

EE 328L Physical Electronics Lab (1) (1 3-hr Lab) Hands-on laboratory where students make various electronic devices using IC technology. Devices are also tested and analyzed. Pre: 327. Co-requisite: 328.

EE 331 Electric Machines and Drives (3) Magnetic circuits, induction motors, synchronous motors, power inverters, electric motor drives. Pre: 211.

EE 331L Electric Machines and Drives Lab (1) (1 3-hr Lab) Experiments on electromechanical energy conversion using generalized machines, magnetic circuits and transformers. Pre: 211. Co-requisite: 331.

EE 341 Introduction to Communication Systems (3) Signal representation, Fourier analysis; amplitude and angle modulated systems; sampling theorems, pulse and digital modulation systems; carrier modulation by digital signals. Pre: 315.

EE 341L Communication Systems Lab (1) (1 3-hr Lab) Experiments illustrating the basic principles of communication systems. Pre: 315. Co-requisite: 341.

EE 342 EE Probability and Statistics (3) Probability, statistics, random variables, distributions, densities, expectations, limit theorems, and applications to electrical engineering. Pre: 315 (or concurrent) and MATH 244, or consent.

EE 351 Linear Systems and Control (3) Analysis/design of feedback systems. Compensator design via root locus and Bode analysis. Routh/Nyquist stability. State space representation and introduction to MIMO formulation. Controllability/observability. Pre: 315. Co-requisite: 351L.

EE 351L Linear Systems and Control Lab (1) (1 3-hr Lab) Provides experience in applying theoretical tools to analyze linear systems. Extensive use is made of computer-aided analysis and design packages study system performance. Pre: 315. Co-requisite: 351.

EE 361 Digital Systems and Computer Design (3) Design methodology, processor design, control design, memory organization, system organization. Pre: 213 and 260; or consent.

EE 361L Digital Systems and Computer Design Lab (1) (1 3-hr Lab) Laboratory for 361, experiments on digital systems and interfacing. Co-requisite: 361.

EE 366 CMOS VLSI Design (4) (3 Lec, 1 3-hr Lab) Introduction to the design of very large scale integrated (VLSI) systems and use of CAD tools and design languages. Lab includes hands-on use of CAD tools and experiments with field programmable logic devices. Pre: 260.

EE 367 Computer Data Structures and Algorithms (3) Introduction to computer programming algorithms with emphasis on advanced data structures, input-output routines, files, and interpreters. Pre: 150 or 160.

EE 367L Computer Data Structures and Algorithms Lab (1) (1 3-hr Lab) Laboratory for 367. Pre: 150. Co-requisite: 367.

EE 371 Engineering Electromagnetics I (3) Transient and steady-state waves on transmission lines. Plane wave solutions of Maxwell's

equations. Application of Maxwell's equations under static and time-varying conditions. Pre: 213

EE 372 Engineering Electromagnetics II (3) Solution of Maxwell's equations under various boundary conditions. Introduction to radiation and guided waves. Pre: 371.

EE 372L Engineering Electromagnetics Lab (1) (1 3-hr Lab) Experiments illustrating the basic principles of electromagnetics. Pre: 371. Co-requisite: 372.

EE 396 Junior Project (V) Undergraduate hands-on experience. May be a EE 296 project continuation or a new project leading directly to the EE 496 major design activity. Repeatable. Pre: 101, 296, junior standing, and consent.

EE 415 Digital Signal Processing (4) (3 Lec, 1 3-hr Lab) Discrete-time signals and systems, sampling, Z-transform, transform, transform analysis of linear time-invariant systems, filter design, discrete Fourier transform, and computation of discrete Fourier transform. Repeatable once. Pre: 315 or consent.

EE 422 Electronic Instrumentation (3) Electronic circuits for interfacing with transducers, signal processing, and data acquisition. Amplifiers for measurement and control. Operational amplifiers in linear, nonlinear, and digital applications. Design project. Basic transducers. Pre: 326, 326L, and 371; or consent.

EE 422L Instrumentation Lab (1) (1 3-hr Lab) Laboratory for 422. Co-requisite: 422.

EE 423 Computer-Aided Analysis and Design (3) Algorithms and techniques used in computer-aided analysis and design of electronic circuits. Circuit simulation with interactive computers. Pre: 326 or consent.

EE 425 Electronic Instrumentation II (3) Instrumentation systems and circuits for measurement, control, signal processing, transmission, and detection. Noise and interference, ADC/DAC, modulation/demodulation, high-frequency and high-speed techniques, IC applications. Pre: 422 and 422L, or consent.

EE 426 Theory and Design of IC Devices II (3) Advanced silicon solid-state devices. State of the art in silicon-based devices, including advanced bipolar and MOS devices. Subjects from the most current literature included. Pre: 327.

EE 427 Computer-Aided Circuit Design (3) Application of the computer to the analysis, design, simulation, and construction of analog and digital circuits. Pre: 326 and 326L, or consent.

EE 435 Power Systems Analysis (3) Characteristics of transmission systems. Matrix algebra and representation of power systems. Numerical solutions of simultaneous algebraic and differential equations. Computer methods for short-circuit problems, load-flow studies, stability analysis. Pre: 331.

EE 436 Advanced Energy Conversion (3) Advanced topics on AC and DC machines, conventional and alternate energy conversion concepts, wind energy conversion, photovoltaic, thermoelectricity, storage, and utility interface considerations. Pre: 331.

EE 437 Power Electronics (3) Line-frequency, phase-controlled rectifiers, DC-DC switch mode converter, switch mode inverter, resonance converters. Pre: 323.

EE 441 Statistical Communications (3) Random variables, random processes, stationarity, correlation functions, spectral characteristics, linear filters, applications to noisy communication systems. Pre: 341 and MATH 471.

EE 442 Digital Communications (3) Baseband transmission, intersymbol interference and pulse shaping, partial response signaling, equalization, bandpass modulation and demodulation, channel coding, synchronization, multiplexing and multiple access, spread spectrum techniques. Pre: 341 and 342; or consent.

EE 446 Information Theory and Coding (3) Models of communication systems. Channel noise, measurement, and coding of information. Intrinsic limits of performance of communication systems. Pre: 341 and 342; or consent.

EE 449 Computer Communication Networks (3) ISO Reference Model, Physical Layer, Data Link Layer protocols, local- and wide-area networks, routing, congestion and flow control, higher layer protocols, network design, ISDN, performance evaluation, high-speed networks. Pre: 315 and one of EE 342, MATH 371, or MATH 471; or consent.

EE 452 Digital Control Systems (3) Sampling/reconstruction, Z-transform, DT transfer function. Reachability/observability. State and output feedback, observer design, input-output models, diophantine equations. Implementation procedures. Pre: 315 and 351, or consent.

EE 453 Modern Control Theory (3) Analysis and synthesis of nonlinear control systems by means of Lagrange's equation, state space techniques, maximum principle. Lyapunov's theorems, the phase plane, and Z-transform techniques. Optimization and adaptation by means of gradient methods, calculus of variations, dynamic programming. Pre: 351.

EE 455 Design of Intelligent Robots (3) Study of the design principles of computer-controlled, intelligent robots such as roving vehicles, hand-eye systems. Pre: 351 and 367.

EE 460 Switching Circuit Theory (3) Threshold logic circuits, iterative combinational logic circuits, sequential circuits analysis and synthesis, minimization, state assignment, hazards, race conditions, fault-detection experiments, linear sequential circuits. Pre: 120 or 361.

EE 461 Computer Architecture (3) Structure of stored program machines, data flow machines, pipelining, fault-tolerant computing, instruction set design, effects of compilation on architecture, RISC vs. CISC architecture, uses of parallelism. Pre: 361.

EE 466 VLSI Design (3) Design, simulation, and fabrication of digital VLSI systems using field-programmable logic devices. Pre: 323 and 361.

EE 467 Object-oriented Software Engineering (3) Introduction to advanced techniques for designing, implementing, and testing computer

software with a particular focus on using object-oriented design, analysis, and programming to produce high-quality computer programs that solve non-trivial problems. Pre: 367 or consent.

EE 468 Introduction to Operating Systems (3) Computer system organization; multiprocessor systems, memory hierarchies, assemblers, compilers, operating systems, virtual machine, memory management, processor management; information management. Pre: 260 and 367; or consent.

EE 473 Microwave Engineering (3) Passive and active microwave devices and circuits for RF and wireless applications. Scattering parameters, signal-flow graphs, and computer-aided design. Pre: 323 (or concurrent), 341 (or concurrent), and 371.

EE 474 Antennas (3) Electromagnetic wave propagation in free space and ionized media. Geomagnetic and solar effects on the ionosphere. Absorption and dispersion. Antenna arrays, apertures, horns, impedance. Design of antenna systems. Pre: 372.

EE 475 Optical Communications (3) Principles and applications of optical fibers and waveguides. Fundamentals of optical communication systems (optical links, high-speed systems, wavelength-division-multiplexing networks, and network elements) and optical components (guided-wave circuits, lasers, detectors, and optical amplifiers). System and network integration issues. Repeatable once. A-F only. Pre: 371 or consent.

EE 477 Fundamentals of Radar, Sonar, and Navigation Systems (3) Discussion of basic radar detection and position- and velocity-measurement principles. Applications to various types of radar and sonar systems. Modern navigation aids. Pre: 371 or equivalent, and familiarity with waveguides or waveguide theory.

EE 480 Introduction to Biomedical and Clinical Engineering (3) Application of engineering principles and technology to biological and medical problems. Introduction to human anatomy, physiology, medical terminology, clinical measurements. Systems modeling, physiological control systems, computer applications, health-related problems. Pre: 213 and MATH 244.

EE 480L Biomedical Engineering Lab (1) (1 3-hr Lab) Measurement of bioelectrical signals, computer and electronic simulation of biological systems, design and evaluation of electronic circuits for biomedical measurements, evaluation of instruments for patient safety. Pre: 323 and 323L. Co-requisite: 480.

EE 481 Bioelectric Phenomena (3) Study of electrical phenomena in living systems. Mechanisms underlying bioelectric activity. Membrane and transepithelial potentials, skin impedance, electrocardiography, neuroelectric signals, diagnostic considerations, laboratory demonstrations. Pre: 480 or consent.

EE 482 Biomedical Instrumentation (3) (2 Lec, 1 3-hr Lab) Principles, applications, and design of biomedical instrumentation. Transducers, IC and microcomputer applications, patient safety. Pre: 326, 480, or consent.

EE 491 (Alpha) Special Topics in Electrical Engineering (3) Course content will reflect special interests of visiting/permanent faculty; to

be oriented toward juniors and seniors. (B) artificial intelligence; (C) circuits; (D) communications; (E) computer hardware; (F) computer software; (G) computer vision; (H) control; (I) devices; (J) fields; (K) power. Pre: consent.

EE 494 Provisional Topics (3) Upper division course with subject matter to be announced.

EE 496 Capstone Design Project (V) A significant project that integrates the design content of previous courses and satisfies realistic constraints involving reliability, safety, and economics, as well as aesthetic, ethical and societal aspects of the problem. A-F only. Pre: 396 or consent.

EE 499 Directed Reading (V) Investigation of advanced engineering problems. Pre: senior standing and consent.

EE 500 Master's Plan B/C Studies (1)

EE 601 Graph Theory and Its Applications (3) Graphs and subgraphs, trees and treelike graphs, planar graphs, connectivity and edge-connectivity, applications. Pre: MATH 311 or consent.

EE 602 Algorithm I (3) Design and evaluation of machine representations, techniques and algorithms for sorting, pattern processing, computational geometry, mathematical computations, and engineering applications. Introduction to computational issues of time, space, communication, and program correctness. Pre: 367 or consent.

EE 603 Algorithm II (3) Techniques of parallel and distributed computation. Design and analysis of computational structures and algorithms based on general models of computer architecture. Issues in interprocessor communication and synchronization. Pre: 602, 660, or consent.

EE 604 Artificial Intelligence (3) LISP for machine intelligence applications, or related constraint object and logic-oriented languages. Pre: 467 or knowledge of LISP/PROLOG.

EE 606 Machine Processing of Natural Languages I (3) Review of computer language syntax analysis, natural language as a knowledge-based process, grammars and parsing, transition and augmented transition grammars, feature and function grammars, natural language parsing. Pre: 367 and knowledge of LISP.

EE 615 Advanced Digital Signal Processing (3) An advanced course in digital processing. Topics include fast DFT algorithms, multirate systems and filter banks, power spectrum estimation, linear prediction, optimum linear filters, and adaptive filtering. A-F only. Open to non-majors for CR/NC only. Pre: 415 or 640 or consent.

EE 618 Optimization Theory and Practice (3) Dynamic programming, nonlinear optimization, optimal control. Pre: 650.

EE 620 Advanced Electronic Circuits (3) Electronic circuits for precision measurement, computation, and signal processing. Low noise and interference reduction techniques. High-frequency and high-speed techniques. Microprocessor and biomedical applications. Pre: 422.

EE 621 Advanced Solid-State Devices (3) Advanced physical principles and design of modern solid-state electronic devices. Heterostructures, photodetectors, LED, junction lasers, and other devices of current importance identified from the current literature. Pre: 327.

EE 622 Optical Electronics I (3) Optical electronics including light-guiding, optical resonators, lasers, and applications. Pre: 327 or consent.

EE 623 Optical Electronics II (3) Electro-optics, noise detection, light and sound dielectric waveguide phenomena, lasers, optics, phase conjugation. Pre: 622 or consent.

EE 624 Microsensors and Microactuators I (3) Technology methods and physical principles of microsensors and microactuators. Vacuum technology, thin film deposition and characterization techniques, solid mechanics, micromachining, acoustics, piezoelectricity and principles of current microtransducers. Pre: 327 or consent.

EE 625 High-Frequency Solid-State Devices (3) High-frequency semiconductor devices. Hot electrons, Gunn oscillators, IMPATT diodes, mesfets, modfets, micromechanical klystrons, TWTS, magnetrons, resonant tunneling devices, superlattice devices. Pre: 327 or consent.

EE 626 Microsensors and Microactuators II (3) Survey of current microsensors and microactuators; pressure sensors; accelerometers; thermal, chemical, and magnetic sensors; micromotors and transducers. Pre: 624 or consent.

EE 627 Advanced Topics in Physical Electronics (3) Recent developments in phenomena and devices of physical electronics. Pre: 327.

EE 628 Analysis and Design of Integrated Circuits (3) Fabrication constraints and design guidelines for integrated circuits. Nonlinear model of integrated circuit transistor. Design and analysis of integrated logic circuits and linear circuits. Pre: 323.

EE 631 Advanced Power Systems (3) Computer-aided analysis and design of large power systems: modeling, system protection, economic operation, short-circuit analysis, load-flow studies, and transient stability of N-machine systems. Pre: 331 and 435, or consent.

EE 633 Power Generation and Control (3) Power generation. Power exchange of interconnected areas, control of generation, simulation models and optimum control, power system security, state estimation. Pre: 351, 435, 436 or consent.

EE 640 Applied Random Processes (3) Random variables, multivariate distributions, random sequences, stochastic convergence, stationary and nonstationary processes, spectral analysis, Karhunen-Loeve expansion, Markov processes, mean square estimation, Kalman filters. Pre: MATH 471 or equivalent.

EE 641 Queueing Theory (3) Poisson, Markov, and renewal processes, M/G/1 queue, G/M/1 queue, queueing networks, simulation, and performance evaluation of computer systems and communication networks. Pre: 342, 640 (or concurrent), or consent.

EE 642 Detection and Estimation Theory (3) Fundamentals of signal detection and estimation theory. Hypothesis testing, parametric and nonparametric detection, sequential detection, parametric estimation, linear estimation, robust detection and estimation, and applications to communication systems. Pre: 640.

EE 643 Communication System Performance (3) Fundamental performance limits, signal detection and estimation, modulation, intersymbol interference, equalization adaptive filtering, sequence detection, synchronization, fading multipath channels, spread spectrum. Pre: 640.

EE 644 Computer Communication Networks (3) Fundamentals of computer communication networks including modeling, performance evaluation, routing, flow control, local area networks, distributed algorithms, and optimization algorithms. Pre: 342, MATH 471, or consent.

EE 645 Neural Nets and Learning Theory (3) Pattern recognition, neural networks, and machine learning. Discriminant functions, super-vised and unsupervised learning, associative memories, feed forward and recurrent networks, learning complexity, computational learning theory and applications. Pre: 640.

EE 646 Advanced Information Theory (3) Measure of information, coding for discrete sources, discrete memoryless channels and capacity, the noisy channel coding theorem, source coding with fidelity criterion, rate-distortion theory, multiuser channels. Pre: 640.

EE 647 Source Coding (3) Theory and applications of source coding, rate-distortion theory, companding, lattice coding, tree coding, trellis coding, entropy-constrained coding, asymptotic theory, predictive and differential encoding, combined source/channel coding, vector quantization. Pre: 640.

EE 648 Error-Control Coding I (3) Linear block codes, soft and hard decision decodings, correction of random errors, cyclic codes, BCH codes, Reed-Solomon codes, majority logic decodable codes, burst-error correcting codes, concatenated codes. Pre: MATH 311 or consent.

