Fall 2017 Course Offerings to Satisfy TMC General Education Requirements

MATH/STATS/LOGIC: Mathematics & Adv. Statistics

MATH 3C. Pre-Calculus (4)
Functions and their graphs. Linear and polynomial functions, zeroes, inverse functions, exponential and logarithmic, trigonometric functions and their inverses. Emphasis on understanding algebraic, numerical and graphical approaches making use of graphing calculators. (No credit given if taken after Math 4C, 1A/10A, or 2A/20A.) Three or more years of high school mathematics or equivalent recommended. *Prerequisites: Math Placement Exam qualifying score.*

MATH 4C. Pre-Calculus for Science and Engineering (4)
Review of polynomials. Graphing functions and relations: graphing rational functions, effects of linear changes of coordinates. Circular functions and right triangle trigonometry. Reinforcement of function concept: exponential, logarithmic, and trigonometric functions. Vectors. Conic sections. Polar coordinates. Three lectures, one recitation. (No credit given if taken after Math. 1A/10A or 2A/20A. Two units of credit given if taken after Math. 3C.) *Prerequisite: Math Placement Exam qualifying score, or Math 3C with a grade of C or better.*

MATH 10A. Calculus (4)
Differentiation and integration of algebraic functions. Fundamental theorem of calculus. Applications. (No credit given if taken after Math. 2A/20A. *Prerequisite: Math Placement Exam qualifying score, or AP Calculus AB score of 2, or SAT II Math 2C score of 600 or higher, or Math 3C with a grade of C or better, or Math 4C with a grade of C– or better.*

MATH 10B. Calculus (4)
Further applications of the definite integral. Calculus of trigonometric, logarithmic, and exponential functions. Complex numbers. (No credit given if taken after Math 20B.) *Prerequisite: AP Calculus AB score of 3, 4, or 5, Math 10A with grade of C– or better, Math 20A with grade of C– or better.*

MATH 10C. Calculus (4)
Vector geometry, velocity, and acceleration vectors. (No credit given if taken after Math 20C.) *Prerequisite: AP Calculus BC score of 3, 4, or 5, or Math 10B with a grade of C– or better, or Math 20B with a grade of C– or better.*

MATH 20A. Calculus for Science and Engineering (4)
Foundations of differential and integral calculus of one variable. Functions, graphs, continuity, limits, derivative, tangent line. Applications with algebraic, exponential, logarithmic, and trigonometric functions. Introduction to the integral. (Two credits given if taken after Math. 1A/10A and no credit given if taken after Math 1B/10B or Math 1C/10C.) *Prerequisite: Math Placement Exam qualifying score, or AP Calculus AB score of 2 or 3, or SAT II Math 2C score of 650 or higher, or Math 4C with a grade of C– or better, or Math 10A with a grade of C– or better.*

MATH 20B. Calculus for Science and Engineering (4)
Integral calculus of one variable and its applications, with exponential, logarithmic, hyperbolic, and trigonometric functions. Methods of integration. Polar coordinates in the plane. (Two credits given if taken after Math. 1B/10B or Math. 1C/10C.) *Prerequisite: AP Calculus AB score of 4, or 5, or AP Calculus BC score of 3, or Math 20A with a grade of C– or better, or Math 10B with a grade of C– or better, or Math 10C with a grade of C– or better.*

MATH 20C. Calculus and Analytic Geometry for Science and Engineering (4)
Vector geometry, vector functions and their derivatives. Partial differentiation. Maxima and minima. Double integration. (Two credits given if taken after Math 10C.) *Prerequisite: AP Calculus BC score of 4, or 5, or Math 20B with a grade of C– or better.*

MATH/STATS/LOGIC: Introductory Statistics

COGS 14A. Introduction to Research Methods (4)
Introduction to the scientific method. Methods of knowledge acquisition, research questions, hypotheses, operational definitions, variables, control. Observation, levels of measurement, reliability, validity. Experimentation and design: between-groups, within-subjects, quasi-experimental, factorial, single-subject. Correlational and observational studies. Ethics in research. *Prerequisites: none.*

