

## 2021 Pre-College Summer Session Online Course List

This course list was updated on 2021-03-09. *See the last page of this document for a changelog.*

Courses meet daily unless otherwise noted. Full courses at Carnegie Mellon carry 9 to 12 units, corresponding to 3 to 4 credits at other U.S. colleges and universities.

Pre-College Summer Session students are allowed to enroll in **23 or fewer units**, because the courses in this six-week summer term cover material from the longer fall and spring semesters and we have found students who enroll in excessive units cannot experience everything Pre-College Summer Session has to offer. Students who do enroll in 23 units may be expected to study challenging Carnegie Mellon academic material for at least 57 hours every week. For more information, contact the Pre-College Summer Session Director, Dr. William Alba ([alba@cmu.edu](mailto:alba@cmu.edu), 412-268-7333).

Newly listed courses for the Pre-College Summer Session in 2021 include:

03-128 Pandemics: Biological Basis and Societal Impact	80-100 Introduction to Philosophy
21-127 Concepts of Mathematics	80-212 Arguments and Logical Analysis
21-241 Matrices and Linear Transformations	82-133 Elementary Chinese Online I
33-115 Physics for Future Presidents	82-134 Elementary Chinese Online II
33-141 Physics for Engineering Students I	82-162 Elementary Italian II
33-142 Physics for Engineering Students II	82-172 Elementary Japanese II
73-102 Principles of Microeconomics	82-173 Introduction to Japanese I
76-234 Media: Past, Present, and Future	82-174 Introduction to Japanese II
79-277 From Venice to Chicago: How “The Ghetto” Came to America	82-278 Japanese Film and Literature: The Art of Storytelling
79-282 Europe and the World Since 1800	82-283 Language Diversity & Cultural Identity

### Enrollment information

Visit the enrollment portal for up-to-date course availability and class times. Additional online courses may be available during the university’s concurrent Summer Session 2 for appropriately prepared students. For other courses, both the faculty member teaching the course and the Pre-College Summer Session Director must authorize your choice. For a complete listing of available Summer Session 2 courses, contact Dr. William Alba.

Some of the online courses in the following list are especially designated for Pre-College Summer Session, while some enroll both Pre-College Summer Session students and undergraduate students. In either case, all Summer Session courses offer the same quality of instruction and expectation of work as during the fall or spring at Carnegie Mellon.

After reviewing these course descriptions and, if needed, consulting by phone or email with the Pre-College Summer Session Director about course choices, select your courses using the Pre-College Summer Session Course Request Form in the Pre-College Enrollment Portal. Students will have access to the form through this portal after they are admitted to the Pre-College Summer Session program.

Courses fill in the order that deposits and forms are received by the university, including when the course request form is completed. For Computer Science courses that require the completion of an assessment test for placement, the date of completion of that assessment also factors into the order in which students are enrolled in those courses.

Pre-College Summer Session students do not enroll themselves in courses. They are enrolled based on their course availability and their course selections on the Pre-College Summer Session Course Request forms. Enrollment is subject to completion of any required assessments and meeting required placement scores as well as course availability. To view your course schedule once you are enrolled in classes, visit Student Information Online on the HUB’s website ([www.cmu.edu/hub/sio](http://www.cmu.edu/hub/sio)) using your Carnegie Mellon University Andrew ID and password. Please allow time for the receipt and processing of your payment and enrollment forms.

Students may request schedule changes until the end of the second day of classes by contacting the Pre-College Summer Session Director. Students and their families are responsible for communicating with each other any changes in their academic plans.

