hiragana* and *katakana*, and basic Chinese characters, called *kanji*. Elements of Japanese culture, history and geography are regularly integrated throughout the course of the semester.

*Ball State University offers 4 college credit hours in JPN 101 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

JPN2A/2B – Intermediate Japanese 2 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: Placement or Japanese 1 (JPN1B)
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

The Japanese II course is designed for the fuller development of the working knowledge of spoken and written Japanese acquired in the level one course. Students are also expected to be able to ask questions regarding routine activities, participate in conversations on a variety of topics, relate a simple narrative about a personal event or experience, interact in a variety of situations to meet personal needs, understand main ideas and facts from simple texts, read aloud properly, and write briefly in response to given situations. Elements of Japanese culture are regularly integrated throughout the course.

*Ball State University offers 4 college credit hours in JPN 102 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

JPN3A/3B – Advanced Japanese 3 (CL)

Prerequisite: Japanese 2 (JPN2B) or permission of instructor
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

The Japanese 3A/3B course is the continuation of Japanese 1A/1B and 2A/2B, which aims at the further development of the ability of the students in using the four skills of the Japanese language. This is a full immersion course. Students are required to discuss the contents of culture lessons in Japanese, thus integrating the learning of the culture with that of the language. Over the year, students gain speaking skills to give presentations in Japanese, participate in academic discussions, take job interviews and work in a Japanese environment. Students will also read authentic Japanese materials such as newspapers and novels, and regularly watch Japanese media. With the completion of the "Genki" series, they will have acquired a total of 317 *kanji* characters by the end of their course, which allows them to read any material in Japanese with the help of a dictionary. They should be ready to take JLPT (Japanese Language Proficiency Test) 3 Level at the end of the year, and be eligible for a third-year university level in Japanese.

HIGHER LEVELS OF JAPANESE may be taken at Ball State University. The Academy is not responsible for fees associated with these courses. Questions can be directed to the Guidance Office.

KOR1A/1B – Introduction to Korean Language and Culture (CL)

Prerequisite: None
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

In Intro to Korean Language and Culture, students will study beginning Korean language, Korean history and culture. In the language component, students will study the text "Integrated Korean," where they will learn to read/write the Korean alphabet, introduce themselves, say directions, express daily activities and make simple conversation. Students will learn around 500 words, which should enable them to get around on their own on a visit to Korea. We will also take an in-depth look at Korea's social customs, in particular Confucianism and the education system, as well as the long history of Korea and its diplomatic relations with the US and surrounding Asian neighbors. Pop culture such as kpop and drama will be incorporated to show examples of these culture. Students will gain not only valuable Korean language speaking skills, but an enhanced appreciation and understanding for Korean culture and customs.

HUMANITIES: WORLD LANGUAGES (Continued)

LAT1A/1B – Accelerated Latin 1 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: None
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

Latin 1A/1B is an introduction to the Latin language and Greco-Roman culture. The primary goal of the course is to develop reading fluency in Latin. This is achieved by reading progressively difficult texts in Latin, memorizing and drilling grammatical topics, speaking and interpreting simple Latin questions and conversation, and gaining proficiency in relevant cultural topics through regular English readings about the Greco-Roman world. Students will also learn about Latin's influence on the languages of Europe and its historical role as the *lingua franca* of the European academy.

*Ball State University offers 4 college credit hours per semester in LAT 101 and 102 to students who complete both semesters of this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

LAT2A/2B – Intermediate Latin 2 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: Latin 1 (LAT1B) or permission of instructor
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

Latin 2A/2B is a continuation of the themes of Latin 1A/1B. Students will develop an increasingly sophisticated understanding of the Latin language and Greco-Roman culture, with the goal of accessing primary texts. Reading fluency is still the primary goal of the course, which is achieved by reading progressively challenging texts in Latin, memorizing and drilling grammatical topics, speaking and interpreting simple questions and conversation in Latin, and acquiring cultural proficiency through regular English readings about the Greco-Roman world. Students will continue learning about Latin's relationship to the languages of Europe and its historical role as the *lingua franca* of the European academy.

*Ball State University offers 3 college credit hours per semester in LAT 201 and 202 to students who complete both semesters of this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

HIGHER LEVELS OF LATIN may be taken at Ball State University. The Academy is not responsible for fees associated with these courses. Questions can be directed to the Guidance Office.

RUS2A/2B – Intermediate Russian 2 (CL)

Prerequisite: Russian 1 (RUS1B) or permission of instructor
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

This course presumes facility in the basic skills and knowledge developed in Russian 1A/1B, and begins with a review of the six cases and verbal aspect. Students will be introduced to vocabulary that enables them to converse about the weather, make telephone calls, give directions, discuss adaptations of literary works and movies, among many other useful and everyday topics. Increased attention is paid to the more complex grammar structures that students are expected to utilize in their written work as well as in their conversations. In addition, students will continue to learn about Russian culture, history, geography, and literature. Students will be asked to read the literature (or adaptations from famous works) in the original language. By the end of the 2A/2B sequence, students should have gained a satisfactory understanding the Russian language and the Russian way of life.

HUMANITIES: WORLD LANGUAGES (Continued)

SPN2A/2B – Intermediate Spanish 2 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: Placement or Spanish 1 (SPN1B)
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

The second course in the Spanish language series, this course represents a continuation of grammar, vocabulary, pronunciation and listening with emphasis on both reading and writing. In addition, special emphasis is placed upon the language as an integral component of Spanish and Hispanic cultures.

Students are expected to be able to ask questions regarding routine activities, participate in conversations on a variety of topics, relate a simple narrative about a personal event or experience, interact in a variety of situations to meet personal needs, understand main ideas and facts from simple texts, read aloud properly, and write briefly in response to given situations.

*Ball State University offers 3 college credit hours in SP 201 to students who complete SPN2A and 2B. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SPN3A/3B – Advanced Spanish 3 (DC)

*Available for College Credit (see pg. ii)

Prerequisite: Placement or Spanish 2 (SPN2B)
Credit: 1.25 credits per semester
Offered: Fall/Spring Sequence

Building upon and drawing distinctions from skills established within the grammar, vocabulary, pronunciation, listening and culture curriculum of the previous courses, this course focuses on listening (Spanish film, news broadcasts, etc.), speaking (oral presentations), reading comprehension and writing (summarization of reading passages, essays). Students are expected to respond to factual and interpretive questions and interact in a variety of social situations, read for comprehension, read short literary selections of poetry, plays, and short stories, complete authentic forms and documents and take notes that require familiar vocabulary and structures, write paraphrases, summaries, and brief compositions, describe different aspects of the culture, and participate appropriately.

*Ball State University offers 3 college credit hours in SP 202 to students who complete SPN 3A and 3B. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

HIGHER LEVELS OF SPANISH may be taken at Ball State University. The Academy is not responsible for fees associated with these courses. Questions can be directed to the Guidance Office.

