



Arrupe Virtual Learning Institute

Venturing beyond the classroom in Catholic schools

# Catalog of Courses

2022-23 School Year

“Our prime educational objective must be to form men-and-women-for-others... This kind of education goes directly counter to the prevailing educational trend practically everywhere in the world... **What, then, shall we do? Go with the current or against it?”**

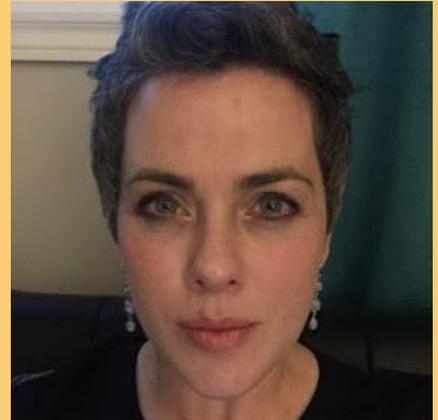
- *Father Pedro Arrupe (1973)*



## A NOTE FROM OUR CHIEF ACADEMIC OFFICER

### **Welcome to the Arrupe Virtual Learning**

**Institute.** Your school is making AVLI courses available to you as a way of providing additional course options so you can pursue interests that will help you grow to be your personal best.



Beyond challenging course content, an AVLI experience fosters important life and learning skills, and provides opportunities to learn with and from teachers and students from schools across North America.

I invite you to join us, and encourage you to bring an open mind, an open heart, and a willing spirit.

Gabrielle Martin  
Chief Academic Officer

# WHAT TO EXPECT FROM AN AVLI COURSE

## LEARNING

Beyond mastering the subject material, our hope for you is that you grow as a learner. Working hard in your online course will help you develop time management skills, discipline, self-advocacy, and more. You will also come to better appreciate your learning strengths and weaknesses, thus maturing into an independent learner that will serve you well in college and beyond.

## INSTRUCTORS

AVLI teachers are seasoned educators. They are experienced in the subject area in which they teach and have gone through extensive training in the development and delivery of online courses.

## FORMAT & TIME COMMITMENT

Our courses run on a traditional semester-based schedule utilizing the type of platform and online format that students might expect to experience in college. Though the formats and schedules differ from course to course, most are very flexible in design to allow students to complete their AVLI work around their existing school and extra-curricular schedules. Here are some important points about the AVLI experience:

- **At AVLI we value your time and try to use it well.** Our courses require as much time as any other course. If you add up the time you spend in class, doing homework, and studying for any given course, that's about how much time each week your AVLI course will require. Obviously, higher-level courses like AP courses require more time just like they would in your face-to-face school. Generally, this falls into the range of 5-7 hours per week.
- **At AVLI regular engagement matters.** You can't skip weeks in an AVLI course just like you can't skip weeks at your face-to-face school. Teachers monitor participation and assignment submission to help students stay on track.
- **AVLI courses are largely Asynchronous, Teacher-led, and Cohort-based.** These are important distinctions that warrant careful explanation.
  - *Asynchronous:* While each course will offer one synchronous (i.e. "live") online meeting per week, typically in the evening, course tasks and activities are mostly asynchronous, meaning students do not have to be present online at a certain time each day. This allows students to work around their other in-school classes. Courses often use learning activities such as instructional videos, discussion forums, readings, and assignments. Students usually complete the majority of these tasks independently during their school day. Teachers are available throughout each week via email should a student have questions or need support. Synchronous sessions are then often used for supplemental instruction, Q&A, group work, or extension activities.
  - *Teacher-led and cohort-based:* While students often work quite independently, our courses are not considered "independent" or "self-paced". Our teachers design their course materials, set the course schedule, work closely with students to facilitate, and monitor their progress, and support the building of a community among the class cohort. Learning tasks are assigned deadlines throughout each week to which students are expected to adhere.

## CLASSMATES & COMMUNITY

Your classmates will be young women and men from other schools across North America. It is the shared responsibility of all the class' participants, both students and teacher, to build a rich learning community. Your support system can extend beyond the course as well, and at AVLI we believe in helping you build and maintain that structure. Because students perform better when their experience occurs as part of a supportive environment, regular communication is sent to students, parents, and schools regarding student progress.

## STILL HAVE QUESTIONS?

Still trying to decide if an AVLI course is right for you? Talk with your school advisor/counselor or contact Ms. Gabrielle Martin at Arrupe Virtual at (877)729-5852 ext. 106, or [gmartin@arrupevirtual.org](mailto:gmartin@arrupevirtual.org).