Units	Course #	Course Title	Online Meeting Times
9	03-121E	Modern Biology	MTWRF 9:00a-10:20a
9	03-128E	Pandemics: Biological Basis and Societal Impact	MTWRF 12:20p-1:40p
9	03-132E	Basic Science to Modern Medicine	MTWRF 2:00p-3:20p
9	06-052E	Fundamentals of Chemical Engineering Practice	MTWRF 9:00a-10:20a and MW 2:00p-3:50p
10	09-105E	Introduction to Modern Chemistry	MTWRF 10:40a-12:00n and T 2:00p-2:50p
10	15-110E	Principles of Computing	MTWRF 9:00a-10:20a and MTWRF 3:40p-4:30p
12	15-112E *	Fundamentals of Programming and Computer Science	MTWRF 9:00a-10:20a and MTWRF 3:40p-4:30p
12	18-100E	Introduction to Electrical and Computer Engineering	MTWRF 10:40a-11:50a and MWF 2:00p-3:20p and TR 2:00p-4:50p
10	21-127E	Concepts of Mathematics	MTWRF 9:00a-10:20a
10	21-241E	Matrices and Linear Transformations	MTWRF 10:40a-12:00n
9	27-052E	Introduction to Nanoscience and Technology	MWF 2:00p-3:20p
9	33-115E	Physics for Future Presidents	MTWRF 2:00p-3:20p
9	33-124E	Introduction to Astronomy	MTWRF 2:00p-3:20p
12	33-141E	Physics I for Engineering Students	MTWRF 12:30p-2:50p
12	33-142E	Physics II for Engineering Students	MTWRF 2:00p-4:20p
9	36-200E	Reasoning with Data	MTWRF 12:20p-1:40p
9	36-202E	Methods for Statistics & Data Science	MTWRF 10:40a-12:00n
9	57-341E	Sound Recording Workshop	MWF 2:00p-3:30p and MW 6:30p-7:50p
9	73-102E	Principles of Microeconomics	MTWRF 2:00p-3:20p
9	73-103E	Principles of Macroeconomics	MTWRF 2:00p-3:20p
9	76-101E	Interpretation and Argument	MTWRF 10:40a-12:00n
9	76-234E	Media: Past, Present, and Future	MTWRF 6:30p-9:50p
9	79-277E	From Venice to Chicago: How “The Ghetto” Came to America	MTWRF 12:20p-1:40p
9	79-282E	Europe and the World Since 1800	MTWRF 2:00p-3:20p
9	80-100E	Introduction to Philosophy	MTWRF 2:00p-3:20p
9	80-135E	Introduction to Political Philosophy	MTWRF 12:20p-1:40p
9	80-180E	Nature of Language	MTWRF 10:40a-12:00n
9	80-212E	Arguments and Logical Analysis	MTWRF 9:00a-10:20a
12	82-101E	Elementary French I	TBA
12	82-102E	Elementary French II	TBA
12	82-133E	Elementary Chinese Online I	TBA
12	82-134E	Elementary Chinese Online II	TBA
9	82-137E	Chinese Calligraphy: Culture and Skills	MTWRF 10:40a-12:00n
12	82-162E	Elementary Italian II	MTWRF 2:00p-3:20p
12	82-171E	Elementary Japanese I	MTWRF 9:00a-10:20a
12	82-172E	Elementary Japanese II	MTWRF 12:20p-1:40p
9	82-173E	Introduction to Japanese I	MTWRF 10:40a-12:00n
9	82-174E	Introduction to Japanese II	MTWRF 2:00p-3:20p
9	82-273E	Introduction to Japanese Language and Culture	MTWRF 2:00p-3:20p
9	82-278E	Japanese Film and Literature: The Art of Storytelling	MTWRF 9:00a-10:20a
9	82-279E	Anime: Visual Interplay between Japan and the World	MTWRF 10:40a-12:00n
	82-283E	Language Diversity & Cultural Identity	MTWRF 9:00a-10:20a
9	82-286E	Understanding Cultural Complexities: The Changing Face of Japan	MTWRF 12:20p-1:40p
9	85-102E	Introduction to Psychology	MTWRF 12:20p-1:40p
9	85-241E	Social Psychology	MTWRF 2:00p-3:20p

All courses are offered online only, on the days and times of the week listed above, based on Eastern Daylight Time (EDT).

If you sign up for a course with multiple times (indicated by “and”), you must be available during all of those times.

\* Placement into 15-112 requires appropriate scoring on the CS Placement test. Details are in course description.

**03-121 Modern Biology (9 units)**

This is an introductory course that provides the basis for further studies in biochemistry, cell biology, genetics and molecular biology. This course emphasizes the chemical principles underlying biological processes and cell structures as well as the analysis of genetics and heredity from a molecular perspective. This is the introductory biology course for all science and non-science majors.

**03-128 Pandemics: Biological Basis and Societal Impact (9 units)**

This special topics course will provide the biological foundations to understand pandemic diseases and will review biological and societal impacts of pandemics through human history. The course is designed for non-majors with no prior background in biological science or chemistry. Example topics are HIV, black death, smallpox, polio, influenzas, cholera, typhus, tuberculosis, leprosy, malaria, Ebola, Zika, and COVID-19.

**03-132 Basic Science to Modern Medicine (9 units)**

This course will focus on the genetics, cell biology, and developmental biology behind human biology and human disease, as well as the growing opportunities for novel therapeutic options that basic science delivers. This is a topics based course, with topics chosen to cover aspects of human biology and health that students are likely to encounter in their daily lives such as cancer, stem cells, genome sequencing, and the human microbiota. Students will explore these topics from both a basic science and a human health perspective.

**06-052 Fundamentals of Chemical Engineering Practice (9 units)**

This course provides advanced high school students with an introduction to Chemical Engineering practice. The course goals are: (1) to provide students with a broad knowledge of the engineering sciences Chemical Engineers utilize; (2) to increase facility with computational tools used by engineers; and (3) to apply chemical engineering sciences to problems in chemical process and product design. The course will cover a selection of topics, including mass and energy balances, Thermodynamics, Fluid Mechanics, Heat and Mass Transfer, and Unit Operations. Laboratory time will reinforce learning inductively and will feature open-ended problems.