MATHEMATICS

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

MAT02999/03000 – Geometry (CP)

Prerequisite: Algebra I
Credit: 1 credit per semester
Offered: Fall/Spring Sequence

In this two-semester sequence, geometry students examine the properties of two- and three-dimensional objects. Proof and logic, as well as investigative strategies in drawing conclusions, are stressed. Properties and relationships of geometric objects include the study of (1) points, lines, angles and planes; (2) polygons, with a special focus on quadrilaterals, triangles, right triangles; (3) circles; and (4) polyhedral and other solids. Use of graphing calculators and computer drawing programs is included.

This course is available through Burris Laboratory School and meets 5 days a week.

MAT03001/03002 – Advanced Algebra/Trigonometry 1, 2 (CP)

Prerequisite: Placement
Credit: 1 credit per semester
Offered: Fall/Spring Sequence

This course covers topics that include solutions of systems of equations and inequalities, simplifying algebraic expressions, radicals, polynomial, exponential and logarithmic functions, circular and trigonometric functions including trigonometric identities and the trigonometry of right triangles. This course serves as preparation for Precalculus.

MAT03101/03102 – Precalculus 1, 2 (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Placement
Credit: 1 credit per semester
Offered: Fall/Spring Sequence

This course provides a thorough, careful study of basic precalculus topics. Topics include linear and quadratic functions, polynomial functions, inequalities, graphs of functions, exponential and logarithmic functions, trigonometric functions and equations, and triangle trigonometry.

Students completing this course will generally choose two courses from among Calculus, Statistics, and Finite Mathematics for the senior year. Exceptional students may be allowed to enroll in Advanced Placement Calculus AB.

*Ivy Tech Community College offers 3 college credit hours in MATH 136 to students who complete both semesters of this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT03311/03312 – Precalculus for Advanced Placement 1, 2 (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Placement
Credit: 1 credit per semester
Offered: Fall/Spring Sequence

This course provides the rigorous development of precalculus topics necessary to prepare students for studying Advanced Placement Calculus. The first semester will include the study of polynomial, exponential, logarithmic and trigonometric functions and their graphs. Topics for the second semester include triangle trigonometry, polar coordinates, vectors, sequences and series, analytic geometry, parametric equations, and limits. Elementary proof techniques will be employed throughout the course.

Successful completion of this course will generally result in enrollment in Advanced Placement Calculus AB or BC the senior year.

*Ivy Tech Community College offers 3 college credit hours per semester in MATH 136 and MATH 137 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MATHEMATICS (Continued)

MAT04005 – Calculus (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Precalculus 2 (MAT03102) or Precalculus for AP 2 (MAT03312)
Credit: 1 credit
Offered: Fall

This course is an introduction to differential and integral calculus. Topics include limits, continuity, derivatives and definite integrals. The emphasis will be on applications and writing, rather than on theory.

Not open to students with credit in Advanced Placement Calculus.

*Ball State University offers 3 college credit hours in MATH 132 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT04123/04124 – AP Calculus AB 1, 2 (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Precalculus for AP 2 (MAT03312) or Precalculus 2 (MAT03102) with teacher recommendation, or placement
Credit: 1 credit per semester
Offered: Fall/Spring Sequence

This course covers the College Board's AB syllabus in Advanced Placement Calculus. Students are encouraged to register for the AP exam and may find that their college grants them credit equivalent to one semester of college calculus. Topics covered include properties of functions, limits, differential calculus and its applications, and integral calculus and its applications. Treatment of these topics involves both theory and its implementation on graphing calculators.

Not open to students with credit in AP Calculus BC.

*Ball State University offers 4 college credit hours in MATH 165 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT04133 – AP Calculus BC 1 (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Precalculus for AP 2 (MAT03312) with teacher recommendation, or placement
Credit: 1.25 credits
Offered: Fall

This course meets four days a week and covers the College Entrance Examination Board's BC syllabus in Advanced Placement Calculus. Students are encouraged to register for the AP exam and may find that their college grants them credit for up to two semesters of calculus. Topics covered include limits, derivatives, and integrals as well as their application in numerous real-world problems. Treatment of these topics involves both theory and its implementation on graphing calculators.

AP Calculus BC 1 is not open to students with credit in AP Calculus AB 2.

*Ball State University offers 4 college credit hours in MATH 165 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT04134 – AP Calculus BC 2 (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: AP Calculus AB 2 (MAT04124) with teacher recommendation, AP Calculus BC 1 (MAT04133), or placement
Credit: 1.25 credits
Offered: Fall or Spring

This course meets four days a week and covers the College Entrance Examination Board's BC syllabus in Advanced Placement Calculus. Students are encouraged to register for the AP exam and may find that their college grants them credit for up to two semesters of calculus. Topics covered include techniques of integration, series, vectors, and parametric equations, as well as their application in numerous real-world problems. Treatment of these topics involves both theory and its implementation on graphing calculators.

*Ball State University offers 4 college credit hours in MATH 166 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MATHEMATICS (Continued)

MAT04514 – Statistics (DC)

*Available for College Credit (see pg. ii)

Prerequisite: Algebra II
Credit: 1 credit
Offered: Fall or Spring

In this course, students do activities that guide them to discover statistical concepts, explore statistical principles, and apply statistical techniques. The course focuses on developing statistical reasoning through analysis of genuine data. The students will learn to describe the distribution of a variable, compare the distributions of two or more variables, and describe the relationship between two variables. The course introduces the issues of sampling, surveys, and experiments. Probability is introduced through simulations and these simulations build an understanding of the Central Limit Theorem. Inferences from data include confidence intervals and significance tests for a proportion, a mean, the difference between two proportions, and the difference between two means, both for matched pair designs and independent samples. Exploratory data analysis, data production issues and interpretation of results by the students are emphasized throughout.

*Ball State University offers 3 college credit hours in MATH 181 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT04515 – Quantitative Reasoning (DC)

*Available for College Credit (see pg. ii)

Prerequisite: Algebra II or permission of Division Chair
Credit: 1 credit
Offered: Spring

This course exposes students to a variety of practical applications in order to further develop problem-solving skills and other fundamental mathematics skills. Elementary probability theory and basic statistics are core topics of the course. Additional topics are selected from linear programming, mathematics of finance, voting methods, and graph theory.

*Ball State University offers 3 college credit hours in MATH 125 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT04522 – Discrete Mathematics (CL)

Prerequisite: Precalculus for Advanced Placement 2 or the equivalent
Credit: 1 credit
Offered: Fall

The course is a survey of discrete mathematical topics selected from among logic, set theory, cardinality of sets, number systems, graph theory, combinatorics, recursion, and discrete probability. This course uses various proof techniques including mathematical induction and stresses algorithmic thinking and precise mathematical expression.