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# COURSE LIST

## WORLD LANGUAGES

[AP Spanish Literature and Culture](#) (dual credit eligible)

[Chinese Mandarin Level 1](#)

[Chinese Mandarin Level 2](#)

[Italian Level 1](#)

[Italian Level 2](#)

[Latin Level 1](#)

[Latin Level 2](#)

## ART

[AP Art History\\*](#) (dual credit eligible)

[AP Music Theory](#) (dual credit eligible)

[Digital Photography](#) (Fall)

[Advanced Digital Photography](#) (Spring)

## SCIENCE

[AP Environmental Science](#)

[Astronomy: An Introduction](#) (Spring)

[Engineering Principles](#) (Fall)

[Introduction to Anatomy and Physiology](#) (Spring)

[Introduction to Biochemistry](#) (Fall)

[Introduction to Veterinary Careers](#) (Spring)

[Powered By: The Science of Energy](#) (Fall)

## MATHEMATICS

[AP Calculus BC](#) (dual credit eligible)

[AP Statistics](#) (dual credit eligible)

[Linear Algebra](#)

[Multivariable Calculus](#) (dual credit eligible)

[Statistical Reasoning in Sports](#) (Spring)

*\* Schools might choose to list AP Art History as a Social Studies course and/or Catholic Authors as a Theology course.*

## SOCIAL STUDIES\*

[AP Comparative Government and Politics](#) (dual credit eligible)

[AP Macroeconomics](#) (Spring) (dual credit eligible)

[AP Microeconomics](#) (Fall) (dual credit eligible)

[AP Psychology](#) (dual credit eligible)

[AP United States Government and Politics](#) (dual credit eligible)

[AP World History](#) (dual credit eligible)

[Genocide and the Holocaust](#) (Spring)

[Introduction to Business and Entrepreneurship](#) (Fall)

[Introduction to Sociology](#) (Fall)

[Law and Society](#) (Fall)

[Model United Nations and International Relations](#) (Spring)

## COMPUTER SCIENCE

[AP Computer Science](#) (dual credit eligible)

[C++ Programming](#) (Spring)

[Computer Game Development](#) (Spring)

[Computer Science Principles](#) (Fall)

[Database Development for Real World Problems](#) (Spring)

[JavaScript Programming](#) (Fall)

[Playing with Legos: An Introduction to Computer Programming Through Lego Building](#) (Fall)

[Understanding Artificial Intelligence: The Science and Morality](#) (Fall)

## ENGLISH/COMMUNICATIONS

[Catholic Authors\\*](#) (Spring)

[Comic Book Fiction](#) (Spring)

[Multimedia Authorship: The Power of Words and Images](#) (Fall)

## THEOLOGY\*

[Bioethics: Navigating the Ethical Dilemmas of our Future](#) (Fall)

[Bioethics: Navigating the Ethical Dilemmas of our Future](#) (Spring)

## COURSE SCHEDULE

- **YEAR-LONG COURSES:** September 8, 2022 through May 5, 2023
- **FALL TERM COURSES:** September 8 through December 16, 2022
- **SPRING TERM COURSES:** January 12 through May 5, 2023

