Universal Learner™
Course Catalog
2020–2021
Course Offerings

ASM 246: Human Origins
AST 111: Introduction to Solar Systems Astronomy
ACC 231: Uses of Accounting Information I
BIO 100: Bio Beyond
CEE 181: Technological, Social, and Sustainable Systems
CHM 114: General Chemistry for Engineers
CIS 105: Computer Applications and Information Technology
COM 100: Introduction to Human Communication
CSE 110: Programming for Everyone: Introduction to Programming
EA 11: Foundations for Earned Admission
ECN 211: Macroeconomic Principles
ECN 212: Microeconomic Principles: Decision-Making Under Scarcity
ENG 101: English Composition
ENG 102: English Composition: Research and Writing
HEP 100: Introduction to Health and Wellness
FSE 100: Introduction to Engineering: Imagine. Design. Discover!
FSE 150: Perspectives on Grand Challenges for Engineering
HST 102: Western Civilization: Ancient and Medieval Europe
MAT 117: College Algebra and Problem Solving
MAT 210: Brief Calculus: Calculus for Business and Economics
MAT 265: Calculus for Engineers 1: Calculus with Analytic Geometry for Science and Engineering
PAF 112: Identity, Service and American Democracy
SES 106: Habitable Worlds
SOC 101: Introduction to Sociology
Overview

In this introductory course, we will guide you through an exploration of the scientific evidence for the evolution of humans and our fossil relatives, and humankind’s place in the natural world. This includes an introduction to evolutionary theory, an overview of the hominin fossil record and what that record teaches us about our place in nature. Dr. Donald Johanson, a world-renowned paleoanthropologist who found the skeleton known as Lucy will present an exciting in-depth exploration of paleoanthropological field research from his unique perspective.

About this course

By completing this course, you will be able to:

- Recognize the ASU Charter and how it relates to the development of Earned Admission
- Navigate the Earned Admission platform and course features
- Defend the need for Academic Integrity
- Find resources to aid in course success
- Recognize key mindsets for successful online learning
- Utilize common digital learning tools used throughout Earned Admission

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

By the end of this course, students should be able to:

- Outline the nature of science and explain how scientific research is conducted.
- Identify humans’ place in the natural world from taxonomic/phylogenetic perspectives.
- Define the role of paleoanthropologists in human origins research.
- Identify how paleoanthropologists use the scientific method to formulate hypotheses and strategically conduct research.
- Articulate differences between scientific evidence for human evolution and non-scientific, non-testable, explanations for human origins.

Additional Info

This course satisfies 3 credit hours toward the Social-Behavioral Sciences (SB) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Dr. Donald C. Johanson
Donald C. Johanson is the Founding Director of the Institute of Human Origins now located at Arizona State University in the School of Human Evolution and Social Change. For the past 45 years he has conducted field and laboratory research in paleoanthropology. He is best known for his discovery of the 3.18 million year old hominin skeleton from Ethiopia, popularly known as “Lucy.”

Through grants from the National Science Foundation, the L.S.B Leakey Foundation and the National Geographic Society, Johanson has carried out field research in Ethiopia, Yemen, Saudi Arabia, Egypt, Jordan, and Tanzania. He is an Honorary Board Member of the Explorers Club, a Fellow of the Royal Geographical Society, a member of many other professional organizations and recipient of several international prizes and awards.

In addition to his scholarly contributions, he has co authored some 7 books including the widely read “Kucy: The Beginnings of Humankind” and most recently “Lucy’s Legacy: The Quest for Human Origins.” He hosted and narrated the three part NOVA television series In Search of Human Origins seen by more than 100 million people worldwide. Johanson is a frequent lecturer at university and other forums in the United States and abroad.

Dr. Sara Marsteller
Sara Marsteller is a teaching postdoctoral scholar in the School of Human Evolution and Social Change at Arizona State University. She received her PhD in Anthropology from the Arizona State University in 2015. A bioarchaeologist, Marsteller is broadly trained in methods and theory in biological anthropology, archaeology, and cultural anthropology and specializes in online anthropology course development and instruction. In her research, Marsteller uses biological and chemical data from archaeological human skeletal remains to reconstruct past human behavior and social relationships. Her current project in Lima, Peru, focuses on patterns of diet and residential mobility to investigate how the Wari and Inka Empires influenced local communities in this important regional hub in the Central Andes.
Overview

Explore the exciting world of modern solar systems astronomy.

About this course

In this introductory lecture and laboratory course, we will explore the origins, structure, contents, and evolution of our solar system and other solar systems. We will also cover aspects of the history of astronomy, gravity, light, and telescopes.

Throughout the course, we will learn about the Discovery Channel Telescope, the Lowell Observatory, the Challenger Space Center, and Meteor Crater, the world’s best-preserved meteorite impact site on Earth. We will also get a chance to virtually walk through the Lunar Exploration Museum and Arizona State University’s Moeur Building, home of the Mars Space Flight Facility where ASU scientists and researchers are using spacecraft instruments on Mars to explore the geology and mineralogy of the red planet.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency, computer literacy, and secondary school-level Algebra.

To be adequately prepared for the mathematics required in this course, a recommended prerequisite course is MAT 117 College Algebra and Problem Solving. The prerequisite course should be taken first to ensure that the course credits will transfer to your institution, including ASU.

Learning Outcomes

By the end of this course you will be able to:

- Describe the origins, structure, contents, and evolution of our solar system.
- Use algebra and order-of-magnitude estimates to obtain quantitative, scientific results.
- Give clear explanations of physical phenomena.

Additional Info

This course includes a lab and satisfies 4 credit hours toward the Natural Science - Quantitative (SQ) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Dr. Frank Timmes
Frank Timmes is a theoretical astrophysicist who is interested in the universe's evolving composition and its implications for life in the universe. His current research focuses on stars, supernovae and explosions of all sorts, cosmic chemical evolution, and gamma-ray emission from radioactive isotopes. This research involves analytical models, desktop calculations, large-scale parallel computations, comparison with existing observations or experiments, and creating testable predictions. He holds a B.S. in Physics from UC Santa Barbara, and a M.S. & Ph.D. in Astronomy & Astrophysics from UC Santa Cruz.
Overview

Are you interested in business and its financial aspects? This course introduces the uses of accounting information throughout the business cycle and how accounting information is used for internal and external purposes. Topics include Generally Accepted Accounting Principles or “GAAP” and the preparation and analysis of financial statements.

Opportunities to apply concepts with hands-on practice are integrated throughout the course. In addition, the course’s content is adaptive, allowing you to achieve mastery of concepts on a personalized learning path.

Focused on decision-making and the role of accounting in the decision-making process, this course’s topics are applicable not only to business but to any situation that utilizes financial information.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency, computer literacy, basic mathematics concepts (whole numbers, fractions, decimals, percentages, ratios, order of operations, exponents), and basic algebra.

Learning Outcomes

By the end of this course, students should be able to:

- Explain the uses and limitations of accounting information
- Distinguish between types of business entities, internal controls, and regulatory bodies
- Complete the steps of the accounting cycle from transaction entry to preparation of financial statements
- Apply Generally Accepted Accounting Principles and Assumptions (GAAP) within the overall accounting framework
- Interpret and analyze financial statements using ratio analysis

Additional Info

This course satisfies 3 credit hours at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Veena Srinivasan
Senior Lecturer
W.P. Carey School of Accountancy

Veena Srinivasan has been teaching introductory financial and managerial accounting at Arizona State University since Spring 2013. She brings over 25 years of experience, both professional and academic, to her appointment as senior lecturer. She has worked for global accounting firms in both India and the United States and was director of accounting programs at the State University of New York at Albany.

Audrey Cook
Lecturer
W.P. Carey School of Accountancy

Audrey Cook has been teaching financial accounting at Arizona State University since Spring 2017. Ms. Cook teaches a variety of accounting courses such as introduction to financial accounting, managerial accounting, intermediate financial accounting, and financial statement analysis. Ms. Cook has also taught at Grand Canyon University and various community colleges such as Chandler-Gilbert Community College and Central Arizona College. Her professional experience includes audit services with professional services firm Deloitte & Touche, LLP in their Phoenix office. Ms. Cook is also a Certified Public Accountant (CPA) in the state of Arizona and is a member of the American Institute of CPAs (AICPA).
Overview

The Living World is an introductory biology course centered on the authentic, compelling question of how to find life in the universe. As students investigate the possibilities, they learn everything included in a standard first year biology curricula.