POLI 30D. Political Inquiry (4)
Introduction to the logic of inference in social science and to quantitative analysis in political science and public policy including research design, data collection, data description and computer graphics, and the logic of statistical inference (including linear regression). *Prerequisites: none.*

PSYC 60. Introduction to Statistics (4)
Introduction to the experimental method in psychology and to mathematical techniques necessary for experimental research. *Prerequisite: one year mathematics or consent of instructor. Prerequisites: none.*

SOCI 60. The Practice of Social Research (4)
Introduction to the fundamental principles of the design of social research. Examine key varieties of evidence, sampling methods, logic of comparison, and causal reasoning researchers use in their study of social issues. *Will not receive credit for SOCI 60 and SOCL 60. Prerequisites: none.*

MATH/STATS/LOGIC: Computer Programming & Logic

CSE 5A. Introduction to Programming I (4)
Introduction to algorithms and top-down problem solving. Introduction to the C language including functions, arrays, and standard libraries. Basic skills for using a PC graphical user interface operating system environment. File maintenance utilities are covered. (A student may not receive credit for CSE 5A after receiving credit for CSE 10 or CSE 11 or CSE 8B or CSE 9B or CSE 62B or CSE 65.) *Prerequisite: A familiarity with high-school level algebra is expected, but this course assumes no prior programming knowledge.*

MATH/STATS/LOGIC: Computer Programming & Logic

CSE 8A. Introduction to Computer Science: JAVA I (4)
Introductory computer science course designed for students interested in computing. No prior programming experience is assumed. Learn fundamental concepts of applied computer science using media computation. Must be taken concurrently with CSE 8AL. CSE 8A is part of a three-track course (CSE 8A, CSE 8AL, and CSE 8B) that is equivalent to CSE 11. Students should take CSE 8B to complete this track. Students who have taken CSE 8B or CSE 11 may not take CSE 8A. Recommended prep: High school algebra and familiarity with computing concept. *Prerequisite: co-requisite of CSE 8AL.*

CSE 11. Introduction to Computer Science: Java (4)
Introduction to computer science and programming using the Java language. Basic UNIX. Modularity and abstraction. Documentation, testing and verification techniques. Basic object-oriented programming including inheritance and dynamic bind. Exception handling. Event-driven programming. Experience with AWT library or other similar library. *Prerequisites: high-school algebra and a course in programming in a compiled language.* Majors only.

MAE 05. Quantitative Computer Skills (4)
Introductory course for non-engineering majors. Use of computers in solving problems; applications from life sciences, physical sciences, and engineering. Students run existing computer programs and complete some programming in BASIC. *Prerequisites: none.*

PHIL 10. Introduction to Logic (4)
Basic concepts and techniques in both informal and formal logic and reasoning, including a discussion of argument, inference, proof, and common fallacies, and an introduction to the syntax, semantics, and proof method in sentential (propositional) logic. *Prerequisites: none.*

PHIL 12. Scientific Reasoning (4)
Strategies of scientific inquiry: how elementary logic, statistical inference, and experimental design are integrated to evaluate hypotheses in the natural and social sciences. *Prerequisites: none.*

NATURAL SCIENCES: Biology
For Non-Science/Math/Engineering Majors

ANTH 2. Human Origins (4)
An introduction to human evolution from the perspective of physical anthropology, including evolutionary theory and the evolution of the primates, hominids, and modern humans. Emphasis is placed on evidence from fossil remains and behavioral studies of living primates. Prerequisite for upper-division biological anthropology courses.