## MORE ABOUT DUAL-CREDIT AND ADVANCED PLACEMENT

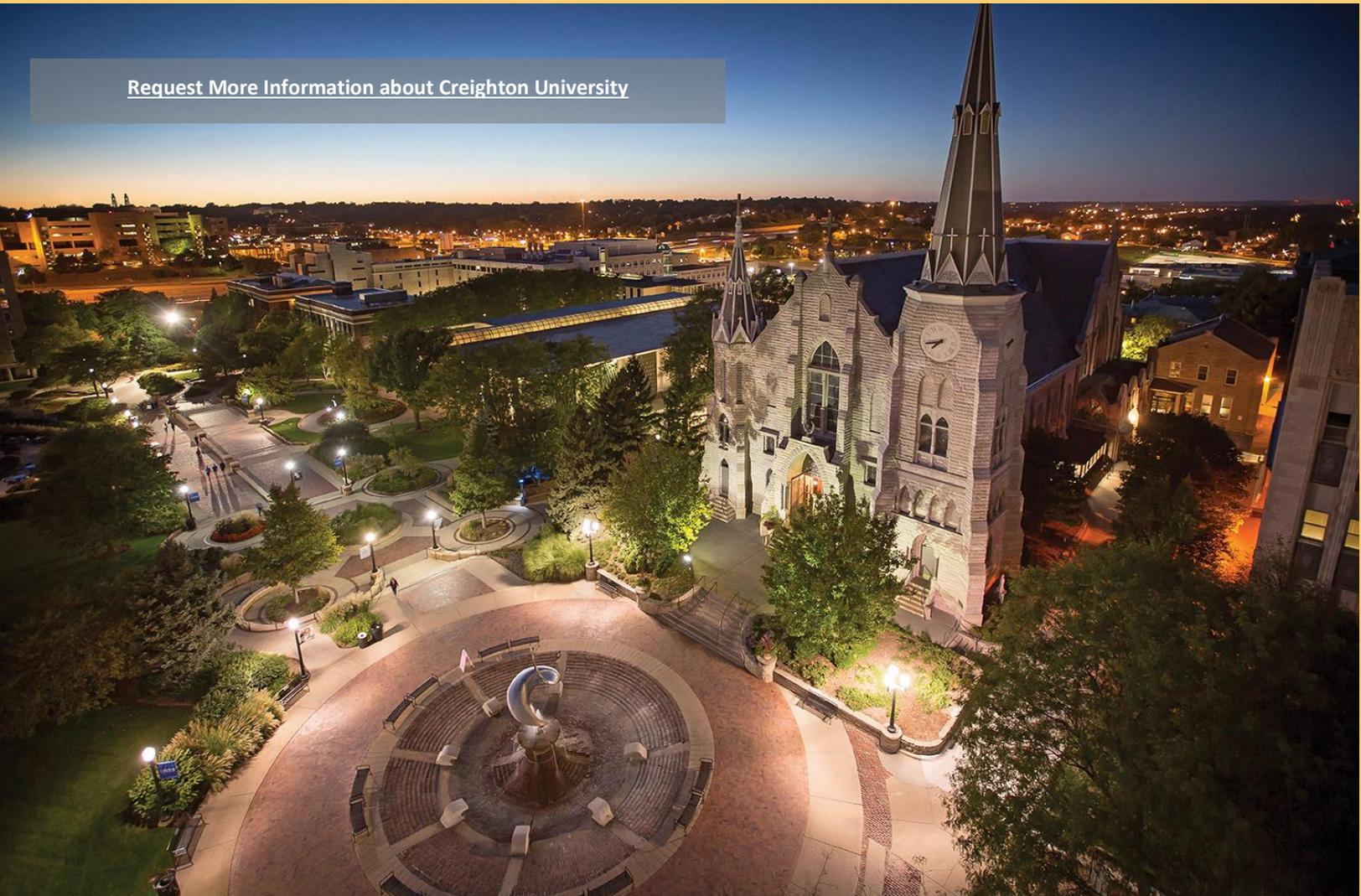
### ADVANCED PLACEMENT

AVLI offers a variety of Advanced Placement (AP) courses, all of which are College Board approved. AP testing is coordinated through the schools in which the students are enrolled. Like most schools, AVLI expects that students will sit for the College Board's subject exam after taking the AVLI's AP course, with some exceptions. (When available, students may choose to apply for dual credit in lieu of or in conjunction with sitting for an AP exam.)

### CREIGHTON UNIVERSITY DUAL CREDIT OPTION

AVLI has a dual credit partnership with Creighton University, a premier Jesuit university based in Omaha, Nebraska. Students are eligible to receive 3 hours of college credit for select AVLI courses (identified in the course listing). To qualify, students enroll in the course and pay the traditional course fee. They will then be provided the option of applying for credit for an additional fee of \$110 paid to the University.

[Request More Information about Creighton University](#)



## YEAR-LONG COURSES

September 8, 2022 through May 5, 2023

*Courses in this section carry 1.0 CREDIT*

### AP Art History

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Art ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$100

The AP Art History course explores topics such as the nature of art, its uses, its meanings, art making, and responses to art. Through investigation of diverse artistic traditions of cultures from prehistory to the present, the course fosters in-depth and holistic understanding of the history of art from a global perspective. Students learn and apply skills of visual, contextual, and comparative analysis to engage with a variety of art forms, constructing understanding of individual works and interconnections of art-making processes and products throughout history. Coursework is rigorous and will prepare students to sit for the AP Art History College Board exam in the spring.

### AP Calculus BC

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Mathematics ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$50. Students must also have access to a TI-84 Calculator.

AP Calculus BC will cover all of the topics associated with AP Calculus AB including the study and application of differentiation and integration, and graphical analysis including limits, asymptotes, and continuity. In addition, AP Calculus BC includes the study of convergence tests for series, Taylor and/or Maclaurin series, the use of parametric equations, polar functions, including arc length in polar coordinates, calculating curve length in parametric and function equations, L'Hôpital's rule, integration by parts, improper integrals, Euler's method, differential equations for logistic growth, and using partial fractions to integrate rational functions.

### AP Comparative Government and Politics

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Social Studies ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$80

The AP course in Comparative Government and Politics introduces students to fundamental concepts used by political scientists to study the processes and outcomes of politics in a variety of country settings. The course aims to illustrate the rich diversity of political life, to show available institutional alternatives, to explain differences in processes and policy outcomes, and to communicate to students the importance of global political and economic changes. Comparison assists both in identifying problems and in analyzing policymaking.

## AP Computer Science

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Computer Science ([Dual Credit Eligible through Creighton University](#))

**PREREQUISITES:** Students should have successfully completed one course in a programming language such as C, C++, Visual Basic .Net, or Java. Moreover, students should know how to edit, compile, and run a program.