EE 649 Error-Control Coding II (3) Convolutional codes, Viterbi algorithm, coded modulation, multistage decoding, concatenated coded modulation, probabilistic decoding, turbo codes, low density parity check codes and iterative decoding. Pre: 648

EE 650 Linear System Theory (3) State space theory of linear systems, controllability, observability, stability, irreducible realizations. Pre: 452.

EE 651 Nonlinear Control Systems (3) Digital simulations, phase-plane analysis, limit cycles and amplitude bounds, Lyapunov's theorem, circle criterion of stability, lure systems, Popov's stability theorem. Pre: 650.

EE 652 Optimal Control Systems (3) Optimal controls introduced through parametric optimization, calculus of variations, Euler-Lagrange and Hamilton-Jacobi equations, Pontryagin's maximum principle, minimum-time and minimum-fuel problems, dynamic programming, applications. Pre: 650 or consent.

EE 655 Robust Control (3) Multivariable frequency response design, signals and systems, linear fractional transformations, LQG Control, Full Information H-infinity Controller Synthesis, H-infinity filtering, model reduction, the four-block problem. Pre: 453 and 650.

EE 660 Computer Architecture I (3) Models of computation, high-performance processors, pipelined machines, RISC processors, VLIW, superscalar and fine-grain parallel machines. Data-flow architectures. Hardware/software tradeoffs. Pre: 461.

EE 661 Computer Architecture II (3) Design principles and techniques for architecture of parallel processing computers, processors, memories, interprocessor communication mechanism, multiprocessor scheduling and synchronization. Pre: 660 or consent.

EE 665 Computer Systems (3) Modern operating system software, process communication, distributed systems, device drivers. Software development and maintenance, integration of software packages. Projects reflecting special interests of faculty. Pre: 461 and 468.

EE 668 Telecommunication Networks (3) Telecommunication-network architecture; switching, broadcast, and wireless networks; protocols, interfaces, routing, flow- and congestion-control techniques; intelligent network architecture; service creation capabilities; multimedia, voice, data, and video networks and services. Pre: 468 or consent.

EE 671 Electromagnetic Theory and Applications (3) Solutions of Maxwell's equations and applications to radiation and propagation of electromagnetic waves. Pre: 372 or consent.

EE 673 Advanced Microwave Engineering (3) Advanced RF and microwave circuit design for wireless applications. Pre: 473 or consent.

EE 680 Biomedical Engineering Systems (3) Systems analysis and electronic instrumentation methods in biomedicine. Network and control-loop modeling, computer simulation, biological transducers, and analysis of electronic and physiological systems. Pre: 326, 326L, and 371; or consent.

EE 691 Seminar in Electrical Engineering (1) CR/NC only. Pre: graduate standing and consent.

EE 692 Seminar in Electrical Engineering (1) CR/NC only. Pre: graduate standing and consent.

EE 693 (Alpha) Special Topics in Electrical Engineering (3) Course content will reflect special interests of visiting/permanent faculty. (B) artificial intelligence; (C) circuits; (D) communications; (E) computer hardware; (F) computer software; (G) computer vision; (H) control; (I) devices; (J) fields; (K) power. Pre: consent.

EE 699 Directed Reading or Research (V) CR/NC only. Pre: graduate standing and consent.

EE 700 Thesis Research (V) Research for master's thesis. Pre: candidacy for MS in electrical engineering.

EE 790 Directed Instruction (V) Student assists in undergraduate classroom and/or project instruction under direction and close supervision of faculty member. CR/NC only. Pre: admission to PhD candidacy.

EE 800 Dissertation Research (V) Research for doctoral dissertation. Pre: candidacy for PhD in electrical engineering.

ENBI

See Environmental Biochemistry

Engineering (ENGR)

College of Engineering

Preference in registration is given to declared engineering majors. Please consult the current Schedule of Courses for confirmed offerings each semester.

ENGR 100 Engineering Freshman Practicum (1) Practicum sessions to integrate course material from engineering learning community courses and apply it to engineering problems. Repeatable once. CR/NC only. Open to College of Engineering learning community students only. Co-requisite: EE 160, MATH 242, and PHYS 170.

ENGR 250 Personal Development for Effective Teams (3) Exploration and application of basic leadership theories and processes which foster personal and interpersonal development via cognitive experiential classroom methods and mentoring relationships with experienced peer leaders.

ENGR 401 Engineering Management (3) Introduction to engineering management with emphasis on development of skills for professional advancement. Repeatable once.

ENGR 493 Field Experience (1) Supervised internship in engineering practice under professional and faculty direction. Repeatable once. CR/NC only. Pre: junior standing in engineering and consent.

English (ENG)

College of Languages, Linguistics and Literature

ENG 100 Composition I (3) Introduction to the rhetorical, conceptual, and stylistic demands of writing at the university level; instruction in composing process, search strategies, and writing from sources. Pre: placement exam.

ENG 101 Composition I (3) Introduction to the rhetorical, conceptual, and stylistic demands of writing at the university level; instruction in composing process, search strategies, and writing from sources. Requires supplemental tutorial laboratory. A-F only. Pre: placement exam. Co-requisite: 101L.

ENG 101L Composition I Writing Laboratory (1) Intensive individual instruction in writing at the university level. CR/NC only. Pre: placement exam. Co-requisite: 101.

ENG 200, 209, and 225 are courses in intermediate expository writing.

ENG 200 Composition II (3) Further study of rhetorical, conceptual, and stylistic demands of writing; instruction develops the writing and research skills covered in Composition I. Pre: 100.

ENG 209 Business Writing (3) Practice in informative, analytical, persuasive writing. Pre: 100.

ENG 225 Technical Writing (3) Combined lecture/lab course preparing students to write about technical subjects for specialists and laypersons. Introduces theory of technical communication and document design and teaches students to make use of relevant technology. A–F only. Pre: 100.

Courses ENG 250–257 are applicable toward the “arts and humanities” core requirements. Credits are not considered “beyond the introductory level.”

ENG 250 American Literature (3) Major American works from beginnings to present. Requires a minimum of 3,000 words of writing. Pre: 100. **AHL3**

ENG 251 British Literature to 1800 (3) Major works from Medieval, Renaissance, and Neoclassical periods. Requires a minimum of 3,000 words of writing. Pre: 100. **AHL3**

ENG 252 British Literature after 1800 (3) Major works from the Romantic, Victorian, modern, and contemporary periods. Requires a minimum of 3,000 words of writing. Pre: 100. **AHL3**

ENG 253 World Literature to 1600 (3) Major Western and non-Western works from classical Greece through the Renaissance. Requires a minimum of 3,000 words of writing. Pre: 100. **AHL3**

ENG 254 World Literature after 1600 (3) Major Western and non-Western works from after the Renaissance to the modern period. Requires a minimum of 3,000 words of writing. Pre: 100. **AHL3**

ENG 255 Short Story and Novel (3) Introduction to prose fiction through major works. Requires a minimum of 3,000 words of writing. Pre: 100. **AHL3**

ENG 256 Poetry and Drama (3) Introduction to poetry and drama through major works. Requires a minimum of 3,000 words of writing. Pre: 100. **AHL3**

ENG 257 (Alpha) Themes in Literature (3) Selected themes in major works of various types, cultures, periods. Requires a minimum of 3,000 words of writing. Repeatable one time. Pre: 100. (257Y cross-listed as WS 257) **AHL3**

ENG 257A (Alpha) Themes in Literature (3) Selected themes in major works of various types, cultures, periods. Requires a minimum of 3,000 words of writing. Co-requisite: 100 and Honors standing. **AHL3**

ENG 300 The Rhetorical Tradition (3) History of theory and practices of rhetoric from Classical to contemporary period; e.g., Plato, Aristotle, Cicero, Quintilian, Augustine, Sidney, K. Burke, DeMan. Pre: any two of the following:

250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 302 Introduction to the English

Language (3) Uses of language in speech and in writing; diversity of modern English. Problems of dialects, style, usage, “correctness”; nature of standard English. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent. **AHL3**

ENG 306 Argumentative Writing I (3)

Theory and practice of written argument; emphasis on the role of invention in argumentative discourse and on the nature of rhetorical proof. Pre: grade of C or better in ENG 100 or ENG 200; or consent.

ENG 307 Rhetoric, Composition, and

Computers (3) Introduction to computer-based writing and reading technologies. Study of principles of traditional and online composition. Writing traditional and multimedia essays. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 311 Autobiographical Writing (3) Writing clear, effective prose based on the writer’s own experiences and ideas. Pre: 100 and one of the following: 250, 251, 252, 253, 254, 255, 256, 257.

ENG 313 Creative Writing (3) Basic principles applied through writing in two major genres (short story and poetry, short story and drama, or poetry and drama). Pre: 100 and one of the following: 250, 251, 252, 253, 254, 255, 256, 257. **AHL1**

Fulfillment of the college’s written communication requirement and two semesters of 250–257 are prerequisite to upper division English courses numbered 320 or above. A few courses have different or additional prerequisites as listed below.

ENG 320 Introduction to English Studies (3)

Introduction to the purpose, practice, and potential of literary and rhetorical study of texts. Prerequisite to 400-level work for English majors. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 321 Backgrounds of Western Literature (3) Sources of European and American literary themes and allusions; myth, legend, and folklore of Western cultures; e.g., Classical texts, Arthurian romances, King James Bible. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent. **AHL3**

ENG 322 The Bible as Literature (3)

Narrative, generic, and stylistic forms in the Bible in English. Related writings may be considered in comparative analysis. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 323 Literature in English to 1660 (3)

Basic concepts and representative texts for the study of literature in English to 1660. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 324 Literature in English 1660-1900

(3) Basic concepts and representative texts for the study of literature in English from 1660-1900. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 325 Literature in English after 1900 (3)

Basic concepts and representative texts for the study of literature in English after 1900. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 326 World Literature in English (3)

Basic concepts and representative texts for the study of colonial, post-colonial, and commonwealth literatures in English, from regions such as Africa, India, the Pacific, and the Caribbean. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 327 Literary Criticism and Theory (3)

Survey of representative texts from Greek to modern times; e.g., Plato, Aristotle, Sidney, Johnson, Arnold, Eliot, Barthes, Derrida, Foucault, Kristeva. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 330 Medieval British Literature (3)

Basic concepts and representative texts for the study of British literature before 1500. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 331 Renaissance British Literature (3)

Basic concepts and representative texts for the study of British prose and poetry from 1500 to 1660. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 332 Restoration/18th-Century British Literature (3)

Basic concepts and representative texts for the study of British prose, poetry, and drama from 1660 to 1780, exclusive of Milton. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 333 Romantic British Literature (3)

Basic concepts and representative texts for the study of British prose and poetry from 1780 to 1832. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 334 Victorian British Literature (3)

Basic concepts and representative texts for the study of British prose and poetry from 1832 to 1900. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 335 British Literature after 1900 (3)

Basic concepts and representative texts for the study of British prose, poetry, and drama from 1900 to the present. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 336 American Literature to Mid-19th Century (3)

Basic concepts and representative texts for the study of prose, poetry, and drama in American literature through the middle of the 19th century. Pre: any two of the following:

250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 337 American Literature Mid-19th to Mid-20th Century (3) Basic concepts and representative texts for the study of prose, poetry and drama in American literature from the middle of the 19th century to the middle of the 20th century. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 338 American Literature since Mid-20th Century (3) Basic concepts and representative texts for the study of American literature since approximately 1950. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 350 18th-Century Novel in English (3) Basic concepts and representative texts for the study of the novel in English before 1800. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 351 19th-Century Novel in English (3) Basic concepts and representative texts for the study of the novel in English between 1800 and 1900. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 352 20th-Century Novel in English (3) Basic concepts and representative texts for the study of the novel in English after 1900. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 353 History of Poetic Forms (3) Basic concepts and representative texts for the historically organized study of poetic genres and forms before the 20th century and primarily in English. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 354 Poetry in English after 1900 (3) Basic concepts and representative texts for the study of poetry in English after 1900. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 355 Drama in English to 1900 (3) Basic concepts and representative texts for the study of drama in English from the Middle Ages through the end of the 19th century. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 356 Drama in English after 1900 (3) Basic concepts and representative texts for the study of drama in English after 1900. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 360 Prose Fiction (3) Basic concepts and representative texts for the study of the form, function, and development of prose fiction genres such as short story and novel. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 361 Poetry (3) Basic concepts and representative texts for the analysis of imagery, sound, language, form, and structure in poems. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent. **AHL3**

ENG 362 Drama (3) Basic concepts and representative texts for the study of the form, function, and development of the genre of drama. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 363 Film (3) Basic concepts and representative texts for study of the form, function, and development of cinematic narrative techniques. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 364 Non-fiction Prose (3) Basic concepts and representative texts for the study of non-fiction prose such as essays, biographies, autobiographies, speeches, political and legal documents, conversion and captivity narratives, testimonials, science writing, and travel writing. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 365 Mixed Genres (3) Basic concepts and representative texts for the study of works that incorporate more than one genre. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 370 Ethnic Literature of Hawai'i (3) Writings of various ethnic groups in Hawai'i, ancient to contemporary. Songs, stories, poetry, fiction, essays that illustrate the social history of Hawai'i. Pre: one social science core course. (Cross-listed as ES 370)

ENG 371 Literature of the Pacific (3) Basic concepts and representative texts for the study of the literature of the Pacific, including Pacific voyagers and contemporary writings in English by Pacific Islanders. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent. (Cross-listed as PACS 371)

ENG 372 Asian American Literature (3) Basic concepts and representative texts for the study of Asian American literature by writers from a variety of backgrounds. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 373 African American Literature (3) Basic concepts and representative texts for the study of African American literature by writers from a variety of backgrounds. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 374 Race, Ethnicity, and Literature (3) Basic concepts and representative texts for the study of race and ethnicity as the basis for literary inquiry. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 380 Folklore and Oral Tradition (3) Basic concepts and representative texts for the study of folktales, legends, ballads and other folklore genres in various cultures; consideration

given to folklore/literature relationships. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 381 Popular Literature (3) Basic concepts and representative texts for the study of popular literature genres, such as detective fiction, science fiction, the thriller, the romance, and westerns. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 382 Gender, Sexuality and Literature (3) Basic concepts and representative texts for the study of literary constructions of gender and sexuality. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent. (Cross listed as WS 381)

ENG 383 Children's Literature (3) Basic concepts and representative texts for the study of children's literature; may include study of children's book illustration. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 384 Literature and Technology (3) Basic concepts and representative texts for the study of literature in relation to technological developments. May include history of the book, impact of printing and computer networks, science fiction. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 393 Junior Honors Tutorial (3) Tutorials in English and American Literature. Consult the English Department's Honors Director for particulars; offered Fall semester. Repeatable one time. Pre: enrollment in Honors Program and two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

ENG 394 Junior Honors Tutorial (3) Tutorials in English and American Literature. Consult the English Department's Honors Director for particulars; offered Spring semester. Repeatable one time. Pre: enrollment in Honors Program and two of the following: 250, 251, 252, 253, 254, 255, 256, 257; second may be taken concurrently; or consent.

The specific content of 400-level Studies courses varies by semester. Students should obtain the English department's fall and spring course descriptions prior to enrolling. Descriptions are available in KUY 402 and 429 and on the department's Web page (www2.hawaii.edu/~uhmeng) a week or so before the SOC comes out. All Studies courses require a significant research component.

ENG 402 History of the English Language (3) Origin and evolution of English language to c.1800, particularly as manifested in literary texts. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 403 Modern English Grammar (3) Structure of contemporary English; current theories of grammar; relation between grammar and style. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 404 English in Hawai'i (3) English language in Hawai'i viewed historically and in a multicultural context, with attention to politics, religion, race, and education, from 1820 to present. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 405 Teaching Composition (3) Theory, observation, and practice in teaching writing, especially the use of one-on-one and small group instruction. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent. Recommended: 306.

ENG 406 Argumentative Writing II (3) Extended study of both the philosophical and practical dimensions of written reasoning. Emphasis on argument as a process of inquiry. Pre: 306 or consent.

ENG 407 Writing for Electronic Media (3) Combined lecture/lab course on writing and rhetoric in computer-mediated communication. May include online technical writing, courseware development, hypertext fiction. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; and 307; or consent.

ENG 408 Professional Editing (3) Discussion and practice in the professional editing of articles, reports, books; logic, clarity, coherence, consistency of tone and style, grammar and punctuation. Pre: 306 or consent.

ENG 409 Studies in Composition/Rhetoric/Language (3) Intensive study of selected topics, problems, themes, issues, and/or writers in composition, rhetoric, and/or English language. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 410 Form and Theory of Poetry (3) Poetic theories and techniques for students interested in writing poetry. Pre: 313 or consent.

ENG 411 Poetry Workshop (3) Writing, evaluating poems. Repeatable once. Pre: 410 or consent.

ENG 412 Nonfiction Writing (3) Workshop analysis of nonfiction as a literary form. Repeatable one time. Pre: 306 or 313; or consent.

ENG 413 Form and Theory of Fiction (3) Narrative techniques for students interested in writing fiction. Pre: 313 or consent.

ENG 414 Fiction Workshop (3) Writing, evaluating fiction. Repeatable once. Pre: 413 or consent.

ENG 415 Prosody (3) Reading and writing in traditional poetic forms—sonnet, villanelle, sestina, roundel, pantoum, etc.—for theoretical and practical appreciation of formal poetry. Pre: 361 or 410; or consent.