ADVANCED ELECTIVES

MAT04825 – AP Statistics (DC)

*Available for College Credit (see pg. ii)

Corequisite: Precalculus for AP 2 (MAT03312) or permission of Division Chair
Credit: 1.25 credits
Offered: Spring

This course meets four days a week and covers the College Entrance Examination Board's syllabus in Advanced Placement Statistics. It is organized around the four broad conceptual themes of exploring data, planning a study, producing models using probability and simulation, and statistical inference. Exploratory analysis of data uses graphical and numerical techniques. An appropriate graphing calculator, such as the TI-84, and appropriate statistical software, such as Minitab or SAS, are used. The variety of associations among variables permeates most of statistics. Exploring these types of associations will engage critical thinking, problem solving, and creative abilities.

*Ball State University offers 3 college credit hours in MATH 181 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MATHEMATICS (Continued)

MAT04832 – Linear Algebra (DC)

*Available for College Credit (see pg. ii)

Prerequisite: AP Calculus AB 2 (MAT04124) or AP Calculus BC 1 (MAT04133)
Credit: 1.25 credits
Offered: Fall

This course meets four days a week and includes the solution of linear systems, vector equations, linear transformations in two- and three-dimensional space, matrices and determinants, vector spaces, inner product spaces, eigenvalues and eigenvectors and related topics. There are some computational projects.

*Ball State University offers 4 college credit hours in MATH 217 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT04833 – Multivariable Calculus (DC)

*Available for College Credit (see pg. ii)

Prerequisite: AP Calculus BC 2 (MAT04134)
Credit: 1.25 credits
Offered: Spring

This course meets four days a week and covers multidimensional calculus with applications. The topics include higher dimensional analytic geometry, vector-valued functions, motion, curvature and torsion, partial differentiation, directional derivatives, optimization, multiple integration in rectangular, cylindrical and spherical coordinates, vector fields, divergence, curl, line and surface integrals, work, flux, flow, Green's theorem, the divergence theorem, Stokes' theorem, and the fundamental theorem for line integrals. Students work with graphing calculators and a computer algebra package.

*Ball State University offers 4 college credit hours in MATH 267 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

MAT04834 – Differential Equations (DC)

*Available for College Credit (see pg. ii)

Prerequisite: AP Calculus BC 2 (MAT04134) or concurrent enrollment in AP Calculus BC 2 with the permission of the Math/CS Division Chair
Credit: 1 credit
Offered: Spring

This course is an introduction to ordinary differential equations and boundary value problems. The topics include first order linear, separable, exact, and homogeneous equations with applications in biology, chemistry, physics, and finance; numerical methods for first order equations; second order linear homogeneous and non-homogeneous equations, including the methods based on reduction of order; undetermined coefficients and variation of parameters with applications in physics; n^{th} -order linear equations and systems of first order linear equations including use of eigenvectors and eigenvalues.

*Ball State University offers 3 college credit hours in MATH 374 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

COMPUTER SCIENCE

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

CMP03301– Computer Applications (CP)

Prerequisite: Placement
Credit: .5 credit
Offered: Fall - Open only to Juniors

This online course is a brief introduction to currently popular and useful elementary software applications.

CMP04101 – Web Page Development (XC)

Prerequisite: None
Credit: 1 credit
Offered: Fall

This course is the study of multimedia computer concepts. The student will learn the current version of HTML, DHTML, XHTML and other software packages to develop Web Pages that could be placed on the Internet. The student will use multimedia computer equipment (scanner, digital camera, etc.), multimedia computer files, and software.

CMP04201 – Introduction to Programming (CL)

Prerequisite: None
Credit: 1 credit
Offered: Fall and Spring

This course is an introduction to computer programming (C++) and is designed for students with little or no previous programming experience. Students will learn to program using a top-down design, structured, and object-oriented approach. Topics will include using basic variables, loops, strings, arrays, functions, and basic input/output files.

CMP04202 – Visual Programming (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Introduction to Programming (CMP04201) suggested or experience in structured programming language or permission of instructor
Credit: 1.25 credit
Offered: Fall

This course is an introduction to visual programming using a high-level language (Python) and an established programming paradigm. Developing problem solving skills and programming techniques will be emphasized. Skills learned in this course will be applied to computer gaming and software development.

*Ball State University offers 4 college credits in CS 120 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

CMP04501/04502 – AP Computer Science A 1, 2 (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Fall: Introduction to Programming (CMP04201) or experience in structured programming language and permission of instructor
Spring: Successful completion of first semester AP Computer Science A.
Credit: 1.25 credits
Offered: Fall/Spring Sequence

This course uses a high level, object oriented programming language (Java). Students will learn syntax and the development of algorithms. The emphasis is on developing problem-solving skills and programming techniques. This course is designed for students with a computer programming background who desire a more challenging programming course. Semester 1 topics will include defining variables, primitive types vs. objects, methods, strings, if/else conditionals, loops, one- and two-dimensional arrays, array lists, inheritance, interfaces, abstract classes, basic input/output files and using applets, error handling, testing and debugging. Semester 2 topics will include using data structures such as linked lists, stacks, queues, binary trees, sequential and binary searching, sorting, traversing trees, and hashing. Laboratory activities include the required AP Computer Science A lab exercises.

Successful completion of this course will prepare the student for the Advanced Placement Computer Science A exam.

*Ball State University offers 4 college credit hours in CS 121 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

CMP04605 – Introduction to Virtual Reality (CL)

Prerequisite: Introduction to Programming (CMP04201) or permission of instructor

Credit: 1 credit

Offered: Spring

This course will provide an introduction to the study of virtual reality. Students will explore the basics of virtual reality, 3D graphics, and programming in the world of virtual reality.

SCIENCE: PHYSICS EMPHASIS

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

Students will be placed in the appropriate physics level based on their math enrollment. Juniors may wish to delay taking physics until their senior year in order to build their math abilities.

For students who have no credits in General Physics, a comprehensive physics test, covering the subject matter of the two semesters of General Physics at the Academy, will be given to those students attempting to place out of the lecture portion of the course. This test will include questions to satisfy the Indiana physics standards and additional questions to satisfy the higher expectations of the Academy. The test will be given before classes start in the fall and may be taken only once.

There are two possible outcomes of this test:

- The student does not pass the exam, and thus is assigned to a physics course as the Academy math placement test dictates.
- The student does pass the exam, and thus can –
 - elect to not place out and thus take the General Physics course and that earned grade will appear on the transcript
 - use the spare credit to take another Academy course. If this path is chosen, they will be required to take and pass both semesters of the lab portion of the General Physics course
 - take AP Physics I
 - take AP Physics C (if the student is concurrently enrolled in Calculus BC)

Passing this comprehensive physics placement test (upon completion of the laboratory requirement), or a higher-level class, will satisfy a student's survey physics course requirement for their Indiana Academy diploma.

SCI03101/03102 – Physics I: General Physics (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Fall: Algebra II
Spring: Successful completion of first semester General Physics or permission of Science Division Chair.
Co-requisite: Precalculus 1, 2 (MAT03101/03102) or higher and Physics I: General Physics Lab (SCI3101L/3102L)
Credit: 1.5 credits per semester
Offered: Fall/Spring Sequence

General Physics I-II is a high school level course which provides an introduction to the basic principles of physics. Topics include motion, force, energy, heat and thermodynamics, wave motion, sound, light, electricity and magnetism and, as time allows, topics in modern physics. A basic knowledge of algebra and geometry is required for this course. Mathematics in the course serves as a tool to define and describe physical relationships and the logical progression of ideas. The lab portion of the course models the scientific process, and gives students hands on experience in dealing with many of the concepts covered in the course.