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$100

This course is a college level introduction to object-oriented programming in Java. Students will focus on a problem-solving approach designed to focus attention on programming algorithms and data structures. Students will be fluent in the syntax and logic structures of the Java programming language as well as familiar with the Java API. Students will attempt difficult programming challenges, reflect on these exercises, and share their discoveries with their peers. In the spring, students will be eligible to take the AP Computer Science A Exam offered by the College Board at their school.

## AP Environmental Science

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Science

**PREREQUISITES:** Chemistry and Biology

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$100

The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them. Labs will be coordinated with the student's brick-and-mortar school. In the spring, students will be eligible to take the AP Environmental Science Exam offered by the College Board at their school.

## AP Music Theory

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Fine Arts ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$80

This course corresponds to the introductory college music theory class. Topics include reading and writing musical notation, musical materials, and procedures. Course sequence involves aural skills, sight-singing, melodic and rhythm dictation, aspects of melody, keyboard harmony, musical form analysis, and elementary composition. The goal is to develop the ability to recognize, understand and describe basic materials and processes of music that are heard or presented in a musical score. Students who complete this course are encouraged and eligible to take the AP Music Theory examination in the Spring.

## AP Psychology

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Psychology/Social Studies ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$50

AP Psychology offers a general introduction to Psychology that is comparable to a first-year college course. The course surveys the major topics of psychology including: Psychology's early history to the present, neuroscience & behavioral genetics, sensation & perception, cognition (memory, intelligence, & language), motivation & emotion, states of consciousness, learning, development, personality, research methods, social dynamics, psychological disorders, and therapeutic methods.

## AP Spanish Literature and Culture

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** World Languages ([Dual Credit Eligible through Creighton University](#))

**PREREQUISITES:** Fluency in speaking, reading, and writing in Spanish

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$40

Following the College Board curriculum, this course is “designed to provide students with a learning experience equivalent to an introductory college course in literature written in Spanish. The course introduces students to the formal study of a representative body of texts from Peninsular Spanish, Latin American, and U.S. Hispanic literature. The course provides opportunities for students to demonstrate their proficiency in Spanish across the three modes of communication (interpersonal, interpretive, and presentational) and the five goal areas (communication, cultures, connections, comparisons, and communities) outlined in the Standards for Foreign Language Learning in the 21<sup>st</sup> Century. The overarching aims of the course are to provide students with ongoing and varied opportunities to further develop their proficiencies across the full range of language skills — with special attention to critical reading and analytical writing — and to encourage them to reflect on the many voices and cultures included in a rich and diverse body of literature written in Spanish.”

## AP Statistics

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Mathematics ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$60

This course prepares students to take the Advanced Placement national exam in elementary statistics. It develops an intuitive, non-calculus-based understanding with an emphasis on doing statistics. Statistics makes sense of data. It consists of a set of tools that allow us to make inferences in the face of uncertainty. Statistical methods draw from the Gaussian (normal, bell shaped) distribution as well as the binomial and chi-square distributions. We learn about data description concepts, hypothesis testing, probability, discrete and random variables, several inferential techniques, regression, and how to plan and carry out a properly designed statistical analysis.

## AP United States Government & Politics

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Social Studies ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$75

Students in Advanced Placement United States Government and Politics will analyze the contemporary nature and function of the American political system. Students will examine the scope and framework of the United States government's institutions and structures. Also, students will explore the process through which the political system operates, and the factors impacting political participation. Students will understand how public policy is adopted, implemented, and impacts our lives.

## AP World History

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Social Studies ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a bi-weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

AP World History is structured around the investigation of key course themes and concepts in six different chronological periods, from approximately 8000 B.C.E. to the present. These themes, examined across cultures and time periods, include: Interaction between humans and the environment; Development and interaction of cultures; State-building, expansion and conflict; Creation, expansion and interaction of economic systems; Development and transformation of social structures.

## Chinese Mandarin Level 1

**RECOMMENDED FOR:** Sophomore, Juniors, and Seniors

**COURSE LISTING:** World Languages

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$60

This course combines the study of the Chinese language with an introduction to Chinese culture. Students will gain practical experience in speaking Mandarin with proper pronunciation using the pinyin system to acquire basic conversational skills. Students will learn basic vocabulary and sentence patterns used in daily life and social interaction. Culture notes will be given along with speaking practice necessary for interpersonal communication. In addition, a certain amount of Chinese written characters are studied with a fun approach.

## Chinese Mandarin Level 2

**RECOMMENDED FOR:** Sophomore, Juniors and Seniors

**COURSE LISTING:** World Languages

**PREREQUISITES:** Chinese Mandarin Level 1 or equivalent

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$65

Mandarin Level 2 builds on the grammar, writing, and conversational skills established in Mandarin Level 1.