About this course

Can we find life elsewhere in the Universe? This is one of the big questions at the forefront of scientific endeavor. Nations and companies alike are exploring our celestial neighborhood, searching for signs of life in our solar system and Earthlike planets in nearby systems. BioBeyond uses the search for life to explore concepts in general biology, including biodiversity, evolution, cellular biology, molecular biology, ecology, and human anatomy and physiology.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

The learning objectives for this course are organized around the five core principles identified in the 2009 AAAS document Vision and Change in Undergraduate Biology Education. Those five principles are:

1. **Evolution**: The diversity of life changed and diversified over time by processes of mutation, selection, and isolation.
2. **Structure and Function**: Basic units of structure establish the function of all living things.
3. **Information Flow, Exchange, and Storage**: The macro and microscopic features of organisms result from the expression of genetic information in context.
4. **Pathways of Energy and Matter**: Biological systems are built and maintained by chemical transformation pathways that are governed by the laws of thermodynamics.
5. **Biological Systems**: Living systems are interconnected and interacting.

In addition, we’ve added a sixth principle of our designation:

6. **Nature of Science**: Science proceeds by developing and testing explanations for patterns observed in nature.

Additional Info

Course format
BioBeyond is an innovative course with a format different from most online courses. It is built around interactive activities with rich adaptive feedback. Usually they are problem-solving activities through which you will be introduced to key concepts, and master them, in a question-driven "learn-by-doing" approach. Often they will be designed around game-like simulations that you can manipulate, or virtual field trips that you can explore. In some ways, these activities and the Project can feel like a serious game! That's not an accident: That's in fact how the pursuit of science feels to professional scientists.

This course is offered in a self-paced format. In this course, students will complete course assignments at their own pace, as long as the course is completed within one year. Self-paced courses are great for:

- Students who want to start right away
- Students who are self-directed and can set and stick to a plan for completing the course
- Students who may want to either go faster or slower than the instructor-paced version

**Credit Designation**

This course satisfies 4 credit hours toward the Natural Sciences (SQ) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Overview

Explore how social, technological, and sustainable systems are interacting to create the modern world.

About this course

Understand the impact of technology on sustainability and society, using relevant historical examples and current issues in the news, and gain insight on the cultural frameworks within which ideas such as sustainability and different technologies are understood and evolve. You’ll also explore emerging technologies from the Industrial Revolution through present day, leading to a future that will be complex and challenging, and in many ways look like science fiction.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

- The importance of technology and technological systems in shaping the world and our future
- What issues face technologies companies today and how you might prepare for a career with a tech organization
- The social and environmental implications of design and management of technology systems
- How to identify and explain critical principles of complexity and complex systems
- How art and literature guide technological evolution
- The economic, environmental, and cultural issues arising from emerging technologies

Additional Info

This is a three credit hour course that counts toward the Humanities, Arts and Design (HU) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Dr. Brad Allenby

At Arizona State University, Dr. Allenby has the following roles:

- President's Professor and Lincoln Professor of Engineering and Ethics, School of Sustainable Engineering and the Built Environment, Ira A. Fulton Schools of Engineering
- Professor at School of Sustainable Engineering and the Built Environment in Civil Engineering
- Distinguished Sustainability Scientist, Julie Ann Wrigley Global Institute of Sustainability
- Director, Center for Earth Systems Engineering and Management

Dr. Samuel Markolf

Dr. Samuel Markolf is an Assistant Research Professor within the School for Sustainable Engineering and the Built Environment (SSEBE) at Arizona State University. His research broadly focuses on urban infrastructure resilience to extreme events. In particular, current projects include characterizing vulnerabilities that arise in transportation systems via interdependencies with other infrastructure systems (e.g. the electricity grid.); critically assessing the role of risk analysis in infrastructure resilience and the exploration of alternative approaches; and modeling disruption and resilience in regional transportation networks. In addition to research, Dr. Markolf has helped instruct courses within SSEBE for three years. He earned his B.S. from the University of Texas-Austin and his Ph.D. in Civil & Environmental Engineering and Engineering & Public Policy from Carnegie Mellon University.

When not working on ways to enhance the sustainability and resiliency of our cities, Dr. Markolf is most likely traveling, hiking, biking, or enjoying the company of his friends and family.
Overview

In this online chemistry for engineers course, you’ll learn how atoms and molecules act and interact to make the modern materials that underpin technology and solve engineering challenges.

About this course

Have you ever wondered what’s inside your mobile phone case? Why batteries aren’t lighter and have to be recharged? How different colors can be shown on your computer screen? Or why glass shatters when you hit it with a hammer? These, along with other questions of how atoms and molecules combine to make macroscopic materials with desired properties, are at the heart of countless challenges addressed by chemists and engineers every day.

This course is not a standard introductory chemistry course. In this course, you will learn by doing, and you will be helped along the way with instant visual and audio feedback. You will simultaneously learn the language of chemistry and how to think like a chemist by exploring the chemistry embedded in four key engineering challenges:

- Why don’t we build everything out of glass?
- What are the fuels of the future?
- Can battery technology solve the energy crisis?
- How will modern materials shape tomorrow?

The course introduces general chemistry topics and explains directly how these concepts are related to engineering. You will develop the language and chemistry skills necessary to work as an engineer in a team with chemists.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

To be adequately prepared for the mathematics required in this course, a recommended prerequisite course is MAT 170 Calculus. The prerequisite course should be taken first to ensure that the course credits will transfer to your institution, including ASU.

Learning Outcomes

You will learn:

- To solve engineering challenges using tools from chemistry
- To apply molecular ideas to understanding the properties of materials and functionality of modern devices
- To predict chemical and physical properties from molecular or material structures
- To evaluate suitability of chemicals and materials for applications like batteries or fuel cells based on chemical and physical properties
Additional Info

This course satisfies 4 credit hours toward the Natural Science - Quantitative (SQ) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creators

Dr. Ian Gould
Ian Gould is President’s Professor and Associate Director of Outreach, Online and Communications in the School of Molecular Sciences at Arizona State University. He received his B.Sc., M.Sc., and PhD. Degrees in chemistry from the University of Manchester (UK). After a postdoctoral fellowship at Columbia University, he moved to the Eastman Kodak Company. In 1998, he joined the faculty of ASU where he teaches organic chemistry. Areas of expertise include organic geochemistry, chemical education, and organic mechanisms.

Dr. Anne Katherine Jones
Anne Jones is Associate Professor and Associate Director for Academic Affairs in the School of Molecular Sciences at Arizona State University. She received her B.S. in chemistry and mathematics from the University of the South and her D. Phil in Inorganic Chemistry from the University of Oxford (UK). Following post-doctoral research at the Humboldt University in Berlin, Germany and the University of Pennsylvania, she joined the faculty in the School of Molecular Sciences in 2017 where she teaches undergraduate and graduate courses in inorganic and biological chemistry. Areas of expertise include electrocatalysis, biological inorganic chemistry, and bioenergy.
**Dr. Pamela Marks**
Pamela Marks is a Principal Lecturer in the School of Molecular Sciences at Arizona State University. She earned her B.A. in chemistry from St. Olaf College and her M.A. in inorganic chemistry from the University of Arizona. Since joining the ASU faculty in 1995, Pam has focused on teaching introductory chemistry in labs, traditional and non-traditional lecture courses, and online.

**Dr. Peter Williams**
Peter Williams is a Professor of Chemistry in the School of Molecular Sciences at Arizona State University. He obtained his BSc in Chemistry and a PhD in Physical Chemistry from the University of London, King’s College (UK). Following a postdoctoral fellowship at Argonne National Laboratory and staff position at the Universities of Manitoba and Illinois, he joined the ASU faculty in 1981 where he teaches courses in introductory chemistry and bioanalytical chemistry. Areas of expertise include bioanalytical chemistry, mass spectrometry, and bioimaging.
Overview

This course is an introductory course with a dual focus: one focus on organizations and another focus on the individuals who work for them. At the individual level, we will examine how business decision making can be improved when supporting technologies like spreadsheets are leveraged. From the organizational perspective, we will cover strategic analysis frameworks and business strategies that can be fine-tuned for competition in an increasingly digitally transformed world.

About this course

Humans are inherently limited in how they might approach problem solving because of the cognitive biases we all bring to decision situations. Understanding these biases and how to confront them using the spreadsheet modeling knowledge gained in this class will change the way you face and solve problems. We will cover practical decisions you will deal with in many different personal and professional business settings. You will build models in spreadsheet software that serve to help you analyze problem situations in a completely new light.

