



THE  
**INDIANA ACADEMY**  
FOR SCIENCE, MATHEMATICS, AND HUMANITIES

# COURSE CATALOG 2025-2026

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## Introduction

The Indiana Academy for Science, Mathematics, and Humanities offers a robust college-level curriculum reflecting current Indiana Academic Standards, faculty expertise, and student interest. Thus, our curriculum is subject to change as factors, both external and internal, require we revisit, update and/or revise our courses and their descriptions.

## Definitions

**Course Title Codes** Refers to the type of course:

**CL**

College Level – Uses a college textbook and syllabus

**DC**

Dual Credit – available for post-secondary credit (see page ii)

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

**Co-requisite** refers to courses that are required concurrently.

**Consent 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, placement exams, and other relevant information by the Director of Academic Affairs, the appropriate academic division chair, or their designees.

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## DUAL CREDIT COURSES

Dual Credit Courses (designated as “DC” in the course catalog descriptions) are Indiana Academy courses taught by Academy instructors which have been recognized as equivalent to a post-secondary institution’s courses.

### 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 early in fall. Enrollment for spring dual credit courses will start in December and finish in early January. **You must enroll during these times if you wish to receive dual credit. Our partner institutions do 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 for courses with an asterisk. 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 with two Academy course numbers listed are the fall **and** spring semesters of the Academy class. The two semesters together are equal to one semester of the partner institution’s equivalent class. The dual credit grade is based on work from both semesters of the Academy class.

### Ball State Dual Credit Courses

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 below, all courses underlined will cost \$25 per college credit hour. These courses are on the state core transfer 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 TransferIN, <https://transferin.net/> Applications, directions for enrollment, and other information on dual credit courses can be obtained from the Guidance Office.

## DUAL CREDIT COURSES (Continued)

Academy course number and title	Ball State University course	
ENG103	<u>Composition and Rhetoric</u>	3 cr. hrs. in ENG 103 Composition and Rhetoric ( <i>enroll fall</i> )
ENG104	<u>Composing Research</u>	3 cr. hrs. in ENG 104* Composing Research ( <i>enroll spring</i> )
FRN1A	<u>Beginning French 1 (Fall)</u>	4 cr. hrs. in FR 101 Beginning French 1 ( <i>enroll fall</i> )
FRN1B	<u>Beginning French 1 (Spring)</u>	4 cr. hrs. in FR 102* Beginning French 2 ( <i>enroll spring</i> )
FRN2A/2B	<u>Intermediate French 2</u>	3 cr. hrs. in FR 201 Intermediate French 1 ( <i>enroll fall</i> )
FRN3A/3B	<u>Advanced French 3</u>	3 cr. hrs. in FR 202 Intermediate French 2 ( <i>enroll fall</i> )
GER1A	<u>Beginning German 1 (Fall)</u>	4 cr. hrs. in GER 101 Beginning German 1 ( <i>enroll fall</i> )
GER1B	<u>Beginning German 1 (Spring)</u>	4 cr. hrs. in GER 102* Beginning German 2 ( <i>enroll spring</i> )
GER2A/2B	<u>Intermediate German 2</u>	3 cr. hrs. in GER 201 Intermediate German 1 ( <i>enroll fall</i> )
SPN2A/2B	<u>Intermediate Spanish 2</u>	3 cr. hrs. in SP 201 Intermediate Spanish 1 ( <i>enroll fall</i> )
SPN3A/3B	<u>Advanced Spanish 3</u>	3 cr. hrs. in SP 202 Intermediate Spanish 2 ( <i>enroll fall</i> )
SOC203	<u>American History 1492-1876</u>	3 cr. hrs. in HIST 201 U.S. History 1492-1876 ( <i>enroll fall</i> )
SOC204	<u>American History 1877-Present</u>	3 cr. hrs. in HIST 202 U.S. History 1877-Present ( <i>enroll spring</i> )
SOC05130	<i>The West in the World</i>	3 cr. hrs. in HIST 150 The West in the World ( <i>enroll fall</i> )
MAT04005	<i>Calculus</i>	3 cr. hrs. in MATH 132 Brief Calculus ( <i>enroll fall</i> )
MAT04123/04124	<u>AP Calculus AB 1, 2</u>	4 cr. hrs. in MATH 165 Calculus 1 ( <i>enroll fall</i> )
MAT04133	<u>AP Calculus BC 1</u>	4 cr. hrs. in MATH 165 Calculus 1 ( <i>enroll fall</i> )
MAT04134/04134B	<u>AP Calculus BC 2</u>	4 cr. hrs. in MATH 166 Calculus 2 ( <i>enroll semester taken</i> )
MAT04514/04514B	<i>Statistics</i>	3 cr. hrs. in MATH 181 Elem. Prob. Stats ( <i>enroll semester taken</i> )
MAT04825	<i>AP Statistics</i>	3 cr. hrs. in MATH 181 Elem. Prob. Stats ( <i>enroll spring</i> )
MAT04832	<i>Linear Algebra</i>	4 cr. hrs. in MATH 217 Linear Algebra ( <i>enroll fall</i> )
MAT04833	<i>Multivariable Calculus</i>	4 cr. hrs. in MATH 267 Calculus 3 ( <i>enroll spring</i> )
MAT04834	<i>Differential Equations</i>	3 cr. hrs. in MATH 374 Differential Equations ( <i>enroll spring</i> )
CMP04511	<i>AP Computer Science A 1</i>	4 cr. hrs. in CS 120 Computer Science 1 ( <i>enroll fall</i> )
CMP04512	<i>AP Computer Science A 2</i>	4 cr. hrs. in CS 121* Computer Science 2 ( <i>enroll spring</i> )
SCI03201/03202	<i>General Chemistry 1, 2</i>	3 cr. hrs. in CHEM 100 People and Chemistry ( <i>enroll fall</i> )
SCI04204	<i>AP Chemistry 1</i>	4 cr. hrs. in CHEM 111 General Chemistry 1 ( <i>enroll fall</i> )
SCI04205	<i>AP Chemistry 2</i>	4 cr. hrs. in CHEM 112* General Chemistry 2 ( <i>enroll spring</i> )
SCI04301	<i>AP Biology 1</i>	4 cr. hrs. in BIO 111 Principles in Biology 1 ( <i>enroll fall</i> )
SCI04328	<i>AP Environmental Science</i>	3 cr. hrs. in NREM 101 Environment & Society ( <i>enroll spring</i> )
SCI03103/03103A	<u>Physics &amp; Astronomy: Physics</u>	3 cr. hrs. in PHYC 100 Conceptual Physics ( <i>enroll fall</i> )
SCI03104/03104A	<u>Physics &amp; Astronomy: Solar System</u>	3 cr. hrs. in ASTR 100 Intro Astro: Sol Sys & Bey ( <i>enroll fall</i> )
SCI03111/03112	<i>AP Physics I</i>	4 cr. hrs. in PHYC 110 General Physics 1 ( <i>enroll fall</i> )
SCI03113/03114	<i>AP Physics II</i>	4 cr. hrs. in PHYC 112* General Physics 2 ( <i>enroll fall</i> )
SCI04102	<i>AP Physics C 1</i>	5 cr. hrs. in PHYC 120 General Physics 1 ( <i>enroll fall</i> )
SCI04103	<i>AP Physics C 2</i>	5 cr. hrs. in PHYC 122* General Physics 2 ( <i>enroll spring</i> )
SCI04403	<i>Astrophysics I: The Sun &amp; Stars</i>	3 cr. hrs. in ASTR 120 The Sun and Stars ( <i>enroll fall</i> )
SCI04404	<i>Astrophysics II: Galaxies &amp; Cosmology</i>	3 cr. hrs. in ASTR 122* Stellar Ev, Gal, & Cosm ( <i>enroll spring</i> )