## Italian Level 1

**RECOMMENDED FOR:** Freshmen, Sophomores, Juniors, and Seniors

**COURSE LISTING:** World Languages

**SYNCHRONOUS COMMITMENT:** This course has a bi-weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$100

Introduction to the basics of conversational Italian, including nouns, regular and irregular verbs, and basic conversations from Italian to English and English to Italian. This course will be team taught with by an Italian teacher in the United States and an English teacher in Italy. Students will communicate in Italian with native speakers in Italy. Successful completion of Italian 1 is a prerequisite for admission into Italian 2.

## Italian Level 2

**RECOMMENDED FOR:** Freshmen, Sophomores, Juniors, and Seniors

**COURSE LISTING:** World Languages

**PREREQUISITES:** Italian Level 1 or equivalent

**SYNCHRONOUS COMMITMENT:** This course has a bi-weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$100

Italian Level 2 builds on the grammar, writing, and conversational skills established in Italian Level 1.

## Latin Level 1

**RECOMMENDED FOR:** Freshmen, Sophomores, Juniors, and Seniors

**COURSE LISTING:** World Languages

**SYNCHRONOUS COMMITMENT:** This course has a bi-weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$20

In this introductory course, students will learn the basic elements of Latin grammar, syntax, and vocabulary. Students will also study the Latin-based etymological roots of common English word families and selected topics from Roman history, culture, and mythology. By the end of the course, students will be able to read short, authentic Latin texts and write original Latin sentences using basic Latin grammar and vocabulary.

## Latin Level 2

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** World Languages

**PREREQUISITES:** Latin Level 1 or equivalent

**SYNCHRONOUS COMMITMENT:** This course has a bi-weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$50

Latin Level 2 builds on the grammar, syntax, and vocabulary skills established in Latin Level 1.

## Linear Algebra

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Mathematics

**PREREQUISITES:** High Performance in both Honors Algebra 2 and Honors Geometry

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$75

This course will cover the essentials of linear algebra. Topics covered will include matrix arithmetic, systems of equations, the determinant function, vectors in  $R^2$  and  $R^3$ , general vector spaces, eigenvalues and vectors, and linear transformations.

## Multivariable Calculus

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Mathematics ([Dual Credit Eligible through Creighton University](#))

**PREREQUISITES:** Successful completion of AP Calculus BC with a score of 4 or 5 on the AP exam.

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$50

This course will focus on the study of fundamental theorems and applications of multivariable calculus, extending the calculus of one-dimension studied in AP Calculus BC to Euclidean spaces of arbitrary dimension. The course will begin with careful consideration of vectors in  $R^n$  and then move on to the theory of partial derivatives and vector fields. Multiple Riemann integrals and their applications will be covered in term 2, as well as important theorems of vector calculus including the theorems of Green, Gauss, and Stokes. In particular, a nontrivial amount of real analysis and point-set topology will be studied to facilitate the development of certain multivariable calculus concepts. This increased sophistication will allow students to see more clearly how multivariable calculus is a beautiful generalization of single-variable calculus.

FALL 2022

September 8 through December 16, 2022

*Courses in this section carry 0.5 CREDIT*

## AP Microeconomics

**RECOMMENDED FOR:** Sophomores, Juniors and Seniors

**COURSE LISTING:** Social Studies ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$20

How should faithful Catholics think about economics? This course integrates selected themes from the Neoscholastic School of economics with the content of the Advanced Placement economics syllabus in microeconomics. The course prepares students to do well on the AP Microeconomics exam as well as offers a way to view our redeemed creation through the prism of social science. The economic way of thinking does not begin with Adam Smith. It is based on insights from Aristotle, St. Augustine, St. Aquinas, the Jesuit and Franciscan theologians at the University of Salamanca in Spain during the sixteenth and seventeenth centuries, and on the Popes' social encyclicals. We develop our understanding of basic economic concepts and analytic tools by anchoring them to our faith's moral traditions and foundations.

## Bioethics: Navigating the Ethical Dilemmas of our Future

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Theology

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

The purpose of this course is to deepen the ethical and moral competence of students who are interested in the healthcare field. Medical decisions are some of the most difficult decisions that we have to make, and in this course, students will learn how to make these decisions, closely examining beginning and end of life issues, the ethics of medical research, justice concerns in the medical field and emerging technologies in medicine. This course is taught from a Catholic perspective and students will learn the teaching of the Catholic Church through the Ethical and Religious Directives for Catholic Healthcare Services, but students will also be free to discuss their own moral views in discussion forums and projects.

## Computer Science Principles

**RECOMMENDED FOR:** Primarily Freshmen, and Sophomores. Juniors and Seniors welcome.

**COURSE LISTING:** Computer Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

This course will introduce students to a wide array of important computer science topics. Students will learn the ideas and practices of computational thinking as well as how computers are impacting the world around us. Topics that will be covered include basic computer vocabulary, bits and bytes, programming, abstraction, internet and networking. Another important aspect of this course is learning how to collaborate with other students. Each student will be put in a group of 3 and will work together to meet the objectives of the module. Collaborating with other students is essential to success of students in this course, as well as a much-needed life skill.