Organizations are undergoing major upheaval as required digital transformations are impacting everything from how customers pay for goods and services to how we interact with each other in an increasingly digital world. All areas of business are undergoing rapid change, and this change will continue throughout your lifetime. This course will provide you with strategic frameworks to help you understand digital transformation and how today’s companies are and will change in order to remain competitive. You will learn to analyze industries and the companies in them with an eye towards strategic prospects and potential setbacks. You’ll learn new ways to think about businesses using advanced digital transformation strategic lenses that let you peer into industry rivalry, supplier and customer power and other important determinants. After this course, you will look at businesses and how they compete in an entirely new way.

As a first course in business, you will be immersed in a world where some jobs are being eliminated and new ones are being added in a process known as creative destruction. Just around the corner for the world economy will be the emergence of artificial intelligence (AI) technologies. AI will disrupt industries and will require major strategic change in established companies. It will also provide opportunities for new business ideas and entrepreneurship. The dual focus in this course – on individuals and organizations – will provide you with the background needed to make important decisions about choosing a possible career in business and/or information systems.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.
Learning Outcomes

You will learn:

- A dual focus approach to study information systems from both tactical and organizational viewpoints in order to advance a broad understanding of digital transformation’s impact on people, business processes and organizational strategy
- The limitations cognitive biases can inflict on individuals, and learn how business decision making can be enhanced through judicious leveraging of supporting technologies that enable leading-edge modeling and analysis
- How to describe industry competition in an age of digital transformation using frameworks and constructs that enable a fundamental level of competitive strategy analysis
- How to debate how well-positioned digitally transforming industry competitors are for sustained advantage by applying concepts and contexts related to platforms and competition in two-(or more)-sided platform-based market spaces
- How to leverage this first course in business to understand the exciting career paths available now – and those that may be created as digital transformation continues at break-neck pace

Additional Info

This course is worth 3 credit hours toward the Computer Science (CS) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creator

Dr. Michael Goul

Michael Goul is associate dean for faculty and research and a professor at the W. P. Carey School of Business at Arizona State University. He is also an affiliated faculty member for both ASU’s Institute for Social Science Research and the Global Security Initiative, and he serves on the Biodesign Institute’s Internal Advisory Board. In the Carey School, Professor Goul oversees faculty and department affairs and leads initiatives to advance faculty excellence. In addition, he oversees the school’s portfolio of research centers, coordinates the school’s doctorate program, and he represents the school on university research initiatives such as those associated with advanced analytics. For the six years prior, he served as chair of the school’s department of information systems. As chair, Professor Goul spearheaded the development of the nine-month Master of Science in Business Analytics program, and he administered the launch of the school’s undergraduate Bachelor of Science in Business Data Analytics degree. Professor Goul also administered the launch of the online version of Carey’s highly successful Master’s of Science in Information Management program.
Professor Goul is passionate about how the concomitant explosion of big data, the shift to cloud computing and the emergence of the mobile/social web does and will impact the global economy. His most recent research efforts are in the area of big data, IoT and data science governance, fog computing and analytics/data sharing contracts. In summer 2016, Professor Goul was recognized with the Outstanding Leadership Award by the IEEE Computer Society Technical Committee on Services Computing. He has published more than 100 articles, authored cases and he conducted analytics research at companies including American Express, eBay, Intel and Teradata.
Overview

Learn the basics of effective human communication, which can change the way you interact with others and the world.

About this course

This course is designed to introduce you to the basic concepts of human communication, processes, and environments. This course surveys communication topics related to culture, identity, organizations, and relationships. By the end of this course, you should have a fuller understanding of appropriate and effective communication based on your knowledge of theoretical concepts and their application.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

You will learn:

- To define and describe the complex nature of communication
- To identify and describe the various contexts of communication study, including interpersonal, small group, organizations, public, and mass communication
- To explain the features of communication common to all contexts, including verbal and nonverbal
- To connect theoretical concepts of communication to everyday experiences
- To define key terms used by communication researchers and practitioners
- To describe the relationships between the discipline of communication and other academic areas of study

Additional Info

This course satisfies 3 credit hours toward the Social-Behavioral Sciences (SB) General Studies at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Dr. Frederick C. Corey
Frederick C. Corey is vice provost for undergraduate education at Arizona State University. Professor Corey focuses on undergraduate student success through academic advising, degree planning, and major and career exploration. His research and instruction interests focus on communication and culture with an emphasis on ethnographic writing, cultural performance, and narrative. Professor Corey has published widely in journals and edited collections in communication studies. His articles have appeared in Text and Performance Quarterly, Canadian Journal of Political and Social Theory, Western Journal of Communication, Journal of Homosexuality, Communication Studies, and Communication and the Disenfranchised.

Dr. Alexis Valianos
Alexis Valianos is an instructor in the Hugh Downs School of Human Communication at Arizona State University. Her areas of specialization are cross-cultural communication and conflict management.

Dr. Terrie Wong
Terrie Wong is a lecturer at the College of Integrative Sciences and Arts, Arizona State University. Her areas of specialization are intercultural communication and ethnography.
**Dr. Greg Wise**
Greg Wise is professor of communication studies and social technologies at Arizona State University. He received his Ph.D. from the University of Illinois in 1995. Professor Wise's areas of expertise include media studies, culture and technology, globalization, and surveillance. His major works include Surveillance and Film, Culture and Technology: A Primer, and Cultural Globalization: A User’s Guide.

**Dr. Manuel G. Avilés-Santiago**
Manu Avilés-Santiago is associate professor of communication and culture at Arizona State University. He received his Ph.D. from the University of Texas at Austin. Professor Avilés-Santiago's areas of expertise include media studies, culture and technology, Latina/o studies, and intercultural Communication.
Overview

Computers are all around us. They’re in our pockets, our phones, homes, schools, and offices. Sure, you may know how to use a computer to write a document or send an email, but what if you could take full advantage of the machine you’re sitting at right now, and make people’s lives better and easier? And what if all you needed to do it were some programming basics and a web browser?

Knowing how to program, to understand and control the machines that surround us, is a critical skill in our modern world. And this 15-week, 3-credit class is your first step toward doing just that. You’ll see what a computer scientist does, learn how to think like a programmer, and be able to speak the language of computers to write your own apps and solve today’s problems.

This course is focused on learning by doing in an interactive, minimally technical way; no prior programming experience is needed. You will learn about the operation and capabilities of computers; algorithmic problem-solving; debugging programs and automating basic processes; and how to write basic programs using modern programming languages. You’ll use innovative interactive web technologies, enabling you to write and execute code, view the inner workings of the computer as it processes instructions, and visualize the fundamentals of programming.

The first half of this course uses the approachable Python programming language to teach fundamental programming principles, then switches to the Java language to develop skills in one of the most popular programming languages in the world. Programming projects are based on real-world problems, and automated tools provide you with immediate feedback, which is then augmented by style and structure feedback from expert instructors.

Fluency in programming only comes with experience and practice. In the process, we hope you’ll fall in love with the challenge and excitement of computer science, and set yourself on a path to where you can program all the time!

About this course

Do you ever think: “There has to be a better way!” Then engineering is for you! Engineering is for anyone with a passion for problem solving.

This course actively introduces you to skills and tools that engineers use to solve problems while teaching you to think like an engineer. You will learn to identify opportunities, imagine new solutions to problems, model your creations, make data-driven decisions, build prototypes, and showcase your ideas that will impact the world.

Taught by engineering professors and highlighting industry engineers in action, this course will equip you, as an engineer-in-training, with the skills necessary to compete in today’s world of innovation.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy, as well as high school algebra and understanding of basic mathematical concepts.
Learning Outcomes

By the end of this course, students should be able to:

1. Demonstrate problem solving techniques for programming.
2. Develop algorithms to solve problems. Demonstrate effective troubleshooting, testing, and debugging of programs.
3. Apply basic object-oriented analysis and design methods.
4. Describe and apply variables, basic and composite data types, and collections to the development of programs.
5. Develop programs using fundamental structures of sequence, selection, and iteration.
6. Write functions that accept parameters and return results.
7. Implement object oriented programs.
8. Describe the importance and relevance of computing and programming skills in their lives and careers.

Additional Info

This is a 3 credit hour course at Arizona State University (CSE 110 Principles of Programming) and satisfies the Computer/Statistics/Quantitative (CS) General Studies requirement. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creators

Dr. Ryan Meuth
Ryan Meuth is a Lecturer at Arizona State University in the Fulton Schools of Engineering. He received his Ph.D. in Computer Engineering from Missouri University of Science and Technology in 2009. His areas of expertise include engineering education, computational intelligence, and robotics.