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

## DUAL CREDIT COURSES (Continued)

### Ivy Tech Dual Credit Courses

Students who enroll for dual credit may request a transcript from Ivy Tech, which can be transferred to any college, or university that accepts Ivy Tech credits. Tuition fees for any Dual Credit courses from Ivy Tech listed below are no charge. Students should check with a receiving college for their policy on the transfer of Ivy Tech courses. Students can also check for transfer of credits through TransferIN, <https://transferin.net/> Applications, directions for enrollment, and other information on dual credit courses can be obtained from the Guidance Office.

Academy course number and title		Ivy Tech Community College course
MAT03121/03122	AP Precalculus SL 1, 2	3 cr. hrs. in MATH 136 College Algebra ( <i>enroll fall</i> )
MAT03131	AP Precalculus EL 1	3 cr. hrs. in MATH 136 College Algebra ( <i>enroll fall</i> )
MAT03132	AP Precalculus EL 2	3 cr. hrs. in MATH 137 Trig w/Analytic Geometry ( <i>enroll spring</i> )

### 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. 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 after the deadline. 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 often receive college credit in that discipline towards their degree at an institution of higher education. See TransferIN, <https://transferin.net/>, for more information on how those courses transfer and what score is needed for credits.

### 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. The Assistant Director of Academic Advising and Guidance and the Director of Academic Affairs must approve all BSU course substitutions. 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	1.00
4	1.25
5	1.50

## GRADUATION REQUIREMENTS

Requirements for:	3-Year Students	2-Year Students	1-Year Students
<b>Science</b>	2 credits biology 2 credits chemistry 2 credits physics 6 cr. lab science from Academy	2 credits biology 2 credits chemistry 2 credits physics 4.5 cr. lab science from Academy	2 credits biology 2 credits chemistry 2 credits physics 1.5 cr. lab science from Academy
<b>Math</b>	2 credits Algebra 1/Int. Math 1 2 credits Geometry/Int. Math 2 2 credits Algebra 2/Int. Math 3 2 credits beyond Algebra 2 5+ credits total from Academy	2 credits Algebra 1/Int. Math 1 2 credits Geometry/Int. Math 2 2 credits Algebra 2/Int. Math 3 2 credits beyond Algebra 2 3+ credits total from Academy	2 credits Algebra 1/Int. Math 1 2 credits Geometry/Int. Math 2 2 credits Algebra 2/Int. Math 3 2 credits beyond Algebra 2 1+ credits total from Academy
<b>English</b>	8 credits total 1 credit American Literature 1 credit World Literature 3+ cr. electives from Academy	8 credits total 1 credit American Literature 1 credit World Literature 1+ cr. electives from Academy	8 credits total 1+ cr. electives from Academy
<b>Social Studies</b>	2 credits Geography/History of the World 2 credits U.S. History 1 credit Economics 1 credit U.S. Government 5+ credits total from Academy	2 credits Geography/History of the World 2 credits U.S. History 1 credit Economics 1 credit U.S. Government 3+ credits total from Academy	2 credits Geography/History of the World 2 credits U.S. History 1 credit Economics 1 credit U.S. Government 1+ credits total from Academy
<b>World Language</b>	6 credits one language OR 4 credits each two languages At least 2.5 credits from Academy	6 credits one language OR 4 credits each two languages	6 credits one language OR 4 credits each two languages
<b>Fine Arts</b>	2 credits	2 credits	2 credits
<b>Phys Ed</b>	2 credits	2 credits	2 credits
<b>Health</b>	1 credit	1 credit	1 credit
<b>Digital Apps</b>	0.5 credits OR test out	0.5 credits OR test out	0.5 credits OR test out
<b>Colloquium</b>	1.5 credits	1 credit	0.5 credits
<b>May Term</b>	1.5 credits	1 credit	0.5 credits
<b>Min. Acad. Credits</b>	39	26.5	13

**Each of these requirements is only met if the student earns a C- or better in the applicable course.**

For an honors diploma, each student must also complete ONE of the following:

- SAT score of 1250+, Math 560+, English 590+
- ACT combined score of 26+ with writing section completed
- 2 Full year AP Courses with exams taken
- 2 Dual Credit courses with dual credits enrolled and earned
- Combination of 1 full year AP course with exam and 1 dual credit course



## GRADUATION REQUIREMENTS (Continued)

### **Graduation requirements extra information:**

Students must maintain at least 5.5 credits per semester to be full time students.

Courses that typically meet for 150 minutes per week are worth 1 credit, 200 minutes per week are generally worth 1.25 credits, and more than that per week are worth 1.5 credits. Courses that only last for one quarter or meet for less than 150 minutes per week are generally worth 0.5 credits. See the course description for confirmation of credits earned for successful completion of each course.

The graduation requirements table shown lists ALL graduation requirements: for a Core40 with Academic Honors Diploma and the Academy graduation requirements. Requirements specific to the Academy are listed as the bottom line in each applicable box.

Courses that are not taught at the Indiana Academy which would have traditionally been taken at the previous school may be taken through summer school or through other arrangements. These classes include, but are not limited to, PE, Health, and some Fine Arts. Approval for these substitutions should be arranged with the Assistant Director of Academic Advising and Guidance.

# INDIANA GRADUATION PATHWAYS



# Indiana GRADUATION PATHWAYS

The path to graduation is not one-size-fits-all. Indiana provides many pathways for students to earn a high school diploma.