ENG 416 Studies in Creative Writing (3) Intensive study of selected topics, problems, themes, writers, or modes of creative writing in a workshop setting. Repeatable one time. Pre: 313; 410, 412, or 413; or consent.

ENG 420 Studies in Literature and Culture (3) Intensive study of selected problems, issues, writers, traditions, or movements in regard to cultural studies and the reading and interpretation of cultural texts. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 421 Studies in Comparative Literature (3) Intensive study of selected problems, issues, writers, traditions, or movements in the field of comparative literature. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 427 Studies in Literary Criticism and Theory (3) Intensive study of selected problems, issues, writers, traditions, or movements in the field of literary criticism and critical theory. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 430 Studies in Medieval Literature (3) Intensive study of selected problems, issues, writers, traditions, or movements in Old/Middle English literature from 500-1500, including works in modern translation. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 431 Studies in 16th and 17th Century Literature (3) Intensive study of selected problems, issues, writers, traditions, or movements in texts written during the period 1500-1700. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 432 Studies in 18th Century Literature (3) Intensive study of selected problems, issues, writers, traditions, or movements in texts written during the period 1660-1830, the "long" 18th century. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 433 Studies in 19th Century Literature (3) Intensive study of selected problems, issues, writers, traditions, or movements in texts written during the 19th century. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 434 Studies from 20th Century to Present (3) Intensive study of selected problems, issues, writers, traditions, or movements in texts written from the 20th century to the present. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 440 (Alpha) Single Author (3) Intensive study of the works and literary milieu of a single author: (B) Emily Dickinson; (C) George Eliot; (D) William Faulkner; (E) Ben Jonson; (F) James Joyce; (G) Mark Twain; (H) Walt Whitman; (I) Virginia Woolf; (J) William Wordsworth; (K) Charles Dickens. Repeatable one time (different alpha letter). Pre: 320 and two other 300-level ENG courses; or consent.

ENG 442 Geoffrey Chaucer (3) Intensive study of the works and literary milieu of Geoffrey Chaucer. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 445 William Shakespeare (3) Intensive study of the works and literary milieu of William Shakespeare. Repeatable one time. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 447 John Milton (3) Intensive study of the works and literary milieu of John Milton. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 460 Studies in Fiction (3) Intensive study of selected problems, issues, writers, traditions, or movements in prose fiction.

Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 461 Studies in Poetry (3) Intensive study of selected problems, issues, writers, traditions, or movements in poetry. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 462 Studies in Drama (3) Intensive study of selected problems, issues, writers, traditions, or movements in drama. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 463 Studies in Film (3) Intensive study of selected topics in film, e.g.: genres, major filmmakers, film theory/criticism, or film and literature. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 464 Studies in Life Writing (3) Intensive study of forms and theories of lifewriting in forms such as biographies, autobiographies, oral histories, diaries, journals, letters, film, drama, and portraiture. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 465 Studies in Mixed Genre (3) Intensive study of selected texts that either combine traditional genres, challenge categorization by genre, or cross lines of genres. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 466 Special Topics: Genre Studies (3) Intensive study of a selected genre which crosses disciplines or is overlooked in the study of larger genre categories such as poetry, fiction, or drama. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 470 Studies in Asia/Pacific Literature (3) Intensive study of selected problems, issues, traditions, genres, or writers relating to Asia and the Pacific. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 471 Studies in Postcolonial Literature (3) Intensive study of selected problems, issues, traditions, genres, or writers in postcolonial literatures and theories. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 472 Studies in Diasporic Literature (3) Intensive study of literary, cultural and theoretical issues of diasporic experiences such as immigration, assimilation, nation, and transnationalism. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 479 Modern Pacific Women's Poetry (3) Critical examination of modern indigenous women's poetry from the Pacific Islands. Thematic concentration on land, family, sexual and national oppression. Pre: any two of the following (second may be taken concurrently): 250, 251, 252, 253, 254, 256, 257; or consent. (Cross-listed as HWST 494)

ENG 480 Studies in Literature and Folklore (3) Intensive study of selected problems, issues, traditions, or genres in folklore and oral traditions and their performance and transformations within specific social and cultural contexts. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 481 Studies in Literature and Popular Culture (3) Intensive study of selected problems, issues, traditions, writers, movements,

or genres in the field of popular literature and/or popular culture. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent.

ENG 482 Studies in Literature and Sexuality and Gender (3) Intensive study of selected problems and issues in the construction and representation of sexuality and gender in specific genres, social and cultural contexts, or thematic/figurative clusters. Repeatable one time. Pre: 320 and one other 300-level ENG course; or consent. (Cross-listed as WS 483)

ENG 491 Senior Honors Tutorial (3) Studies in history of ideas, periods, genres, or themes in English and American literature. Includes research paper. Offered Fall semester. Repeatable one time. Pre: enrollment in Honors Program, 320 and two 300-level ENG courses; or consent.

ENG 492 Senior Honors Tutorial (3) Studies in history of ideas, periods, genres, or themes in English and American literature. Includes research paper. Offered Spring semester. Repeatable one time. Pre: enrollment in Honors Program, 320, and two ENG 300-level courses; or consent.

ENG 494 London Program (V) Intensive study of selected topics, issues or writers from Great Britain and Ireland; Study Abroad/London Program only. Repeatable one time. A-F only. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 495 Internship (3) Faculty supervised participation in the operations of an organization. A-F only. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; junior standing.

ENG 499 Directed Reading (V) Repeatable once. A-F only. Pre: any two of the following: 250, 251, 252, 253, 254, 255, 256, 257; or consent.

ENG 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

ENG 550 Supervised Teaching Practicum (1) Supervised participation in instruction or tutoring. CR/NC only. Repeatable twice. Pre: graduate standing and consent.

ENG 560 HWP Summer Writing Institute (V)

ENG 561 HWP Summer Institute WAC (V) Practicum in the current best approaches to teaching writing across the curriculum. Participants write, read published theory and research in composition, and demonstrate effective writing lessons. Repeatable.

Graduate standing or consent is required for all courses numbered 600 and above for which no specific prerequisite is listed.

ENG 611 (Alpha) Graduate Writing Workshop (3) Advanced practice and critical evaluation of the writing of poetry, fiction, or creative nonfiction. (B) poetry; (C) fiction; (D) nonfiction. Repeatable. Pre: graduate standing plus 411 for (B); 414 for (C); 412 for (D); or consent.

ENG 620 The Profession of English (3) Introduction to the professional study of English and the four concentrations in the MA program. Required of all candidates for the MA in English. Pre: graduate standing. Fall only.

ENG 633 (Alpha) Theories and Methods (3) Required course in the MA student's area of concentration; (B) theories and methods of literary study; (C) introduction to composition and rhetoric; (D) foundations of creative writing; (E) theories in cultural studies. Repeatable in different alphas. Pre: 620 or consent. Spring only.

ENG 637 (Alpha) Literary Theory and Criticism (3) (B) classical period through 18th century; (C) Romantic and post-Romantic.

ENG 639 Film Theory and Criticism (3) Classic theories of representation and aesthetics; modern and contemporary cultural, psychoanalytic, and aesthetic theories as they apply to film.

ENG 640 Old English (3) Structure of the language, relation to present English; reading of selected prose and poetry.

ENG 660 (Alpha) Major Authors (3) Study of one or more authors, English or American. Repeatable.

ENG 675 (Alpha) Literary Genres and Problems (3) Study of one area of English or American literature. Repeatable.

ENG 680 Theory and Practice of Teaching Composition (3) Major contemporary theorists and classroom practices that evolve from their theories; observation and applications.

ENG 691 MA Final Project (V) Individual reading and research towards preparation of MA project. 3 credit hours required. CR/NC only. Repeatable. Pre: 620, 633 (or concurrent) and consent.

ENG 699 Directed Reading (V) Individual reading or research. Pre: graduate standing and consent.

ENG 700 Thesis Research (V) Pre: graduate standing and consent.

ENG 711 Seminar in Creative Writing (3) Advanced study in creative writing focused on thesis and dissertation projects. Repeatable once. Pre: 611 or consent.

ENG 716 (Alpha) Techniques in Contemporary Literature (3) The study, from the point of view of the creative writer, of works written within the last 25 years. (B) techniques in fiction; (C) techniques in poetry; (D) techniques in creative nonfiction. Repeatable. Pre: 611 (or concurrent) or consent.

ENG 730 Advanced Literary Research (3) Assumptions, methods, and definition of a literary field. Required of all doctoral candidates writing a critical/scholarly dissertation or a dissertation with a creative emphasis. Pre: 633 or equivalent or consent.

ENG 735 (Alpha) Seminar in Comparative Literature (3) Introduction to comparative literature; relationship of English to other literatures; sources and influences. Repeatable.

ENG 737 Problems in Literary Criticism (3) Intensive study of selected topics in literary theory and its practical application; topics to be announced. Repeatable. Pre: graduate standing or consent.

ENG 740 Seminar in Composition Studies (3) Intensive study of selected issues in composition studies. Repeatable. Pre: 633C (or concurrent); or consent.

ENG 745 Seminar in English Language (3) Intensive study of one topic in English linguistics. Repeatable.

ENG 751 Seminar in Life Writing (3) Intensive study of critical and theoretical issues raised by various forms of life writing (biography, autobiography, oral history, diaries, etc.) and of their history and methodology. Repeatable once.

ENG 757 Seminar in Shakespeare (3) Intensive study of Shakespeare.

ENG 760 Seminar in Rhetoric (3) Intensive study of selected topics in the history of rhetoric, rhetorical theory, or rhetorical criticism; topic to be announced. Repeatable. Pre: 633C (or concurrent) or consent.

ENG 765 Seminar in Cultural Studies in Asia/Pacific (3) Intensive study of selected issues in cultural studies in Asia and the Pacific; topics to be announced. Repeatable once.

ENG 766 Issues in Cultural Studies (3) Intensive study of selected issues in cultural studies and cultural and social theory; topics to be announced. Repeatable once.

ENG 775 (Alpha) Seminar in English Literature (3) Study of authors or a period.

ENG 780 (Alpha) Seminar in American Literature (3) Study of authors or a period. Repeatable.

ENG 785 Special Topics in Literature (3) Content to be announced. Repeatable.

ENG 800 Dissertation Research (V) Pre: graduate standing and consent.

English Language Institute (ELI)

College of Languages, Linguistics and Literature

Initial placement in ELI courses is by examination only. A grade of CR (credit) is prerequisite to promotion or exemption. Normal course sequence is 70, 80; 72, 82; 73, 83 or ELI 100.

ELI 070 Listening Comprehension I (0) Intensive work in understanding lectures, taking lecture notes, writing examinations, and study skills. Language laboratory required.

ELI 072 Reading for Foreign Students (0) Instruction and practice in improving reading comprehension and speed, and in use of textbooks and reference materials. Work on study skills; individual conferences and tutoring.

ELI 073 Writing for Foreign Students (0) Extensive practice in expository writing. Analysis and use of rhetorical devices. Individual conferences and tutoring as required.

ELI 080 Listening Comprehension II (0) Further practice; development of classroom discussion skills. Language laboratory required. Pre: 070 or placement by examination.

ELI 082 Advanced ESL Reading (0) Advanced ESL study skills and extensive reading strategies; focus on vocabulary and reading in student's major. Pre: 072 or placement by examination.

ELI 083 Writing for Foreign Graduate

Students (0) Individual instruction in specific writing problems: term papers, reports, projects. Foreign graduate students only except by permission. Pre: 073 or placement by examination.

ELI 100 Expository Writing: A Guided

Approach (3) Extensive practice in writing expository essays; linguistic devices that make an essay effective. (Fulfills composition requirement for nonnative speakers of English only.)

ENGR

See Engineering

Entomology (ENTO)

College of Tropical Agriculture and Human Resources

ENTO 250 The World of Insects (3) Biology/ecology of insects with emphasis on relationships to plants, animals, and especially people in Hawai'i and the tropics. **NSI**

ENTO 363 General Entomology (4) (3 Lec, 1 3-hr Lab) Biology, ecology, habits, structure of Hawai'i's insects/arthropods. Classification to family level. Pre: ZOOL 101, BOT 101, or consent.

ENTO 374 Economic Entomology (3) Destructive and beneficial insects; principles of cultural, mechanical, legislative, biological, and chemical control. Pre: 263, CHEM 151, and CHEM 152; or consent.

ENTO 374L Economic Entomology Lab (1) (1 3-hr Lab) Studies with Hawaiian insect pests of households, plants, and animals. Pre: 374 (or concurrent) or consent.

ENTO 462 Systematic Entomology (3) (2 Lec, 1 3-hr Lab) Classification of insects; orders and families. Use of taxonomic tools. Rules of zoological nomenclature. Pre: consent.

ENTO 463 Urban Entomology (3) (2 Lec, 1 3-hr Lab) Biology, ecology, and management of insects associated with people, structures, and the urban environment in Hawai'i and North America. Pre: 263 (or concurrent); or consent. (Alt. years: spring)

ENTO 470 Forensic Entomology (3) (2 Lec, 1 3-hr Lab) Entomological techniques used to estimate postmortem intervals, movement of the body following death, trauma assessment, entomotoxicology, and documentation of abuse and neglect of the living. Report preparation and expert witness testimony. A–F only. Pre: 263 or consent. Recommended: 462.

ENTO 491 Topics in Entomology (V) Study and discussion of significant topics, problems. Offered by visiting faculty and/or for extension programs. Repeatable.

ENTO 492 Internship (4) Integration and application of academic knowledge and critical skills emphasizing professional development. Placement with an approved cooperating supervisor/employer. Required of undergraduate students in entomology. Pre: consent. (Cross-listed as AGRS 492 and HORT 492)

ENTO 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

ENTO 633 Insect Genetics (3) (2 Lec, 1 3-hr Lab) Genetic analysis, manipulation and control of insect populations. Pre: BIOL 172, BOT 101, CMB 451, or ZOOL 101.

ENTO 641 Insect Physiology (4) (3 Lec, 1 3-hr Lab) Study of the principal physiological and biochemical functions in insects, with emphasis on hormonal interactions. Pre: CHEM 272, CHEM 272L, CHEM 273, and CHEM 273L, or ENBI 402 and ENBI 402L; or consent.

ENTO 661 Medical and Veterinary Entomology (3) (2 Lec, 1 3-hr Lab) Vector control; insects and other arthropods in relation to human and animal diseases. Pre: 263 or consent. (Cross-listed as PH 682)

ENTO 664 Immature Insects (3) (2 Lec, 1 3-hr Lab) Identification, structure, biology, literature, economic significance, emphasis on holometabola. Pre: 462 or consent.

ENTO 671 Insect Ecology (3) (2 Lec, 1 3-hr Lab) Insects as living units in an environment of physical and biotic factors. Pre: 374 and 462, or consent.

ENTO 672 Acarology (3) (2 Lec, 1 3-hr Lab) Taxonomy, biology, ecology of mites. Emphasis on medically and agriculturally important species. Pre: 462 or consent. (Cross-listed as ZOOL 672)

ENTO 675 Biological Control of Pests (3) (2 Lec, 1 3-hr Lab) Fundamental concepts. Critical study of major biological control projects. Pre: 374 and 462, or consent. Recommended: ZOOL 631 or 632.

ENTO 681 Insecticide Toxicology (3) Principles of toxicology; chemical and biochemical mechanisms of pesticide toxicity. Pre: ENBI 402 or BIOC 441; CHEM 272; or consent. (Cross-listed ENBI 681)

ENTO 686 Insect Transmission of Plant Pathogens (3) (2 Lec, 1 3-hr Lab) A multidisciplinary treatment of insect transmission of plant pathogens. Insect-plant and cellular insect-pathogen interactions and management strategies are emphasized.

ENTO 687 Entomology Seminar (1) Current entomological literature. Reviews and reports. Required of graduate students in entomology.

ENTO 690 Foundations in Entomology (1) Seminars on foundations of current research in entomology. Required of graduate students in entomology. Repeatable.

ENTO 699 Directed Research (V) Directed research, critical reviews in various fields of entomology.

ENTO 700 Thesis Research (V)

ENTO 800 Dissertation Research (V)

Environmental Biochemistry (ENBI)

College of Tropical Agriculture and Human Resources

ENBI 152 Survey of Organic and Bioorganic Chemistry (3) Structure, nomenclature, properties, reactions of organic compounds;

emphasis on those of practical importance in related fields. Open to nonmajors. Pre: CHEM 151, CHEM 162, or CHEM 171. (Cross-listed as CHEM 152) **NS2**

ENBI 402 Principles of Biochemistry (4)

Molecular basis of living processes in bacteria, plants, and animals; emphasis on metabolism of carbohydrates, lipids, proteins, and nucleic acids. Pre: BIOL 275, BIOL 275L, CHEM 272, and CHEM 273; or consent. (Cross-listed as BIOL 402)

ENBI 402L Principles of Biochemistry

Lab (2) (1 Lec, 1 3-hr Lab) Pre: 402 (or concurrent).

ENBI 412 Environmental Biochemistry (3)

Biochemical and chemical principles of occurrence, distribution, biotic and abiotic conversion, fate, and impact of synthetic and natural molecules in the environment. Important pollutants will be used as case studies to illustrate the principles. Pre: 152 or CHEM 272 and CHEM 162 or 171; or consent.