Dr. Phill Miller
Phill Miller is a Lecturer at Arizona State University in the Fulton Schools of Engineering. Phill joined ASU in 2014 after teaching computer science and software engineering courses for 14 years at the University of Advancing Technology in Tempe, AZ. His areas of expertise include programming languages, business application development, and software engineering.
Dr. Steven Osburn
Steven Osburn is a lecturer at Arizona State University in the Fulton Schools of Engineering. A California native, he grew up traveling the US, from Oregon and Washington State, to Montana and Arkansas, before landing in Phoenix. Steven spent several years in the military, and subsequently returned to Arizona for a job in industry, where he stayed for 18 years while teaching part-time at a local community college for 13 of those years. During that time, he completed his bachelor’s and master’s in systems engineering at ASU. He ultimately took the opportunity to teach full time at ASU, and has loved it ever since! His areas of expertise include software and hardware design, specifically control system.
Overview

This non-credit, self-paced orientation course introduces you to Earned Admission, our online learning platform, and the tools used throughout many of our courses. This course also provides you--an online student--with guidance and best practices so you will feel confident as you complete your Earned Admission Track.

About this course

By completing this course, you will be able to:

- Recognize the ASU Charter and how it relates to the development of Earned Admission
- Navigate the Earned Admission platform and course features
- Defend the need for Academic Integrity
- Find resources to aid in course success
- Recognize key mindsets for successful online learning
- Utilize common digital learning tools used throughout Earned Admission

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

By completing this course, you will be able to:

- Recognize the ASU Charter and how it relates to the development of Earned Admission
- Navigate the Earned Admission platform and course features
- Defend the need for Academic Integrity
- Find resources to aid in course success
- Recognize key mindsets for successful online learning
- Utilize common digital learning tools used throughout Earned Admission

Additional Info

This is a non-credit course. It is highly recommended that you complete this orientation prior to beginning your work in the other Earned Admission courses.
Overview

Understand how the decisions of those around you impact your daily life, including the cost of everyday items and even how much you earn in your paycheck.

About this course

Macroeconomics is the study of the sum of all spending, income, and productive efforts. The economic outcomes that we experience are the result of our intricate dealings with other governments, businesses, and people, both locally and globally. This course will give you insight into how economists approach and measure these big issues and questions.

This first part of this course takes a look at the common household with a specific focus on how the members of a household choose their workloads and spending habits. You will also study how businesses, both large and small, make important economic decisions.

The second part of this course dives into policymaking and how these policies can either distort or enhance market outcomes. You will focus on five specific areas of economic policy:

- Free trade
- Research and development & innovation
- Fiscal and tax
- Inflation and monetary
- Unemployment and labor market policies

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

To be adequately prepared for this course, a recommended prerequisite course is MAT 117, MAT 170, or MAT 210. The prerequisite course should be taken first to ensure that the course credits will transfer to your institution, including ASU.

Learning Outcomes

You will learn:

- Basic principles of the theory of household and business decisions
- How these decisions drive macroeconomic outcomes, namely growth and fluctuations
- The difference in macroeconomic outcomes over time and across countries
- Which data points are used to track U.S. macroeconomic outcomes
- How economic policies can affect growth and fluctuations
Additional Info

This course satisfies 3 credit hours toward the Social-Behavioral Sciences (SB) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creators

Dr. Bart Hobijn
Bart Hobijn is a macroeconomist in the Economics Department at the W.P. Carey School of Business at Arizona State University. He joined ASU in the summer of 2015, after having been a research economist at the Federal Reserve Banks of New York and San Francisco. Bart’s current research focuses on what drives wage growth of U.S. workers and whether it is being held back by the Great Recession, by a slowdown in the growth of productivity of workers, or by increased globalization and competition from workers abroad. In addition, he has investigated why people and businesses in poor countries do not adopt more modern technologies, how firms’ price setting decisions drive inflation, and how the Great Recession has affected the U.S. labor market. Bart’s research has been published in top-tier academic journals and his findings have been reported on in many media outlets including Bloomberg, Businessweek, CNN, the Economist Magazine, New York Times, Wall Street Journal, Washington Post, and, of course, the Onion. He has his PhD in Economics from New York University and MSc in Econometrics from Erasmus University Rotterdam in the Netherlands.

Jarod Coulter (Teaching Assistant)
Jarod is an undergraduate student studying economics and global politics at Arizona State University. When not spending time on his classwork, he assists in running the ASU Global Business Association and the ASU Chess
Club. His current plan for post-graduation is to further his studies in the field of economics, specifically in the areas of international economics and political economy.

Alberto Vindas (Teaching Assistant)
Alberto is a graduate student of economics at Arizona State University. He has worked as a research analyst at the University of Costa Rica and the Federal Reserve Bank of Minneapolis, and as a junior researcher at the Central Bank of Costa Rica. His research interests are in economic growth, and how technological progress has pushed people in and out of the labor force. Before joining the PhD program at ASU, he earned his BSc from the University of Costa Rica and his MSc from the London School of Economics and Political Science. He enjoys cooking new dishes (when the result is not disastrous), stretching in yoga classes (and sometimes regretting it), and has found himself being quite fond of hikes in the desert.
Overview

This course introduces you to microeconomics, the field of economics that studies the decision-making behavior of consumers and firms when their choices are constrained by scarcity. This principle of constrained decision-making is a major building block of modern economics and is the central concept around which this course is built.

This course will help you understand decisions that are made in the face of constraints, such as the transactions you make every day in the marketplace. For example, consumers are constrained by the prices they face and their overall income when making a purchase. Business managers are constrained in their ability to sell a product by consumers’ own preferences for it in addition to the presence of competing products.

About this course

The course is divided into four parts:

- In part I, you’ll gain an understanding of how consumers make decisions on the types and quantities of goods to purchase.
- In part II, you’ll learn how managers decide how much to produce, the price to set for their products, and the amounts and types of inputs to buy.
- In part III, the focus will be on the interaction between consumers and producers and the concepts of equilibrium and efficiency.
- The final part of this course focuses on market distortions that are introduced by governments, such as taxes and tariffs, or those that result from the nature of the products produced or consumed.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency, computer literacy, secondary school (high school) algebra, and basic mathematics concepts.

To be adequately prepared for this course, a recommended prerequisite course is MAT 117, MAT 170, or MAT 210. The prerequisite course should be taken first to ensure that the course credits will transfer to your institution, including ASU.

Learning Outcomes

By the end of this course you should be able to:

- Explain how consumers decide what products to purchase and how much to purchase.
- Explain how producers decide how much to produce, how many inputs to use and what price to charge for their products.
- Describe how the interaction of consumers and producers in competitive markets generates the market price and the quantity consumed and produced.
- Explain the concept of efficiency and describe how markets often lead to efficient outcomes.
- Explain how market distortions occur and their impact on the welfare of producers and consumers.

**Additional Info**

This course satisfies 3 credit hours toward the Social-Behavioral Sciences (SB) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

**Creators**

Dr. Jose Mendez

Dr. Cara McDaniel

Dr. Fernando Leiva Bertran

Each of your instructors for this course is a faculty member within the Department of Economics at Arizona State University. They bring a combined 61 years of experience teaching economics at various collegiate levels and universities, including Carlos III of Madrid, ITAM, Kenyon College, University of Georgia, and Georgetown University.

Each has recently taught microeconomics at the undergraduate level. Their research interests span the areas of Macroeconomics (McDaniel), Industrial Organization (Levia Bertran), and International Economics (Mendez).
ENG 101: English Composition

Overview

Language and the ability to communicate effectively are critical skills in the global economy and in our daily social exchanges, but they are also essential to gaining a deeper understanding of who we are. This introductory composition course will help you develop and express ideas effectively for a variety of personal and professional purposes, audiences, and occasions.

During the course, you will complete five major written projects, maintain a writer’s journal, learn and apply a variety of concepts in the field of rhetoric and composition, and create an ePortfolio where you will showcase your work and your evolving identity as a writer.

Credit earned will count as one of ASU’s First-Year Composition courses.