*Ball State University offers 3 college credit hours in PHYC 100 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI03111/03112 – AP Physics I (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: Precalculus and math placement test score or permission of instructor or co-requisite enrollment in Academy Precalculus for AP.
Credit: 1.5 credits per semester
Co-requisite: AP Physics I Lab (SCI3111L/3112L)
Offered: Fall/Spring Sequence

AP Physics I proceeds at an accelerated pace and provides a physical introduction to the main principles of physics, which include Newtonian mechanics, oscillations and sound, electricity and magnetism, kinetic theory and thermodynamics, fluids, optics and modern physics. Emphasis will be given to linear and rotational applications to kinematics, forces, and momentum, as well as energy and power, gravitation, harmonic motion, and introductory electric circuits. Knowledge of geometry, algebra and some trigonometry is required for this course. Laboratory investigations emphasize concepts and inquire in order to develop proficiency in problem solving and in the application of fundamental principles to a wide variety of situations. This course is intended for those students whose career goals include life or earth science, pre-medicine, as well as other fields not directly related to science. Students will prepare for and are encouraged to take the AP Physics I exam in May.

*Ball State University offers 3 college credit hours in PHYC 110 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCIENCE: PHYSICS EMPHASIS (Continued)

SCI03113/03114 – AP Physics II (DC)

*Available for College Credit (see pg. ii)

- Prerequisite:** AP Physics I or permission of the instructor
Credit: 1.5 credits per semester
Co-requisite: AP Physics II Lab (SCI3113L/3114L)
Offered: Fall/Spring Sequence

AP Physics II builds upon what was learned in AP Physics I, and will emphasize fluid statics and dynamics; thermodynamics and kinetic theory; PV diagrams and probability; electrostatics, electric circuits with capacitors, magnets and electromagnetism; physical and geometric optics, and various topics in modern physics. Knowledge of geometry, algebra and some trigonometry is required for this course. Laboratory investigations emphasize concepts and inquiry in order to develop proficiency in problem solving and in the application of fundamental principles to a wide variety of situations. This course is intended for those student whose career goals include life or earth science, pre-medicine, as well as other fields not directly related to science. Student will prepare for and are encouraged to take the AP Physics II exam in May.

*Ball State University offers 3 college credit hours in PHYC 112 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI04102/04103 – AP Physics C (DC)

*Available for College Credit (see pg. ii)

- Prerequisite:** Fall: Completion of a General Physics course and/or concurrent enrollment in AP Calculus BC or permission of the Science Division Chair.
Spring: Successful completion of first semester AP Physics C.
Co-requisite: AP Physics C Lab (SCI4102L/4103L) or permission of instructor.
Credit: 1.5 credits per semester
Offered: Fall/Spring Sequence

This calculus-based physics course forms the first part of the college sequence, normally extending over two or three semesters. Linear and Rotational Mechanics, Wave Motion, and Heat for the first semester, and Electricity, Magnetism, Optics and Thermodynamics for the second semester. Strong emphasis is placed on solving a variety of challenging problems with an emphasis on analysis in both the laboratory and classroom. Calculus is used freely in formulating principles and in solving problems. This course serves as the foundation for students whose career goals include the physical sciences or engineering, but has many applications to geo-physics, bio-physics and other interdisciplinary fields. Students will prepare for and are strongly encouraged to take both the College Board AP Physics C: Mechanics exam and the College Board AP Physics C: Electricity & Magnetism Exam in May.

*Ball State University offers 5 college credit hours each semester in PHYC 120 and 122 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI04107Q – Physics II: Modern Physics (XC)

- Prerequisite:** A General Physics Course
Co-requisite: Physics II: Modern Physics Lab (SCI4107L) and AP Calculus AB 1, 2 (MAT04123/04124) or above
Credit: .5 credit
Offered: Quarter 4

The course includes Einstein's theories of relativity, quantum physics, quantum mechanics, and atomic physics. Other topics covered include properties of nuclei, nuclear models, radioactivity, nuclear fission and fusion, particles and anti-particles, conservation laws, quarks, and standard model. Laboratory work will enhance the concepts learned in class. This course is intended for students interested in majoring in science, medicine, or engineering.

SCI04116 – Physics II: Introduction to Engineering (XC)

- Prerequisite:** None
Co-requisite: Physics II: Introduction to Engineering Lab (SCI4116L)
Credit: 1.5 credits
Offered: Fall

This course will provide students with an introduction to engineering as a profession through case studies and hands-on projects in several areas of engineering, including robotics. In particular, students will work in teams, applying engineering principles, to build and test simple robots. Students will have the opportunity to participate in a robotics competition.

SCI04117 – Physics II: Projects in Engineering (XC)

Prerequisite: One semester of physics; Intro to Engineering or instructor permission

Co-requisite: Physics II: Projects in Engineering Lab (SCI4117L)

Credit: 1.5 credits

Offered: Spring

Students will develop and work on engineering-related projects that have a strong community service component. The class will be divided into small groups and work on projects based upon common interest. All projects will be required to demonstrate development and application of engineering skills in addition to fulfilling an identified need in the community. The class will have a regularly assigned class period but much of the work will be completed outside of regular class time. Project groups will meet with the instructor on a regular basis.

SCIENCE: CHEMISTRY EMPHASIS

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

For students who have no credits in General Chemistry, a comprehensive chemistry test, covering the subject matter of the two semesters of General Chemistry at the Academy, will be given to those students attempting to place out of the lecture portion of the course. This test will include questions to satisfy the state chemistry standards and additional questions to satisfy the higher expectations of the Academy. The test will be given before classes start in the fall and may be taken only once.

There are two possible outcomes of this test:

- The student does not pass the exam, and thus takes General Chemistry
- The student does pass the exam, and thus can –
 - elect to not place out and thus take the General Chemistry course and that earned grade will appear on the transcript
 - use the spare credit to take another Academy course. If this path is chosen, they will be required to take and pass both semesters of the lab portion of the General Chemistry course.
 - take AP Chemistry (if concurrently enrolled in AP Calculus AB or higher)

Passing this comprehensive chemistry placement test (upon completion of the laboratory requirement), or a higher-level class, will satisfy a student's survey chemistry course requirement for their Indiana Academy diploma.

SCI03201/03202 – Chemistry I: General Chemistry 1 & 2 (DC)

*Available for College Credit (see pg. ii)

Prerequisite:	Fall: Algebra I and Geometry Spring: Successful completion of first semester General Chemistry or permission of Science Division Chair.
Co-requisite:	Chemistry I: General Chemistry Lab (SCI3201L/3202L) and Advanced Algebra/Trigonometry 1, 2 (MAT03001/03002) or higher.
Credit:	1.5 credits per semester
Offered:	Fall/Spring Sequence

General Chemistry examines the concepts of the structure of matter, the states of matter, chemical bonding and reaction types, stoichiometry, equilibrium, acid-base theory, kinetics, thermodynamics, oxidation-reduction, and an introduction to organic chemistry. The course emphasizes chemical calculations and the mathematical formulation of principles. Laboratory work emphasizes both qualitative and quantitative experiences and introduces the use of technology in the lab.