## OVERVIEW

Students starting with the Class of 2023 must meet all of the following:

- 1 Credits**
- 2 Learn & Demonstrate Employability Skills**
- 3 Postsecondary-Ready Competencies**

## DIPLOMA REQUIREMENTS

- 1 Credits**  
Earn credits toward a diploma with designation.
  - Core 40 - minimum 40 credits
  - Academic Honors - minimum 47 credits
  - Technical Honors - minimum 47 credits
  - General
- 2 Learn & Demonstrate Employability Skills**  
Produce defined outcome(s) based on experience.  
**Defined Outcome Options**
  - Videos
  - Papers
  - Resume
  - Dual Credit
  - Certifications
  - Portfolio
  - Projects
  - Slideshows
  - Presentation
  - Five Year Goal Plan
  - Reflection of Experience
  - Letters of Recommendation
  - Letter of Employment Verification
  - Postsecondary-related Experiences
  - Co-Curricular Participation
  - Extra-Curricular Participation
  - Locally Defined Outcome
- 3 Postsecondary-Ready Competencies**  
Meet at least one of these competencies.
  - **Honors Diploma**  
academic or technical
  - **SAT**  
reading/writing = 480, math = 530
  - **ACT**  
english = 18, reading = 22, math = 22, science = 23 (2 out of 4 needed with at least one in English/Reading and one in Math/Science)
  - **ASVAB**  
minimum of 31
  - **Industry Certification**  
certification from approved DWD list
  - **Apprenticeship**  
federally recognized
  - **CTE Concentrator**  
C average or higher in at least 2 advanced HS courses in a state-approved CTE Pathway
  - **AP/IB/Dual Credit/ Cambridge International/CLEP**  
C average or higher in 3 courses (1 of the 3 courses must be in core content area or all three must be part of a CTE pathway)
  - **Locally Created Pathway**  
approved by SBOE
  - **Waiver**  
see listed web link

## TRACKING

- 1 Transcript with Completed Courses**
  - **Project-Based Experience**  
Allows students to gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question.
- 2 Work Toward Completion of One of the Experiences *Below***
  - **Service-Based Experience**  
Integrates academic study with service experience, reflects larger social, economic, and societal issues, and collaborative efforts between students, schools, and community partners.
- 3 Course Selection, Graduation Plan, & Testing Opportunities**
  - **Work-Based Experience**  
Activities that occur in a workplace while developing the student's skills, knowledge, and readiness for work.

# HUMANITIES: ENGLISH

CL College Level

DC Dual Credit

## REQUIRED COURSES

Every student who enters as a sophomore or 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

### ENG103 – Composition and Rhetoric (DC)

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

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall

This course introduces and develops an understanding of principles of rhetoric, basic research methods, and the elements, strategies, and conventions of persuasion used in constructing written and multi-modal texts.

\*Ball State University offers 3 college credit hours in ENG 103 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

### ENG104 – Composing Research (DC)

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

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Spring

This course applies the fundamentals of rhetoric to the research process: methods of research; the rhetorical nature of research; elements, strategies, and conventions common to research writing, including multimodal presentations of new knowledge.

\*Ball State University offers 3 college credit hours in ENG 104 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

### ENG05104 – The Irish Literary Revival (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Spring

This course focuses on the ways that the Irish Literary Revival at the turn of the twentieth century refashioned and adapted earlier myths, literary forms, characters, and themes of Irish literature and the Irish nation. We will examine how Irish writers selected elements of their country's past literary traditions and then revised, rewrote, or re-presented those elements as a part of a literary, nation-making project, which unfolded as Ireland itself fought for and achieved independence from the British Empire. We will pay close attention to the ways in which older themes or characters which did not align with Ireland's twentieth-century, nationalist vision of itself may have been excluded or written out of the mainstream literary tradition. We'll move between novels, drama, poetry, and prose to practice the methods required for writing literary analysis of these forms. No experience with the Irish language is necessary, yet we will consider Irish-language texts in translation and the impact that has on storytelling and meanings.

### ENG05108 – Detective Fiction (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall

Detective Fiction introduces students to the particularities of the mystery genre and immerses them in discourses regarding the intersection of mainstream literature with popular culture. Arguably developed first in the nineteenth century, the notion of an arch investigator continues to appear in many contemporary forms but almost always as someone whose investigation operates beyond and outside of police forces. From the cerebral deductions of Sherlock Holmes and his good-natured competition with Scotland Yard, to Phillip Marlowe's calling out of police corruption, the detective figure and the crimes they solve offer us a way to explore ethical dilemmas and plumb the psychological depths of human behavior. Simultaneously, these stories offer a much needed reminder that many of our society's most cherished philosophical ideals, such as "truth," "duty," and "justice", can be achieved only through questioning and holding in check those in power. Assignments will involve students thinking critically to interpret texts, group discussions, occasional quizzes to ensure comprehension of subject matter, and a final research project of a creative and/or analytical nature that involves both a written and presentational aspect.

### ENG05114 – Literature of The World Wars (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall

In our increasingly global world, there is a great need to have an understanding of how prior global conflicts have shaped our cultural history. Literature of The World Wars offers such an examination by exploring works of prose and poetry, many written by former soldiers, that attempt to grapple with how to represent the chaos and tragedy of wars waged on a world-wide scale. Students will analyze the topics and methodologies of writers of varied nationalities, all of whom offer different experiences and perspectives on their involvement with the World Wars, from British and U.S. servicemen to everyday citizens who survived atrocities like the Holocaust. With this study, as well as with an application of literary theories and critical voices normal to English courses, students will have the opportunity to expand their critical thinking skills and confront some of the most impactful moments of recent history.

## HUMANITIES: ENGLISH (Continued)

### ENG05116/05116A – French Literature (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall (ENG05116) or Spring (ENG05116A)

This course focuses on the study of poetry, drama, and prose produced by French and Francophone authors from the 19th Century to the present. Course texts will be in the English translations of their French originals, and no knowledge of the French language is required. 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 response papers and projects that call upon the processes of analysis, synthesis, and evaluation and have opportunities for oral participation. Creative projects inspired by the readings will be included. Students will write analytical and creative response papers for each of the texts. Examples of works that may be studied in this course include *Ball of Suet*, *The Horla*, *Cyrano de Bergerac*, *No Exit*, *The Second Sex*, and *So Long a Letter*. In addition, students will read poetry by nineteenth and twentieth century writers such as Hugo and Baudelaire. The course may also include French and Francophone films. Examples of films that may be studied include *La Jetée*, *Molière*, *la Belle et la Bête*, and *Persepolis*.