**09-105 Introduction to Modern Chemistry I (10 units)**

This course begins with a very brief survey of some fundamental principles of chemistry and a presentation of chemically interesting applications and sophisticated problems. These will form the basis for introducing the relationships between the structure of molecules and their chemical properties and behavior. The subject matter will include principles of atomic structure, chemical bonding, intermolecular interactions and molecular structures of organic and inorganic compounds including some transition metal complexes. Relevant examples will be drawn from such areas as environmental, materials, and biological chemistry.

**15-110 Principles of Computing (10 units)**

A course in fundamental computing principles for students with minimal or no computing background. Programming constructs: sequencing, selection, iteration, and recursion. Data organization: arrays and lists. Use of abstraction in computing: data representation, computer organization, computer networks, functional decomposition, and application programming interfaces. Use of computational principles in problem-solving: divide and conquer, randomness, and concurrency. Classification of computational problems based on complexity, non-computable functions, and using heuristics to find reasonable solutions to complex problems. Social, ethical and legal issues associated with the development of new computational artifacts will also be discussed.

### **15-112 Fundamentals of Programming and Computer Science (12 units)**

A technical introduction to the fundamentals of programming with an emphasis on producing clear, robust, and reasonably efficient code using top-down design, informal analysis, and effective testing and debugging. Starting from first principles, we will cover a large subset of the Python programming language, including its standard libraries and programming paradigms. We will also target numerous deployment scenarios, including standalone programs, shell scripts, and web-based applications. This course assumes no prior programming experience. Even so, it is a fast-paced and rigorous preparation for 15-122. Students seeking a more gentle introduction to computer science should consider first taking 15-110. Note: students must achieve a C or better in order to use this course to satisfy the pre-requisite for any subsequent Computer Science course.

**Note on 15-110 vs. 15-112:** If you are certain at this time that you want to study Electrical and Computer Engineering (ECE) or Computer Science (CS) as a major or minor during college, or if you want to devote an immense amount of time during the summer doing programming, you should consider 15-112 if you have prior programming experience. On the other hand, if you are exploring the possibility of majoring in CS or ECE, intend to apply CS primarily towards other areas, or want to get a broad sense of computer science and how computer scientists approach problems, 15-110 is much more appropriate .

**Computer Science Placement Exam:** To ensure students are placed in the correct CS courses, Pre-College Summer Session students who seek to enroll in 15-112 must complete a CS placement exam administered by CMU. This is due to the fast-paced nature of summer courses. Information about this exam will be sent to students who have listed 15-112 on their course request forms. Students will be enrolled in these courses only after their placement exams are scored.

### **18-100 Introduction to Electrical and Computer Engineering (12 units)**

The goals of this freshman engineering course are: To introduce basic concepts in electrical and computer engineering in an integrated manner; To motivate basic concepts in the context of real applications; To illustrate a logical way of thinking about problems and their solutions, and; To convey the excitement of the profession. These goals are attained through analysis, construction and testing of an electromechanical system (e.g., a robot) that incorporates concepts from a broad range of areas within Electrical and Computer Engineering. Some of the specific topics that will be covered include system decomposition, ideal and real sources, Kirchhoff's Current and Voltage Laws, Ohm's Law, piecewise linear modeling of nonlinear circuit elements, Ideal Op-Amp characteristics, combinational logic circuits, Karnaugh Maps, Flip-Flops, sequential logic circuits, and finite state machines. Prerequisite: high school technical course such as chemistry or physics. We assume students have knowledge of complex numbers in rectangular and polar forms, can convert between the two, and can add, subtract, multiply and divide complex numbers. Junior or senior standing in high school required, senior preferred. This is the same rigorous course required of ECE majors.

### **21-127 Concepts of Mathematics (10 units)**

This course introduces the basic concepts, ideas and tools involved in doing mathematics. As such, its main focus is on presenting informal logic, and the methods of mathematical proof. These subjects are closely related to the application of mathematics in many areas, particularly computer science. Topics discussed include a basic introduction to elementary number theory, induction, the algebra of sets, relations, equivalence relations, congruences, partitions, and functions, including injections, surjections, and bijections. A basic introduction to the real numbers, rational and irrational numbers. Supremum and infimum of a set.

**21-241 Matrices and Linear Transformations (10 units)**

A first course in linear algebra intended for scientists, engineers, mathematicians and computer scientists. Students will be required to write some straightforward proofs. Topics to be covered: complex numbers, real and complex vectors and matrices, row space and column space of a matrix, rank and nullity, solving linear systems by row reduction of a matrix, inverse matrices and determinants, change of basis, linear transformations, inner product of vectors, orthonormal bases and the Gram-Schmidt process, eigenvectors and eigenvalues, diagonalization of a matrix, symmetric and orthogonal matrices. 21-127 is strongly recommended as a prerequisite.