*Ball State University offers 3 college credit hours in CHEM 100 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI04204/04205 – AP Chemistry (DC)

*Available for College Credit (see pg. ii)

Prerequisite:	Fall: Successful completion of two semesters (or equivalent) of General Chemistry or permission of instructor. Spring: Successful completion of first semester AP Chemistry or permission of Science Division Chair.
Co-requisite:	Juniors: AP Calculus/AB (MAT04123/04124) or higher or permission and AP Chemistry Lab (SCI4204L/4205L) Seniors: Pre-Calculus for AP (MAT03311/03312) or any 4000-level math course or permission and AP Chemistry Lab (SCI4204L/4205L)
Credit:	1.5 credits per semester
Offered:	Fall/Spring Sequence

Advanced Placement Chemistry is an accelerated course designed to review and extend the concepts introduced in General Chemistry, and it is comparable to a course for science majors in freshman college chemistry. Advanced laboratory work is emphasized. This course is designed for students who hope to advance place in college chemistry and/or whose career goals include science, engineering or the medical sciences. Students will prepare for and are encouraged to take the AP Chemistry exam in May.

*Ball State University offers 4 college credit hours in CHEM 111 and 112 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCIENCE: CHEMISTRY EMPHASIS (Continued)

SCI04209 – Chemistry II: Intro to Organic & Biochemistry (CL)

Prerequisite:	General Chemistry
Co-requisite:	Chemistry II: Introduction to Organic and Biochemistry Lab (SCI4209L)
Credit:	1.5 credits
Offered:	Fall

In this course, the traditional aspects of organic chemistry, which include nomenclature, structure, bonding, and functional groups are examined but with emphasis on reactions and reaction pathways. The goal is to educate students to think independently about organic chemistry. Students are expected to analyze problems, sort facts, reason by analogy, and look for patterns. Laboratory work is carried out at both the micro-scale and macro-scale level. Selected topics in biochemistry will be covered, and students will be exposed to biochemical techniques in the laboratory. This course is intended for students whose college goals include biology, chemistry, or the medical sciences.

SCI04250 – Chemistry II: Forensic Science (XC)

Prerequisite:	1-year course in chemistry with laboratory, trigonometry or permission of instructor
Co-requisite:	Chemistry II: Forensic Science Lab (SCI4250L)
Credit:	1.5 credits
Offered:	Spring

Forensic Science is a first course in the forensic application of both science and technology. Topics will be taught on a case history approach to expose students to “front-page” cases of past and present. This course will place major emphasis on exposing students to biological, chemical, and physical methods of analyzing crime scene evidence. Students will use information and evidence data from case histories and case readings, as well as the compilation of information from the internet, to explore and learn about the forensic applications of science and technology. Topics in this course will include: the history and development of forensic science, security of a crime scene and collection of physical evidence, trace evidence, fire investigations and explosives, fingerprints, firearms and tool marks, document examination, and computer forensics. This course will place a major emphasis on the newest and best methods to gather, analyze, and interpret data needed to solve all types of crimes. In addition, students will explore the disciplines of forensic science and college courses and majors necessary to obtain a career in the forensic sciences.

SCIENCE: LIFE SCIENCE EMPHASIS

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

SCI04301/04302 – AP Biology (DC)

*Available for College Credit (see pg. ii)

- Prerequisite:** Fall: Successful completion of two semesters (or equivalent) of General Biology and General Chemistry or permission of instructor
Spring: Successful completion of first semester AP Biology or permission of the Science Division Chair.
- Co-requisite:** AP Biology Lab (SCI4301L/4302L)
- Credit:** 1.5 credits per semester
- Offered:** Fall/Spring Sequence

This Advanced Placement course provides an accelerated, comprehensive, and thorough overview of the field of biology in preparation for the AP Biology exam. The course covers biological chemistry, cell biology, Mendelian genetics, evolutionary theory and principles, and an overview of the diversity, structure and ecology of organisms. Laboratory activities follow the required AP Biology lab exercises and other lab activities. Students will prepare for and are encouraged to take the AP Biology exam in May.

*Ball State University offers 4 college credit hours in BIO 111 and 112 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI04304 – Biology II: Microbiology (DC)

*Available for College Credit (see pg. ii)

- Prerequisite:** One year laboratory biology
- Co-requisite:** Biology II: Microbiology Lab (SCI4304L)
- Credit:** 1.5 credits
- Offered:** Fall

The history of bacterial discovery, the scope of bacterial effects, biotechnology, and the classification of micro-organisms are studied. The course includes the study of the structure, function, and ecology of microbes and viruses. Basic aseptic and sterile techniques for isolating, culturing, and identifying bacteria are discussed and practiced in the laboratory as a prelude to learning fundamental staining techniques, biochemical tests, etc. that are used in the identification of unknown bacteria. Some consideration is given to the medical concerns related to bacterial and viral pathogens.

*Ball State University offers 5 college credit hours in BIO 113 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI04305/04306 – Biology II: Human Anatomy and Physiology (CL)

- Prerequisite:** Fall: One year biology
Spring: Successful completion of first semester Biology II: Human Anatomy and Physiology or permission of Science Division Chair.
- Co-requisite:** Biology II: Human Anatomy and Physiology Lab (SCI4305L/4306L)
- Credit:** 1.5 credits per semester
- Offered:** Fall/Spring Sequence

Using an integrated text, this course covers material in six parts, which include: levels of organization, support and movement, control and regulation, fluids and transport, environmental exchange, and the continuity of life. Clinical topics that relate to personal and family health concerns are interwoven with a consideration of the relationship of structure to function. The concepts of anatomical and physiological processes are explored so that not only those seeking careers in the health sciences may benefit from the course, but also those interested in the mechanics of the human body are challenged.

SCI04310 – Biology II: Zoology (CL)

- Prerequisite:** One year biology
- Co-requisite:** Biology II: Zoology Lab (SCI4310L)
- Credit:** 1.5 credits
- Offered:** Spring

Zoology is a comprehensive survey of the diversity found in Kingdom *Animalia*. This course addresses the issue of why such diversity occurs, and what factors influence and constrain it. Laboratory explorations of live and preserved specimens allow hands-on examination of the structure and behavior of animals.