ENBI 420 Hazardous Materials (3) Introduction to state and federal environmental regulations relative to hazardous substances. Analysis of specific health and environmental impacts of hazardous waste. Pre: CHEM 151 (or concurrent) or consent. (Cross-listed as GEOG 420 and NURS 430)

ENBI 491 Topics in Environmental Biochemistry (V) Study and discussions of significant topics and problems. Offered by visiting faculty and/or for extension programs. Repeatable.

ENBI 499 Directed Reading and/or Research Experience (V) Pre: consent.

ENBI 604 Survey of Environmental Toxicology of Pesticides (1) Current research findings on use, dissipation and analysis of pesticides; environmental aspects; pesticide regulation and legislation. Pre: consent.

ENBI 610 Plant Biochemistry (3) Comprehensive study of chemical constituents and biochemical processes unique to plant kingdom with emphasis upon selected aspects of current interest. Pre: 402 or consent. (Cross-listed as PMP 620)

ENBI 681 Pesticide Toxicology (3) Principles of toxicology; chemical and biochemical mechanisms of pesticide toxicity. Pre: 402 or BIOC 441; CHEM 272; or consent. (Cross-listed as ENTO 681)

ENBI 687 Advanced Lab Techniques (1) (2 3-hr Lab) Advanced laboratory techniques used in food science and human nutrition research. Pre: 402, 402L, and FSHN 477; or BIOC 441 and BIOC 441L; or consent. (Cross-listed as ANSC 687 and FSHN 687)

ENBI 699 Directed Research (V) Pre: consent.

Ethnic Studies (ES)

College of Social Sciences

ES 101 Introduction to Ethnic Studies (3)

Basic concepts and theories for analyzing dynamics of ethnic group experiences, particularly those represented in Hawai'i, and their relation to colonization, immigration, problems of identity, racism, and social class. **SS**

ES 221 Hawaiians (3) Relationship between changes in Hawaiian lifestyle and development of Hawaiian economy; land use and tenure; participation in government, labor, and industry; Hawaiian institutions; "Hawaiian movement."

ES 301 Ethnic Identity (3) Individual and group problems of identity, identity conflict, culture conflict, inter-ethnic relations. Critical review of available material on Hawai'i. Pre: one social sciences core course.

ES 305 African American Experience I (3) Afrocentric perspective. Analysis of the black political/cultural diaspora, including ancient African kingdoms, the slavery experience, organized resistance, emancipation struggles, the Civil War and Reconstruction. Pre: one social sciences core course or consent.

ES 306 African American Experience II (3) Afrocentric socio political analysis. The struggle for freedom: Reconstruction period, reign of terror, intellectual and cultural awakenings, civil rights movements, contemporary issues. Pre: one social sciences core course or consent.

ES 310 Ethnicity and Community: Hawai'i (3) Site visits to museums, social welfare units, etc., as well as guest lecturers from the community including police, health, education. Pre: one social sciences course. (Summer only)

ES 318 Asian America: Survey (3) History of selected Asian immigrant groups from the 19th century to the present. Topics include: immigration and labor history, Asian American movements, literature and cultural productions, community adaptations and identity formation. Pre: junior standing and one of AMST 201 (or concurrent), AMST 202 (or concurrent), SOC 100 (or concurrent), or SOC 214 (or concurrent); or consent. (Cross-listed as AMST 318)

ES 320 Hawai'i and the Pacific (3) Hawai'i as part of the Pacific community: selected historical and contemporary problems of Pacific areas; cultural and economic imperialism, land alienation, and the impact of development on Pacific peoples. Pre: one social sciences core course.

ES 330 Japanese in Hawai'i (3) Issei roots in Japan; the role of Japanese in labor, politics, and business; sansei and perspectives on local identity and culture. The Japanese in light of changing economic, social, and political conditions in Hawai'i today. Pre: one social sciences core course.

ES 331 Chinese in Hawai'i (3) Ethnohistorical and contemporary view of the experiences of the Chinese in Hawai'i and U.S. Mainland; specific roles and contributions; immigration, social organization, and identity. Pre: one social sciences core course.

ES 332 Caucasians in Hawai'i (3) Historical and current views of white ethnic groups in Hawai'i; significance in economic and social development of Hawaiian society. Pre: one social sciences core course.

ES 333 Filipinos in Hawai'i (3) Historical and contemporary experiences; immigration; traditional culture and values; plantation experience; labor organizing; development of Filipino community. Racism, discrimination, and ethnic identity. Pre: one social sciences core course or consent.

ES 335 Koreans in Hawai'i (3) Historical and contemporary experiences, causes and patterns of immigration, conditions on plantations, ties to Korea, community development and roles in society. Pre: one social sciences core course.

ES 338 The Original American: Indians (3) Overview of American Indian history and traditions. Impact of European contact and conquest; contemporary issues of resistance and survival. Pre: one social sciences core course.

ES 340 Land Tenure and Use in Hawai'i (3) Dynamics of change: indigenous Hawaiian land tenure; Great Mahele and Kuleana Act; ethnic succession of land ownership; concentration of ownership today; effects of land development on ethnic communities. Pre: one social sciences core course.

ES 348 Teaching Ethnic Studies in Higher Education (3) Strategies for teaching subject matter in university, college, and community college classrooms: Concepts, models, classroom techniques, case studies. Pre: two ES courses at the 100, 200 or 300 level; or consent.

ES 350 Economic Change and Hawai'i's People (3) Development of modern Hawaiian economy and impact on Hawai'i's people. Sugar, pineapple, and tourism industries; role of local and multinational corporations; scenarios for Hawai'i's future development. Pre: one social sciences core course.

ES 360 Immigration to Hawai'i (3) Historical overview: "push and pull factors"; effect of changing economy; experiences of various ethnic groups; problems of recent immigrants; immigration policies in the United States and Hawai'i. Pre: one social sciences core course.

ES 365 Pacific/Asian Women in Hawai'i (3) Adaptive strategies of Hawaiian, Chinese, Japanese, Korean, Filipino, Samoan, and Southeast Asian women in Hawai'i; feminist anthropological and historical analysis. Pre: one ANTH, SOC, or WS course. (Cross-listed as WS 360) SS

ES 370 Ethnic Literature of Hawai'i (3) Writings of various ethnic groups in Hawai'i, ancient to contemporary. Songs, stories, poetry, fiction, essays that illustrate the social history of Hawai'i. Pre: one social sciences core course and consent. (Cross-listed as ENG 370)

ES 380 Fieldwork in Ethnic Studies (V) Specialized supervision of individual student research projects in historical, oral history, or contemporary problems. Repeatable to total of 6 credit hours. Pre: consent.

ES 381 Social Movements in Hawai'i (3) Role of various contemporary movements for social change in Hawai'i: community, ethnic, labor, student, etc. Theories of social movements and social change. Pre: one social sciences core course.

ES 390 Gender and Race in U.S. Society (3) Historical and sociological studies of race and gender in U.S. society; grassroots feminist and race/ethnic activism in the mainland and Hawai'i. A-F only. Pre: 101, WS 151, or Social Science Cores. (Cross-listed as WS 390)

ES 392 Change in the Pacific—Polynesia (3) Impact of cultural and physical change and their interrelationship. Pre: ES or social sciences courses.

ES 399 Directed Reading/Research (V) Repeatable to total of 6 credit hours. Pre: consent only.

ES 410 Race, Class, and the Law (3) Historical context and implications of landmark court decisions and legal issues affecting social change in ethnic communities in Hawai'i and the Continental United States. Pre: one 300-level course in ethnic studies, political science, or sociology.

ES 420 American Ethnic Relations: Politics and Economy (3) Relationship between race and class in the United States, focusing upon ethnic conflict, changing economic structures, and the role of the modern state. Pre: one 300-level ethnic studies course.

ES 430 Plantation Studies Seminar (3) An interdisciplinary inquiry into the Hawaiian plantation experience; topics include women and the family, ethnic relations, environment, work, etc. Pre: junior standing or consent. (Cross-listed as AMST 416)

ES 455 (Alpha) Topics in Comparative Ethnic Conflict (3) Causes and dynamics of ethnic conflicts with attention to problem resolution. (B) Middle East; (C) Hawaiian sovereignty in Pacific context. Repeatable. Pre: 320 or 392, or consent for (C).

ES 492 Politics of Multiculturalism (3) The development of ethnic relations and political approaches to multiculturalism in two multiethnic nations: Canada and the United States. Pre: one social sciences core course, an ES 300-level course, or consent.

ES 493 Oral History: Theory and Practice (3) Literature and methodology; project design. Students develop and execute an oral history project. Pre: upper division standing; and HIST 151 and HIST 152, or HIST 281 and HIST 282; or consent.

ES 495 Hawaiian Labor History (3) Conditions of work under varying political, social, and economic transformations in Hawai'i; anthropological, sociological, and historic data. Pre: HIST 151 and HIST 152.

Family Practice and Community Health (FPCH)

School of Medicine

FPCH 531 Unit VI 7-Week Family Practice Clerkship (10) Ambulatory-based clerkship in family practice to be taken on O'ahu or one of the Neighbor Islands. Students will learn history taking, physical exam skills, and management of family practice patients of all ages. Emphasis on behavioral care, preventative care, and common ambulatory problems, both acute and chronic. CR/NC only. Pre: BIOM 555. Co-requisites: MED 531, OBGN 531, PED 531, PSTY 531, and SURG 531.

FPCH 532 Family Practice and Community Health Longitudinal Clerkship (10) 5.5-month ambulatory clerkship. Students will learn history taking, physical exam skills, and management of family practice patients of all ages. Emphasis on behavioral care, preventative care, and common ambulatory problems, both acute and chronic. Repeatable once. CR/NC

only. Pre: BIOM 555. Co-requisite: MED 532, OBGN 532, PED 532, PSTY 532, and SURG 532.

FPCH 545 (Alpha) Unit VII Electives in Family Practice and Community Health (V)

Fourth-year elective in which medical students may do study of selected topics within the field of family practice and community health: (B) primary care preceptorship; (C) topics in community health; (D) sub-internship in family practice; (E) extramural elective in Family Practice and Community Health—miscellaneous; (F) sports medicine preceptorship. CR/NC only. Pre: 531 or 532 for (F).

FPCH 599 Directed Reading/Research (V)
Pre: consent.

Family Resources (FAMR)

College of Tropical Agriculture and Human Resources

FAMR 230 Human Development (3)
Concepts, issues, theories of human growth and development from conception to death; systems approaches to inquiry into factors affecting growth and development. **SS**

FAMR 331 Infancy (3) Intensive investigation into development from prenatal period through two years. Historical and current issues using cross-cultural and systems approach. Focus on optimal development. Pre: 230.

FAMR 332 Childhood (3) Intensive investigation into developmental aspects of children 2–12 years. Historical and current issues, cross-cultural study. Focus on optimal development. Pre: 230.

FAMR 333 Adolescence and Young Adulthood (3) Problems, concepts, and research relating to development from puberty through early adulthood. Examination of biological, cognitive, social, and cultural factors affecting the individual. Pre: 230.

FAMR 334 Middle Age (3) Change and continuity in midlife from theoretical and applied perspectives. Key physical, psychological, and sociological events. Community resources to meet needs. Pre: 230.

FAMR 335 Old Age (3) Social attitudes and values regarding aging; roles of elderly; theories of aging; personal continuity; physical, functional, psychological, socioeconomic change; community and societal programs. Pre: 230.

FAMR 340 Family Development (3) Family functioning and development over the family life cycle; family stages, tasks, interaction, adjustment, and growth in various cultures. Pre: PSY 100, SOC 100, or consent.

FAMR 341 Parenting (3) Parenting theories, methods, skills, issues, and resources; parent-child relations in various cultural contexts. Pre: 340 or consent.

FAMR 350 Leadership and Group Process (3) Exploration of leadership research and theories and their application to leadership development; designed to enhance personal and inter-active leadership. Pre: PSY 100 or SOC 100.

FAMR 352 Community Needs and Resources (3) Theory and practice in determining community needs and resources; community resources development based on needs identification. Pre: PSY 100 or SOC 100.

FAMR 360 Family Resource Management (3) Concepts, principles, and practices in managing family and household resources. Pre: PSY 100 or SOC 100.

FAMR 361 Family Financial Planning (3) Analytical approach to family financial planning from the perspective of changing family demands over the life cycle. Pre: 360, ECON 120, or consent.

FAMR 363 Consumer Economics (3) Consumer rights, responsibilities, and resources; consumer decision-making; factors affecting consumer functioning within economy. Pre: ECON 120.

FAMR 371 Shelter and Society (3) Development and characteristics of traditional shelter and furnishings in relation to culture and customs with focus on Hawai'i, the Pacific Basin, and Asia.

FAMR 380 Research Methodology (3) Fundamentals of scientific methodology and techniques in design and data collection; introduction to statistics for decision-making and program evaluations in agriculture and human resources. Pre: 230 or AGRN 220. Co-requisite: 380L.

FAMR 380L Research Methodology Lab (1) (1 3-hr Lab) Test design, computer use, data analysis. Co-requisite: 380.

FAMR 436 Ethnicity and Aging (3) Study role of ethnicity in the aging process; impact on expectations, resources, behaviors of elderly and their families. Implications for program development and family management. Pre: 230.

FAMR 442 Marriage Development (3) Marital interaction and development; divorce and remarriage; resources and techniques for marital adjustment, enrichment, and growth. Pre: 340.

FAMR 443 Work and the Family (3) Work/family roles, relationships, and interactions; issues, problems, and resources relevant to dual career marriage, maternal employment, and other areas of work/family interface. Pre: 340.

FAMR 444 Contemporary Family Issues (3) Investigation of current issues with impact upon family quality of life, with emphasis on the interdependent nature of families and their environments. Pre: 340.

FAMR 452 Community Program Development (3) Concepts and theories of community program development; principles, practices, and procedures in administration and supervision of volunteer services surveyed and analyzed. Pre: 352.

FAMR 453 Quality of Life Indicators (3) Quality of life indicators used in program planning and evaluation research; cross-cultural perspectives on strategies for improving individual, family, and community life. Pre: 352.

FAMR 454 Family Public Policy (3) Cross-national survey of family public policy; analysis, revision, and development of family public

policy; impacts of policy on consumers and families. Pre: 352.

FAMR 455 Consumer Communications (3) Development, production, analysis, and evaluation of consumer materials for print, broadcast, and videotape. Pre: 363 or consent.

FAMR 460 Family Management Practice (3) Strategies for working with families to enhance management practices; application of management concepts, methods, and skills to specific household and family problems. Pre: 360.

FAMR 468 Family Economics (3) Study of personal family resources and its interaction with the economy. Focuses on contemporary economic problems that affect the welfare of families. Pre: 360, ECON 120, or consent.

FAMR 482W Senior Seminar (3) Preparation, presentation, and discussion of student research papers dealing with selected topics in family resources. Pre: senior standing.

FAMR 491 Topics in Family Resources (V) Study and discussion of significant topics, problems. Offered by visiting faculty and/or for extension programs. Repeatable.

FAMR 492 Internship (4) Integration and application of academic knowledge and critical skills emphasizing professional development. Placement with an approved cooperating supervisor/employer. Pre: senior standing and consent.

FAMR 496 Supervised Experience in Family Resources (V) Supervised course material preparation and teaching experience in assigned class. Repeatable. Pre: consent.

FAMR 499 Directed Reading and Research (V) Independent reading and research on a topic, done under supervision of a faculty member; outcomes contracted in writing with faculty member at beginning of semester. Pre: consent.

FAMR 699 Directed Reading and Research (V) Pre: consent.

Filipino (FIL)

College of Languages, Linguistics and Literature

FIL 101 Elementary Filipino (4) Listening, speaking, reading, writing skills. Structural points introduced inductively. Co-curricular cultural activities included. Meets five hours weekly; daily lab work. **HSL**

FIL 102 Elementary Filipino (4) Continuation of 101. **HSL**

FIL 111 Intensive Elementary Filipino (6) Emphasis on communication through integrated development of listening, speaking, reading, and writing skills. Co-curricular cultural activities included. Meets 20 hours a week for six weeks. **HSL**

FIL 112 Intensive Elementary Filipino (10) **HSL**

FIL 201 Intermediate Filipino (4) Continuation of 102. Co-curricular cultural activities included. Meets five hours weekly; daily lab work. Pre: 102 or equivalent. **HSL**

FIL 202 Intermediate Filipino (4) Continuation of 201. **HSL**

FIL 212 Intensive Intermediate Filipino (10) HSL

FIL 224 Filipino for Education (4) Continuation of 102. Lessons focus on various aspects of Philippine culture and specialized topics that cater to the needs of teachers intending to teach Filipino immigrant students or teach Filipino as a second language. Meets five hours a week; daily lab work. Pre: 102. **HSL**

FIL 225 Filipino for Education (4) Continuation of 202 or 224. **HSL**

FIL 301 Third-Level Filipino (3) Continuation of 202. Conversation, advanced reading, and composition. Co-curricular cultural activities included. Meets three times weekly. Pre: 202 or 225, or consent.

FIL 302 Third-Level Filipino (3) Continuation of 301.

FIL 303 Accelerated Third-Level Filipino (6)

FIL 315 Filipino Aural Comprehension (3) Training in comprehension of spoken authentic/simulated authentic materials presented in news broadcasts, songs, documentary narration, formal lectures, radio and television soap operas, etc. Pre: 302 or consent.