**27-052 Introduction to NanoScience and Technology (9 units)**

The course is primarily intended to provide an introduction to nanoscience and technology to a wide audience of students at the advanced high school to incoming freshmen level. The course goals are twofold: (1) to provide students with a holistic view of the objectives, opportunities and challenges of the emerging field of nanotechnology and 2) to sensitize students at an early stage of their career to the relevance of the connections among the traditional disciplines as a vital element to the progress in interdisciplinary areas such as nanotechnology. The course will cover: Introduction and fundamental science; Preparation of nanostructures; Characterization of nanostructures; Application examples, Social and ethical aspects of nanotechnology.

**33-115 Physics for Future Presidents (9 units)**

Countless topics of social and political importance are intimately related to science in general and physics in particular. Examples include energy production, global warming, radioactivity, terrorism, and space travel. This course aims to provide key bits of knowledge based on which such issues can be discussed in a meaningful way, i.e., on the level of arguments and not just vague beliefs. We will cover an unusually wide range of topics, including energy, heat, gravity, atoms, radioactivity, chain reactions, electricity, magnetism, waves, light, weather, and climate. No calculus or algebra will be required.

**33-124 Introduction to Astronomy (9 units)**

Astronomy continues to enjoy a golden age of exploration and discovery. This course presents a broad view of astronomy, straightforwardly descriptive and without any complex mathematics. The goal of the course is to encourage non-technical students to become scientifically literate and to appreciate new developments in the world of science, especially in the rapidly developing field of astronomy. Subjects covered include the solar system, stars, galaxies and the universe as a whole. The student should develop an appreciation of the ever-changing universe and our place within it. Computer laboratory exercises will be used to gain practical experience in astronomical techniques. In addition, small telescopes will be used to study the sky. This course is specifically geared toward non-science/engineering majors.

**33-141 Physics I for Engineering Students (12 units)**

This is a first semester, calculus-based introductory physics course. Basic principles of mechanics and thermodynamics are developed. Topics include vectors, displacement, velocity, acceleration, force, equilibrium, mass, Newton's laws, gravitation, work, energy, momentum, impulse, torque and angular momentum, temperature, heat, equations of state, thermodynamic processes, heat engines, refrigerators, first and second laws of thermodynamics, and the kinetic theory of gases. Prerequisite: one semester of calculus (e.g, 5 on AP Calculus AB or Calculus BC exam).

### **33-142 Physics II for Engineering Students (12 units)**

This is the second half of a two-semester calculus-based introductory physics sequence for engineering and physics students. Two-fifths of the course covers electricity, including electrostatics and electric fields, Gauss' law, electric potential, and simple circuits. Two-fifths cover magnetism, including magnetic forces, magnetic fields, induction and electromagnetic radiation. One-fifth of the course covers mechanical waves (including standing and traveling waves, superposition, and beats) and electromagnetic waves (including mode of propagation, speed, and other properties). Prerequisite: two semesters of calculus (e.g., 5 on AP Calculus BC exam) and one semester of calculus-based college-level physics (e.g., 5 on AP Physics C – Mechanics).

### **36-200 Reasoning with Data (9 units)**

This course will serve as an introduction to learning how to "reason with data." While still an introductory-level course in the Statistics Department, the focus will be more on thinking about the relationship between the application and the data set and extracting useful statistical information rather than taking primarily a formula-driven approach. There will be an emphasis on thinking through a empirical research problem from beginning to end. Types of data will include continuous and categorical variables, images, text, and networks. Applications will largely drawn from interdisciplinary case studies spanning the humanities, social sciences, and related fields. Methodological topics will include basic exploratory data analysis, elementary probability, hypothesis tests, and empirical research methods. There is no calculus or programming requirement. There will be weekly computer labs for additional hands-on practice.

### **36-202 Methods for Statistics and Data Science (9 units)**

This course builds on the principles and methods of statistical reasoning developed in 36-200 (or its equivalents). The course covers simple and multiple regression, analysis of variance methods and logistic regression. Other topics may include non-parametric methods and probability models, as time permits. The objectives of this course are to develop the skills of applying the basic principles and methods that underlie statistical practice and empirical research. Learning the Data Analysis Pipeline is strongly emphasized through structured coding and data analysis projects. In addition to three lectures a week, students attend a computer lab twice a week for "hands-on" practice of the material covered in lecture; students will learn the basics of R Markdown and related analytics tools. Prerequisite: Reasoning with Data (36-200), or equivalent knowledge (e.g., AP Statistics with score 4 or higher, Cambridge A Level "Further Mathematics C" with grade of B or higher, prior college-credit course with passing grade)

### **57-341 Sound Recording Workshop (9 units)**

Centers around the new recording studio in the School of Music: how the studio works and how to record various types of music, using the recording studio and the Kresge Recital Hall, which has audio and video links to the recording studio. The method of instruction is to learn by doing, and the goal is to achieve professional-sounding results. Equipment includes a complete 24-track Pro-Tools system, professionally designed control room and an interesting array of microphones. All recording is direct to hard disc. The lecture portion will cover the basics of sound, wave propagation, human hearing, psychoacoustics, transducers (microphones and speakers), mixing consoles, signal processors, digital and analog recording systems and signal flow. There are no specific prerequisites for the course, although reading music and/or playing an instrument is helpful.