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## Digital Photography

**RECOMMENDED FOR:** Freshmen, Sophomores, Juniors and Seniors

**COURSE LISTING:** Art

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

**\*\*Students must have access to Digital SLR camera and the ability to use it outside of school.**

Digital Photography is a semester course designed for beginning photographers. Students will learn the basics of photography and fine-tune their camera skills. The course will also cover composition and the principles of design that work to create an aesthetically pleasing photo. The course will not cover photo editing and retouching but will focus on getting good images that don't need editing.

## Engineering Principles

**RECOMMENDED FOR:** Sophomores, Juniors and Seniors

**COURSE LISTING:** Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

This course takes students on a "doing" tour of the discipline of engineering and several of its sub-disciplines including mechanical engineering, electrical engineering, and computer engineering. Students will learn the engineering design process and computer aided design and apply it to "hands-on" projects.

## Introduction to Biochemistry

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Science

**PREREQUISITES:** Biology and Chemistry

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$100

This course provides an overview of the main aspects of biochemistry, especially as related to human biology. Topics will include a thorough study into the four major biochemical families including proteins, carbohydrates, lipids, and nucleic acids. Select biochemical functions will be discussed in the context of chemical structures and of specific chemical principles for each of the families of molecules (for example: enzymes and enzyme regulation, carbohydrate needs in the body, lipid functions, and nucleic acid structures). Finally, the course provides an overview of metabolism and metabolic pathways which are fundamental to understanding molecular biology.

## Introduction to Business and Entrepreneurship

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Social Studies

**SYNCHRONOUS COMMITMENT:** This course has a bi-weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$50

So you want to be an entrepreneur. There's more to it than you might think! This course introduces fundamental components of business and entrepreneurship by giving participants the opportunity to work with entrepreneurs on real-world problems. Students will practice working in groups, scoping deliverables, setting deadlines, talking to stakeholders, and making presentations. In the final segment of the course, participants will put their entrepreneurial knowledge and group management skills to work creating startups and competing for a fictional \$50,000 in seed funding.

## Introduction to Sociology

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Social Studies

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

Sociology touches on the essential concepts of sociology with an emphasis on contemporary American social themes. The main units of study are cultural analysis, family dynamics, gender studies, racial and ethnic inequality, socioeconomic stratification, and crime and deviance. The course requires students to perform scholarly research, prepare and perform numerous presentations, engage in class dialogues, and process information through various writing exercises. The sociology classroom demands academic determination and a desire to engage in-class discussion.

## JavaScript Programming

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Computer Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided in class)

This course will introduce students to computer programming using the JavaScript programming language. JavaScript is an object-oriented programming language similar to Java, Swift, C# or Python. It is the language behind the internet and is a crucial language for any aspiring programmer to learn. In this course, students will learn basic programming concepts including variables, control-flow, loops, functions, and data structures. Through a variety of projects, students will practice these skills and learn how to write high quality code. Previous computer science experience is not required for this course.

## Law and Society

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Social Studies

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$60

Law & Society features the study of the political nature of state and federal level courts, while paying particular attention to contemporary issues related to the judiciary. The course will provide a foundation for legal study through surveying 1) the historical development of the courts, 2) controversial issues surrounding the essence of court authority, 3) state and federal court structures and operations, and 4) case study areas related to civil rights and liberties. Students will have the unique opportunity to become acquainted with fundamental aspects of the American legal system and be afforded educational exposure to issues applicable as both citizens and students in the historical field of law. Class methods will include discussion, lecture, case-summary writing, historical research, and other related techniques. *Note: this course is not designed to be the basis of professional legal training. It is a general survey course designed to provide students with historical and contemporary practical learning material.*

## Multimedia Authorship: The Power of Words and Images

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** English, Communications, Practical Arts, Media Studies

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

This course aims primarily to develop communication skills through student expression ideas using multimedia technology. Students will study models of multimedia composition used by professional and student writers and then create their own multimedia content, pushing students to a mastery of the concepts and technical skills the composition requires. To fully participate in the class, students must have a computer (Mac or Windows) on which they can install new programs. They will also need access to a digital camera. The semester will culminate with each student producing an original, substantive multimedia project on a topic of the student's choice.

## Playing with Legos: An Introduction to Computer Programming Through Lego Building

**RECOMMENDED FOR:** Primarily for Freshmen, and Sophomores. Juniors and Seniors welcome.

**COURSE LISTING:** Computer Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided). PC or Mac Computer required.

This project-oriented course is designed for students with no previous computer programming experience who want to learn the fundamentals of coding through an interactive graphics-oriented environment called Bricklayer. Using virtual bricks (i.e. Legos) to build progressively sophisticated 2D and 3D models, students will learn basic coding concepts such as functions, parameters, conditional expressions, basic data structures, and debugging. The culminating student project will be a 3D artifact that will be imported for viewing in Minecraft.