### ENG05117 – Critical Approaches to Literature (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Spring

This course on literary criticism provides a survey of advanced theoretical frameworks used to analyze texts. Beginning with the question of ‘what is literature?’, this discussion-driven course explores a variety of modern methods for making meaning. With a thematic emphasis on the literary construction of otherness, students will be introduced to a wide range of critical approaches by applying them to exciting and challenging works, such as *Frankenstein*, *Dracula*, *The Bluest Eye*, and *Annihilation*. Additionally, students will engage with scholarly articles, develop academic research skills, and construct a literature review to prepare for their own analytical essays.

### ENG05147 – Ecohorror and Environmental Literature (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Spring

Ecohorror and Environmental Literature is a course that invites students to explore the fascinating overlap between science and culture by taking an interdisciplinary approach to storytelling. In a world beset by increased natural disasters - storms, droughts, wildfires, floods – discussions and debates about the causes and consequences of environmental issues frequently form the basis for adventure and horror. More than just scary stories, such tales reflect how monsters and madness often indicate deep-seeded human anxieties and emotions about important environmental issues. Toxic terrors of pollution, mythic mushrooms, evolutionary evils; there seems to be no limits to the interplay between nature and the human imagination. Looking at these thrills and chills of fictional stories, alongside the non-fiction of science and nature writing, students will discover how human behavior has influenced, and been influenced by, the intricacies of place and nature. In this way, students will address how society can use written communication to prevent humans from being the next endangered species. Coursework will include both discussion and writing, involving a variety of short reflections and creative exercises as well as longer analytical essays.

### ENG05113S1/05113S2 – Creative Writing (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall (ENG05113S1) or Spring (ENG05113S2)

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.

## HUMANITIES: ENGLISH (Continued)

### ENG01012/01012S2 – Advanced English as a Second Language (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall/Spring Sequence

This course is designed for international students who want to understand academic writing in an American context. It provides foundational academic writing skills essential for writing paragraphs and essays. It develops processes for critical reading, writing, and responding to a variety of texts in order to compose various academic essays. It promotes an awareness of the interplay among purpose, audience, content, structure, and style while introducing documentation methods. Students are expected to demonstrate rhetorical skills, use academic language such as academic vocabulary, collocations, and phrases, and demonstrate effective use of structure, grammar, punctuation, and spelling. They are also expected to understand American academic conventions including the issue of plagiarism in academic writing.

### ENG05141S1 – Speculative Fiction (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall

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.

## 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.

### ENG05143 – Game Studies & Design (CL)

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

As old as history and as new as the latest release, games have played an outsized role in human culture. The advent of digital games has led to an explosion of artistic experimentation and a competitive industry. This course will introduce students to the academic field of game studies, providing an opportunity to think deeply about games and how they function in contemporary culture. It will also encourage students to become active participants in that culture. Students may pursue one of two tracks: a critical track and a design track, with critical students performing scholarly analysis, and design students working to develop a prototype game.

# HUMANITIES: SOCIAL STUDIES

CL College Level

DC Dual Credit

## REQUIRED COURSES

For an Academic Honors Diploma students need to have successfully completed: 2 semesters of World History, 2 semesters of United States History, 1 semester of Government and 1 semester of Economics. For more information, see the Academy Diploma Requirements on page vi.

### 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.

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

**Prerequisite:** Two credits of American History or senior status  
**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 include pressing questions of past and present surrounding political power and democracy. Critical thinking and productive civil discourse will be consistently emphasized. (Only one credit can be earned from the Exploring United States Government course series.)

### SOC303 – Exploring United States Government: The Constitution (CL)

**Prerequisite:** Two credits of American History or Senior status  
**Credit:** 1 credit  
**Offered:** Spring

An exploration of United States government, with particular attention to the history and role of the Constitution. The Constitution of the United States is not only the law of the land, it is also the fundamental political mechanism under which the nation has achieved unprecedented freedom and prosperity. This course will provide students with both a historical background and a modern working knowledge of the Constitution and the American political system. Discussions will regularly consider how the Constitution applies to current issues. Critical thinking and productive civil discourse will also be consistently emphasized. (Only one credit can be earned from the Exploring United States Government course series.)

## HUMANITIES: SOCIAL STUDIES (Continued)

### ECONOMICS

#### ECON116/116S2 – Survey of Economics (CL)

**Prerequisite:** Two credits of American History or Senior status  
**Credit:** 1 credit  
**Offered:** Fall (ECON116) or Spring (ECON116S2)

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:** Two credits of American History or Senior status  
**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

#### SOC05101 – Indiana History (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Spring

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.

#### SOC05140 – History of World Religions (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Fall

Explore the development of religions around the globe that have greatly affected large numbers of people and had significant impact on the development of world civilizations. We will examine key events related to people and places, as well as transcultural interaction and exchanges. Special emphasis will be placed on exploring the interaction between different religions. We will focus on primary sources in order to discover, from the words of their own sacred texts, the beliefs that have motivated millions of diverse peoples and civilizations throughout world history.



## HUMANITIES: SOCIAL STUDIES (Continued)

### 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.

### SOC05147 – The Life and Times of Abraham Lincoln (CL)

**Prerequisite:** SOC201  
**Credit:** 1 credit  
**Offered:** Spring

This course examines the life of Abraham Lincoln primarily through the lens of his own writings. Students will see how ambition and personal tragedies of his youth impacted his life and mature beliefs; how the tenets of the Whig party shaped his career in Illinois state politics and as a one-term U.S. congressman; how an autodidact established a successful law career; how a commitment to antislavery principles brought national prominence during the sectional crisis and facilitated his rise to the presidency as a Republican; and how a president committed to the preservation of the Union ended up waging a war against American slavery.

### SOC05150 – Themes in Ethnic Studies (CL)

**Prerequisite:** None  
**Credit:** 1 credit  
**Offered:** Spring

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

DC Dual Credit

## FRN1A/1B – Beginning French 1 (DC)

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

**Prerequisite:** *Fall* – None  
*Spring* – Successful completion of FRN1A or permission of instructor  
**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 per semester in FR 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.

## FRN2A/2B – Intermediate French 2 (DC)

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

**Prerequisite:** *Fall* – Placement, successful completion of FRN1B, or permission of instructor  
*Spring* – Successful completion of FRN2A 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:** *Fall* – Placement, successful completion of FRN2B, or permission of instructor  
*Spring* – Successful completion of FRN3A 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 – Beginning German 1 (DC)

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

**Prerequisite:** *Fall* – None  
*Spring* – Successful completion of GER1A or permission of instructor  
**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 per semester in GER 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.