**73-102 Principles of Macroeconomics (9 units)**

A one-semester course that teaches the fundamentals of microeconomics. Students will learn how microeconomic analysis can explain market successes, market failures, and how government intervention might improve outcomes. In addition to an investigation of firm behavior and consumer behavior, attention will be paid to: Game Theory, Behavioral Economics, Economics of Time and Risk, Economics of Information, Experimental Economics, and Auctions and Market Design. Students will also learn how to integrate basic data analysis and statistics.

**73-103 Principles of Microeconomics (9 units)**

A one-semester course that teaches the fundamentals of macroeconomics. Students will learn how macroeconomic analysis can explain national economic activity and how government intervention might stabilize an economy. Topics include: defining and measuring national wealth, economic growth, credit markets, unemployment, interest rates, inflation, and the monetary system. Additional emphasis will be paid to: long-term economic development, political economy, financial crises and topics that are central to contemporary macroeconomic debates such as the impact of technological change, migration, and trade on the macroeconomy. Students will access macroeconomic databases, and then use basic statistics to describe and isolate empirical patterns in macro-data. Prerequisite: prior college course in macroeconomics, or equivalent knowledge (e.g., AP Economics – Micro or AP Economics – Micro and Macro with score of 5).

**76-101 Interpretation and Argument (9 units)**

76-101 introduces first-year students to an advanced, inductive process for writing an argument from sources. Because the course is based upon empirical research about professional academic writers, students will learn expert practices for authoring their own arguments that contribute to an existing community of authors. Because reading and writing are inseparable practices for academic writing, students will read a variety of texts so that they can explore and critically evaluate a single issue from multiple perspectives and from different disciplinary genres. Students will learn methods for summarizing, synthesizing, and analyzing arguments within that issue so that they may contribute an argument of their own. The course is also geared toward helping students understand the requirements of advanced college-level writing. Our students are typically very accomplished readers and writers, and we are eager to push their accomplishments toward greater excellence. For this purpose, students will build upon their composing knowledge by reflecting and thinking strategically as they plan, write, and revise their own texts. Ultimately, they will develop critical reading, rhetorical and linguistic practices for analyzing and producing texts within the context of an academic community. Each section of 76-101 is structured by the same objectives and core assignments. There is a core vocabulary and set of heuristics that all sections teach.

*The Interpretation and Argument topic for 2021 Summer Session is to be announced.*

### **76-234 Media: Past, Present, and Future (9 units)**

In the late 1700s moral crusaders were worried about the latest media scandal: the surge in women reading novels. As one observer complained, "Women, of every age, of every condition...retain a taste for novels. I find [novels]...in the work-bag of the seamstress, in the hands of the lady who lounges on the sofa, the mistresses of nobles, the mistresses of snuff-shops, the belles who read them in town, and the chits who spell them in the country." While today we might be genuinely concerned about texting while driving, or the depression associated with high levels of facebook use, in this class we won't judge so much as we will analyze. We will look at what historical media trends have in common with, and how they are different from, the media trends of today. We will read about the print revolution, the electronic media revolution, the current digital revolution, and we will also try to peer into the future. We will ask, specifically, what can the humanities teach us about media revolutions over time? How is narrative, or storytelling, central to each media revolution?

### **79-277 From Venice to Chicago: How "The Ghetto" Came to America (9 units)**

This course will explore the genealogy of the term "ghetto". For most Americans, "ghetto" probably makes them think of poor urban neighborhoods, or of Jews living under Nazi oppression. Most do not know that the first ghetto was established 500 years ago, to keep Jews separate from Catholics. After quickly reviewing how ghettos spread throughout early modern Europe, the course will shift its focus to the Americas. We will examine when and how the term "ghetto" arrived in the United States, and how the use and application of the term changed before the 1930s. For the majority of the course we will study how "ghetto" became associated with black urban neighborhoods, and what role local, state, and federal governments played in forming postwar American ghettos. By the end of the course students should better understand the origins of current urban policy and will be prepared to critique and make arguments about how urban policy is often used as a political tool.

### **79-282 Europe and the World Since 1800 (9 units)**

This course will introduce students to topics of historical and contemporary relevance in European society and culture from the nineteenth century to the present. We shall focus especially on Europe's place in shaping debates of major international importance--both new and old--about topics such as: colonialism; migration; religious, ethnic, and national identity; Islamophobia; and antisemitism. Throughout we will pay special attention to the situation of inhabitants. past and the present, who have been considered outsiders or "others" in European society. In addition to class lectures, students will view films and listen to music related to the main themes of the course, in addition to reading and discussing historical texts.