SCIENCE: LIFE SCIENCE EMPHASIS (Continued)

SCI04313 – Biology II: Introduction to Nutrition (CL)

Prerequisite:	None
Co-requisite:	Biology II: Introduction to Nutrition Lab (SCI4313L)
Credit:	1.5 credits
Offered:	Fall

This course will explore the general principles of nutrition that are needed for optimal health. The chemical composition of the major macronutrients and micronutrients will be examined. Additionally, the physiology behind proper digestion and absorption of consumed nutrients as well as their use in cellular energy metabolism will be studied. For the laboratory component of the course, the class will learn to comprehend nutrition and food labels, utilize nutrition tracking tools, as well as perform hands-on activities to explore the chemical makeup of food molecules. Current topics in nutrition will be integrated into the course material, such as evaluating the efficacy of dietary trends and gaining helpful strategies to eat healthier as a high school student. This course is highly recommended for students who are interested in increasing their knowledge base about basic nutrition in order to make more informed decisions about leading a healthy lifestyle.

SCI04317 – Biology II: Principles of Genetics and The Human Genome (CL)

Prerequisite:	One year laboratory biology
Co-requisite:	Biology II: Principles of Genetics and The Human Genome Lab (SCI4317L)
Credit:	1.5 credits
Offered:	Fall

Principles of Genetics and The Human Genome is an introductory genetics course that examines classical Mendelian genetics and modern examples as they relate to the human genome. Specific topics include Mendelian genetics, the inheritance patterns of genes, the Central Dogma, pedigree analysis, chromosomal aberrations, behavioral genetics, and genetic screening. Laboratory activities emphasize techniques used to detect and analyze genetic information.

SCI04320 – Biology II: Molecular Genetics (CL)

Prerequisite:	One year biology
Co-requisite:	Biology II: Molecular Genetics Lab (SCI4320L)
Credit:	1.5 credits
Offered:	Spring

Molecular Genetics is an advanced Biology course emphasizing the structure of DNA and biotechnology techniques. Specific topics include the modular structure of DNA and proteins, the relationship between DNA mutations and cancer, and the molecular techniques used in forensics and biotechnology. Laboratory activities will provide students the opportunity to perform some commonly used techniques in molecular genetics.

SCI04321 – Biology II: Field Botany (XC)

Prerequisite:	One year biology
Co-requisite:	Biology II: Field Botany Lab (SCI4321L)
Credit:	.75 credit
Offered:	Quarter 1

This course will emphasize the diversity found within the plant kingdom at differing levels of the classification. Topics covered will include Plant Anatomy, Morphology, Systematics and Taxonomy. Both non-vascular and vascular plants will form the basis of our study. Laboratory explorations will be organized around the study of the structure and function of plants and the organs. This is a field course that will emphasize knowledge of the local flora as models for plant study.

SCI04324 – Biology II: Intro to Bioethics (XC)

Prerequisite:	One year biology
Credit:	.5 cr.
Offered:	Quarter 4

The ethical basis for the use of scientific knowledge is explored during this course. Students will explore ethical issues resulting from the application of scientific knowledge to solve problems in today's world. Our priority will be the promotion and development of informed citizens and leaders who can use scientific information to cope with science related issues. The focus of the course revolves around such issues as energy resource problems, sustainability, the bioethics of genetic engineering, medical practices and death and dying. We hope to expand students' horizons and understanding of science by exposing them to a variety of issues using selected readings. This course does not satisfy the Academy lab science requirements.

SCIENCE: LIFE SCIENCE EMPHASIS (Continued)

SCI04327 – AP Environmental Science I (CL)

Prerequisite: One year biology
Co-requisite: AP Environmental Science Lab (SCI4327L)
Credit: 1.5 credits
Offered: Fall

The study of environmental science concerns itself with the interaction between humans and the ecosystems, in which we live and work. The course focuses on the determination of environmental quality through a series of laboratory experiences dealing with soil, water, population and air resources. There is a concentration on problems having to do with population, pollution, agriculture, resource management and land use. An integrated approach to the issues facing us is emphasized. The course will use a problem-based learning approach and will incorporate a service learning component. Students will prepare for and are encouraged to take AP Environmental Science II in the spring in order to qualify for the exam in May.

SCI04328 – AP Environmental Science II (DC)

***Available for College Credit (see pg. ii)**

Prerequisite: One year biology
Co-requisite: AP Environmental Science Lab (SCI4328L)
Credit: 1.5 credits
Offered: Fall

The study of environmental science concerns itself with the interaction between humans and the ecosystems, in which we live and work. The course focuses on the determination of environmental quality through a series of laboratory experiences dealing with soil, water, and air resources. There is a concentration on problems having to do with population, pollution, agriculture, resource management and land use. An integrated approach to the issues facing us is emphasized. The course will use a problem-based learning approach and will incorporate a service learning component. Students will prepare for and are encouraged to take the AP Environmental Science exam in May.

*Ball State University offers 3 college credit hours in NREM 101 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI04329 – Biology II: Sport and Exercise Physiology (CL)

Prerequisite: One year biology
Co-requisite: Biology II: Sport and Exercise Physiology Lab (SCI4329L)
Credit: 1.5 credits
Offered: Spring

This course will explore the human body's physiological response to acute exercise and exercise training. The main systems of the body (musculoskeletal, cardiovascular, respiratory, endocrine, and nervous) and cellular energy metabolism will be examined at rest through maximal exercise. Additionally, how the main systems of the body adapt to exercise training will be described. The laboratory activities will demonstrate how human fitness and performance are measured. Current topics in sport and exercise physiology will be integrated into the course material. Students will appreciate how exercise and physical activity are essential for optimal human health. Students interested in exploring careers in health and medical fields are encouraged to take this course.

SCI04330 – Biology II: Cognitive Neuroscience (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

This course will review cognitive foundations (e.g. perceptions, attention, memory, executive) for processing symbol systems (i.e. visual words, spoken words and numbers) with a focus on neural basis and development. The course will also describe gross anatomical organization of the brain and different methods for studying the brain basis of communication.

SCIENCE: EARTH AND SPACE SCIENCE EMPHASIS

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

SCI04406 – The Solar System (DC)

*Available for College Credit (see pg. ii)

Prerequisite: None
Co-requisite: The Solar System Lab (SCI4406L)
Credit: 1.5 credits
Offered: Fall

This course is a survey of the solar system based on modern data obtained from NASA and ESA probes. Students are introduced to the basic concepts of planetary science. These concepts include elements of geology and meteorology. The planets, their satellites, and the sun are examined in detail from a planetary science point of view. Other solar system objects such as asteroids and comets are examined as a class. In addition the general motions of bodies in the solar system are examined.

*Ball State University offers 3 college credit hours in ASTRO 100 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

SCI04407 – Galactic Astronomy (DC)

*Available for College Credit (see pg. ii)

Prerequisite: Algebra I
Co-requisite: Galactic Astronomy Lab (SCI4407L)
Credit: 1.5 credits
Offered: Spring

This course introduces students to modern astronomy, its historical roots, and its place as a branch of modern physics. Physics topics include gravitation and the motion of celestial bodies, the relation of electromagnetism to light and thermodynamics and their application to astronomy, modern telescopes and their historical roots. Other topics include the structure of the sun and stars, binary stars, the distance to stars, the birth life and death of stars, neutron stars, black holes, the Milky Way, other galaxies, cosmology and the “Big Bang” theory.