BILD 10. Fundamental Concepts of Modern Biology (4)
Introduction to the biochemistry and genetics of cells and organisms; illustrations are drawn from microbiology and human biology. This course is designed for non-biology students and does not satisfy a lower-division requirement for any biology major. Open to non-biology majors only. *Prerequisites: none.*

BILD 26. Human Physiology (4)
Introduction to elements of human physiology and functioning of the various organ systems. Presents a broad, yet detailed, analysis of human physiology, with emphasis toward understanding disease processes. Designed for non-biology students and does not satisfy a lower-division requirement for any biology major. Open to non-biology majors only. Exclude the following major codes: BI28, BI29, BI30, BI31, BI32, BI33, BI34, BI35, and BI36. Note: Students may not receive credit for BILD 26 after receiving credit for BIPN 100

NATURAL SCIENCES: Biology
For Non-Science/Math/Engineering Majors

COGS 17. Neurobiology of Cognition (4)
Introduction to the organization and functions of the nervous system. Topics include molecular, cellular, developmental, systems, and behavioral neurobiology. Specifically, structure and function of neurons, peripheral and central nervous systems, sensory, motor, and control systems, learning and memory mechanisms. (Students may not receive credit for both BIOL 12 and COGS 17). *Prerequisites: none.*

NATURAL SCIENCES: Chemistry
For Non-Science/Math/Engineering Majors

CHEM 11. The Periodic Table (4)
Introduction to the material world of atoms and small inorganic molecules. Intended for non-science majors. Students may not receive credit for both Chem 4 and Chem 11. (F, S). *Prerequisites: none.*

NATURAL SCIENCES: Physics
For Non-Science/Math/Engineering Majors

PHYS 5. Stars and Black Holes (4)
Introduction to the evolution of stars, including birth and death. Topics include constellations, the atom and light, telescopes, stellar birth, stellar evolution, white dwarfs, neutron stars, black holes, and general relativity. Course uses basic algebra, proportion, radians, logs, and powers.

SIO 12. History of the Earth and Evolution (4)
Evolution of Earth from its origin in the early solar system to formation of continents, ocean basins, and how it became habitable. Examines geologic record of evolution, extinction, plate tectonics, and climate changes. *Prerequisites: none.*

PHYS 13. Life in the Universe (4)
An exploration of life in the Universe. Topics include defining life; the origin, development, and fundamental characteristics of life on Earth; searches for life elsewhere in the Solar System and other planetary systems; space exploration; and identifying extraterrestrial intelligence. This course uses basic algebra, proportion, radians, logs, and powers.

SIO 15. Natural Disasters (4)
Introduction to environmental perils and their impact on everyday life. Geological and meteorological processes, including earthquakes, volcanic activity, large storms, global climate change, mass extinctions throughout history, and human activity that causes and prevents natural disasters. *Prerequisites: none.*

SIO 30. The Oceans (4)
Presents modern ideas and descriptions of the physical, chemical, biological, and geological aspects of oceanography, and considers interactions between these aspects. Intended for students interested in the oceans, but who do not intend to become professional scientists. *Prerequisites: none.*

SIO 40. Life and Climate on Earth (4)
Explores life on Earth and its relationship to the environment—past, present, and future. Topics include origins of life, earth history, elemental cycles, global climate variability and human impacts on our environment. *Prerequisites: none.*

NATURAL SCIENCES: Physics
For Non-Science/Math/Engineering Majors

SIO 50. Introduction to Earth and Environmental Sciences (6)
Introduction to how our planet works, focusing on formation and evolution of the solid earth, and the processes affecting both its surface and interior. Laboratories and substantial field component complement and extend the lecture material. Program and/or material fee may apply. *Prerequisites: none. (F,S)*

NATURAL SCIENCES: Biology
For Science/Math/Engineering Majors

BILD 1. The Cell (4)
An introduction to cellular structure and function, to biological molecules, bioenergetics, to the genetics of both prokaryotic and eukaryotic organisms, and to the elements of molecular biology. *Prerequisites: CHEM 6A; CHEM 6B may be taken concurrently*