### **80-100 Introduction to Philosophy (9 units)**

In this introductory course we will explore three major areas of Philosophy: Ethics, Metaphysics, and Epistemology. Accordingly the course is divided into three sections. In each section we will read primary sources and discuss some of the main philosophic problems associated with that area. These will include: moral problems (Ethics), problems rising from the debates about free-will, personal identity or intelligence (Metaphysics), and inquiries about the scope and limits of human knowledge (Epistemology). We will then introduce some theories designed to solve such problems, and try to understand the strengths and weaknesses of these theories. We will apply different techniques and theories to issues that we might encounter in the real world. We will use class discussions, homeworks and papers to learn skills for evaluating arguments. These skills include: how to present a philosophic argument, what are the assumptions that justify it, what are its weaknesses and its strengths, whether such weaknesses can be resolved and, if they cannot be resolved, why.



### **80-135 Introduction to Political Philosophy (9 units)**

At the heart of political philosophy lie fundamental questions such as: What constitutes a just society? How, and under what circumstances do individuals incur political obligations to a particular state? This course provides a systematic investigation of the way such questions are answered by dominant schools of liberal political theory, such as the social contract tradition, utilitarianism and libertarianism. Later we will introduce critiques from socialist, and feminist theorists. Readings are drawn from classic works by authors such as Plato, Hobbes and Locke, and from the works of more contemporary theorists like Rawls, and Nozick.

### **80-180 Nature of Language (9 units)**

Language is used to talk about the world or to describe it, but how do we go about describing language itself? Linguistics is the name given to the science of language, whose task it is to give such a description. The discipline of linguistics has developed novel tools for describing and analyzing language over the last two hundred years and in this course we learn what these tools are and practice applying them. Sub-areas of linguistics which we study include phonetics (the study of speech sounds), phonology (the study of sound systems), morphology (the study of parts of words), and syntax (the study of combinations of words). Beyond this, we look at changes in language over time, and we consider the puzzle of linguistic meaning. The methods of linguistics are useful in the study of particular languages and in the study of language generally, so this course is useful for students of foreign languages as well as those interested in going on to study language acquisition, psycholinguistics, sociolinguistics, philosophy of language, and computer modeling of language.

### **80-212 Arguments and Logical Analysis (9 units)**

Are there rational methods that can further our knowledge? The notion of rational inquiry presupposes that there are appropriate methods for the pursuit of knowledge. In this course, we will investigate the means by which a successful argument justifies its conclusion, as well as various subtle ways in which other arguments fail. The course will explore the use of logic as an instrument in the study of arguments and reasoning, and it will serve as a gentle introduction to the elementary concepts of formal logic. We will take a historically informed approach to studying logic and argumentative fallacies, and we will discover that logical tools and methods are useful for constructing and analyzing arguments in all disciplines, from philosophy and history to psychology and physics. Our goals are to acquire a solid grasp of some fundamental tools of modern logic, and learn how to use them to make our thinking and writing clearer, more precise, and more critical. To this end, our coursework will consist in homework and exams on topics in logic, as well as writing assignments on a variety of topics. This course is intended for students from any discipline who would like to improve their writing and critical thinking skills, as well as students who are interested in learning logic without having had prior contact with the subject.

*Elementary I language courses have no prerequisites. Courses beyond that level require placement through the Modern Languages Department. Additional Modern Language courses may be available at Intermediate and Advanced levels in Chinese, French, and Japanese. If interested, contact Dr. William Alba (alba@cmu.edu).*

### **82-101 Elementary French I (12 units)**

This course is for students with no prior experience in French. Using a proficiency-oriented approach, students will develop contextually appropriate interpersonal communication skills in both written and spoken French, develop reading and listening skills through the use of various media, understand fundamental grammar, acquire vocabulary, and gain a basic understanding of French and francophone cultures through class activities. Regular homework, quizzes, tests, presentations, and class participation are mandatory (four in-class hours per week). The elementary level is also designed to help students learn to reflect and draw upon strategies used by good language learners in their second language study. A student with prior experience in French must take the placement exam.

**82-102 Elementary French II (12 units)**

This course is designed for students who have taken first-semester French at Carnegie Mellon or learned its equivalent as determined by placement. Using a proficiency-oriented approach, students will expand contextually appropriate interpersonal communication skills in both written and spoken French, continue to develop reading and listening skills through the use of various media, review previously learned and practice new grammar and vocabulary, and gain a further understanding of French and francophone cultures through class activities. Regular homework, quizzes, tests, presentations, and class participation are mandatory (four in-class hours per week). The elementary level is also designed to help students learn to reflect and draw upon strategies used by good language learners in their second language study. A student with prior experience in French must take the placement exam.