### GER2A/2B – Intermediate German 2 (DC)

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

**Prerequisite:** *Fall* – Placement, successful completion of GER1B, or permission of instructor  
*Spring* – Successful completion of GER2A 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 201 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

**Third-year German is not offered at the Academy. To fulfill their language requirement students can take third-year German at Ball State, generally GER 202 and 301. The Academy is not responsible for fees associated with courses beyond third-year German as they are not required for graduation.**

## HUMANITIES: WORLD LANGUAGES (Continued)

### KOR1A/1B – Beginning Korean 1 (CL)

<b>Prerequisite:</b>	<i>Fall</i> – None <i>Spring</i> – Successful completion of KOR1A or permission of instructor
<b>Credit:</b>	1.25 credits per semester
<b>Offered:</b>	Fall/Spring Sequence

This course is a beginner Korean language course. It is designed for those who have no prior knowledge of Korean. The course is framed in a way that the students practice the five language skills (speaking, listening, grammar, reading, and writing) in student-centered communicative and task-based activities and explore Korean culture. Students are expected to be able to understand the Korean alphabet system (Hangul) and read the written text. They will communicate appropriately in the interpersonal mode in daily situations such as greetings, introducing oneself, locations, numbers, and daily and weekend activities (for Beginning 1A) and in everyday life contexts as part of living in contemporary Korean society such as ordering food, talking on the phone, and taking various modes of transportation (for Beginning 1B). Students are also expected to be able to understand grammar, vocabulary, and expressions and use them in their communication and to understand various aspects of Korean culture inscribed in the Korean language and Korean society.

### KOR2A/2B – Intermediate Korean 2 (CL)

<b>Prerequisite:</b>	<i>Fall</i> – Placement, successful completion of KOR1B, or permission of instructor <i>Spring</i> – Successful completion of KOR2A or permission of instructor
<b>Credit:</b>	1.25 credits per semester
<b>Offered:</b>	Fall/Spring Sequence

In Korean 2A, students will be exposed to situations and topics such as weather and seasons, clothing and fashion, travel, life in Korea, and public transportation. In the second semester of Intermediate Korean, students will be introduced to situations and topics such as birthday parties, beauty salons and barbershops, hobbies, holidays in Korea, hospitals and drugstores, cultural differences, academic majors, and jobs/professions. By the end of the 2A/2B sequence, students are expected to be able to use acquired speaking, listening, reading, writing skills, knowledge of Korean culture and grammar appropriate for engaging in these situations in order to develop a balanced functional proficiency in Korean.

### RUS1A/1B – Beginning Russian 1 (CL)

<b>Prerequisite:</b>	<i>Fall</i> – None <i>Spring</i> – Successful completion of RUS1A or permission of instructor
<b>Credit:</b>	1.25 credits per semester
<b>Offered:</b>	Fall/Spring Sequence

This course focuses on the skills required for speaking, reading, writing and comprehending Russian. Particular attention is given to acquiring an understanding of the fundamental grammar structure of Russian, together with pronunciation, intonation, and mastery of the Cyrillic alphabet. In addition, students are expected to utilize communication skills such as responding to and giving oral directions and commands, understanding simple conversations, participating in discussions and conversations on an elementary level in the target language. At the conclusion of the 1A/1B sequence, students will have learned all six cases and their inflectional endings, as well as basic vocabulary necessary for everyday communication. Additionally, students will be exposed to Russian literature and early Russian history with the ultimate goal of understanding the Russian people and their rich heritage.

### RUS2A/2B – Intermediate Russian 2 (CL)

<b>Prerequisite:</b>	<i>Fall</i> – Placement, successful completion of RUS1B, or permission of instructor <i>Spring</i> – Successful completion of RUS2A or permission of instructor
<b>Credit:</b>	1.25 credits per semester
<b>Offered:</b>	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:** *Fall* – Placement, successful completion of SPN1B, or permission of instructor

*Spring* – Successful completion of SPN2A or permission of instructor

**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 SPN 201 to students who complete this course. 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:** *Fall* – Placement, successful completion of SPN2B, or permission of instructor

*Spring* – Successful completion of SPN3A or permission of instructor

**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 SPN 202 to students who complete this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

### SPN 4A/4B – AP Spanish Literature and Culture (CL)

**Prerequisite:** *Fall* - Advanced Spanish 3 (BSU SP 202) or placement.

*Spring* – Successful completion of SPN 4A or permission of instructor.

**Credit:** 1 credit per semester

**Offered:** Fall/Spring Sequence

AP Spanish Literature is equivalent to a college level introductory survey course of literature written in Spanish. Students continue to develop their interpretive, interpersonal, and presentational skills in Spanish language as well as critical reading and analytical writing as they explore short stories, novels, plays, essays, and poetry from Spain, Latin America, and U.S. Hispanic authors along with other non-required texts.

# MATHEMATICS

CL College Level

DC Dual Credit

## MAT02999/03000 – Geometry 1, 2 (CL)

**Prerequisite:** *Fall* – Successful completion of Algebra I  
*Spring* – Successful completion of Geometry 1 or permission of Math Division Chair

**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.

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

**Prerequisite:** *Fall* – Placement  
*Spring* – Successful completion of Advanced Algebra/Trigonometry 1 or permission of Math Division Chair

**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.

## MAT03121/03122 – Advanced Placement Precalculus SL 1, 2 (DC)

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

**Prerequisite:** *Fall* – Placement  
*Spring* – Successful completion of AP Precalculus SL 1 or permission of Math Division Chair

**Credit:** 1 credit per semester

**Offered:** Fall/Spring Sequence

AP Precalculus – Standard Level prepares students for additional mathematical study by reviewing algebra and trigonometry. Topics include linear and quadratic functions, polynomial functions, inequalities, graphs of functions, exponential and logarithmic functions, trigonometric functions and equations, and triangle trigonometry, with a focus on mathematical modeling.

The two-semester sequence covers Units 1, 2, and 3 of the AP Precalculus Course and Exam Description and prepares students for the national AP exam. Students completing this course will generally choose from among Calculus, Statistics, and Quantitative Reasoning in the following year. Exceptional students may be considered for enrollment in Advanced Placement Calculus AB.

AP Precalculus – SL is not open to students with credit in the corresponding semester of AP Precalculus – EL.

\*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.