About this course

We will be discussing our course outcomes and “habits of mind” in each module. You will work towards achieving these outcomes and habits by:

- Reading and watching a variety of texts chosen with these outcomes and habits in mind;
- Composing five major writing assignments including a literacy narrative, context analysis, audience analysis, purpose analysis, and rhetorical analysis;
- Maintaining a Writer’s Journal where you will work through the ideas presented in the course;
- Designing and creating an ePortfolio website;
- Learning and applying a variety of rhetorical concepts.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

- Rhetorical Knowledge: how to craft your writing to meet the needs of specific audiences for specific purposes
- Critical Thinking: how to make decisions about what to include and not include in your writing
- Writing Processes: how to use invention, research, drafting, revising, and editing in your writing
- Knowledge of Conventions: how to use various formats and stylistic choices, including genre conventions
- Digital Technology: how to use diverse technologies to write more effectively and efficiently
- Habits of Mind: how to benefit from and cultivate curiosity, openness, engagement, creativity, persistence, responsibility, flexibility, and reflection
Additional Info

This is a 3 credit hour course at Arizona State University (ENG 101 First-Year Composition). It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creator

Dr. Adam Pacton
Adam Pacton teaches English 101 and 102 for Earned Admission. He earned his PhD in Rhetoric and Composition at the University of Wisconsin-Milwaukee. His research has focused on composition theory, pedagogy, and assessment; online and hybrid composition; disability studies; and writing program administration.
Overview

Technology has increased global connectedness and raised awareness of global problems. Solutions to such problems often begin at the local level by responding to the particular circumstances of a given community and addressing a specific audience. Proposing solutions to local problems requires grounding research in the local context and communicating clear solutions and calls for actions that are understandable and relevant to local audiences.

English 102 introduces students to discourse, research, and research writing for the purpose of proposing solutions to problems. Rather than learning about these subjects in the abstract, students will learn by engaging with local problems and issues in their communities. To achieve this, students will learn how to:

- Develop an actionable central research question,
- Propose a research project,
- Conduct primary and secondary research, and
- Design an action-oriented research project for web publication.

In short, the goal for ENG 102 students is to learn about and conduct research, write about a particular issue, and call for action based upon their research.

About this course

We will be discussing our course outcomes and “habits of mind” in each module. You will work towards achieving these outcomes and habits by:

- Reading and watching a variety of texts chosen with these outcomes and habits in mind;
- Composing five major writing assignments including a literacy narrative, context analysis, audience analysis, purpose analysis, and rhetorical analysis;
- Maintaining a Writer’s Journal where you will work through the ideas presented in the course;
- Designing and creating an ePortfolio website;
- Learning and applying a variety of rhetorical concepts.

Required prior knowledge and skills

This course is not intended to teach English; instead, it is designed to introduce students to rhetorical and compositional concepts, skills, and practices. Basic proficiency in English is a necessary prerequisite for successful completion of this course.

To be adequately prepared for this course, a recommended prerequisite course is ENG 101 English Composition. The prerequisite course should be taken first to ensure that the course credits will transfer to your institution, including ASU.
Learning Outcomes

In this course we'll learn about:

- Rhetorical Knowledge: how to craft your writing to meet the needs of specific audiences for specific purposes.
- Critical Thinking: how to make decisions about what to include and not include in your writing.
- Writing Processes: how to use invention, research, drafting, revising, and editing in your writing.
- Knowledge of Conventions: how to use various formats and stylistic choices, including genre conventions.
- Digital Technology: how to use diverse technologies to write more effectively and efficiently.
- Habits of Mind: how to benefit from and cultivate curiosity, openness, engagement, creativity, persistence, responsibility, flexibility, and reflection.

Additional Info

This is a 3 credit hour course at Arizona State University (ENG 102 First-Year Composition). It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creators

Dr. Duane Roen
Throughout his career Duane Roen has been interested in how people learn to write. He has published nine books, with four more in progress. He has also authored more than 270 chapters, articles, and conference presentations focused on various aspects of writing instruction.

Dr. Adam Pacton
Adam Pacton teaches English 101 and English 102 at the Global Freshman Academy. He earned his PhD in Rhetoric and Composition at the University of Wisconsin-Milwaukee. His research has focused on composition theory, pedagogy, and assessment; online and hybrid composition; disability studies; and writing program administration.
Jamie Merriman-Pacton teaches English 101 for the Global Freshman Academy and Earned Admission program. She completed her graduate work at East Tennessee State University, and she's been teaching college-level Composition, Literature, Technical Communication, Film, and Business Writing for over a decade. In addition to being a teacher, Jamie's also a working professional and creative writer, and her writing has appeared in many publications.

Dr. Mark Haunschild teaches contemporary literature, creative writing, and composition at Arizona State University, where he coordinates the Face-to-Face Writers’ Studio at the downtown Phoenix campus. He also serves as the faculty advisor of poetry for Superstition Review. Mark is the recipient of the 2014, Faculty Achievement Award in Curricular Innovation for his work in the Stretch Writing Program. He holds graduate degrees from California State University, Chico and Arizona State University.

Dr. Michelle Stuckey is the faculty head of the Writers’ Studio, a fully online first-year composition program in the College of Letters and Sciences at Arizona State University. She completed her dissertation in U.S. literature and culture from the University of California, San Diego. Her research interests include issues around equity, access, and inclusivity in education as well as interdisciplinary approaches to the study of transnational, multi-ethnic American culture from the late 19th to the 21st century. In her research, she draws from feminist theory, literary and cultural theory, disability studies, and critical race and gender studies.
Overview

In this online health and wellness course, you will learn current concepts in exercise, health, and wellness. You will also gain valuable insight into how to maintain a healthy lifestyle for yourself.

About this course

This health and wellness course focuses on the latest trends in health, nutrition, physical activity, and wellness. From stress management and sleep to overall wellbeing, we will explore personal health, health related attitudes and beliefs, and individual health behaviors.

In this online health and wellness class, you will explore a wide variety of health-related topics, including:

- How to improve your personal fitness
- How to take a credible assessment of your personal health
- The dietary decisions you need to make to help build a healthy life
- How to achieve and maintain a healthy weight
- How to manage stress
- How to maintain proper sleep hygiene
- How to lower the risk of contracting an infectious disease
- Steps you can take to reduce the risk of chronic disease
- Attitudes and beliefs related to health

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

At the conclusion of this course, students will be able to:

- Identify their personal health risks based upon current lifestyle choices
- Identify lifestyle changes that will enhance lifelong health
- Evaluate the evidence to support or disprove selected health claims

Additional Info

This course satisfies 3 credit hours toward the Social-Behavioral Sciences (SB) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Creators

**Nicole Vaudrin, MS, RDN**
Nicole Vaudrin is a part-time nutrition instructor at Arizona State University (ASU). For her day job, she is a Registered Dietitian and works for Native Health’s Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program. WIC is a federal program nutrition assistance program that provides healthy foods and nutrition education to eligible families. Native Health targets urban American Indians living in the greater Phoenix area but serves all eligible clients.

**Dr. Punam Ohri-Vachaspati**
Dr. Punam Ohri-Vachaspati, PhD, RD, is an Associate Professor of Nutrition at the School of Nutrition and Health Promotion. Under the umbrella of public health nutrition, her research aims to understand the social-ecological determinants of health with a focus on reducing health disparities. She examines food environments in community settings, schools, and child care centers, and assesses the role federal, state, and local policies play in shaping these environments as they relate to obesity prevention efforts. Dr. Ohri-Vachaspati teaches graduate and undergraduate courses in the area of obesity prevention and research methods. She received her bachelor’s and master’s degrees from University of Delhi, India with a focus on food and nutrition, a master’s and a doctorate degree from Tufts University School of Nutrition in Food Policy and Applied Nutrition.
Overview

In this online engineering course, you will discover how to become a true engineer by exploring the engineering design processes in a hands-on learning environment.

About this course

Do you ever think: “There has to be a better way!” Then engineering is for you! Engineering is for anyone with a passion for problem solving.

This course actively introduces you to skills and tools that engineers use to solve problems while teaching you to think like an engineer. You will learn to identify opportunities, imagine new solutions to problems, model your creations, make data-driven decisions, build prototypes, and showcase your ideas that will impact the world.

Taught by engineering professors and highlighting industry engineers in action, this course will equip you, as an engineer-in-training, with the skills necessary to compete in today’s world of innovation.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

What you’ll learn:

- Engineering design process
- Data driven decision making
- Engineering tools (e.g. CAD, programming, etc.)
- Technical Reports and Presentations

Additional Info

This is a 2 credit hour course at Arizona State University (FSE 100 Introduction to Engineering). It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Creators

Dr. Haolin Zhu
Haolin Zhu earned her BEng in Engineering Mechanics from Shanghai Jiao Tong University and her Ph.D. in Theoretical and Applied Mechanics from Cornell University, with a focus on computational solid mechanics. After receiving her Ph.D., Dr. Zhu joined Arizona State University as a full time Lecturer and became part of the freshman engineering education team in the Ira A. Fulton Schools of Engineering. She currently holds the title of Senior Lecturer and focuses on designing the curriculum and teaching in the freshman engineering program. She is also involved in the NAE Grand Challenge Scholars Program, the ASU ProMod project, the Engineering Projects in Community Service program, and the Engineering Futures program. Dr. Zhu also designs and teaches courses in mechanical engineering at ASU, including Mechanics of Materials, Mechanical Design, Mechanism Analysis and Design, Finite Element Analysis, etc. She was part of a team that designed a largely team and activity based online Introduction to Engineering course. Her Ph.D. research focuses on multi-scale multiphase modeling and numerical analysis of coupled large viscoelastic deformation and fluid transport in swelling porous materials, but she is currently interested in various topics in the field of engineering education, such as innovative teaching pedagogies for increased retention and student motivation; innovations in non-traditional delivery methods, incorporation of the Entrepreneurial Mindset in the engineering curriculum and its impact.