**82-133 Elementary Chinese Online I (12 units)**

This course is designed for students who need a more flexible approach to language learning than that offered in a standard classroom course. It is a Chinese language course designed to help beginners develop communicative competence in the four basic skills of listening, speaking, reading and writing the Chinese language. Basic vocabulary and sentence structures for use in essential daily-life situations, as well as cultural information, are taught through the materials and assignments. Materials are web-based, with extensive use of Internet technologies for research, writing and communication. There is a required weekly class meeting for training and for group activities, and weekly individual meetings with a tutor or the instructor for conversation and practice.

**82-134 Elementary Chinese Online II (12 units)**

This course is the continuation of 82-133, Elementary Chinese I Online. Students will continue learning more useful and complex expressions and sentence structures necessary for use in everyday life. Students will continue building their skills in listening, speaking, reading, and writing for everyday communication, and their understanding of Chinese culture and society. There is a required weekly class meeting for training and for group activities, and weekly individual meetings with a tutor for conversation and practice.

**82-137 Chinese Calligraphy: Culture and Skills (9 units)**

Chinese calligraphy is a crucial part of Chinese culture and world art. It is also a clear manifestation of Chinese philosophy that has influenced Chinese people for several thousand years. This introductory course on Chinese calligraphy provides students with basic knowledge of Chinese calligraphy and how it mirrors Chinese history, culture, and philosophy. It will also introduce the fundamental characteristics of the Chinese writing system, its cultural content, and principles of formation as well as the skills used in Chinese calligraphy. At the end of the course, students will have a good understanding of Chinese characters and their cultural and philosophical background but also be able to appreciate the art and beauty in Chinese calligraphy. Classes include lectures, movies, discussions, hands-on practice, and projects. Guest speakers may also be arranged if opportunities should arise. No prerequisites.

**82-162 Elementary Italian II (12 units)**

This course is designed for students who have taken first-semester Italian at Carnegie Mellon or learned its equivalent as determined by placement. Using a proficiency-oriented approach, students will expand contextually appropriate interpersonal communication skills in both written and spoken Italian, continue to develop reading and listening skills through the use of various media, review previously learned and practice new grammar and vocabulary, and gain a further understanding of Italian culture through class activities. Regular homework, quizzes, tests, presentations, and class participation are mandatory (four in-class hours per week). The elementary level is also designed to help students learn to reflect and draw upon strategies used by good language learners in their second language study. A student with prior experience in Italian must contact the Department of Modern Languages for placement.

**82-171 Elementary Japanese I (12 units)**

This course is the first part of a two-semester course sequence (82-171, 82-172) for students with no prior experience in Japanese. It emphasizes the development of communicative language proficiency through oral practice, aural comprehension, reading, writing, and the study of cultural aspects of Japanese society. Regular homework, quizzes, tests, presentations, and class participation are mandatory (four in-class hours per week). The elementary level is also designed to help students learn to reflect and draw upon strategies used by good language learners in their second language study. A student with prior experience in Japanese must take the placement exam.

**82-172 Elementary Japanese II (12 units)**

This course is a sequel to Elementary Japanese I (82-171) and continues to further the development of communicative language proficiency through oral practice, aural comprehension, reading, writing, and the study of cultural aspects of Japanese society. Regular homework, quizzes, tests, presentations, and class participation are mandatory (four in-class hours per week). The elementary level is also designed to help students learn to reflect and draw upon strategies used by good language learners in their second language study. A student with prior experience in Japanese must take the placement exam.

**82-273 Introduction to Japanese Language and Culture (9 units)**

This course is an introduction to modern Japanese. Given the close link between the Japanese language and culture, the examination of the distinctive characteristics of the Japanese language and its sociocultural context provides important insights into contemporary Japan. This course is taught in English and is intended both for individuals who want to gain a better understanding of modern Japanese society, as well as for students of the Japanese language.

**82-278 Japanese Film and Literature: The Art of Storytelling (9 units)**

This course explores how the art of storytelling is in tandem with the vicissitudes of the human condition as illustrated in Japan's variety of fictions, non-fictions, and films in the twentieth and twenty-first centuries. Analyses of each storytelling not only reveal the cultural dynamics behind Japanese modernity, but also invite students to find new insights into Japanese culture and their ways of perceiving our globalized world. What kind of cultural exchanges took place between modern Japan and the West? How are Japan's traditional values transformed in the face of modern technicalization and industrialization, compared to the modernization of other countries? And, in turn, what kind of impact has modern Japanese culture had on today's world? Tackling these questions among others, the course also extends to such issues as the legacy of traditional Japanese culture, the modern Emperor system, World War II experiences, emerging voices of minorities, and popular culture (e.g., anime and subculture). This course is taught in English.