## MAT03131/03132 – Advanced Placement Precalculus EL 1, 2 (DC)

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

**Prerequisite:** *Fall* – Placement  
*Spring* – Successful completion of AP Precalculus EL 1 or permission of Math Division Chair

**Credit:** 1 credit per semester

**Offered:** Fall/Spring Sequence

AP Precalculus – Extended Level 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, rational, exponential, and logarithmic functions and their graphs. Topics for the second semester include trigonometry, polar coordinates, vectors, sequences and series, analytic geometry, parametric equations, and matrices. Elementary proof techniques and mathematical modeling will be employed throughout the course.

The two-semester sequence covers all four units of the AP Precalculus Course and Exam Description and prepares students for the national AP exam. Successful completion of this course will generally prepare students for Advanced Placement Calculus AB or BC or the equivalent college course.

AP Precalculus – EL 1 is not open to students with credit in AP Precalculus – SL 1.

\* 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:** AP Precalculus SL 2 (MAT03122) or AP Precalculus EL 2 (MAT03132)

**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:** *Fall* – AP Precalculus EL 2 (MAT03132) or AP Precalculus SL 2 (MAT03122) with teacher recommendation, or placement

*Spring* – Successful completion of AP Calculus AB 1 or permission of Math Division Chair

**Credit:** 1 credit per semester

**Offered:** Fall/Spring Sequence

This course covers the College Entrance Examination 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 both semesters of 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:** AP Precalculus EL 2 (MAT03132) 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.

### MAT04134/04134B – 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 (MAT04134) or Spring (MAT04134B)

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 (CL)

**Prerequisite:** Algebra II or permission of Math 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.

## ADVANCED ELECTIVES

### MAT04522 – Discrete Mathematics (CL)

**Prerequisite:** AP Precalculus EL 2 (MAT03132) 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.

### MAT04825 – AP Statistics (DC)

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

**Corequisite:** AP Precalculus EL 2 (MAT03132) or permission of Math 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 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;  $n^{\text{th}}$ -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

DC Dual Credit

## CMP3401– Digital Applications (CL)

**Prerequisite:** None  
**Credit:** .5 credit  
**Offered:** Quarter 1

Digital Applications prepares students to use technology in an effective and appropriate manner in school, in a job, or in everyday life. Students develop skills related to word processing, spreadsheets, presentations, and communications software and may use highly specialized or individualized technology or software. Students learn what it means to be a good digital citizen and how to use technology, including social media, responsibly. Students expand their knowledge of how to use digital devices and software to build decision-making and problem-solving skills.

## CMP4301 – Computer Science: Programming C++ (CL)

**Prerequisite:** None  
**Co-requisite:** Computer Science: Programming C++ Lab (CMP4301L)  
**Credit:** 1.5 credits  
**Offered:** Fall

Computer Science: Programming C++ explores and builds skills in programming and a basic understanding of the fundamentals of procedural program development using structured, modular concepts. Discussions will include the role of data types, variables, structures, addressable memory locations, arrays and pointers, and data file access methods. An emphasis on logical program design using a modular approach, which involves task-oriented program functions.

Fulfills a laboratory science course requirement.

## CMP4302 – Computer Science: Programming Python (CL)

**Prerequisite:** None  
**Co-requisite:** Computer Science: Programming Python Lab (CMP4302L)  
**Credit:** 1.5 credits  
**Offered:** Spring

This semester of Computer Science: Programming Python is an introduction to visual programming using Python, a high-level language, 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.

Fulfills a laboratory science course requirement.

## COMPUTER SCIENCE (Continued)

### CMP4511/4512 – AP Computer Science A 1, 2 (DC)

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

- Prerequisite:** *Fall* – Computer Science II: Programming C++ or Computer Science II: Programming Python or experience in a structured programming language and permission of instructor  
*Spring* – Successful completion of AP Computer Science A 1
- Co-requisite:** *Fall* – AP Computer Science A 1 Lab (CMP4511L)  
*Spring* – AP Computer Science A 2 Lab (CMP4512L)
- Credit:** 1.5 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.

Fulfills a laboratory science course requirement.

\*Ball State University offers 4 college credit hours in CS 120 to students who complete the first semester of this course and 4 college credit hours in CS 121 to students who complete the second semester of this course. Refer to the Dual Credit section on the Academy Website for details on enrollment and fees.

## SCIENCE: PHYSICS EMPHASIS

CL College Level

DC Dual Credit

***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.***

### SCI03103/03103A – Physics & Astronomy: Physics (DC)

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

<b>Prerequisite:</b>	None
<b>Co-requisite:</b>	Physics & Astronomy: Physics Lab (SCI03103L/03103AL)
<b>Credit:</b>	1.5 credits per semester
<b>Offered:</b>	Fall (SCI03103) or Spring (SCI03103A)

In this one semester course, students will explore basic classical and modern physics concepts of matter, motion, energy, and forces with application to mechanics, heat, sound, electricity and magnetism, light, atomic, nuclear, and elementary particles. No advanced knowledge of algebra or geometry is required, as simple math will be used to define and describe the physical relationships of ideas.

The lab portion of this course models the scientific process and gives students hands-on experience in dealing with many of the concepts covered.

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

\*\*Completing both this course and Physics & Astronomy: Solar System will satisfy the Indiana Academy graduation requirement of completing two semesters of physics.

### SCI03104/03104A – Physics & Astronomy: Solar System (DC)

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

<b>Prerequisite:</b>	None
<b>Co-requisite:</b>	Physics & Astronomy: Solar System Lab (SCI03104L/03104AL)
<b>Credit:</b>	1.5 credits per semester
<b>Offered:</b>	Fall (SCI03104) or Spring (SCI03104A)

In this one semester course, students will explore the history of astronomy and take a deep dive into the field of planetary science. There are elements of geology and physics in this Physics & Astronomy: Solar System, as well as a focus of the importance of light to understand Earth's backyard, the Solar System, and beyond.

The course also includes lab experience, launching students into basic calculations and creative projects that aids in understanding Earth, our neighboring planets, and the Sun. There will also be the occasional required late evening sky observation (as weather permits) and the occasional field trip to the Ball State Planetarium (as scheduling permits).

\* Ball State University offers 3 college credit hours to students 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.

\*\*Completing both this course and Physics & Astronomy: Physics will satisfy the Indiana Academy graduation requirement of completing two semesters of physics.

## SCIENCE: PHYSICS EMPHASIS (Continued)

### 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 AP Precalculus EL (MAT03131/03132).
- Co-requisite:** AP Physics I Lab (SCI03111L/03112L)
- Credit:** 1.5 credits per semester
- 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 4 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.