BILD 2. Multicellular Life (4)
An introduction to the development and the physiological processes of plants and animals. Included are treatments of reproduction, nutrition, respiration, transport systems, regulation of the internal environment, the nervous system, and behavior. *Prerequisites: BILD 1*

BILD 3. Organismic and Evolutionary Biology (4)
The first principles of evolutionary theory, classification, ecology, and behavior; a phylogenetic synopsis of the major group of organisms from viruses to primates. *Prerequisites: none. (Note: EBE majors should complete this course during first year at UC San Diego.)*

NATURAL SCIENCES: Chemistry
For Science/Math/Engineering Majors

CHEM 4. Basic Chemistry (4)
Offers less-well prepared science majors the fundamental skills necessary to succeed in Chem 6. Emphasizes quantitative problems. Topics include nomenclature, stoichiometry, basic reactions, bonding, and the periodic table. May not receive credit for both Chem 4 and Chem 11. Includes a laboratory/discussion each week. *Recommended: Concurrent Enrollment in MATH 3C, 4C, 10A or higher.*

CHEM 6A. General Chemistry I (4)
First quarter of a three-quarter sequence intended for science and engineering majors. Topics include: atomic theory, bonding, molecular geometry, stoichiometry, types of reactions, and thermochemistry. May not be taken for credit after Chem 6AH. *Recommended: proficiency in high school chemistry and/or physics; concurrent or prior enrollment in Math 10A or 20A.*

CHEM 6AH. Honors General Chemistry I (4)
First quarter of a three-quarter honors sequence intended for well-prepared science and engineering majors. Topics include quantum mechanics, molecular orbital theory, and bonding. An understanding of nomenclature, stoichiometry, and other fundamentals is assumed. Students completing 6AH may not subsequently take 6A for credit. Recommended: completion of a high school physics course strongly recommended. *Concurrent enrollment in Math 20A or higher. (F)*

CHEM 6B. General Chemistry II (4)
First quarter of a three-quarter sequence intended for science and engineering majors. Topics include: atomic theory, bonding, molecular geometry, stoichiometry, types of reactions, and thermochemistry. May not be taken for credit after Chem 6AH. *Recommended: proficiency in high school chemistry and/or physics; concurrent or prior enrollment in Math 10A or 20A.*

NATURAL SCIENCES: Chemistry
For Science/Math/Engineering Majors

CHEM 6C. General Chemistry III (4)
Third quarter of a three-quarter sequence intended for science and engineering majors. Topics include: thermodynamics, kinetics, electrochemistry, coordination chemistry, and introductions to nuclear, main group organic, and biochemistry. May not be taken for credit after Chem 6CH. *Prerequisites: Chem 6B or 6BH. Recommended: completion of Math 10B or 20B.*

NATURAL SCIENCES: Physics
For Science/Math/Engineering Majors

PHYS 1A. Mechanics (3)
First quarter of a three-quarter introductory physics course, geared towards life-science majors. Equilibrium and motion of particles in one and two dimensions in the framework of Newtonian mechanics, force laws (including gravity), energy, momentum, rotational motion, conservation laws, and fluids. Examples will be drawn from astronomy, biology, sports, and current events. *Prerequisites: Mathematics 10A or 20A. Corequisites: Physics 1AL and Mathematics 10B or 20B (prior completion of mathematics corequisite is permitted).*

PHYS 1AL. Mechanics Laboratory (2)
Physics laboratory course to accompany Physics 1A. Experiments in Mechanics. *Prerequisites: Mathematics 10A or 20A. Corequisites: Physics 1A and Mathematics 10B or 20B (prior completion of mathematics corequisite is permitted).*