FIL 401 Fourth-Level Filipino (3) Continuation of 302. Advanced reading in current literature; discussion of cultural implications; advanced conversation and composition. Co-curricular cultural activities included. Meets three times weekly. Pre: 302 or consent.

FIL 402 Fourth-Level Filipino (3) Continuation of 401.

FIL 415 Advanced Filipino Aural Comprehension (3) This is a continuation of Filipino 315. Training in comprehension and analysis/criticism of spoken authentic materials through films. Pre: 315 or consent.

FIL 435 Filipino Translation Techniques (3) Techniques of bilingual translation: Filipino to English and English to Filipino. A–F only. Pre: 302 or consent.

FIL 451 Structure of Filipino (3) Introduction to phonology, morphology, syntax. Pre: 202 or consent.

FIL 461 Filipino Contemporary Literature (3) Selected readings in poetry, short stories, and plays from early 1900s to present. Co-curricular cultural activities included. Pre: 402 or consent.

FIL 462 Filipino Traditional Literature (3) Pre-20th-century folk literature: epics, legends, folktales, myths, and indigenous drama. Co-curricular cultural activities included. Pre: 402 or consent.

Finance (FIN)

College of Business Administration

FIN 301 Personal Financial Planning (3) The course focuses on principles and techniques for handling personal financial decisions, including: personal budgeting, obtaining credit, life and casualty insurance, buying a home, buying an automobile, savings and investments, and retirement planning.

FIN 305 Problems of Business Finance (3)

Application of financial principles to cases involving important financial decisions. Pre: BUS 314.

FIN 307 Theory of Financial Decisions (3)

Development and analysis of modern financial theory and its implications for management decisions: market efficiency, capital asset pricing, firm investment decisions, capital structure, dividend policy, and cost of capital. Pre: BUS 314.

FIN 311 Investments (3) Introduction to various investment media and capital markets. Topics include the analysis of security returns using techniques such as beta, filter rules, and portfolio theory. Pre: BUS 314.

FIN 312 Options and Other Derivatives (3)

Options and other derivatives. Equity options, index options and options on futures. Black-Scholes Model. Trading strategies and tactics. Contemporary developments in financial engineering. Pre: BUS 314 or consent.

FIN 315 Security Analysis and Portfolio

Management (3) Security analysis and portfolio management from standpoint of the professional analyst and institutional investor. Recent advances in security valuation models, portfolio selection, and techniques for appraising portfolio performance. Pre: 311 and BUS 314.

FIN 321 International Business Finance (3)

Financial management of foreign and international business operations: the regulatory environment of international finance, financing international transactions, international capital markets, taxation. Financial decision-making in the firm. Pre: BUS 314.

FIN 330 Bank Financial Management (3)

Analysis of financial institution management within the domestic economy and regulatory environment. Topics include federal reserve activities, interest rates, regulation, lending, investments, and asset/liability management. Pre: BUS 314.

FIN 331 International Banking (3)

Commercial, investment, and merchant banking. Includes theory and practical applications. Topics include international lending, Euromarkets, global gap management, Forex activities, and global risk management. Pre: BUS 314.

FIN 344 Asian Finance (3) Financial systems, regulatory structure over financial institutions in the Asia-Pacific region. Major financial policy issues for financial sector reforms in the region. Seminar format. Pre: BUS 314 or consent.

FIN 360 Seminar in Finance (3) In-depth analysis of selected current practices and issues in finance. Repeatable with change in topic. Pre: BUS 314.

FIN 390 (Alpha) Advanced Topics in Finance

(3) Advanced topics both of a theoretical and an empirical nature in finance. (C) Japanese financial management; (D) investment management; (E) portfolio management theory; (F) capital assets. Pre: BUS 314 and other courses specified for each topic (see department for specific prerequisites).

FIN 399 Directed Reading and Research (V)

Reading and research in a special area of major under direction of faculty member(s). Project

must include statement of objectives, outline of activities planned, results expected, and how they are to be reported and evaluated. Must be approved in advance by the department chair and the faculty adviser.

FIN 633 Problems in Business Finance (3)

Application of financial principles and analytical techniques to financial problems. Case method. Pre: BUS 614 or consent.

FIN 634 Investment Analysis and Management

(3) Techniques of security analysis, theories of investment, and the analysis of investment decisions related to portfolio planning. Pre: BUS 614 or consent.

FIN 635 (Alpha) Advanced Topics in Finance

(3) Major current financial issues and problems. (C) Japanese financial management; (D) portfolio management theory; (E) capital asset analysis; (F) stocks, bonds, and modern instruments. Pre: BUS 614 or consent.

FIN 637 International Financial Management

(3) Financial decision-making in an international setting: analysis of direct foreign investment; economic, accounting, and regulatory environments, including taxation; international money and capital markets; import and export financing; multinational working capital management; and risk aspects of international finance. Pre: BUS 614 or consent.

FIN 638 Bank Financial Management (3)

Financial management of financial institutions. Includes theory and applications. Topics include federal reserve activities, asset/liability management, lending, investment, and the regulatory environment. Pre: BUS 614 or consent.

FIN 639 International Banking (3)

Commercial, investment, and merchant banking in the international arena. Includes international lending, Euromarkets, global gap management, Forex activities, and international risk management. Pre: BUS 614 or consent.

FIN 645 Advanced Capital Markets (3)

Regulatory structure over capital market institutions, market developmental issues, market microstructure issues, and corporate governance, and creation of capital market infrastructure. Seminar format. Pre: BUS 614 or consent.

FIN 660 Seminar in Finance (3) In-depth analysis of selected current practices and issues in finance. Pre: BUS 614 or consent. May be repeated with change in topic.

Food Science and Human Nutrition (FSHN)

College of Tropical Agriculture and Human Resources

FSHN 181 The Chemical Nature of Food (3)

Lectures, discussions, and demonstrations on how food components contribute to the functional, sensory, and safety characteristics of foods, and what changes occur in foods due to preparation, processing, and storage. Repeatable once.

FSHN 181L Food Preparation Lab (1) (1 3-hr Lab)

Experiments in foods emphasizing ingredient function and standard preparation methods for food groups. Co-requisite: 181.

FSHN 185 The Science of Human Nutrition (3) Integration of natural science concepts basic to the study of human nutrition. Emphasis on nutrient requirements of healthy individuals, food sources, functions of nutrients. **NS1**

FSHN 250 Human Needs and Environmental Resources (3) (2 Lec, 1 3-hr Lab) Issues related to human needs and resource sustainability; their impact on environmental concerns and quality of life are explored from the perspective of modern agriculture and human resources.

FSHN 281 Advanced Foods (3) (2 Lec, 1 3-hr Lab) Effects of processing and preparation techniques on nutrient content. Standards of food quality; utilization of organoleptic, physical, and chemical measurements. Pre: 181, CHEM 152, and the equivalent of two years of high school algebra.

FSHN 312 Quantity Food Production (3) (2 Lec, 1 3-hr Lab) Principles of food and beverage management applied to quantity food production operations, consideration of system component including marketing, menu planning, logistical support, production, and control. Repeatable once. Pre: 181 or TIM 184, or consent. (Cross-listed as TIM 312)

FSHN 320 Food Sanitation (3) Principles of food sanitation; foodborne illnesses; hazard analysis critical control points (HACCP) program; federal and state sanitation regulations; inspection; case studies. Pre: 181, TIM 184, or consent. Spring only.

FSHN 370 Lifespan Nutrition (V) Nutritional requirements and food needs during infancy, early childhood and adolescence, and aging. One credit provided for each age group module. One to three credits. Pre: 185, ZOOL 141, ZOOL 141L, ZOOL 142 (or concurrent), ZOOL 142L (or concurrent); or consent.

FSHN 401 Food Processing I (4) (3 Lec, 1 3-hr Lab) Principles and applications of food dehydration, thermal processing, low temperature preservation, chemical and biochemical preservation, irradiation, packaging, manufacturing, plant sanitation, water and waste management. Pre: CHEM 162, CHEM 162L, PHYS 151, PHYS 151L, MICR 130, and MICR 140; or consent.

FSHN 403 Microbiology of Foods (3) Microorganisms encountered in foods; types of food spoilage; microbial hazards in food; methods of food preservation. Pre: MICR 130. (Alt. years)

FSHN 410 Food Service Systems Management (3) Current types of food service systems, components of these systems, and managerial methods applied to produce effective systems. Systems approach to food service management, planning, and decision-making; human resources management; and controlling functions. Pre: 312 or TIM 312, and MGT 301 or TIM 303; or consent. (Cross-listed as TIM 410)

FSHN 411 Food Engineering (3) (2 Lec, 1 3-hr Lab) Principles and application of thermodynamics, electricity, fluid mechanics, heat transfer, psychrometry, and material and energy balances of food processing and preservation. Pre: PHYS 100. (Cross-listed as BE 411) (Alt. years: spring)

FSHN 430 Food Chemistry (3) Chemical properties of food constituents discussed in relation to their effect on processing, nutrition, and spoilage. Pre: CHEM 171, CHEM 171L, CHEM 272, and CHEM 272L. (Alt. years: fall only)

FSHN 430L Food Chemistry Lab (1) (1 3-hr Lab) Application of different chemical methods in the study of food constituents—proteins, lipids, carbohydrates, pigments, enzymes, etc. Pre: 430 (or concurrent). (Alt. years: fall only)

FSHN 440 Food Safety (3) Discussion of potential microbiological, parasitic, chemical, and natural food hazards; food laws and standards; and related aspects of consumer protection. Pre: biology. (Alt. years: spring only)

FSHN 445 Food Quality Control (3) Fundamental principles of quality control in the food industry: measurement of quality parameters, utilization and integration of the individual test procedures into grades and standards of quality, sampling, and reporting results.

FSHN 451 Community Nutrition (3) (2 Lec, 1 3-hr Lab) Concepts and methods of nutrition program planning; analysis of nutritional problems of local, national, and international communities. Pre: 370, and AREC 310 or FAMR 380; or consent.

FSHN 452 Concepts in Nutrition Education (3) (2 Lec, 1 2-hr Discussion) Concepts, methods, and materials used in nutrition education of community, clinical, and school populations. Strategies used to educate groups or individuals. Repeatable once. Pre: 451 or consent.

FSHN 467 Medical Nutrition Therapy I (V) Development of dietary, anthropometric and clinical lab assessment skills measuring nutritional status. Understanding pathophysiology of disease processes, medical terminology and nutritional intervention, utilizing case studies. Repeatable once. Pre: 486 or consent.

FSHN 468 Medical Nutrition Therapy II (3) Understanding of the pathophysiology of disease processes and nutritional intervention, using medical terminology and case studies. Repeatable once. Pre: 467 or consent.

FSHN 469 Nutrition Counseling Skills (1) Theory and practice in nutritional counseling. Pre: 452 (or concurrent) and 467 (or concurrent), or consent.

FSHN 475 Human Nutrition for Health Professionals (3) Basic principles and practices; includes sources and functions of nutrients, nutritional needs and habits. Intended for students in pre-nursing and nursing, and graduate students in health professions. Pre: two semesters of chemistry, and one semester of biology or zoology; or consent.

FSHN 476 Cultural Aspects of Food Habits (3) Study of eating from behavioral perspectives. Implications for health practitioners and health education. Pre: two semesters of anthropology, sociology, or psychology; and junior and senior standing. (Alt. years: spring)

FSHN 477 Food Analysis (2) Principles of sample preparation and chemical and physical analysis of food components using current methodology. Pre: 430, CHEM 162, CHEM 253, or ENBI 402; or consent. (Alt. years: spring)

FSHN 477L Food Analysis Lab (2) (2 3-hr Lab) Application of different chemical and physical methods for the identification and quantitation of food components. Co-requisite: 477. (Alt. years: spring)

FSHN 480 Nutrition in Exercise and Sport (3) Effects of physiologic demands of exercise on nutrition. Emphasis on physiologic and biochemical basis for nutrition recommendations to enhance exercise participation and optimize athletic performance. Pre: 185 and KLS 254, or consent. (Cross-listed as KLS 480)

FSHN 482 Current Topics in Food and Nutritional Sciences (1) Pre-professional seminar in food and nutritional sciences. Seminar provides a forum for the discussion of topics of current relevance to students preparing for a career in this field. Repeatable. CR/NC only.

FSHN 485 Nutritional Biochemistry I (3) Metabolism and biochemistry of carbohydrates, lipids, and proteins, including chemical structure, digestion, absorption, transport, cellular/molecular functions in human nutrition; integration of metabolic pathways; energy metabolism and balance, including relevance to chronic disease. Repeatable. Pre: either PHYS 142 and PHYS 142L or PHYS 302 and PHYS 302L, and ENBI 402 or BIOC 441; or consent.

FSHN 486 Nutritional Biochemistry II (3) Metabolism and biochemistry of vitamins, minerals, and dietary fiber, including chemical structure, digestion, absorption, transport, and cellular/molecular functions in human nutrition; relevance to establishing nutrient requirements and to mechanisms of chronic disease. Repeatable twice. Pre: FSHN 485 and either ANAT 301 or PHYL 301, and one of ENBI 402, BIOC 341, or BIOC 441; or consent.

FSHN 490 Field Practicum in Dietetics (4) Organized on-the-job learning experience supervised by coordinating instructor and on-site supervisor with weekly discussions. Repeatable once. A–F only. Pre: 468 (or concurrent) and 469 (or concurrent); senior standing; and consent.

FSHN 491 Topics in Food Science and Human Nutrition (V) Study and discussion of significant topics, problems. Offered by visiting faculty and/or for extension programs. Repeatable.

FSHN 492 Internship (4) Integration and application of academic knowledge and critical skills emphasizing professional development. Placement with an approved cooperating supervisor/employer. Pre: FSHN major and consent.

FSHN 499 Directed Reading and Research (V)

FSHN 500 Master's Plan B/C Studies (1)

FSHN 601 The Science of Food Systems (3) (2 Lec, 1 2-hr Discussion) Combined lecture-discussion course on food systems as they apply to food science and human nutrition. Repeatable once. Pre: graduate FSHN standing or consent.

FSHN 610 Advanced Food Processing Technology (3) Principles and applications of new methods of food preservation. Repeatable once. Pre: 401 and 403; or consent. (Cross-listed as BE 610)

FSHN 630 Advanced Food Chemistry (2) (1 Lec, 1 2-hr Discussion) Combined lecture-discussion course on the chemistry of selected functional components, e.g., vitamins, minerals, flavors and pigments. Repeatable once. Pre: 430 or ENBI 402; or consent.

FSHN 681 Seminar in Food and Nutritional Sciences (1) Student presentation of literature reviews and research. Repeatable. Pre: consent.

FSHN 682 Topics in Nutritional Sciences (1) Advanced topics in nutritional sciences, from basic to applied research, including current issues in nutrition and critical analysis of current research literature. Repeatable. Pre: consent.

FSHN 683 Nutrition Policy Analysis (2) The analysis of agricultural, economic, and social policies that affect food security and nutrition. Pre: AREC 310 and consent. (Alt. years: fall 97)

FSHN 685 Progress in Human Nutrition (4) (2 Lec, 2 2-hr Discussion) In-depth discussion of selected topics relating nutrition to human health ranging from molecular, cellular, clinical to epidemiological. Fundamental concepts and applications of nutrition. Pre: 485 and 486; statistics; or consent.

FSHN 687 Advanced Lab Techniques (3) (1 Lec, 2 3-hr Lab) Advanced laboratory techniques used in food science and human nutrition research. Pre: 477, or ENBI 402 and ENBI 402L, or BIOC 441 and BIOC 441L; or consent. (Cross-listed as ANSC 687 and ENBI 687) (Alt. years: spring)

FSHN 699 Directed Reading and Research (V)

FSHN 700 Thesis Research (V)

FSHN 701 Topics in Food Science (1) Advanced topics in food science and technology, from basic to applied research, including current issues in food science and technology and critical analysis of current research literature. Repeatable. Pre: consent.

FPCH

See Family Practice and Community Health

French (FR)

College of Languages, Linguistics and Literature

All courses are conducted in French.

FR 101 Elementary French (4) Conversation, laboratory drill, grammar, reading. HSL

FR 102 Elementary French (4) Continuation of 101. Pre: 101. HSL

FR 104 Accelerated Elementary French (3) Covers material of 101 at an accelerated pace. Designed for students having some prior exposure to French but in need of review before 102. Pre: consent.

FR 110 Immersion French–Elementary (8) Meets two hours daily, Monday–Friday. Work of 101 and 102 covered in one semester. HSL

FR 111 Introduction to French for TIM Majors (3) Basic grammar and vocabulary emphasized through conversation, reading, and

writing. Laboratory drill. Not applicable to language requirements of Arts and Sciences. Pre: TIM 101 or concurrent.

FR 112 Introduction to French for TIM Majors (3) Continuation of 111.