## Powered By: The Science of Energy

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

This course introduces students to the science that underscores the challenges of producing energy for tomorrow. Topics discussed in this course include but are not limited to thermodynamics, electromechanical energy conversion, and the effect on climate, politics, and social justice. We will then explore various energy sources including traditional fossil fuels, solar, geothermal, nuclear, and wind energy.

## Understanding Artificial Intelligence: The Science and the Morality

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Computer Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

In this course, students will explore the emerging fields of machine learning and artificial intelligence. Artificial intelligence systems are all around us, from predictive text in our emails to customer service chatbots, to the curation of the media that we consume. Understanding how AI works will help students understand its promise and its limitations. Students will learn how AI systems 'think', how to train an AI, and through hands on labs explore the various applications of AI in our world today. Students will also spend time discussing the morality of AI systems and take a critical look at the way that these systems are shaping our world. Previous Computer Science experience is helpful but not required.

**SPRING 2023**

**January 12 through May 5, 2023**  
*Courses in this section carry 0.5 CREDIT*

## **AP Macroeconomics**

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Social Studies ([Dual Credit Eligible through Creighton University](#))

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$20

This course integrates selected themes from the Neoscholastic School of economics with the content of the Advanced Placement economics syllabus in macroeconomics. The course prepares students to do well on the AP Macroeconomics exam as well as offers a way to view our redeemed creation through the prism of social science. The economic way of thinking does not begin with Adam Smith. It is based on insights from Aristotle, St. Augustine, St. Aquinas, the Jesuit and Franciscan theologians at the University of Salamanca in Spain during the sixteenth and seventeenth centuries, and on the Popes' social encyclicals. We develop our understanding of basic economic concepts and analytic tools by anchoring them to our faith's moral traditions and foundations.

## **Advanced Digital Photography**

**RECOMMENDED FOR:** Freshmen, Sophomores, Juniors, and Seniors

**COURSE LISTING:** Art

**PREREQUISITE:** At least one previous course in Digital Photography

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

**\*\*Students must have access to Digital SLR camera and the ability to use it outside of school. Students will use whatever image editing program they have installed on their computer.**

This course is an extension to the 1<sup>st</sup> semester Digital Photography course with students deepening their mastery of key camera functionality, composition, and design principles as applied to developing personal expression and creativity.

## **Astronomy: An Introduction**

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$15

At some point in our lives, each of us has gazed at the night sky in awe of its sheer magnitude. While we have learned much about our planet and its relationship to other celestial bodies, in many ways, the cosmos is the last great frontier. But how did it come to be? How large is it? How much do we know about the universe versus what remains to be discovered? This course provides an introduction to the solar system, stars, the interstellar medium, the galaxy, and the universe. It is also designed to force students to think like scientists – separating fact from theory, studying relationships between objects in search of patterns, and more. Please note that Astronomic principles are grounded in Physics (which is largely grounded in Mathematics). Though students need not have studied Physics previously, they should be prepared to work within this discipline.

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## Bioethics: Navigating the Ethical Dilemmas of our Future

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Theology

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

The purpose of this course is to deepen the ethical and moral competence of students who are interested in the healthcare field. Medical decisions are some of the most difficult decisions that we have to make, and in this course, students will learn how to make these decisions, closely examining beginning and end of life issues, the ethics of medical research, justice concerns in the medical field and emerging technologies in medicine. This course is taught from a Catholic perspective and students will learn the teaching of the Catholic Church through the Ethical and Religious Directives for Catholic Healthcare Services, but students will also be free to discuss their own moral views in discussion forums and projects.

## C++ Programming

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Computer Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

This course will introduce students to computer programming using the C++ programming language. C++ is a programming language used in many applications, across many different industries. Through this course, students will learn the basic syntax necessary to write a computer program and how to attack a problem using the proper planning techniques. Students will learn about control structures, loops, procedures, arrays and much more. Another important aspect of this course is learning how to collaborate with other students. Each student will be put in a group of 3 and will work together to meet the objectives of the module. Collaborating with other students is essential to success of students in this course, as well as a much-needed life skill.

## Catholic Authors

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Dual-listed for Theology and English

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

The Roman Catholic Church is richly blessed with many wonderful authors who write passionately and compellingly about our faith. How many do you know? Augustine, Aquinas, Belloc, Chesterton, Dante, Day, Endo, Finnis, Greene, L'engle, Merton, O'Connor, Percy, Tolkien, and so many more. This course explores several diverse Catholic authors and their works and ideas, hones students' critical reading and interpretative skills, and brings students together from Catholic schools around North America to explore our Catholic faith through our rich literary heritage.