PHYS 1B. Electricity and Magnetism (3)
Second quarter of a three-quarter introductory physics course geared toward life-science majors. Electric fields, magnetic fields, DC and AC circuitry. *Prerequisites: Physics 1A or 2A, 1AL, and Mathematics 10B or 20B. Corequisites: Physics 1BL and Mathematics 10C or 20C or 11 (prior completion of mathematics corequisite is permitted).*

PHYS 1BL. Electricity and Magnetism Laboratory (2)
Physics laboratory course to accompany Physics 1B. Experiments in electricity and magnetism. Program or material fee may apply. *Prerequisites: Physics 1A or 2A, 1AL, and Mathematics 10B or 20B. Corequisites: Physics 1B and Mathematics 10C or 20C or 11 (prior completion of mathematics corequisite is permitted).*

PHYS 1C. Waves, Optics, & Modern Physics (3)
Third quarter of a three-quarter introductory physics course geared toward life-science majors. The physics of oscillations and waves, vibrating strings and sound, the behavior of systems under combined thermal and electric forces, and the interaction of light with matter as illustrated through optics and quantum mechanics. Examples from biology, sports, medicine, and current events. *Prerequisites: Physics 1B, 1BL, and Mathematics 10C or 20C or 11. Corequisites: Physics 1CL.*

PHYS 1CL. Waves, Optics, & Modern Physics Lab. (2)
Physics laboratory course to accompany Physics 1C. Experiments in waves, optics, and modern physics. Program or material fee may apply. *Prerequisites: Physics 1B, 1BL, and Mathematics 10C or 20C or 11. Corequisites: Physics 1C.*

PHYS 2A. Mechanics (4)
A calculus-based science-engineering general physics course covering vectors, motion in one and two dimensions, Newton's first and second laws, work and energy, conservation of energy, linear momentum, collisions, rotational kinematics, rotational dynamics, equilibrium of rigid bodies, oscillations, gravitation. Students may not earn credit for Physics 2A and 4A. *Prerequisites: Mathematics 20A. Corequisites: Mathematics 20B (prior completion of mathematics corequisite is permitted).*

NATURAL SCIENCES: Physics
For Science/Math/Engineering Majors

PHYS 2B. Electricity and Magnetism (4)
Continuation of Physics 2A covering charge and matter, the electric field, Gauss's law, electric potential, capacitors and dielectrics, current and resistance, electromotive force and circuits, the magnetic field, Ampere's law, Faraday's law, inductance, electromagnetic oscillations, alternating currents and Maxwell's equations. Students may not earn credit for both Physics 2B and Physics 4C. *Prerequisites: Physics 2A or 4A and Mathematics 20B (prior completion of mathematics corequisite is permitted). Corequisites: Mathematics 20C.*

PHYS 2C. Fluids, Waves, Thermodynamics, & Optics (4)
Continuation of Physics 2B covering fluid mechanics, waves in elastic media, sound waves, temperature, heat and the first law of thermodynamics, kinetic theory of gases, entropy and the second law of thermodynamics, Maxwell's equations, electromagnetic waves, geometric optics, interference and diffraction. Students may not earn credit for both Physics 2C and Physics 4B. *Prerequisites: Physics 2A, 2B, and Mathematics 20C. Corequisites: Mathematics 20D (prior completion of mathematics corequisite is permitted).*

PHYS 4C. Physics Majors-Electricity and Magnetism
Continuation of Physics 4B covering charge and Coulomb's law, electric field, Gauss's law, electric potential, capacitors and dielectrics, current and resistance, magnetic field, Ampere's law, Faraday's law, inductance, magnetic properties of matter, LRC circuits, Maxwell's equations. Students may not earn credit for both Physics 4C and Physics 2B. *Prerequisites: Physics 4A, 4B, and Mathematics 20C. Corequisites: Mathematics 20E (prior completion of mathematics corequisite is permitted).*

FINE ARTS

MUS 4. Introduction to Western Music (4)
A brief survey of the history of Western music from the Middle Ages to the present. Much attention will be paid to the direct experience of listening to music and attendance of concerts. Class consists of lectures, listening labs, and live performances. *Prerequisites: none.*