FR 201 Intermediate French (3) Reading, conversation, laboratory drill, composition. Pre: 102 or equivalent. HSL

FR 202 Intermediate French (3) Continuation of 201. Pre: 201. HSL

FR 210 Immersion French–Intermediate (6) Course content of 201–202 covered in one semester. Three two-hour sessions per week plus laboratory practice. Pre: 102. HSL

FR 258 Intermediate French Abroad (3) Intensive course of full-time formal instruction on the second-year level in French language and culture in a French-speaking country. Pre: 102 or equivalent. HSL

FR 259 Intermediate French Abroad (3) Continuation of 258. HSL

FR 260 Intensive Intermediate French Abroad (V) Intensive course of formal instruction on the second-year level in French language and culture in a French-speaking country. For semester programs only. Pre: 102. HSL

FR 301 French Phonetics (3) Analysis of phonological system; methods of teaching pronunciation; understanding various types of spontaneous speech. Drills in pronunciation, intonation, stress, and rhythm. Pre: 202 or consent.

FR 306 Structure of French (3) Structure of contemporary French as analyzed by descriptive linguists. Pre: 202.

FR 309 Business French (3) Reading and writing commercial materials. Pre: 202.

FR 311 Conversation (3) Systematic practice for control of spoken French. Further development of vocabulary for accurate, mature expression. Pre: 202.

FR 312 Composition (3) Emphasis on strengthening facility with language through further training in syntax, structure, and composition writing. Pre: 202.

FR 331 Survey of French Literature (3) Major authors and movements. Pre: 311 and 312; only one may be concurrent.

FR 332 Survey of French Literature (3) Continuation of 331. Pre: 311 and 312; only one may be concurrent.

FR 358 Third-Level French Abroad (3) Intensive course of full-time formal instruction on the third-year level in French language and culture in a French-speaking country. Pre: 202 or 259 or 260 or equivalent.

FR 359 Third-Level French Abroad (3) Continuation of 358.

FR 360 Intensive Third-Level French Abroad (V) Intensive course of formal instruction on the third-year level in French language and culture in a French-speaking country. For semester programs only. Pre: 202 or 260 or equivalent.

FR 361 Contemporary French Civilization (3) Survey of culture and institutions of modern France. Pre: 202.

FR 364 Survey of French Civilization (3) A historical survey of the development of French culture. The course is interdisciplinary, focusing on the relations between politics, literature, science, and the arts. Pre: 202 or consent.

FR 391 (Alpha) Topics in French Literature (3) (B) French film; (C) the Fantastic; (D) Francophone literature. Pre: 311 or 312, or consent. Repeatable with consent.

FR 405 Advanced Oral and Written Expression (3) Further development of listening, comprehension, speaking, and writing skills through viewing of French videotapes, reading French newspapers, frequent oral and written reports. Pre: 311 and 312, 306, or 358.

FR 406 French-English Translation Techniques (3) Practice in techniques based on contrastive linguistics. Translation of texts from various fields from French into English and the reverse. Pre: 306 or 309, and 312.

FR 408 Masterpieces of Medieval Literature (3) Samplings from epic, novel, verse and prose, tale, lyric poetry, chronicle, theater, didactic literature. Elementary readings in original text in editions giving modern French translation. Pre: 331.

FR 410 Masterpieces of 16th-Century Literature (3) Samplings from all major writers of the period. Readings in original text in editions giving modern French equivalents for difficult words. Pre: 331 or consent.

FR 411 Masterpieces of 17th-Century Literature (3) Principal works of major dramatists: Corneille, Moliere, Racine. Principal movements and major authors of non-dramatic prose and poetry. Pre: 331 or consent.

FR 413 Masterpieces of 18th-Century Literature (3) Pre: 332 or consent.

FR 417 19th Century French Prose and Poetry (3) Study of representative prose and poetry of the major trends of 19th century France: romanticism, realism, symbolism, aestheticism. Pre: 311, 312, 332 (332 may be taken concurrently with approval of the instructor).

FR 421 20th-Century French Theater (3) Major French playwrights and their works: Claudel, Giraudoux, Anouilh, Sartre, Camus, etc. Pre: 332 or consent.

FR 423 20th Century French Prose and Poetry (3) Study of representative prose and poetry of the major trends of 20th century France: modernism, surrealism, existentialism, postmodernism and multiculturalism. Pre: 311, 312, 332 (332 may be taken concurrently with approval of the instructor.)

FR 458 Fourth-Level French Abroad (3) Intensive course of full-time formal instruction on the fourth-year level in French linguistics, civilization, culture, and literature in a French-speaking country. Pre: 359 or 360 or equivalent.

FR 459 Fourth-Level French Abroad (3) Continuation of 458.

FR 460 Intensive Fourth-Level French Abroad (V) Intensive course of formal instruction on the fourth-year level in French language, culture and literature in a French-speaking country. For semester programs only. Pre: 360 or equivalent.

FR 491 Seminar in French Literature (3)
Study of authors, a period, or a topic. Repeatable. Pre: senior standing, Honors Program, or permission of division chair.

FR 506 French for Reading Proficiency (3)
Reading of scholarly and technical French for graduate students; open to undergraduates with consent of department chair. Not applicable to undergraduate language requirement. CR/NC only. Repeatable.

FR 601 Seminar in 20th-Century French Literature (3) Authors and movements of modern period.

FR 602 Seminar in French Poetry (3)
Representative poems from Renaissance to the present.

FR 609 French Renaissance (3) Poetry, theater, prose. Emphasis on Montaigne and Rabelais. Lectures, discussions, reports.

FR 620 Masterpieces of the 17th Century (3)
Dramatic or prose works of the classical period.

FR 651 Philosophic Currents in 18th Century (3) Philosophic movements and their impact on the social, political, and literary life of the period and the modern era.

FR 661 Stylistics (3) Designed to give mastery of structure and phrasing. Translation into French, discussion, composition.

FR 671 History of the French Language (3)
Origins and development of French language in its cultural context. Contrastive analysis.

FR 672 (Alpha) Seminar in Medieval Literature (3) Genesis and evolution of literary genres from the 12th to 15th centuries. (B) epic and romance; (C) drama and prose; (D) lyric poetry. Repeatable.

FR 681 Seminar: The Novel in France (3)
Novels which have influenced movements or established techniques. Repeatable with consent of chair of graduate field.

FR 690 The Theater in France (3) Historical development; major dramatists who have influenced movements or established techniques. Pre: 6 credit hours at 400 level.

FR 699 Directed Research (V) Pre: consent of department chair.

FR 735 Seminar in French Literature (3)
Study of authors or a period. Repeatable. Pre: consent of chair of graduate field.

FSHN

See *Food Science and Human Nutrition*

Geography (GEOG)

College of Social Sciences

A 100-level course, or consent of instructor, is prerequisite to all courses numbered over 299.

GEOG 101 The Natural Environment (3)
Survey of man's natural environment; distribution and interrelationships of climates, vegetation, soils, landforms. **NS2**

GEOG 101L The Natural Environment Lab (1) Analysis by use of maps, air photos, field and laboratory observation, and experimentation. Emphasis on Hawai'i and on human modification of environment. Pre: 101 (or concurrent). **NS2**

GEOG 102 World Regional Geography (3)
World's major cultural regions; geographic aspects of contemporary economic, social, political conditions. **SS**

GEOG 151 Geography and Contemporary Society (3) Elements of economic geography and resource management, population and urban geography; application to current problems of developed and underdeveloped worlds. **SS**

GEOG 300 Introduction to Climatology (3)
Elements and controls of climate. World patterns of insolation, temperature, evaporation, precipitation, atmospheric circulation. Climatic classifications. Pre: 101.

GEOG 301 Atmospheric Pollution (3)
Interdisciplinary approach: chemical, meteorological, health, economic, technological, control, and legal aspects; public awareness. Pre: 101, MET 101, or CHEM 151.

GEOG 303 General Geomorphology (3)
Introduction to geomorphological concepts, process mechanics, and relationships between forms and processes. Emphasis on various subdisciplines of geomorphology: coastal hillslopes, fluvial, aeolian, and glacial. Pre: 101 and 101L, or GG 101 and GG 101L.

GEOG 305 Water and Society (3) Interaction of people with water at household, community, regional, national, and international scales, from cultural, political, economic, and biophysical perspectives. Pre: 101 or environmental science or ecology course.

GEOG 309 Plants, People and Ecosystems (3) Introduction to ecosystem concept; environmental adaptations for energy and nutrient transfer; characteristics, dynamics, productivity, and distribution of principal vegetation communities. Human dominance. Pre: 101.

GEOG 312 Agriculture, Food and Society (3) Examines historical and contemporary development of the global agro-food systems. The impacts of technological, political and economic changes to food security, environment and development. Open to non-majors.

GEOG 314 Tropical Agrarian Systems (3)
Analysis of environmental potential and constraints and of spatial organization of economy and society of tropical agrarian systems. Emphasis on change through colonial and post-colonial periods.

GEOG 321 Regional Analysis (3) Spatial dynamics and environmental implications of urban and rural development. Concepts of regions, process of regional development, patterns of spatial interaction, and theoretical bases for development strategies; emphasis on Hawai'i. Pre: 102 or 151.

GEOG 324 Geography of Global Tourism (3)
Tourist landscape in relation to resources, spatial patterns of supply and demand, impacts of tourism development, and models of tourist space. Flows between major world regions. Pre: 102 or 151. (Cross-listed as TIM 324)

GEOG 325 World Resources and Economic Development (3) The pattern of world economic development. Agricultural resources and industries. Mineral resources, energy and metal industries. Manufacturing industries in development. The network of world trade, regional associations, and international economic aid.

GEOG 326 Environment, Resources and Society (3) Human interaction with the environment. Changes in concept of conservation. Ecological, philosophical, and political aspects of present environmental dilemmas. Problems in Hawai'i, U.S., and developing world.

GEOG 328 Culture and Environment (3)
Introduction to cultural geography, the cultural landscape, and built environment. A-F only. Pre: consent.

GEOG 330 Population Geography (3) Spatial view of human population; distribution, structure, and internal dynamics. Recent geographic approaches to population problems and processes.

GEOG 335 Political Geography (3) Political organization of area in the nation state; geographic background of international relations. Boundaries and disputed territories, exploitation of physical resources, evolving geography of the territorial sea and zones of exclusive economic interest.

GEOG 336 Geography of Peace and War (3)
Geographical factors underlying conflict in the world. Pre: 101, 102, or 151. **SS**

GEOG 340 Geography of North America (3)
Overview of the physical and cultural geography. Regions and characters. Patterns of population, natural resources, industry, agriculture, and transportation/communication networks. Pre: 101, 102, or 151.

GEOG 352 Geography of Japan (3) Regional synthesis of physical and cultural features; economic, social, political geography; origins and development of cities.

GEOG 353 Geography of China (3) Topics: environmental parameters and resource base, ecological control and resource management, institutional and technological transformation of agriculture, industrial potential and industrial location, settlement patterns and rural urban symbiosis.

GEOG 355 Geography of South Asia (3)
Introduction to physical and human geography of India, Bangladesh, Pakistan, Sri Lanka, Himalayan kingdoms. Environmental, economic, social, cultural, and political factors in development.

GEOG 356 Geography of Southeast Asia (3)
Southeast Asia in world economy. Human and physical resources; returns achieved by various methods of land use. National economies; problems and prospects of modernization.

GEOG 365 Geography of the Pacific (3)
Physical character of the Pacific; cultural, political, economic geography of Melanesia, Micronesia, Polynesia (except Hawai'i).

GEOG 366 Geography of Honolulu (3)
Development of Honolulu and O'ahu from 1778. Evolution of function, land use, and

social patterns. Contemporary planning and environmental issues arising from urban growth.

GEOG 368 Geography of Hawai'i (3)

Regional, physical, cultural geography. Detailed study of people and resources.

GEOG 370 Map and Aerial Photo Interpretation (3) (2 Lec, 1 3-hr Lab)

Introduction to sources, analysis, interpretation, and application of maps and aerial photographic images. Topographic maps, thematic maps, aerial photographs, satellite images, field use. For nonmajors. Pre: a 100-level geography course or GG 100, or consent.

GEOG 375 Introduction to Cartography and Air Photo (3) (2 Lec, 1 3-hr Lab)

Principles of cartography: compilation and measurement from aerial photographs, alternate forms of data presentation, symbolism, design, and map projection.

GEOG 380 Analytical Methods in Geography I (3)

Analytical problems of and mathematical methods for describing and interpreting geographic phenomena: measurement and scaling; dimensional analysis; structural/relational models; spatial sampling and statistics; matrix methods. Pre: 101 and 151 (or concurrent).

GEOG 385 Research Methods in Human Geography (3)

Introduction to the methodologies and practice of research in human geography. Combines lectures, workshops, and assignments. Students will conduct and report upon their own research. Pre: 151.

GEOG 387 Computer-Assisted Cartography (3)

Display techniques for statistical and terrain data using software packages. Graphic-to-digital-data conversion. Cartographic data structures and processing algorithms. Stresses map design. Pre: 380 or consent.

GEOG 390 Tutorial in Geography (3)

Concepts and methods in geographic analysis. Application to local problems through short field trips. Research on topics of special interest. Required of majors in junior year.

GEOG 399 Directed Reading (V) Limited to senior majors with a minimum cumulative GPA of 2.7 or a minimum GPA of 3.0 in geography.

GEOG 400 Vegetation and the Climate System (3)

Role of vegetation in the climate system; links to hydrology and biogeochemical cycling; vegetation and climate history; evolution of terrestrial ecosystems; effects of global warming. Pre: 300 or consent.

GEOG 401 Climate Change (3) Approaches to the study of past and future climate change. Pre: 300.

GEOG 402 Agricultural Climatology (3)

Analyzing climatic data; relation to photosynthesis, phenological development, and crop yields. Crop-weather models as guides to improved land-use planning and agronomic practices. Pre: 300 and 312, or BOT 101 and MET 101; or consent.

GEOG 403 Fluvial Geomorphology (3)

Introduction to the single most important geomorphic agent shaping the terrestrial environment. Focus on fluvial process, fluvial dynamics, fluvial landforms, and sediment transport. Pre: 303 or GG 306

GEOG 404 Drainage Basin Geomorphology (3)

The drainage basin as the fundamental unit in geomorphology. This provides the basic framework for studying the hillslope system, soil system, and fluvial system. Pre: 303 or GG 306.

GEOG 405 Water in the Environment (3)

Water fluxes in the environment. Occurrence and movement of water; methods of quantification. Water balance of soil-plant system: precipitation, interception, infiltration, runoff, soil moisture, evapotranspiration, and ground-water recharge. Pre: 101 or MET 101.

GEOG 409 Cultural Biogeography (3)

Coevolution of human societies and plants over the last 10,000 years. Foraging, farming and urban societies economies; spread and modification of selected plants; issues of preservation of genetic resources and traditional plant knowledge. The form and function of gardens. A-F only. Pre: 101.

GEOG 410 Human Role in Environmental Change (3)

Human impacts through time on vegetation, animals, landforms, soils, climate, and atmosphere. Special reference to Asian/Pacific region. Implications of long-term environmental change for human habitability. Pre: one of 101, BIOL 123, or BIOL 124 and either 326 or BIOL 310; or consent. (Cross-listed as BIOL 410)

GEOG 411 Human Dimensions of Global Environmental Change (3)

Past, present, and potential future effects of global environmental change upon humanity; anthropogenic causes and catalysts; past, current, and potential human responses and policy options. Pre: 101 or consent.

GEOG 412 Environmental Impact Assessment (3)

Theory and practice. Critique and writing of environmental impact statements. Field study of local projects. Pre: upper division standing in environmental discipline.

GEOG 415 Geography of Health and Disease (3)

Principles, methods, and research design of medical geography. Analysis of place as applied to questions of health and disease. Overview of global health issues. Pre: 380 or consent. (Cross-listed as PH 415)

GEOG 420 Hazardous Materials (3)

Introduction to state and federal environmental regulations relative to hazardous substances. Analysis of specific health and environmental impacts of hazardous waste. Pre: CHEM 151 (or concurrent) or consent. (Cross-listed as ENBI 420 and NURS 430)

GEOG 421 Urban Geography (3)

Origins, functions, and internal structure of cities. Problems of urban settlement, growth, decay, adaptation, and planning in different cultural and historical settings. Dynamics of urban land use and role of policies and perceptions in shaping towns and cities. Pre: 102 or 151.

GEOG 425 The Geography of Film (3)

Landscapes of film. How movies work by conveying a sense of space and a sense of place. Genres and landscapes. Pre: 151 or 328.

GEOG 435 Political Geography of Oceans (3)

The oceans' evolution and relation to problems of economic development, resources, seapower, shipping, trade. Pre: 335 or consent.

GEOG 445 Decision-Making in Geography (3)

Optimization under constraints, using linear, integer, and multi-objective programming. Applications to geography, planning, and resource management for problem solving, research, and theory development. Pre: junior standing.

GEOG 453 Geography of China's Modernization (3)

Applies geographic principles and approaches to explore the rapid transformation of the spatial structure of recent socio-economic development in China. Special emphasis given to resource management and environmental quality, which are important factors in sustainable development. Course is designed to explore China's role in the world economy of the 21st century and to meet the needs of students majoring in business administration, international trade, economics, political science and Asian studies. Pre: 102 or consent.

GEOG 455 Resource Management (3) (2 Lec, 1 3-hr Lab)

Hands-on development of analytical models for application to problems of water resource, coastal fisheries, agroforestry, and/or land management. Focus on problems facing Hawai'i and the Pacific. Pre: 101, 445 or AREC 410 (or equivalent), and SOCS 225 (or equivalent); or consent. May be taken concurrently with 445 or AREC 410.