*Ball State University offers 3 college credit hours in ASTRO 120 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

Ball state courses such as the following may be taken on a space-available basis. The academy is not responsible for fees associated with these courses.

GEOL 101 Introduction of Geology

GEOL 102 Historical Geology

GEOL 206 Oceans and Nations

GEOL 207 Environmental Geology

GEOL 220 Mineralogy

ACADEMY / BURRIS: FINE ARTS

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

Enrollment into Burris classes (BUR prefix) is subject to space availability. Burris courses meet five days a week and could conflict with other Academy choices. Burris courses are also subject to additional course fees. Courses taken to fulfill graduation requirements will be covered by the Academy. Fees for courses taken for student interest are the responsibility of student and their family.

FAR05110 – Social History of Art (CL)

Prerequisite: Not open to students with credit in History through Art and Architecture
Credit: 1 credit in Fine Arts
Offered: Fall

An introduction to the history of art and architecture, with a deliberate exposure to both pre-modern and non-Western cultures. Topics and regions covered may include prehistoric and primitive art, a survey of Western art traditions and ideas from Greco-Roman times to the present, and comparative treatments of the independent artistic perspectives of Africa, India, East Asia, and the Americas. There will be a significant independent research component, with individual students “curating” a proposed gallery show as their final project.

BURA0101 – Introduction to Two-Dimensional Art (CP)

Prerequisite: None
Credit: 1 credit in Fine Arts
Offered: Spring

Introduction to Two-Dimensional Art is a course based on the Indiana Academic Standards for Visual Art. Students taking this course engage in sequential learning experiences that encompass art history, art criticism, aesthetics, production, and integrated studies and lead to the creation of portfolio quality works. Students explore historical and cultural background and connections; analyze, interpret, theorize, and make informed judgments about artwork and the nature of art; create two-dimensional works of art, reflect upon the outcomes, and revise their work; relate art to other disciplines and discover opportunities for integration; and incorporate literacy and presentational skills. They identify ways to utilize and support art museums, galleries, studios, and community resources.

BURA0105 – Ceramics (CP)

Prerequisite: Introduction to Two-Dimensional Art (BURA0101), Introduction to Three-Dimensional Art
Credit: 1 credit in Fine Arts
Offered: Fall

Ceramics is a course based on the Indiana Academic Standards for Visual Art. Students in ceramics engage in sequential learning experiences that encompass art history, art criticism, aesthetics, and production and lead to the creation of portfolio quality works. Students create works of art in clay utilizing the processes of hand building, molds, wheel throwing, slip and glaze techniques, and the firing processes. They reflect upon and refine their work; explore cultural and historical connections; analyze, interpret, theorize, and make informed judgments about artwork and the nature of art; relate art to other disciplines and discover opportunities for integration; and incorporate literacy and presentational skills. Students utilize the resources of art museums, galleries, and studios, and identify art-related careers.

BURA0106 – Sculpture (CP)

Prerequisite: Introduction to Two-Dimensional Art (BURA0101)
Credit: 1 credit in Fine Arts
Offered: Spring

Sculpture is a course based on the Indiana Academic Standards for Visual Art. Students in sculpture engage in sequential learning experiences that encompass art history, art criticism, aesthetics, and production. Using materials such as plaster, clay, metal, paper, wax, and plastic, students create portfolio quality works. Students at this level produce works for their portfolios that demonstrate a sincere desire to explore a variety of ideas and problems. They create realistic and abstract sculptures utilizing subtractive and additive processes of carving, modeling, construction, and assembling. They reflect upon and refine their work; explore cultural and historical connections; analyze, interpret, theorize, and make informed judgments about artwork and the nature of art; relate art to other disciplines and discover opportunities for integration; and incorporate literacy and presentational skills. Students utilize the resources of art museums, galleries, and studios, and identify art-related careers.

BURA0107 – Drawing (CP)

Prerequisite: Introduction to Two-Dimensional Art (BURA0101)
Credit: 1 credit in Fine Arts
Offered: Spring

Drawing is a course based on the Indiana Academic Standards for Visual Art. Students in drawing engage in sequential learning experiences that encompass art history, art criticism, aesthetics, and production and lead to the creation of portfolio quality works. Students create drawings utilizing processes such as sketching, rendering, contour, gesture, and perspective drawing and use a variety of media such as pencil, chalk, pastels, charcoal, and pen and ink. They reflect upon and refine their work; explore cultural and historical connections; analyze, interpret, theorize, and make informed judgments about artwork and the nature of art; relate art to other disciplines and discover opportunities for integration; and incorporate literacy and presentational skills. Students utilize the resources of art museums, galleries, and studios, and identify art-related careers.

BURA0108 – Painting (CP)

Prerequisite: Introduction to Two-Dimensional Art (BURA0101)
Credit: 1 credit in Fine Arts
Offered: Spring

Painting is a course based on the Indiana Academic Standards for Visual Art. Students taking painting engage in sequential learning experiences that encompass art history, art criticism, aesthetics, and production that lead to the creation of portfolio quality works. Students create abstract and realistic paintings, using a variety of materials such as mixed media, watercolor, oil, and acrylics as well as techniques such as stippling, gouache, wash, and impasto. They reflect upon and refine their work; explore cultural and historical connections; analyze, interpret, theorize, and make informed judgments about artwork and the nature of art; relate art to other disciplines and discover opportunities for integration; and incorporate literacy and presentational skills. Students utilize the resources of art museums, galleries, and studios, and identify art-related careers.

BURA118 – Design Fundamentals (CP)

Prerequisite: Introduction to Communications
Credit: 1 credit in Fine Arts
Offered: Fall

Design Fundamentals introduces students to fundamental design theory. Investigations into design theory and color dynamics will provide experiences in applying design theory, ideas and creative problem solving in the areas of communication technology. Student learning experiences encompass art history, art criticism, aesthetics, and production, which lead to the creation of portfolio quality works. Students reflect upon and refine their work; explore cultural and historical connections; analyze, interpret, theorize, and make informed judgments about artwork and the nature of art in areas of communication; relate art to other disciplines and discover opportunities for integration; and incorporate literacy and presentational skills.

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

J101 – Publications (CP)

Prerequisite: None
Credit: 1 credit per semester in elective studies
Offered: Fall and/or Spring

This course provides the study and practice in gathering and analyzing information, interviewing and note taking for the purpose of writing, editing, and publishing; the gathering, editing and preparation of digital images; and the design and preparation of page layouts for high school yearbook.

This course will also provide the study of—and practice in—gathering and analyzing information, interviewing, and note taking for the purpose of: (1) writing, (2) editing, (3) publishing for high school newspaper.