### SCI03113/03114 – AP Physics II (DC)

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

- Prerequisite:** AP Physics I or permission of the instructor
- Co-requisite:** AP Physics II Lab (SCI03113L/03114L)
- Credit:** 1.5 credits per semester
- 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 4 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 (SCI04102L/04103L) 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.

## SCIENCE: CHEMISTRY EMPHASIS

CL College Level

DC Dual Credit

### 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 (SCI03201L/03202L) 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 (SCI04204L/04205L)  
*Seniors* – AP Precalculus SL (MAT03121/03122) or any 4000-level math course or permission and AP Chemistry Lab (SCI04204L/04205L)
- 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: LIFE SCIENCE EMPHASIS

CL College Level

DC Dual Credit

### 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 (SCI04301L/04302L)
- 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 (SCI04304L)
- 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 (SCI04305L/04306L)
- 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.

### SCI04309 – Principles of Ecology (CL)

- Prerequisite:** One year biology
- Co-requisite:** Principles of Ecology Lab (SCI04309L)
- Credit:** 1.5 credits
- Offered:** Spring

This course explores the ways in which organisms interact with their environment. Topics include physiological ecology, population ecology, life history, social ecology, population genetics and natural selection, species interactions, community structure and diversity, broad-scale ecology, ecosystem ecology, biogeography, and global ecology. Hands-on laboratory and field activities reinforce fundamental concepts.

## SCIENCE: LIFE SCIENCE EMPHASIS (Continued)

### SCI04310 – Biology II: Zoology (CL)

<b>Prerequisite:</b>	One year biology
<b>Co-requisite:</b>	Biology II: Zoology Lab (SCI04310L)
<b>Credit:</b>	1.5 credits
<b>Offered:</b>	Fall

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.

### SCI04313 – Biology II: Introduction to Nutrition (CL)

<b>Prerequisite:</b>	None
<b>Co-requisite:</b>	Biology II: Introduction to Nutrition Lab (SCI04313L)
<b>Credit:</b>	1.5 credits
<b>Offered:</b>	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.

### SCI04319 – Biology II: Human Genetics (CL)

<b>Prerequisite:</b>	One year biology
<b>Co-requisite:</b>	Biology II: Human Genetics Lab (SCI04319L)
<b>Credit:</b>	1.5 credits
<b>Offered:</b>	Spring

Human Genetics is an advanced Biology course emphasizing the inheritance of human traits. Specific topics include the inheritance patterns of genes, pedigree analysis, chromosomal aberrations, behavioral genetics, and genetic screening. Laboratory activities emphasize techniques used to detect and analyze genetic information.

### SCI04321S2 – Biology II: Botany (CL)

<b>Prerequisite:</b>	One year Biology
<b>Corequisite:</b>	Biology II: Botany Lab (SCI4321L)
<b>Credit:</b>	1.5 credits
<b>Offered:</b>	Spring

This course explores the biology of plants. Topics include plant taxonomy, physiology, life history, genetics, natural selection, population and community ecology, species interactions, community structure and diversity, primary productivity and nutrient cycling, biogeography, and global carbon dynamics. Hands-on laboratory and field activities will include examination of plant tissues, cultivation of plants to investigate physiology and genetics, and characterization of natural plant communities on and near campus.



## SCIENCE: LIFE SCIENCE EMPHASIS (Continued)

### SCI04327/04328 – AP Environmental Science (DC)

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

- Prerequisite:** *Fall* – One year biology  
*Spring* – Successful completion of fall semester AP Environmental Science or permission of Science Division Chair
- Co-requisite:** AP Environmental Science Lab (SCI04327L/04328L)
- Credit:** 1.5 credits
- Offered:** Fall/Spring Sequence

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 to students 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.

### SCI04250 – Chemistry II: Forensic Science (CL)

- 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: EARTH AND SPACE SCIENCE EMPHASIS

CL College Level

DC Dual Credit

## SCI04403 – Astrophysics I: The Sun & Stars (DC)

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

**Prerequisite:** Algebra I  
**Co-requisite:** Astrophysics I: The Sun & Stars Lab (SCI04403L)  
**Credit:** 1.5 credits  
**Offered:** Fall

In this course, students will be introduced to the science underlying modern stellar astronomy. The sky is full of amazing objects and astronomers use the properties of light and matter to better understand the currently unreachable expanse of the universe. The properties of the sun and stars reveal the processes that govern their birth, life, and death, revealing insights into the remnants they leave behind (such as white dwarfs, neutron stars, and black holes!)

The course also includes lab experience, launching students into the analysis of astrophysical data with algebraic calculations and use of observational data to reveal natural physical laws that provide information about remote objects in space. There will also be the occasional required late evening sky observation (as weather permits) and the occasional field trip to the Ball State Planetarium (as scheduling permits).

\*Ball State University offers 3 college credit hours to students 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.

## SCI04404 – Astrophysics II: Galaxies & Cosmology (DC)

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

**Prerequisite:** Algebra I  
**Co-requisite:** Astrophysics II: Galaxies & Cosmology Lab (SCI04404L)  
**Credit:** 1.5 credits  
**Offered:** Spring

In this course, students will be introduced to the physical processes that govern the structure and evolution of galaxies and the universe. The course will take students on a journey through the history of the cosmos as we currently understand it and the amazing super-structures that shape the known universe. The evolution of the universe and the formation of galaxies, including the hypothetical blackhole star, will allow students to dive further into the many facets of galactic classification, the mystery behind active galactic nuclei (AGN), and current models of the end of the universe.

The course also includes a lab experience, capitalizing on the observational and experimental data that are used in modern galactic astronomy and cosmology research to reveal natural physical laws that provide information about remote objects in space. There will also be the occasional required late evening sky observation (as weather permits) and the occasional field trip to the Ball State Planetarium (as scheduling permits).

Prior completion of Astrophysics I: The Sun & Stars is NOT required but is recommended.

\*Ball State University offers 3 college credit hours to students in ASTRO 122 to students who complete this course. Refer to the Dual Credit section on the Academy website for details on enrollment and fees.

## SCIENCE: ENGINEERING EMPHASIS

CL College Level

DC Dual Credit

### SCI04118 – Introduction to Engineering (CL)

<b>Prerequisite:</b>	None
<b>Co-requisite:</b>	Introduction to Engineering Lab (SCI04118L)
<b>Credit:</b>	1.5 credits
<b>Offered:</b>	Fall

Introduction to Engineering explores a broad range of engineering and technology topics with their relationship to science and mathematics by solving real world problems. This hands-on course is designed to provide students interested in engineering and technology career opportunities to explore applications related to specialized fields such as mechanical, software, electrical, civil, aeronautical and astronomical engineering, among others. Students will engage in research, development, planning, design, production, and project management. Classroom activities are organized to allow students to work in teams and use modern technological processes, software, and production systems to develop and present solutions to engineering problems.