Alicia Baumann
Ali Baumann received her master’s degree in Electrical Engineering from the University of Wyoming before working as a senior systems engineer at General Dynamics C4 Systems. She is now part of the freshman engineering education team in the Ira A. Fulton Schools of Engineering at Arizona State University. Currently, she focuses on enhancing the curriculum for the freshman engineering program to incorporate industry standards into hands-on design projects. She is an instructor for the Introduction to Engineering program, Engineering Transfer Success program, Engineering Futures program, and the Electrical Engineering department at ASU. She is a winner of the Fulton Top 5% Teaching Award and was nominated for Badass Women of ASU. Her philosophy boasts incorporating large scale systems engineering techniques into collegiate engineering curriculum to better prepare upcoming professionals and develop a student’s resume from day one.
Amy Trowbridge received her Master’s degree in Biomedical Engineering from Arizona State University (ASU). She is a member of the freshmen engineering education lecturer team in the Ira A. Fulton Schools of Engineering at ASU, focused primarily on enhancing the first year students’ experience through the Introduction to Engineering course curriculum. She is also Director of the National Academy of Engineering (NAE) Grand Challenge Scholars Program (GCSP) at ASU, which aims to prepare students to become globally and socially aware engineers who will lead future efforts to solve the world’s biggest challenges. She is interested in curricular and co-curricular experiences that broaden students’ perspectives and enhance student learning, and encouraging student reflection through the use of digital portfolios.

Dr. Ben Mertz received his Ph.D. from the University of Notre Dame in Aerospace Engineering and his B.S. from Rose-Hulman Institute of Technology in Mechanical Engineering, where he is currently an assistant professor. While at ASU, he was a member of the Freshman Engineering Education lecturer team at Arizona State University and designed and taught classes including Introduction to Engineering, Advanced Math Methods for Engineers, Thermofluids, High Speed Aerodynamics, among others. His research background is in aerodynamic flow control, but his current interests are in the scholarship of teaching and learning. Specifically, his interests are in incorporating active learning into large classrooms, improving teamwork both in onsite and online classes, incorporating the entrepreneurial mindset into engineering curriculum, and promoting diversity within competition clubs.
Dr. Anoop S. Grewal
Anoop Grewal received his doctorate in Mechanical and Aerospace engineering (in the field of Theoretical and Applied Mechanics) from Cornell University. His research background is in robotics but his passion lies in engineering education. Currently, he is working as a lecturer at ASU in the Ira A. Fulton Schools of engineering. He is part of the instructional team for “Introduction to Engineering”, a multidisciplinary project based course. He also teaches various mechanical engineering courses e.g. Engineering Mechanics, Control System Design, and System Dynamics and Controls. His teaching philosophy is to promote instinctive/inherent understanding of engineering concepts, and productive student-faculty interactions.
Overview

Explore global challenges and the impact of engineering on society. Develop an interdisciplinary entrepreneurial mindset to make life more sustainable, healthy, secure, and joyful.

About this course

Are you excited about new technologies that impact every facet of our lives? Are you concerned about the many problems, big or small, faced by our communities on planet earth, and want to help? This course is for you!

This course will provide you with opportunities to explore the global challenges facing society, and to learn about how engineers are making an effort to address these challenges. It will serve as a first step to prepare you to become a well rounded Engineer who is ready to tackle these challenges.

You will hear from experts in many engineering fields talking about the National Academy of Engineering’s Grand Challenges for Engineering and their groundbreaking research that is impacting communities of all sizes across the globe. Through this course, you will be equipped with an Entrepreneurial Mindset that complements the technical engineering skill set and drives innovation. The entrepreneurial mindset focuses on exercising your curiosity about the surrounding world in order to identify opportunities, make connections, and create real value for society. This course is also an active introduction to developing an interdisciplinary systems perspective, a new way of thinking and problem solving that is important to address these challenges. Through discussions and activities, you will actively explore how engineering solutions and technologies can be affected by and impact various aspects of society including economics, politics, environment, culture, and human behavior.

Are you ready to make a difference in the world? Do you want to have real impact on society as an engineer? This course is about the global challenges, but it is also about YOU! You will have the chance to identify opportunities that you are passionate about and apply your newly gained skills to develop a futuristic solution that will create value for a community that you care about. You will also identify your path to achieving the necessary competencies to become a successful engineer that makes an impact!

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

What you'll learn:

- Interdisciplinary understanding of global Grand Challenges for Engineering
- Awareness of on-going research that addresses the global challenges
- Societal factors that influence the development and implementation of technologies
- Recognize value created by technologies from multiple perspectives
Additional Info

This is a three credit hour course that counts toward the Social-Behavioral Sciences (SB) General Studies requirement at Arizona State University. This course is also a required component of the National Academy of Engineering Grand Challenge Scholars Program at ASU. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creators

Dr. Haolin Zhu
Haolin Zhu earned her BEng in Engineering Mechanics from Shanghai Jiao Tong University and her Ph.D. in Theoretical and Applied Mechanics from Cornell University, with a focus on computational solid mechanics. After receiving her Ph.D., Dr. Zhu joined Arizona State University as a full time Lecturer and became part of the freshman engineering education team in the Ira A. Fulton Schools of Engineering. She currently holds the title of Senior Lecturer and focuses on designing the curriculum and teaching in the freshman engineering program. She is also involved in the NAE Grand Challenge Scholars Program, the ASU ProMod project, the Engineering Projects in Community Service program, and the Engineering Futures program. Dr. Zhu also designs and teaches courses in mechanical engineering at ASU, including Mechanics of Materials, Mechanical Design, Mechanism Analysis and Design, Finite Element Analysis, etc. She was part of a team that designed a largely team and activity based online Introduction to Engineering course. Her Ph.D. research focuses on multi-scale multiphase modeling and numerical analysis of coupled large viscoelastic deformation and fluid transport in swelling porous materials, but she is currently interested in various topics in the field of engineering education, such as innovative teaching pedagogies for increased retention and student motivation; innovations in non-traditional delivery methods, incorporation of the Entrepreneurial Mindset in the engineering curriculum and its impact.
Amy Trowbridge received her Master’s degree in Biomedical Engineering from Arizona State University (ASU). She is a member of the freshmen engineering education lecturer team in the Ira A. Fulton Schools of Engineering at ASU, focused primarily on enhancing the first year students’ experience through the Introduction to Engineering course curriculum. She is also Director of the National Academy of Engineering (NAE) Grand Challenge Scholars Program (GCSP) at ASU, which aims to prepare students to become globally and socially aware engineers who will lead future efforts to solve the world’s biggest challenges. She is interested in curricular and co-curricular experiences that broaden students’ perspectives and enhance student learning, and encouraging student reflection through the use of digital portfolios.
Overview

This course will take you on an exploration of the beginnings and development of Western societies from the Ancient World through the Middle Ages.

About this course

This first year online history course will take you on a fascinating journey through the history of Europe and the Mediterranean from ancient times through 1500 AD. You will learn about a number of cultures and periods, including:

- Egypt and Mesopotamia
- Greece
- Rome
- Judaism
- The Byzantine Empire
- The Rise of Islam
- Medieval Europe

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

You will also learn to:

- Critically analyze the development and growth of people economically, socially, culturally, and politically
- Describe the evolving social role that religion plays in European culture
- Explore the changing political systems in Europe and how they impact Western society
- Explain the evolving relations between Europe, the Mediterranean, and the larger world

Additional Info

This course satisfies 3 credit hours toward the Social-Behavioral Sciences (SB) and Historical Awareness (H) General Studies requirement for Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Dr. Ian Frederick Moulton
Ian Frederick Moulton is Professor of English in the College of Letters and Sciences at Arizona State University. He is a cultural historian and literary scholar who has published widely on the representation of gender and sexuality in early modern European literature. Professor Moulton was born in London, UK, raised in Winnipeg, Canada, and received his Ph.D. in English from Columbia University before joining ASU in 1995. He is the author of Love in Print in the Sixteenth Century: The Popularization of Romance (Palgrave, 2014), as well as the co-editor of Teaching Early Modern English Literature from the Archives (MLA, 2015). He regularly teaches Classical Literature in translation and English literature from the medieval period to 1800 for ASU Online. Professor Moulton is fluent in French and Italian and has a reading knowledge of Spanish, Latin, and Ancient Greek.
Overview

This online math course teaches the fundamentals of algebra and will prepare you for calculus courses as you progress toward your college degree.