GEOG 468 (Alpha) Topics in Hawaiian Geography (3)

Selected topics in the geography of Hawai'i. Repeatable. Pre: 368.

GEOG 470 Remote Sensing (3) (2 Lec, 1 3-hr Lab)

Air photo interpretation, application in natural and social science research, electromagnetic spectrum, exotic sensors, satellite imagery interpretation. Research project, lab. Pre: 375 or consent.

GEOG 472 Field Mapping (3)

Techniques for field measurement and recording of cultural and physical data. Field sketching, Brunton surveying, plane table mapping, oblique photo compilation, topographic mapping, and representation of field data. Pre: 375.

GEOG 475 Cartographic Illustration (3) (3 2-hr Lab)

Tools and methods for preparation of cartographic materials for illustration and publication; drafting and reproduction. Pre: 375 (or concurrent) or consent.

GEOG 476 Advanced Cartography (3) (3 2-hr Lab)

Special topics: computer mapping, relief representation, map reproduction methods, use of color, analytic map interpretation, experimental cartography. Pre: 375 and 475, or consent.

GEOG 480 Advanced Quantitative Methods in Geography (3)

Multivariate analysis, factor analysis, and analysis of variance, dummy variables, canonical correlation analysis; application to geographic research. Pre: 380 or consent.

GEOG 487 Advanced Computer-Assisted Cartography (3)

Concepts underlying computer programming for cartographic applications. Pre: 375 and FORTRAN programming ability, or consent.

GEOG 488 Geographic Information Systems (3)

Design, implementation, and use. Database construction and documentation. Techniques for spatial data manipulation and display. Evaluation of existing systems. Student research projects. Pre: 375.

GEOG 490 Senior Thesis (3) Preparation of research paper under individual faculty supervision. Recommended for admission to graduate program. Pre: 390.

GEOG 491 Teaching Geography (6) For geography majors who lead, under supervision, a freshman seminar section of geography. Pre: senior standing and consent.

GEOG 492 Practicum in Geography (V) Internship in applied geography under professional and faculty supervision. Field placement integrated with academic study. Repeatable to 6 credit hours maximum. Pre: senior major and consent.

GEOG 600 Seminar in Climatology (3) Methods of determining energy budget and water balance; applications in agriculture, hydrology, climatic classifications. Theory of climatic change. Bibliography. Pre: 300 or consent.

GEOG 618 Human Environment Systems (3) Role and potential of systems science in analysis of human environment interaction, especially resource management. Framework and methodology for problem structuring; overview of techniques. Pre: graduate standing or advanced undergraduate standing with consent.

GEOG 628 (Alpha) Resource Systems (3) Resource development and use in a time perspective. Ecological and socioeconomic impacts, concepts, definitions, and methodology. (B) renewable; (C) nonrenewable. Pre: consent.

GEOG 631 Urban and Regional Planning in Asia (3) Key issues and policies in urban planning, rural-urban relations, rural regional planning, and frontier settlement in Asia and the Pacific. Repeatable. Pre: PLAN 600 or consent. (Cross-listed as PLAN 630)

GEOG 632 Field Study of Population (3) Concepts and techniques in field study of nonliterate (tribal and peasant) populations. For graduate students in social sciences planning field research that involves taking census. Pre: consent. (Cross-listed as ANTH 632)

GEOG 633 International Political Economy and Urban Policy (3) Urbanization and urban policy in Asia and the Pacific region with focus on the international dimension of national and local restructuring. Pre: PLAN 630 or consent. (Cross-listed as PLAN 633)

GEOG 635 Economic Analysis for Urban and Regional Planning (3) Reviews and builds skills in applying basic theories and principles of urban and regional economics in contemporary U.S., Hawai'i, and Asia-Pacific. Repeatable. Pre: consent. Fall only. (Cross-listed as PLAN 603)

GEOG 637 Environment and Development (3) Theories and practice of development; how changing development paradigms shape different ideas concerning the environment and the management of natural resources; emerging debates in development and environment in post-modern era. (Cross-listed as PLAN 637)

GEOG 638 China's Economic and Regional Development (3) A review of contemporary China's economic and regional development, examining the changing plans, policies and performances in the Socialist Development and Market Transition eras, and the implications on spatial patterns. Pre: 353 or PLAN 630; or consent. (Cross-listed as PLAN 638)

GEOG 639 Planning for Rural Development (3) Rural development theories and policies. Planning and spatial aspect of Asian and Pacific development: integrated development, agropolitan development and rural industrialization. Pre: PLAN 630 or consent. (Cross-listed as PLAN 639)

GEOG 651 Seminar in Geography of China (3) Repeatable. Pre: consent.

GEOG 652 Contemporary Japan Seminar (3) Selected physical and human features that represent economic, social, and political life of modern Japan. Repeatable. Pre: consent. (Cross-listed as ASAN 652)

GEOG 653 Seminar in Geography of South Asia (3) Repeatable. Pre: consent.

GEOG 654 Seminar in Geography of Southeast Asia (3) Repeatable. Pre: consent.

GEOG 665 Seminar in Geography of the Pacific (3) Investigation of geographic problems of Melanesia, Micronesia, Polynesia. Repeatable. Pre: consent.

GEOG 691 History of Geographic Thought (3) Development from early Greece to present. Origins of current trends and relations to contemporary thought in natural and social sciences.

GEOG 692 Faculty Seminar Series (1) Graduate seminar required of all MA students and recommended for PhD students. Single credit course in which faculty present ongoing research in their fields. Pre: consent. Co-requisite: 695.

GEOG 693 Technology and Natural Risks Methods of Analysis (3) Survey of tools for evaluating risks to human health from technological and natural hazards. Historical and international context of methods. Pre: consent.

GEOG 695 Concepts and Theories in Geography (3) Concepts, theory, models. Geographic approaches to spatial and environmental problems. Required of entering graduate students unless waived by department. Pre: consent.

GEOG 696 Research Design/Methods in Geography (3) Elements of research design, practical field experience, exposure to research and ideologies, broad exposure to heritage and ethos of the discipline. Pre: 695.

GEOG 699 Directed Research (V) CR/NC only. Pre: consent.

GEOG 700 Thesis Research (V)

GEOG 703 Geomorphology (3) Current understanding of geomorphological concepts, processes, and the dynamic relationship between human landscape modification and system response. Pre: one of 303, 403, or 404; or consent.

GEOG 710 (Alpha) Special Topics (3) Study and discussion of significant topics, problems. Repeatable.

GEOG 728 Seminar: Resource Management in Asia-Pacific (3) Examination of resource management problems in Asia and the Pacific. Problems of resource use—agriculture, forestry, energy, minerals, ocean, air quality. Pre: AREC 458 or ECON 458, or consent.

GEOG 750 Research Seminar: Biogeography (3)

GEOG 752 Research Seminar: Resource Management (3)

GEOG 753 Research Seminar: Population Geography (3)

GEOG 755 Research Seminar: Urban Geography (3)

GEOG 756 Research Seminar: Aspects of Development (3)

GEOG 757 Research Seminar: Cultural Geography (3)

GEOG 758 Research Seminar: Conservation (3)

GEOG 761 Research Seminar: Cartography (3)

GEOG 762 Research Seminar: Remote Sensing (3)

GEOG 763 Research Seminar: Agricultural Geography (3)

GEOG 764 Research Seminar: Social Geography (3)

GEOG 765 Research Seminar: Marine Geography (3)

GEOG 766 Society and Space (3) Advanced seminar on social production of space. Topics include spatial metaphor in social theory; western spatiality from the renaissance through the enlightenment, modernity and post modernity; and geography of the body, home, landscape, and nation. Pre: Graduate standing or consent.

GEOG 800 Dissertation Research (V)

Geology and Geophysics (GG)

School of Ocean and Earth Science and Technology

GG 101 Dynamic Earth (3) The natural physical environment; the landscape; rocks and minerals, rivers and oceans; volcanism, earthquakes, and other processes inside the earth; effects of human use of the Earth and its resources. Field trip. **NS2**

GG 101L Dynamic Earth Lab (1) Study of minerals, rocks, and topographic and geologic maps. Field trip. Pre: one of 101, 103, 108, or 166 (or concurrent). **NS2**

GG 103 Geology of the Hawaiian Islands (3) Hawaiian geology and geologic processes: origin of Hawaiian islands, volcanism, rocks and minerals, landforms, stream and coastal processes, landslides, earthquakes and tsunamis, groundwater, geologic and environmental hazards. Field trip. **NS2**

GG 104 Volcanoes in the Sea (4) Hawaiian geology and geologic processes: origin of Hawaiian islands, volcanism, rocks and minerals, landforms, stream and coastal processes, landslides, earthquakes and tsunamis, groundwater, geologic and environmental hazards. Frequent required field trips. Credit not given for both 103 and 104.

GG 105 Voyage through the Solar System (3) An illustrated voyage through the solar system. The origin, evolution, and present state of the sun and each planet based on recent results. **NS2**

GG 108 Controversial Topics in Geology and Geophysics (3) Earth-science topics of current societal impact or intellectual implications. Students will select three from a list of six topics, such as volcanoes, climate, solar system, plate tectonics, evolution and extinction, and water. Each topic will be considered in a mini-course module five weeks in length. **NS2**

GG 168 Planetary Science in the Classroom (4) (2 3-hr Lec/Lab) Combined lecture-lab course for pre-service and in-service teachers. Covers basics of planetary geology (volcanism, impact cratering, remote sensing, etc.) through inquiry-based, hands-on laboratory activities suitable for use in K-12 classrooms. Field trip.

GG 200 Geological Inquiry (4) (3 Lec, 1 3-hr Lab) Principal contributions of Earth science to Western culture: origin and age of the solar system and Earth, interior of Earth; records of organic evolution and past environments; predictable process and structure. Pre: 101L, or concurrent; or consent.

GG 300 Volcanology (3) Principles; understanding eruptions and their products; impact on humans. Field trips to Hawaiian volcanoes. Pre: 200 or consent.

GG 301 Mineralogy (4) (2 Lec, 1 3-hr Lab) Crystallography, crystal chemistry, phase equilibria, and crystal structures. Also covers mineral optics and identification and includes an introduction to modern methods of mineralogy and crystallography. Pre: 200, CHEM 162 and CHEM 162L or CHEM 171 and CHEM 171L; or consent.

GG 302 Igneous and Metamorphic Petrology (3) (2 Lec, 1 3-hr Lab) Survey of composition, classification, and occurrence of igneous and metamorphic rocks. Hand-specimen identification and optical petrography of igneous and metamorphic rocks. A-F only. Pre: 301 or consent. Spring only.

GG 303 Structural Geology (3) (2 Lec, 1 3-hr Lab) Geometry, kinematics, and mechanics of geologic structures; introduction to geologic maps and cross sections. Pre: 200 and MATH 241 and PHYS 151 or PHYS 170; or consent.

GG 304 Physics of Earth and Planets (4) Survey of terrestrial geophysics: formation, orbits, shapes of planets. Gravity, tides, isostasy. Earthquakes, seismology, Earth's interior. Geomagnetism. Plate tectonics. Pre: 303, PHYS 152L or PHYS 272L, MATH 241; or consent.

GG 305 Geological Field Methods (3) Methods used in geological investigations in the field. Eight hours on Saturday in the field. Pre: 301, 303, and 308. Recommended: 302 and 309.

GG 308 Earth History (3) (2 Lec, 1 3-hr Lab) Physical, chemical, and biological evolution of Earth from its formation to modern times. Fossils applied to dating, stratigraphic correlation, and paleoenvironmental interpretation. Pre: 200 or consent. Fall only.

GG 309 Sedimentology and Stratigraphy (4) (3 Lec, 1 3-hr Lab) Principles of sedimentology, sedimentary petrology, geochemistry and stratigraphy. Description and discussion of modern and past processes and environments that form sedimentary rocks, properties of sedimentary rocks and interpretation of these properties and stratigraphic relationships in

terms of Earth history. Repeatable one time. Pre: 301 and 308; or consent. Spring only.

GG 312 Geomathematics (3) Mathematical methods of geologic and geophysical science. Emphasis on application to earth-science problems using linear algebra, vector calculus, partial differential equations, and numerical solutions. Pre: MATH 242 or consent. (Cross-listed as OCN 312)

GG 313 Geological Data Analysis I (3) Exploratory data analysis, probability theory and statistics, curve interpolation and approximation, simple and multiple regression, multivariate analysis, and analysis of directional data. Pre: MATH 242 (or concurrent) or consent.

GG 325 Fundamentals of Geochemistry (3) Lecture course on theory and applications of geochemistry and environmental chemistry to Earth and ocean sciences. Topics: Chemistry of Hydrosphere-Geosphere-Biosphere system, origin/differentiation of Earth/Solar System. Pre: 200, MATH 241, CHEM 162 (or concurrent); or consent. Fall only.

GG 399 Directed Reading (V) Individual reading in geology and geophysics. Pre: consent.

GG 401 Introduction to Mineral Physics (3) Scientific study of the materials that make up the Earth. Properties of minerals on micro- and macro-scales; their properties and behavior. Pre: 302 and PHYS 272, or consent. (Alt. years)

GG 402 Hawaiian Geology (3) Consists of lectures, discussions, and field trips about the geology of the Hawaiian islands. Focus on geological processes and the geologic history of all islands will be covered. Pre: 302 and 303; or consent.

GG 407 Energy and Mineral Resources (3) Origin and distribution of ore deposits, mineral fuels, and industrial minerals. Coverage and detail will depend partly on student interest and background. Pre: 301 and 303; or consent.

GG 410 Undergraduate Seminar (1) Seminar format, examination of current research topics and methodologies in the field of Geology and Geophysics. Pre: 101 and 200.

GG 420 Quaternary Geology (3) Quaternary records and physical processes of global and local environmental change; dating techniques; late Pleistocene and Holocene climate change, sea-level movements, and ice volume. Repeatable one time. Pre: 309 or consent.

GG 423 Marine Geology (3) Sediments, structure, geophysics, geochemistry, history of ocean basins and margins. Pre: 302 and 308; or consent. (Cross-listed as OCN 423)

GG 425 Environmental Geochemistry (3) Lecture course on theory and applications of geochemistry to contaminant/pollutant distribution in the Hydrosphere-Geosphere-Biosphere system. Topics include aqueous geochemistry, thermodynamics, kinetics, organic and isotope chemistry of environmental contaminants. Pre: 325 or consent. Fall only.

GG 426 Sedimentary Isotope Geochemistry (3) Stable-isotope techniques applied to questions of origin and diagenesis of sedimentary minerals, paleoclimates, environmental geochemistry, organic material, and petroleum. Pre: 325 and consent. (Alt. years)

GG 430 Geology and Mineral Resources of Asia (3) Geologic setting of ore, industrial mineral, and fuel deposits of Asia, its adjacent islands, and shallow seas. Probability of future discoveries in major provinces. Pre: 101, 103, or consent. (Alt. years)

GG 444 Plate Tectonics (3) (2 Lec, 1 3-hr Lab) Quantitative geometrical analysis techniques of plate tectonic theory; instantaneous and finite-rotation poles; triple-junction analysis; plate-boundary stresses as per OCN 444. Pre: 200 or consent. (Cross-listed as OCN 444) (Alt. years)

GG 450 Geophysical Methods (4) Basic geophysical theories, exploration, and interpretation. Seismic reflection and refraction, gravity, and electromagnetics. Constraints on models of Earth's internal structure and composition. Pre: 304 and 312, or consent.

GG 451 Earthquakes (3) Earthquake seismology. Elastic properties of rocks, earthquake waves, causes, detection, location, and prediction of earthquakes; tsunami generation and other effects of earthquakes. Pre: 304 or consent. (Alt. years)

GG 454 Engineering Geology (3) Recognition, characterization, evaluation, and assessment of geologic conditions and processes (earthquakes, landslides, wave action, ground subsidence) that impact people, engineering structures, and engineering operations. Group project format. Pre: junior and/or senior standing in CE or GG, or consent.

GG 455 Hydrogeology (4) (3 Lec, 1 3-hr Lab) Occurrence, characteristics, movement, quality, development, and contamination of water in the Earth's crust. Pre: MATH 242 or consent.

GG 460 Geological Remote Sensing (4) (3 Lec, 1 3-hr Lab) Combined lecture-lab course on the concepts behind, geologic uses for, and techniques of satellite and airborne remote sensing. Lab work will consist of computer image processing. Field trips. Open to non-majors. Pre: 101 and MATH 241 (or concurrent), or consent. Spring only.

GG 466 Planetary Geology (3) Comparative geology of the terrestrial planets (moon, Mars, Mercury, Venus, and Earth); impact cratering, volcanism, tectonism, geomorphology, weathering; manned and unmanned space exploration. Pre: any 100-level GG course.

GG 491 Teaching Geology (4) For GG majors who lead, under supervision, a freshman seminar section of GG 101. Credit not applicable to major. Pre: 302, 303, and 309.

GG 499 Undergraduate Thesis (3) Directed research course in which the student carries out a scientific project of small to moderate scope with one or more chosen advisers. The student must complete a document in the style of a scientific journal article. Pre: consent.

GG 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

GG 593 Earth and Planetary Sciences Workshops (V) Designed for in-service school professionals to learn new approaches and concepts in the fields of earth and planetary sciences. Repeatable for credit. Credits earned in these courses cannot be applied for graduate degrees.