## Comic Book Fiction

**RECOMMENDED FOR:** Seniors

**COURSE LISTING:** English & Communications

**PREREQUISITES:** English III

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

Literature is paradoxical by nature: it attempts to hold a critical mirror up to the very society that produced it and of which it is part, and so it requires skill to uncover what authors want to say, what they do say, and, critically, what they don't say. Comic books are no different. Despite being marginalized by traditional literary circles, comic books feature the same literary techniques and devices as canonized literature and therefore offer an accessible entryway into literary analysis. In this course, you will learn and/or sharpen reading, writing, and analytical skills while reading some of the most lauded comic book titles. Join me, the X-Men, Spiderman, and Batman among others on an epic literary journey.

## Computer Game Development

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Computer Education, Technology

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

In this course, students will explore the variety of technologies and art forms that go into game design and development. Video games are the biggest entertainment industry in the world. They are also multimedia experiences that incorporate storytelling, music, art, and technology. This course examines the impact that games have on our society and exposes students to a wide variety of video games and genres, while teaching students to create their own video games and think critically about the games that they play. Students will learn to use a basic game engine to bring their video game ideas to life. Some previous experience in computer science is helpful but not required.

## Database Development for Real World Problems

**RECOMMENDED FOR:** Sophomores, Juniors, and Seniors

**COURSE LISTING:** Computer Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$30

This course introduces students to Microsoft Access in order to teach database and programming concepts and will show how to use Access as a real-world problem-solving tool through the building of an actual database. Access is part of the Microsoft suite and allows you to organize, manage, collect, analyze, and report on data using 'objects' within Access that you learn to design and build. Students will organize and develop a database throughout the course based on an idea from their school or personal life. Past students have built databases on topics as wide ranging as tracking and rating recipes, entering college applications and showing college acceptance/financial aid, and rankings of different brands and types of audio headphones.

## Genocide and the Holocaust

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Social Studies

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources provided)

This course takes a look at both the academic and social constructions of genocide. We will view the Holocaust as the paradigmatic example of, but not only, genocide in modern history. Students will study the causes and processes of genocide as well as other contemporary crimes against humanity. Students and parents should be advised that this course utilizes intense and disturbing materials.

## Introduction to Anatomy and Physiology

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Science

**PREREQUISITES:** Biology and Chemistry

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$55

Introduction to Anatomy & Physiology provides an overview of the basic systems in the human body. This course will focus on the structure and function of these bodily systems and discuss how they work both independently and collectively with each other. An underlying theme of this course will be that the structure of various components of each system result in unique and specific functions.

## Introduction to Veterinary Careers

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Science

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$0 (Resources Provided)

In Introduction to Veterinary Careers, students will investigate the vast field of veterinary medicine, from entering the field to living and growing within it. They will explore educational and licensing requirements, the varied jobs within the profession, and the reality of everyday life as a veterinarian (or veterinary support staff). The class will emphasize personal discovery of an individual's options for education and careers as well as considering his or her own strengths, weaknesses, and interests as they relate to veterinary careers. Finally, students will consider social and ethical challenges they may encounter to help them discern if veterinary medicine is right for them.

## Model United Nations/International Relations (MUNIR)

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Social Studies

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is MANDATORY.

**APPROXIMATE TEXT/RESOURCES COST:** \$25

*Model United Nations* is an educational simulation and academic competition in which students learn about diplomacy, international relations, and the United Nations. *International Relations* is an academic course designed to examine the behavior of nations and states both individually and collectively. When you combine the two—that is, using the Model UN platform to examine the state of International Relations today, you have an interesting, intriguing, and fun way to enhance both your perception of global issues and your position as a citizen of your country and the global community. This is not a course that will drown itself in theory. Rather, it is designed to offer opportunities for students to study modern global issues, and the positions and interactions of nations and states, through research, simulations, discussion, and written assignments. Students are assigned a country at the beginning of the semester and represent that country during simulations, constructing position papers, resolutions, and amendments. Several seminars encourage students to participate in online discussion to resolve, or perhaps merely to understand better, an issue. Since committee work is such a vital part of the course, significant online interaction via email, video conferencing, or texting is a must for success. Simulations are based on the United Nations format.

## Statistical Reasoning in Sports

**RECOMMENDED FOR:** Juniors and Seniors

**COURSE LISTING:** Mathematics

**PREREQUISITES:** Algebra I and II

**SYNCHRONOUS COMMITMENT:** This course has a weekly synchronous meeting that is OPTIONAL.

**APPROXIMATE TEXT/RESOURCES COST:** \$90

The purpose of this course is to learn the foundational concepts and tools of descriptive and inferential statistical reasoning in a fun way. This is an introductory, non-AP course, that covers most of the concepts in an introductory statistics course by working with data from high school, amateur, and professional sports. In our data-saturated world, citizens must be able to ask thoughtful questions, properly analyze data, and, most importantly, use critical thinking skills to draw appropriate conclusions and recognize inappropriate conclusions made by others. A culminating activity will include applying course concepts by analyzing data from a selected school sport activity, assuming approval from school administration and coaching staff.

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