About this course

This online college algebra course equips you with the skills to effectively solve problems using algebraic reasoning. What sets this course apart from a standard algebra course is its strong emphasis on the techniques that are used to solve problems. The goal is not to simply teach you mathematical forms but to help you understand the “whys” behind how you are solving problems. Throughout this course, you will be able to participate in discussions with other students and the professor to help build your conceptual understanding of algebra.

In this course, you will learn about systems of linear equations, rational functions, quadratic functions, logarithmic functions, general polynomial functions, and exponential functions.

Additionally, our college algebra online course uses cutting-edge adaptive technology (the ALEKS learning system). ALEKS is a personalized math tutor that will help you learn each of the skills in our course at your own pace, making it fun to learn algebra online. Our goal is to reduce your “math anxiety” and ensure you walk away feeling confident about math!

This online college algebra course — offered as self-paced or instructor-led— equips you with the skills to effectively solve problems using algebraic reasoning.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

- How to apply algebraic reasoning to solve a range of problems.
- How to identify functions, domains, ranges, intercepts and other critical algebraic concepts
- Skills required for success in future studies in calculus.

Additional Info

Self-paced

Self-paced courses allow students to complete course assignments at their own pace, as long as the course is completed within a year. Self-paced courses are great for:

- Students who want to start right away
- Students who are self-directed and can set and stick to a plan for completing the course
- Students who may want to either go faster or slower than the instructor-paced version
Instructor-led
Instructor-led courses have a structure with weekly assignment due dates, as well as an instructor guiding a student through the curriculum and content. Instructor-led courses are great for:

- Students who prefer a structured timeline with established due dates for assignments
- Students who enjoy interaction with other students, who will be completing assignments at the same time
- Students who are taking their first course online, and may benefit from greater guidance

This course satisfies 3 credit hours toward the Mathematical Studies (MA) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creator

Adrian Sannier
Adrian Sannier was the Chief Academic Technology Officer for EdPlus at ASU and a Professor of Practice in the School of Computing, Informatics, and Decision Engineering at Arizona State University. He was part of the ASU team pursuing an ambitious program of general education reform that Inside Higher Education called "ground zero for data-driven teaching in higher education," combining Big Data, social networking, and evidence based instruction to drive better student outcomes at scale.

Previously, Sannier was Senior Vice President for Product at Pearson, the world’s largest education company, where he helped forge a partnership between ASU Online and Pearson. Under the agreement, Pearson provides ASU with technology, content, and services to support ASU’s twin goals of access and excellence. While at Pearson, Sannier also led the product teams responsible for Learning Studio, Tapestry, Equella, and #OpenClass. Sannier has been an outspoken evangelist for the increased use of technology in Education. In 2012 The Chronicle of Higher Education named Sannier one of the “12 Tech Innovators Who Are Transforming Campuses”.

Dr. Sue McClure
Sue McClure is a lecturer in the School of Mathematical and Statistical Sciences at Arizona State University. Educated at Ball State University, Purdue University, and Indiana University, Sue has acquired years of experience teaching courses ranging from high school mathematics to college calculus. Her efforts in the Mathematics Department at Angola High School helped rank the school as one of Indiana’s finest high schools, and her interest in educational technologies has led Sue to explore and integrate personalized learning through adaptive mathematics and online education into her courses at Arizona State University.
Overview

In this college-level brief calculus course, you will study the differential and integral calculus of elementary functions with applications. This course is ideal for students interested in business, economics, or social sciences.

About this course

Topics covered in this course include limits and derivatives of algebraic, logarithmic, and exponential functions; the definite integral; analysis of graphs; optimization; applications of the derivative; and more.

Content in this course is adaptive, allowing you to achieve mastery in a certain concept before moving on to the next. This course uses Gradarius, a calculus learning platform that personalizes your learning based on the topics you already know and the topics you still need to learn. You will also have access to individualized coaching as you move through each topic in this course.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

You will learn:
- The meaning and computation of average rates of change and applications
- The meaning and computation of instantaneous rates of change and applications
- Marginal analysis
- The meaning and computation of accumulation and applications
- Techniques to solve optimization problems and applications

Additional Info

This course is worth 3 credit hours toward the Mathematical Studies (MA) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Fabio Milner studies structured population models, including demography, epidemics, ecology, and tumor growth. Populations are usually structured by age (demographic and/or age-of-disease), and may also be structured by sex, size, or other relevant variables. The team studies theoretical properties of the models, such as existence, uniqueness, preservation of non-negativity, and asymptotic behavior, as well as real-life applications.

Professor Milner and his collaborators are also developing a family of epidemiological models structured by immunological variables in order to describe the multi-scale problem of disease propagation at the individual level ("small scale") and at the population level ("large scale") in a single model. They are studying the long-term population effect that chickenpox vaccination in childhood may have many decades later in increased incidence of the shingles by a combination of repeated exposure to the Varicella zoster virus and decreased immune response.
Overview

In this college-level calculus course, you will study topics of differential and integral calculus, including limits, continuity, derivatives and integrals of algebraic and transcendental functions of one variable. This course is ideal for students interested in engineering, mathematics, computer science, physics, chemistry, earth and atmospheric sciences, and life sciences.

About this course

Topics covered in this course include limits (including those involving infinity); derivatives and rates of change; continuity; applications of the derivative; linear approximation; accumulation; antidifferentiation; definite integrals; and more.

Content in this course is adaptive, allowing you to achieve mastery in a certain concept before moving on to the next. This course uses Gradarius, a calculus learning platform that personalizes your learning based on the topics you already know and the topics you still need to learn. You will also have access to individualized coaching as you move through each topic in this course.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

To be adequately prepared for this course, a recommended prerequisite course is MAT 170 Calculus. The prerequisite course should be taken first to ensure that the course credits will transfer to your institution, including ASU.

Learning Outcomes

You will learn:

- The meaning and computation of limits
- The meaning and determination of continuity
- The meaning and computation of average rates of change and applications
- The meaning and computation of instantaneous rates of change and applications
- The meaning and computation of accumulation and applications
- The meaning and computation of Riemann Sums and applications
- Techniques to solve optimization problems and applications
Additional Info

This course is worth 3 credit hours toward the Mathematical Studies (MA) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creator

Fabio Milner
Associate Dean of Graduate Initiatives

Fabio Milner studies structured population models, including demography, epidemics, ecology, and tumor growth. Populations are usually structured by age (demographic and/or age-of-disease), and may also be structured by sex, size, or other relevant variables. The team studies theoretical properties of the models, such as existence, uniqueness, preservation of non-negativity, and asymptotic behavior, as well as real-life applications.

Professor Milner and his collaborators are also developing a family of epidemiological models structured by immunological variables in order to describe the multi-scale problem of disease propagation at the individual level ("small scale") and at the population level ("large scale") in a single model. They are studying the long-term population effect that chickenpox vaccination in childhood may have many decades later in increased incidence of shingles by a combination of repeated exposure to the Varicella zoster virus and decreased immune response.
Overview

Have you ever read the news or overheard a conversation about politics and felt helpless? You are not alone! Many people ask questions like: Does my vote matter? How do federal policies affect me? How can I make a difference? American Democracy is defined by its people participating, voicing their opinion, and making a difference.

About this course

In this course, you will learn about civic engagement and how people like you shape the world. You will also gain insight into how you can become an active and engaged member of your own community. You will interview public service leaders, investigate local issues, and form the what, why, and how of civic engagement, which you will use to create a civic action portfolio.

This course was designed through a unique partnership with Service Year Alliance and Arizona State University. This course is ideal for those looking to identify pathways to civic action, such as corps members working in their year of service, individuals who would like to get more involved in their neighborhoods and cities, or those interested in creating change in their community.

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

You will learn:

- The basic principles of American Democracy and how they apply today
- About civic engagement
- How civic engagement has shaped the United States
- How citizenship has changed over time through civic engagement
- How to identify pathways to public service

Additional Info

This is a three credit hour course that counts toward the Social-Behavioral Sciences (SB) and Cultural Diversity in the United States (C) General Studies requirements at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring your credit.