### SCI04119 – Projects in Engineering (CL)

<b>Prerequisite:</b>	Introduction to Engineering or permission of instructor
<b>Co-requisite:</b>	Projects in Engineering Lab (SCI04119L)
<b>Credit:</b>	1.5 credits
<b>Offered:</b>	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. As a project based course, much of the activity will likely happen outside of the classroom. Project groups will meet with the instructor on a regular basis.

## FINE ARTS

**Fine arts courses offered throughout the school year are commonly through Burris Laboratory School. Enrollment into Burris classes (BUR prefix) is subject to space availability. Burris courses meet 5 days a week and could conflict with other Academy choices.**

### 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:** Spring

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.

## MUSIC

### ACADBAND/ACADBANDS2 – Advanced Concert Band

**Prerequisite:** Beginning and Intermediate Concert Band (Recommended)

**Credit:** 1 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 (ACADBAND) and Spring (ACADBANDS2)

*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.

### BURCHOIR/BURCHOIRS2 – Advanced Chorus

**Prerequisite:** Beginning and Intermediate Chorus (Recommended)

**Credit:** 1 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 (BURCHOIR) and Spring (BURCHOIRS2)

*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.

### BUSTRING/BUSTRINGS2 – Advanced Orchestra (Strings Only)

**Prerequisite:** Beginning and Intermediate Orchestra (Recommended)

**Credit:** 1 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 (BUSTRING) and Spring (BUSTRINGS2)

*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.

## OTHER COURSES

CL College Level

DC Dual Credit

### BUS0110 – Personal Finance (CL)

**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.

### PBL0547 – Project Based Learning (CL)

**Prerequisite:** None  
**Credit:** 0.5 credits  
**Offered:** Quarter 1

Project Based Learning is a quarter-long course designed for students to gain knowledge and skills by investigating and responding to an authentic question, problem, or challenge. Each year, students have an opportunity to work with counterparts at the Academy's sister school in Germany, Sankt Afra. This course culminates in a presentation of a project to an audience of various stakeholders.

## COLLOQUIUM

### COL03800 – Sophomore Colloquium (CL)

**Prerequisite:** None  
**Credit:** .5 credit in Sophomore Colloquium  
**Offered:** Fall

This is a discussion-oriented seminar and is required for all students who enter as sophomores. Students participate in small group seminars and occasional field trips 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.

### 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. 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.

### COL04500 – Senior Colloquium (CL)

**Prerequisite:** Junior Colloquium (COL03900)  
**Credit:** .5 credit in Senior Colloquium  
**Offered:** Spring

This is a discussion-oriented seminar and is required for all seniors. 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.

# EXPERIENTIAL STUDY

CL College Level

DC Dual Credit

## RESEARCH

### RES3000S/3001S – Research Science I & II (CL)

**Prerequisite:** Spring – Successful completion of first semester Research Science I

**Credit:** 1 credit per semester

**Offered:** Fall/Spring Sequence

In the first semester of this course the basic principles of research are covered, and the student is expected in the second semester 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 for a second semester and present it at one of the venues available.

## APPRENTICESHIPS

### APR3101/3201 / APR3102/3202 – Apprenticeship Science Laboratory Assistant

**Credit:** .5 (APR3101/3201) or 1 (APR3102/3202) credit per semester

**Offered:** Fall and/or Spring

The Indiana Academy offers academic credit to students who are interested in gaining experiential activity working in scientific labs with an Academy faculty member, a BSU professor, in the community, or at another location. A minimum of 60 hours must be completed, per semester, to earn half a credit or 120 hours for a full credit (science elective). Work hours may include weekend or evening hours but must follow residential check-ins, curfews, and other residential governing policies when applicable. Students are also responsible for securing their own lab apprenticeship sites.

The lab science apprenticeship offers students the ability to explore interests in a natural and/or physical lab science (such as biology, life science, chemistry, physics, kinesiology, among others), through collaboration with BSU faculty and affiliated research scientists and graduate assistants. The culmination of a lab science apprenticeship program should ideally present itself in the form of a scholarly presentation (poster or paper) or a manuscript submitted to a scientific journal for review and potential publication.

### TAS1/S2 / TAS15/S25 – Teaching Apprenticeships

**Credit:** .5 (TAS15/S25) or 1 (TAS1/S2) credit per semester

**Offered:** Fall and/or Spring

The Indiana Academy offers academic credit to students who are interested in gaining experiential activity working alongside an Academy faculty member as a teacher apprentice. A minimum of 60 hours must be completed, per semester, to earn half a credit or 120 hours for a full credit (elective). Work hours may include weekend or evening hours but must follow residential check-ins, curfews, and other residential governing policies when applicable.

The Teacher apprenticeship program is designed with mentorship and professional development in mind. Students will have the unique opportunity to work alongside Academy faculty on a variety of activities. As such:

1. The faculty members have range to view this arrangement as a needed support for in-class instruction, course management, or mentorship program and, ideally, all three components can be at work simultaneously.
2. Faculty cannot have TAs instruct but may employ them to assist in grading items that do not require professional expertise and judgement (aka multiple choice, True/False, or anything with answer keys).
3. Faculty can employ TAs to run study sessions and exam preps for classes if needed.
4. Faculty can employ TAs to help with class management such as distributing materials, shepherding group work, among other related activity)

### INTERSHIPS

#### INT100/102 / INT101/103 – Internship

**Credit:** .5 (INT100/102) or 1 (INT101/103) credit per semester

**Offered:** Fall and/or Spring

The Indiana Academy will be offering academic credit for students who are interested in working at either a site on campus, in the community, or at another location. A minimum of 60 hours must be completed for during the internship to earn half a credit or 120 hours for a full credit (elective). Work hours may include weekend or evening hours. Some job sites may require a background check, drug testing, immunizations or other types of training before work can begin. Students should plan to complete these requirements before starting their Internship. Students are responsible for securing their own internship sites as well as their own transportation!

The internship program matches students with professionals to allow an exploration experience in the student's area of interest. The student is expected to complete actual projects. The internship experience should not be along the lines of errand running or other types of busy work.

For more information on internships please contact Dr. Olufowote.

### 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 current courses in the Academy curriculum. If students are interested in pursuing a Directed Study, they should first contact the particular instructor who they wish to study with 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 [www.bsu.edu/academy/forms](http://www.bsu.edu/academy/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 begins once the proposal is submitted online.