ACDBDMWF – Advanced Concert Band (CP)

- Prerequisite:** Beginning and Intermediate Concert Band (Recommended)
- Credit:** .5 credit per semester. The nature of this course allows for successive semesters of instruction at an advanced level provided that defined proficiencies and content standards are utilized.
Counts as a Directed Elective or Elective for all diplomas.
Fulfills a Fine Arts requirement for the Core 40 Academic Honors Diploma.
- Offered:** Fall and Spring

Advanced Concert Band is based on the Indiana Academic Standards for High School Instrumental Music. This course provides students with a balanced comprehensive study of music through the concert band, which develops skills in the psychomotor, cognitive, and affective domains. Ensemble and solo activities are designed to develop elements of musicianship including tone production, technical skills, intonation, music reading skills, listening skills, analyzing music, studying historically significant styles of literature, and integration of other applicable disciplines. Experiences include improvising, conducting, playing by ear, and sight-reading. Students develop the ability to understand and convey the composer's intent in performance of music. Time outside of the school day may be scheduled for rehearsals and performances. A limited number of public performances may serve as a culmination of daily rehearsal and musical goals. Students are required to participate in performance opportunities outside of the school day that support and extend learning in the classroom.

BURCHMWF – Advanced Chorus (CP)

- Prerequisite:** Beginning and Intermediate Chorus (Recommended)
- Credit:** .5 credit per semester. The nature of this course allows for successive semesters of instruction at an advanced level provided that defined proficiencies and content standards are utilized.
Counts as a Directed Elective or Elective for all diplomas.
- Offered:** Fall and Spring

Advanced Chorus is based on the Indiana Academic Standards for High School Choral Music. Students taking Advanced Chorus develop musicianship and specific performance skills through ensemble and solo singing. This class includes the study of quality repertoire in the diverse styles of choral literature appropriate in difficulty and range for the students. Chorus classes provide opportunities for performing, creating, and responding to music. Students develop the ability to understand and convey the composer's intent in performance of music. Time outside of the school day may be scheduled for rehearsals and performances. A limited number of public performances may serve as a culmination of daily rehearsal and musical goals. Students are required to participate in performance opportunities outside of the school day that support and extend learning in the classroom.

BUORCHSMWF – Advanced Orchestra (Strings Only) (CP)

- Prerequisite:** Beginning and Intermediate Orchestra (Recommended)
- Credit:** .5 credit per semester. The nature of this course allows for successive semesters of instruction at an advanced level provided that defined proficiencies and content standards are utilized.
Counts as a Directed Elective or Elective for all diplomas.
- Offered:** Fall and Spring

Advanced Orchestra is based on the Indiana Academic Standards for High School Instrumental Music. Students in this ensemble are provided with a balanced comprehensive study of music through the orchestra, string and/or full orchestra, which develops skills in the psychomotor, cognitive, and affective domains. Ensemble and solo activities are designed to develop and refine elements of musicianship including tone production, technical skills, intonation, music reading skills, listening skills, analyzing music, studying historically significant styles of orchestral literature, and integration of other applicable disciplines. Experiences include improvising, conducting, playing by ear, and sight-reading. Students develop the ability to understand and convey the composer's intent in performance of music. Time outside of the school day may be scheduled for rehearsals and performances. A limited number of public performances may serve as a culmination of daily rehearsal and musical goals. Students are required to participate in performance opportunities outside of the school day that support and extend learning in the classroom.

INTERDISCIPLINARY STUDIES

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

GENERAL

BUS0110 – Personal Finance (DC)

*Available for College Credit (see pg. ii)

Prerequisite: None
Credit: 1 credit
Offered: Spring

The fundamental principles of general business and related economic concepts are considered from the consumer's point of view. General fundamental principles of business, consumer buying, use of credit, banking, insurance, investments, tax concepts, and budgeting will be introduced.

*Ball State University offers 3 college credit hours in FIN 110 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

PHIL100 – Introduction to Philosophy (CL)

Prerequisite: None
Credit: 1 credit
Offered: Spring

This course is an introduction to some of the most important questions human beings of all ages, periods, religions, and places have asked themselves. These questions include issues in metaphysics (what exists and what does this mean? what is being?), epistemology (what does it mean to know something? what things can we know and how?), and ethics (what obligation do I have to be a good person? what constitutes good/bad/evil?). In addition to reading a variety of texts on these topics and discussing the questions and ideas therein, we will also focus on developing the skills needed to understand intellectual arguments and evaluate them. In other words, we will practice using basic logical concepts – principles of deduction, induction, soundness, clarity, etc. – to form reasoned judgments about the claims of others and to compose thoughtful responses of our own. This class will challenge many assumptions about the human condition, and our primary goal above all else will be to develop our capacity for thinking, judging, and acting.

COLLOQUIUM

COL03900 – Junior Colloquium (CL)

Prerequisite: None
Credit: .5 credit in Junior Colloquium
Offered: Fall

This is a discussion-oriented seminar and is required for all juniors (residential, international & NECP). Students participate in a variety of experiences: small group seminars, large group lectures, large group outings, and medium group simulations as a part of this interdisciplinary series. All students will do a variety of readings on many different content areas as part of this experience.

COL04000 – Senior Colloquium (CL)

Prerequisite: Junior Colloquium (COL3900)
Credit: .5 credit in Senior Colloquium
Offered: Spring

This is a discussion-oriented seminar and is required for all seniors (residential, international & NECP). Students participate in small group seminars as part of this interdisciplinary series. All students will do a variety of readings and discussions on selected content areas as part of this experience.

INTERDISCIPLINARY STUDIES (Continued)

RESEARCH

RES03100 – Research (XC)

Prerequisite: None
Credit: 1 credit in Academy Research
Offered: Fall or Spring

In this course the basic principles of research are covered, and the student is expected to develop a research project which is to be presented through a written document and oral presentation. Students interested in developing an original in-depth research idea are encouraged to submit a grant proposal. Students are encouraged to continue their project and present it in one of the venues available.

INDIVIDUAL STUDY

CL College Level

CP College Prep

DC Dual Credit

XC Exploratory Course

INTERNSHIPS

The internship program allows students to explore a college major or career interest by working with a professional for a short period of time. The emphasis is on a work experience that enables students to learn about a potential college major or career choice. Students can earn one half credit (60 hours during the semester) or a full credit (120 hours during the semester). Students may schedule with the internship site the times of internship service as needed to complete the credit requirements necessary to earn elective credit. Internships may begin at different points during the semester. For further information, please contact Mr. Aaron Lake.

DIRECTED STUDY

Through a Directed Study, students form linkages with instructors who have expertise in an area of interest for them that cannot be acquired through the Academy curriculum. If students are interested in pursuing a Directed Study, they should first contact the particular instructor with whom they wish to study to determine if the instructor is willing. If the instructor agrees to the Directed Study, then the instructor and the student must complete the Directed Study Proposal form on the Indiana Academy website at academy.bsu.edu/forms. No student may take a Directed Study if their need may be met through an Indiana Academy course offering unless an explicit need or conflict can be demonstrated. Students wishing to enroll in a Directed Study must be at least a second semester junior. The Directed Study must be approved by the instructor, Division Chair, and Director of Academic Affairs. This approval process automatically occurs once the proposal is submitted online.