Service Corps Members and Alumni: Service Corps members and alumni who wish to receive academic credit for this course may use their Eli Segal Education Award to cover the $400 course fee. To use the Eli Segal Education Award, sign up for the course here, and select the “Credit; Segal” option during the sign up process.
Jonathan GS Koppell  
Dean of the Watts College of Public Service and Community Solutions

Dr. Koppell is the Lattie and Elva Coor Presidential Chair and Professor in the School of Public Affairs and Dean of the Watts College of Public Service and Community Solutions. He received his A.B. in Government Studies from Harvard College and M.A. and Ph.D. in Political Science at the University of California, Berkeley in 1993, 1996, and 2000, respectively. Areas of expertise include global governance, public finance and financial regulation, and quasi-government, corporate governance.

Major Works

Eileen Eisen-Cohen  
Faculty Associate for the ASU School of Public Affairs

Dr. Eisen-Cohen has held leadership positions in many nonprofit and public organizations for over 20 years. She is currently employed as the Performance Improvement Manager with the Maricopa County Department of Public Health working with quality improvement and performance management systems. Eileen has experience leading work teams, community partners, and stakeholders in local and statewide initiatives, and serves on several executive boards of directors for grassroots and community organizations. She has worked in public administration and program evaluation for 30 years. As a Faculty Associate for the ASU School of Public Affairs, Dr. Eisen-Cohen teaches courses in Management, Public Policy, Program Evaluation, Leadership, and Women and Politics.
Overview

This online science course uses interactive simulations and virtual field trips to introduce astronomy, biology, chemistry, geology and physics to students as they explore the search for life beyond Earth.

About this course

Are we alone in the Universe? If so, why? If not, where are our cosmic cousins? Such questions, once the domain of science fiction, are on the verge of being answered with science facts. Astronomers are discovering planets around other stars. Planetary scientists are exploring the worlds in our solar system. Biologists are unlocking the secrets of metabolism and evolution. Geoscientists are determining how the Earth supports life. And as we struggle to build a sustainable future for ourselves, all of us are finding out how technologically advanced civilizations rise and how they might fall.

This course surveys these topics. In the process, students master basic concepts from across the major areas of science and learn what makes the Earth a habitable world.

Required prior knowledge and skills

To be successful in this course, we recommend basic mastery of pre-college math and science, English language fluency and computer literacy.

Learning Outcomes

These specific objectives support the overarching objectives of the course. Our goal is that students successfully completing the course can:

- Explain the conditions that can make a planet habitable.
- Identify and justify the steps necessary to determine if an exoplanet is habitable.
- Describe the history of Earth as an inhabited world and how this knowledge informs the search for life on other worlds.

More broadly, our hope is that students who succeed in this course improve their ability to navigate new challenges by:

- Describing and interpreting observations using...
  - data analysis (e.g., reading charts and graphs),
  - foundational mathematics (e.g., fractions, formulae, exponents),
  - accessible computational methods (e.g., calculators, spreadsheets).
- Applying scientific reasoning, particularly...
  - using hypothesis-driven processes to create scientific models.
  - testing models using basic qualitative and quantitative reasoning.
  - choosing among competing ideas that have different levels of uncertainty.
● Applying problem-solving skills including...
  ○ breaking complex problems into multiple steps,
  ○ identifying the knowledge needed to solve each step,
  ○ and obtaining and interpreting that knowledge quantitatively and qualitatively.

Additional Info

Course format

*Habitable Worlds* is an innovative course with a format different from most online courses. It is built around interactive activities with rich adaptive feedback. These are not videos or simple readings and quizzes. Usually they are problem-solving activities through which you will be introduced to key concepts, and master them, in a question-driven "learn-by-doing" approach. Often they will be designed around game-like simulations that you can manipulate, or virtual field trips that you can explore. In some ways, these activities and the Project can feel like a serious game! That’s not an accident: That’s in fact how the pursuit of science feels to professional scientists.

This course is offered in a self-paced format. In this course, students will complete course assignments at their own pace, as long as the course is completed within one year. Self-paced courses are great for:

● Students who want to start right away
● Students who are self-directed and can set and stick to a plan for completing the course
● Students who may want to either go faster or slower than the instructor-paced version

Credit Designation

This course satisfies 4 credit hours toward the Natural Sciences (SQ) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.
Overview

Learn how sociology applies to your everyday life and helps you better communicate and understand people and your environment.

About this course

Sociology is about people. Each individual is unique and idiosyncratic. Yet, when we come together for a common purpose, we try to conduct ourselves in a manner that will achieve mutually desired outcomes. Sometimes we manage to achieve this; sometimes we don’t. Sociology is about that process. By understanding sociology and how we interact with each other, you can yield more personal and professional success.

In this sociology course, you will learn about the social processes groups of all sizes follow to form, function and evolve over time. You will also learn about the ongoing dynamic individuals actively create in their social environment and how they are shaped by it. This course provides an understanding of how the formation and longevity of a society is possible when its members are diverse in their values, beliefs, preferences and agendas.

You will learn about group dynamics, skills for effective interaction in groups and organizations, and obtain a deeper understanding of how sociology applies to everyday life and current events.

Topics include:

- Society
- Culture
- Socialization
- Stratification and Inequality
- Gender Roles
- Major Social Institutions in the U.S. Including the Family, Government and Education System
- Deviance and Social Control
- Social Problems and Social Change

Required prior knowledge and skills

To be successful in this course, we recommend English language fluency and computer literacy.

Learning Outcomes

- You will become more knowledgeable about basic sociological theories and concepts
- You will become more knowledgeable about current events
- You will see how sociological ideas apply everyday life and current events
- You will sharpen your critical thinking and writing skills
- You will become knowledgeable about and more accepting of people who look different than you and of beliefs, opinions and perspectives that differ from your own.
Additional Info

This course satisfies 3 credit hours toward the Social-Behavioral Sciences (SB) General Studies requirement at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied to their degree requirements prior to transferring the credit.

Creators

Lisa Whitaker, Ph.D.

Lisa Whitaker earned her BA in Sociology from Arizona State University and her MA and Ph.D. in Sociology from Stanford University, with particular certification in the areas of Deviance and Phenomenology. Shortly after earning her Ph.D., Dr. Whitaker left academia because she was tired of it and was interested in doing other things. She received culinary training at the Cordon Bleu Cookery School in London, England; then worked for several years as a cook and caterer in the San Francisco Bay area. She then left that career to apply her academic training in an applied setting. More specifically she worked for 14+ years as a probation officer, working with adult offenders.

Ultimately Dr. Whitaker resigned from her probation position to pursue an entirely different course: She moved to Mexico to steep herself in the Mexican language and culture. While there, she was offered and accepted an adjunct faculty position at a small, private four-year college for Mexican students. There she taught Sociology, Social Psychology and ESL courses (in Spanish) for one academic year, before returning to the U.S./ Arizona in 2000. She taught sociology courses in the local community college system for a semester; then spent a semester in France, living in the French language and culture. She returned to the U.S./ Arizona in Summer 2001 and began teaching Sociology courses at Arizona State University in Fall 2001. She has been an ASU instructional faculty member since that time and holds the title of Senior Lecturer. Originally born in Globe, Arizona (small town), but was raised in Phoenix, Arizona. Reanna is married to her high school sweetheart, and they have a beautiful 5-year-old son named Lucian. Currently working as a billing coordinator for a mental health billing company. In the past, Reanna worked for almost 5 years as an office manager at an intensive outpatient facility that treats drug/alcohol abuse, sex addiction, and eating disorders. The work was very rewarding and challenging and allowed her to work with a part of society that is very much in need.
Jennifer Harrison, Ph.D.
Jennifer Harrison earned her MA and Ph.D. in Sociology from Arizona State University with specializations in statistics and medical sociology. After starting out at community college as a first-generation college student, she earned her AA in Sociology from Fullerton College, her BA in Sociology from California State University, Long Beach.

During several years in graduate school at ASU, Dr. Harrison taught classes on the Tempe campus and online before taking a 5-year hiatus from teaching when she accepted a position in academic publishing. She worked mainly in the educational technology field writing digital educational content, working as a course designer, and ultimately as the product manager of print and digital Sociology learning materials. But all that time, while interacting with students and instructors through research, conferences, and demos, she realized how much she missed teaching in her own classes and working directly with students. Dr. Harrison left the publishing industry for a faculty position in 2015 where she has been an instructional faculty member as a Lecturer in the Sanford School of Social and Family Dynamics at ASU.