MUS 8. American Music (4)
The development of music in America. Focus on both the vernacular traditions including hymn singing, country music, jazz, big band, rock, etc., as well as the cultivated traditions of various composers from William Billings to John Cage. *Prerequisites: none.*

MUS 13. World of Music (4)
Topical course focusing on the music and cultural influences of music across the world. *Prerequisites: none.*

MUS 15. Popular Music (4)
Popular music from different time periods. Topics vary from year to year. *Prerequisites: none.*

MUS 16. The Beatles (4)
Explore The Beatles from musical, cultural, historical, technological, and critical angles. It will place them in context, examining their assorted confluences and wide influences. The group will be critically examined as artists, innovators, and public personalities. Listening, watching, and discussion will provide a broader, deeper, and more personal understanding of the group's enduring appeal. *Prerequisites: none.*

TDGE 1. Introduction to Theatre (4)
An introduction to fundamental concepts in drama and performance. Students will attend performances and learn about how the theatre functions as an art and as an industry in today's world. *Prerequisites: none.*

FINE ARTS

TDGE 11. Great Performances on Film (4)
Course examines major accomplishments in screen acting from the work of actors in films or in film genres. *Prerequisites: none. May be taken three times for credit.*

TDHT 21. Ancient and Medieval Theatre (4)
Ancient and medieval theatre. Explores the roots of contemporary theatre in world performance traditions of ancient history with a focus on humans' gravitation toward ritual and play. *Prerequisites: none.*

VIS 1. Introduction to Art Making: Two-Dimensional Practices (4)
An introduction to the concepts and techniques of art making with specific reference to the artists and issues of the twentieth century. Lectures and studio classes will examine the nature of images in relation to various themes. Drawing, painting, found objects, and texts will be employed. *Prerequisites: none. This course is offered only once per year.*

VIS 20. Introduction to Art History (4)
This course examines history of Western art and architecture through such defining issues as the respective roles of tradition and innovation in the production and appreciation of art; the relation of art to its broader intellectual and historical contexts; and the changing concepts of the monument, the artist, meaning, style, and "art" itself. Representative examples will be selected from different periods, ranging from Antiquity to Modern. Content will vary with the instructor. *Prerequisites: none.*

VIS 84. History of Film (4)
A survey of the history and the art of the cinema. The course will stress the origins of cinema and the contributions of the earliest filmmakers, including those of Europe, Russia, and the United States. *Prerequisites: none. Materials fee required. This course is offered only one time each year.*

HUMANITIES/CULTURE

ETHN 1. Intro. To Ethnic Studies: Land & Labor (4)
This course examines key historical events and debates in the field that center around land and labor, including disputes about territory and natural resources, slavery and other forms of unfree labor, labor migration and recruitment, and US and transnational borders. *Prerequisites: none.*

HILD 7A. Race and Ethnicity in the United States (4)
A lecture-discussion course on the comparative ethnic history of the United States. Of central concern will be the African American, slavery, race, oppression, mass migrations, ethnicity, city life in industrial America, and power and protest in modern America. *Prerequisites: none.*

HILD 10. East Asia: The Great Tradition (4)
The evolution of East Asian civilization from the first writing through classical Hei'an Japan and late imperial Song China. Primary and secondary readings on basic ideas, institutions and practices of the Confucian, Daoist, and Buddhist paths and of the state and family. *Prerequisites: none.*

LTEN 28. Introduction to Asian American Literature (4)
This course provides an introduction to the study of the history, communities, and cultures of different Asian American people in the United States. Students will examine different articulations, genres, conflicts, narrative forms, and characterizations of the varied Asian experience.

TWS 24. Third World Literatures
An introduction to the cultures of various Third World countries through close reading of selected literary texts. TWS examines Caribbean literature. Topics will vary each quarter.