### **82-279 Anime - Visual Interplay between Japan and the World (9 units)**

In contemporary Japanese culture, anime plays a vital role, unfolding a wide range of stories with its distinct modes of visual representation and complementing to other forms of culture (e.g., literature, film, and art). This course explores Japanese anime's appeal to the international viewers today, centering around cultural analyses of anime such as the Studio Ghibli production and Cyberpunk. Equally important are to locate the origin of Japanese animation, which is also investigated through the prewar and postwar works of animation in conjunction with related forms such as manga, or comic strips (e.g., Osamu Tezuka's works that was initially inspired by Disney) and to discuss the potential of anime as an art form.

### **82-283 Language Diversity & Cultural Identity (9 units)**

Culture, language, and identity are intimately tied together. Individuals, families, communities, and nations identify themselves in relation to the language or languages they speak. Local, national, and international governmental organizations make choices about the language or languages they recognize and use for political and economic affairs. The United Nations even recognizes language as integral to maintaining the cultural heritage of communities and peoples around the world, and the freedom to choose ones language of expression as a universal human right. In this course, we will explore a variety of questions, advantages, and challenges related to language diversity and cultural identity across the globe. Our main focus will be on contexts of multilingualism that is, contexts in which two or more languages may be used. Adopting a comparative case study approach, we will explore the following themes: (i) The historical underpinnings of language diversity and its consequences for cultural identity today (e.g., migration, colonization, conquest); (ii) How language diversity and cultural identity shapes, and is shaped by, local, regional, national, and international politics; (iii) The relationship between language diversity and language use and visibility in public spaces (i.e., the linguistic landscape); (iv) Relations between linguistic communities (e.g., majority and minority language users) and the sense of belonging to a culture. The course is taught in English. Students who wish to take the course as a Modern Languages major or minor elective will need to complete their final project on a topic relevant to the language they study.

### **82-286 Understanding Cultural Complexities: The Changing Face of Japan (9 units)**

Students will explore Japan's cultural complexities by examining Japanese experiences with migration (immigration and emigration) issues. In the past three decades, due to an acceleration of globalization and a relaxed immigration policy, Japan has become more accepting of foreigners from around the globe including the descendants of those Japanese who emigrated to South America more than a century ago. The number of foreign residents in Japan has more than doubled in the decades with Chinese and Koreans now accounting for only about half of them. In response, Japan has been promoting Tabunka Kyosei Shakai (Multicultural Coexistence Society), which seriously questions the time-honored belief in the 'essentialized' Japan emphasizing its ethnic and cultural homogeneity. Key topics include globalization, recent immigration policy changes, various immigrant groups, multiculturalism, Japanese colonialism, and Japanese diaspora. The course uses films, video clips, newspaper articles, and other reading materials to discover a multicultural/transcultural Japan. Students will have opportunities to compare Japan and their own country and to reflect on the cultural diversity of their own society. The course is taught in English with no knowledge of Japanese assumed. Assignments include film viewings, critical readings, reaction papers, class discussions, and a final research project. A creative option (film/video or screenplay) is also available for the final project. This course will be taught in English; there are no prerequisites.

**85-102 Introduction to Psychology (9 units)**

This course examines major areas of scientific psychology in some depth, the attempt being to develop basic models of our behavior and thought that explain wide areas of our functioning. The primary focus is on the areas of neural and motivational control of behavior, memory and thought, social interaction, and psychological development. Specific topics within these areas include brain function, motivational control systems, learning, cognitive and perceptual information processing, problem solving, obedience and conformity, social interaction, emotion, attitude consistency and change, how our social, cognitive and language functions develop, the importance of childhood to adult functioning, and psychopathology. In addition to the lecture, the course includes a weekly recitation section meeting and weekly short WEB-based laboratory experiences in which students get to perform actual experiments, interpret real data, and experience many psychological phenomena.

**85-241 Social Psychology (9 units)**

The focus of this course will be on how peoples' behavior, feelings, and thoughts are influenced or determined by their social environment. The course will begin with lectures and readings on how social psychologists go about studying social behavior. Next, various topics on which social psychologists have done research will be covered. These topics will include: person perception, prejudice and discrimination, the nature of attitudes and how attitudes are formed and changed, interpersonal attraction, conformity, compliance, altruism, aggression, group behavior, and applications of psychology to problems in health care, law, politics, and the environment. Through readings and lectures on these topics, students will also be exposed to social psychological theories.

If you have questions about courses or scheduling, please contact:

William Alba, Ph.D.

Pre-College Summer Session Director, Carnegie Mellon University

Email: [alba@cmu.edu](mailto:alba@cmu.edu)

The university reserves the right to add, change, or cancel class times and/or course offerings without notice, especially given the current context of the COVID-19 pandemic.

Other courses may become available. Please check the Pre-College Summer Session website regularly for updates to this course listing.

### **Changelog**

2021-03-09 First public version