GG 600 Equations of Geophysics (3) Least-square approximation of functions by orthogonal series; potential, wave heat flow equations; boundary value problems; Bessel Hankel functions, spherical harmonics, potential theory, plane waves, spherical waves; emphasis on geophysics application. Pre: MATH 244, PHYS 400, or consent.

GG 601 Seminar in Volcanology (2) Types and mechanisms of volcanic action; characteristics of products; sub-volcanic intrusions; distribution in time and space; hazard assessment; and eruption production. Repeatable. Pre: 302 or consent.

GG 602 Theoretical Petrology (4) Derivation of phase diagrams from basic thermodynamics principles. Equilibria of natural silicate systems. Crystal chemistry, kinetics, diffusion, etc., Applied to igneous and metamorphic petrology. Pre: 302, 325, and CHEM 351 (or concurrent); or consent. (Alt. years)

GG 603 Petrology of Ocean Lithosphere (3) (2 Lec, 1 3-hr Lab) Petrogenesis of the oceanic lithosphere, including mantle processes and rocks from mid-ocean ridges, seamounts, oceanic hotspots, back-arc basins, and intra-oceanic arcs. Pre: 302 or consent. (Alt. years)

GG 605 Groundwater/Engineering Geology (2) Selected topics. Repeatable. Pre: consent.

GG 606 Current Events in Volcanology (1) Discussion of active areas of volcanism and new publications on volcanology. CR/NC only. Pre: 300 (or concurrent) or consent. Fall only.

GG 608 Isotopes and Trace Elements (3) Principles of radiogenic and stable isotope, and trace element geochemistry as applied to igneous petrology, mantle dynamics, plate tectonics, and terrestrial evolution. Pre: 302 and 325. (Alt. years)

GG 610 Graduate Seminar (1) Seminar course in which students present a 15- to 20-minute talk on their research or a related topic. Meets once a week with two to three talks per meeting. Graduate students are required to register for this course once per year. Repeatable.

GG 611 Accelerated Introduction to Geology I (3) Lecture course presenting a rapid-paced survey of geology and geophysics for graduate students. Includes origin of the solar system, tectonics, volcanology, whole-earth composition, phase transformations, petrology (igneous, metamorphic, and sedimentary), historical geology, and hydrology. Saturday field trips. Fall only.

GG 612 Accelerated Introduction to Geology II (3) Lecture course presenting a rapid-paced survey of geology and geophysics for graduate students. Includes Earth structure, rheology, seismology, dynamics, origin of continents, global change, energy sources, environmental geology, and natural hazards. Saturday field trips. Spring only.

GG 614 Advanced Field Study (V) Shipboard and land-based projects. Repeatable. Pre: consent.

GG 615 Micropaleontology (3) (2 Lec, 1 3-hr Lab) Taxonomy and identification of microfossils and their recent representatives. Use in determining age, paleoecology, provenance of sedimentary rocks. Pre: 308 or consent.

GG 621 Electron Microprobe Analysis (2) Combined lecture-lab course on the principles of geochemical analysis by electron microprobe and X-ray fluorescence. Hands-on experience with the electron microprobe. Required to operate the UH electron microprobe. Pre: 301 or consent.

GG 625 Seminar in Marine Geology and Geophysics (V) Current research topics. Repeatable. Pre: 423 or OCN 622, or consent.

GG 632 (Alpha) Numerical Modeling in Geology (3) Finite difference, finite element, and various other modeling techniques applied to geological and geophysical problems. (B) physical modeling; (C) recursive and time series modeling. Pre: MATH 243 and consent.

GG 638 Earth System Science and Global Change (3) Global view of the planet and how it functions as an integrated unit. Biogeochemical processes, dynamics, and cycles, and analysis of natural and human-induced environmental change. Chemical history of ocean-atmospheric-sediment system and co-evolution of the biota. Repeatable once. Pre: BS in environmentally related science or one year of chemistry, physics, and calculus; or consent. (Cross-listed as OCN 638)

GG 641 Origin of Sedimentary Rocks (3) (2 Lec, 1 3-hr Lab) Environment of deposition and subsequent diagenesis of modern and ancient sediments. Petrogenesis of siliciclastic, carbonate and orthochemical rocks. Sedimentology, sedimentary petrography and geochemistry. Repeatable. Pre: consent. (Cross-listed as OCN 641)

GG 642 Elemental Composition Changes (2) Changes in the chemical composition of meteorites, bulk Earth, Earth's mantle and crust, sedimentary rocks, hydrosphere and biosphere, and underlying principles. Pre: 325 or OCN 623. (Cross-listed as OCN 642) (Alt. years)

GG 644 Sedimentary Geochemistry (3) Geochemical thermodynamics and kinetics and their use in interpreting the origin of sediments, sedimentary rocks, and natural waters over a range of pressure-temperature conditions. Pre: CHEM 171, or CHEM 161 and CHEM 162; PHYS 152; and MATH 242; and consent. (Cross-listed as OCN 644) (Alt. years)

GG 650 Seismology (3) Elasticity, wave equations, body waves, surface waves, free oscillations, seismometry, seismogram interpretation, tectonics, inversion, source theory, and waveform modeling. Pre: 600.

GG 651 Geomagnetism and Cosmic Magnetism (3) Magnetic fields of Earth, planets, stars, and galaxies; dynamo theories; paleomagnetism; terrestrial and lunar rock magnetism; planetary, regional, and local geomagnetic sounding. Pre: consent. (Alt. years)

GG 652 Gravity, Magnetism, Heat Flow (3) Uses of selected potential field and electromagnetic methods in tectonics or in exploration. Processing and interpretation techniques; modeling and inversion. Pre: consent. (Alt. years)

GG 653 Mantle Mineralogy (3) Basic principles of thermodynamics, crystal chemistry, and phase transformation, with emphasis on their relevance to minerals under high pressure/temperature; survey of modern technologies on

high pressure research, and evaluation of the proposed mineralogical models for the Earth's mantle. Pre: consent.

GG 654 Groundwater Contamination (3) Principles of groundwater chemistry; chemical evolution in natural groundwater flow systems; sources of contamination; mass transport processes; hydrochemical behavior of contaminants. Pre: 455.

GG 655 Groundwater Modeling (3) Introduction to the finite-difference method; steady-state and transient groundwater flow in saturated and unsaturated media; applications to groundwater recharge and aquifer evaluation. A-F only. Pre: CE 627 or consent. Fall only. (Cross-listed as CE 623)

GG 656 Transport Modeling (3) Introduction to the finite-element method; transport of mass and heat in groundwater flow systems; applications to groundwater contamination. A-F only. Pre: CE 623 and CE 627; or consent. Spring only. (Cross-listed as CE 624) (Alt. years)

GG 665 Current Readings in Planetary Science (1) Review of current literature and research in planetary sciences; active student participation required. Repeatable. Pre: consent.

GG 666 Planetary Surfaces (3) Comparative geology of terrestrial planets (moon, Mars, Mercury, Venus, and Earth); impact cratering, volcanism, geomorphology; remote sensing; manned and unmanned space exploration. Pre: 601, ASTR 630, or consent. (Alt. years)

GG 667 Planetary Atmospheres: Origin and Evolution (3) Atmospheres of terrestrial and Jovian planets. Emphasis on physical and chemical processes. Pre: consent.

GG 669 Formation of the Solar System (3) Nucleosynthesis; collapse of interstellar clouds, accretion of planets, meteorites, asteroids, comets as probes of the early solar system; cosmochemical processes; equilibrium condensation; isotopic anomalies; other solar systems. Pre: 325, ASTR 630, or consent. (Alt. years)

GG 670 (Alpha) Geology of Planetary Bodies (3) Composition and geologic evolution of the planets and their moons; impact cratering; volcanism; tectonism; remote sensing; manned and unmanned exploration and future missions. (B) the moon; (C) Mars. Pre: 666 or consent.

GG 671 (Alpha) Remote Sensing (3) Spectroscopic, radar, thermal, and other methods for remote sensing applied to geologic problems; instrumental design and data analysis. (B) planets; (C) volcanoes. Pre: 666 or consent.

GG 672 Seminar in Tectonics (3) Evolution of ocean basins, margins, foldbelts, and platforms, from plate tectonics and regional syntheses of structure, petrology, geophysics, and stratigraphy. Repeatable. Pre: consent. (Cross-listed as OCN 672) (Alt. years)

GG 673 (Alpha) Extraterrestrial Material (3) Mineralogical and compositional characteristics of extraterrestrial matter and the implications for the origin and history of the solar system. The subject is treated in two full-semester courses: (B) meteorites; (C) petrologic evolution of the moon. Pre: consent.

GG 674 Paleooceanography (V) Study of the paleoceanographic and paleoclimate evolution of the Earth's oceans, atmosphere and biosphere. Repeatable. Pre: consent. (Cross-listed as OCN 674)

GG 675 The Generic Mapping Tools (3) Introduction to the Generic Mapping Tools (GMT). Processing of scientific data and the automated preparation of maps and illustrations using GMT on UNIX workstations, with introduction to UNIX and the C shell environment. CR/NC only.

GG 681 Continuum Mechanics (3) Continuum mechanics in geophysics, planetary physics, and structural geology. Tensors; stress, strain, flow; conservation of mass, momentum, and energy; rheology; geophysical fluid dynamics. Pre: PHYS 400, MATH 402, or consent.

GG 685 Geophysical Inverse Theory (3) Least squares, the generalized inverse, singular value decomposition, maximum likelihood, Backus-Gilbert, Franklin, and Tarantola methods; applications. Pre: 600 or consent. (Alt. years)

GG 691 Geological Data Analysis II (3) Analysis of sequential data, Markov processes, series of events, spectral analysis, filtering, quantitative map analysis, and introduction to fractals. Pre: 313 and MATH 241, or consent.

GG 699 Directed Research (V) CR/NC only. Pre: consent.

GG 700 Thesis Research (V)

GG 701 Physics of the Earth's Interior (3) Interpretation of geophysical and laboratory data to understand elastic and anelastic properties, composition, phase relationships, temperature distribution in the Earth. Pre: 653 or consent. (Alt. years)

GG 710 Selected Topics in Geology and Geophysics (2) Content to be announced. Repeatable. Pre: consent.

GG 711 Special Topics in Geology and Geophysics (3) Content to be announced. Repeatable. Pre: consent.

GG 733 Seminar in Igneous Petrology (2) Current research on the generation, differentiation, and emplacement of magmas. Pre: 603 and consent. (Alt. years)

GG 734 Seminar in Metamorphic Petrology (2) Current research on the application of phase diagrams to metamorphism. Relation to metamorphism with tectonic setting. Pre: 602. (Alt. years)

GG 735 Seminar in Geochemistry I (2) Selected topics of current geochemical research; application to geologic problems. Pre: 302 and 325, or consent. (Alt. years)

GG 800 Dissertation Research (V)

German (GER)

College of Languages, Linguistics and Literature

All courses are conducted in German.

GER 101 Elementary German (3) Conversation, grammar and reading. **HSL**

GER 101A Elementary German (3) Conversation, grammar and reading. **HSL**

GER 102 Elementary German (3) Conversation, grammar and reading. Pre: 101 **HSL**

GER 102A Elementary German (3) Conversation, grammar and reading. Pre: 101. **HSL**

GER 201 Intermediate German (3) Conversation, grammar, reading and writing. Pre: 102. **HSL**

GER 202 Intermediate German (3) Conversation, grammar, reading and writing. Pre: 201. **HSL**

GER 204 Intermediate German: Business and Related Fields (3) Intermediate German conversation, reading, and writing with a special emphasis on the vocabulary and cultural context of the German business world. Pre: 201. **HSL**

GER 211 Intermediate German: Scholarly Readings (3) General and individual practice in comprehending scholarly readings in German. Pre: 102. Also open to graduate students by consent. **HSL**

GER 212 Intermediate German: Scholarly Readings (3) Continuation of 211. Pre: 201 or 211. Also open to graduate students by consent. **HSL**

GER 260 Intensive Intermediate German Abroad (V) Intensive course of formal instruction on the second-year level in German language and culture in Germany. Pre: 102. **HSL**

GER 301 Phonetics and Pronunciation Practice (3) Analysis of the German phonological system and practice in pronunciation. Pre: 202.

GER 303 Reading and Writing (3) Further development of reading and writing skills through the study of modern short stories by major German authors such as: Boll, Borchert, Frisch, Kafka, and Novak. Pre: 202.

GER 304 Advanced German: Business and Related Fields (3) Advanced German conversation, reading, and writing with a special emphasis on the vocabulary and cultural context of the German business world. Pre: 204.

GER 305 Composition and Conversation (3) German sentence structure and phrasing; conversation; lab drill; composition on literary subjects. Pre: 202.

GER 306 Composition and Conversation (3) Continuation of 305. Pre: 305.

GER 312 Introduction to German Literature (3) Representative reading and discussion of cultural periods in chronological order from c.1700; brief reference to earlier periods. Pre: 303 (or concurrent) with consent.

GER 313 Introduction to German Literature (3) Continuation of 312. Pre: 312 or approval of instructor.

GER 360 Intensive Third-Level German Abroad (V) Intensive course of formal instruction on the third-year level in German language and culture in Germany. Pre: 202 or 260.

GER 361 Introduction to German Civilization (3) German cultural heritage and contemporary German civilization in Austria,

Germany, and Switzerland. Pre: 305 (or concurrent).

GER 371 Practical German for use in Hawai'i (3) Use of German in practical situations in Hawai'i, e.g., in travel industry. Pre: 305 (or concurrent).

GER 401 German Literary Criticism (3) Role of literary criticism, function of literature, literary techniques, and German schools of literary theories. Pre: 312 or 315.

GER 407 Early German Literature to 1500 (3) Beginnings, mythology, and literary documents; courtly literature, including Wolfram's *Parzival*; lyrics of Minnesingers; heroic epic, mysticism, and church drama. Pre: 306 or consent.

GER 408 German Literature from 1500 to 1700 (3) Reformation, humanism; folksong chapbooks, popular theater, early novel, baroque poetry, drama, novel. Pre: 306 or consent.

GER 409 Enlightenment—Sturm und Drang (3) Lessing and his contemporaries; early dramas of Goethe and Schiller; Goethe's early lyrics. Pre: 306 or consent.

GER 410 Classicism (3) Classical writings of Goethe and Schiller; some reference to other writers. Pre: 306 or consent.

GER 411 Romanticism (3) Novalis, Tieck, E. T. A. Hoffmann, Eichendorff, etc. Pre: 306 or consent.

GER 412 Poetic Realism (3) Masterworks by Büchner, Raabe, Storm, Keller, Meyer, Hebbel, and others. Pre: 306 or consent.

GER 414 German Literature from 1880 to 1950 (3) Theater, prose, poetry exemplifying literary currents from naturalism to expressionism and Nullpunkt literature. Hauptmann, Rilke, Trakl, Kafka, Brecht, Böll, etc. Pre: 306 or consent.

GER 415 Contemporary German Literary Activity (3) Handke, Becker, Weiss, Bernhard, Walser, Böll, Grass. Pre: 306 or consent.

GER 428 Survey of German Lyric Poetry (3) Individual interpretation complements lectures on theoretical and historical background. Pre: 306 or consent.

GER 432 Stylistics (3) Analysis of prose selections through identification of their structural and semantic elements. Written and oral styles; specific structural elements and their semantic effect. Pre: 306 or consent.

GER 450 The Structure of German (3) Analysis of German phonology, syntax, and semantics. Pre: 301 and 306; or consent.

GER 451 Introduction to the History of German Language (3) Survey of important developments from beginnings to present. Pre: 301 and 306; or consent.

GER 452 Introduction to Middle High German (3) Introduction to phonology and morphology with selected readings. Pre: 301 and 306; or consent.

GER 460 Intensive Fourth-Level German Abroad (V) Intensive course of formal instruction on the fourth-level in German language and culture in a German-speaking country. Pre: 360 or equivalent.

GER 609 Middle High German (3) Grammar, syntax, phonetics, rhythm, meter, reading.

GER 610 Middle High German (3) Emphasis on literature.

GER 615 History of the German Language (3) Development from Middle High German to present; fundamentals of linguistics.

GER 616 History of the German Language (3) Development from the beginnings through the Old High German period. Pre: 615 or consent.

GER 632 German Stylistics (3) Concepts of style and stylistics; descriptive and applied stylistics; stylistic phenomena in texts and methods of assessing style.

GER 650 Seminar: The German Essay (3) Development as exemplified by works from various periods.

GER 651 Seminar: The German Novelle (3) Discussion of representative works from end of 18th century to 1955.

GER 652 Seminar: German Drama (3) Development of dramatic theory and literature as exemplified by typical works of literary periods.

GER 653 Seminar: Lyric Poetry (3) Comparative study of works of representative German poets.

GER 654 Seminar: The German Novel (3) Novels representative of a period, movement, or author.

GER 655 Faust (3) Short history of Faust theme; Goethe's dramatic poem.

GER 699 Directed Research (V) Pre: consent of department chair.

GER 735 Seminar (3) Study of authors, topics, a genre, or a period. Repeatable. Pre: consent of chair of graduate field.

GG

See *Geology and Geophysics*

Greek (GRK)

College of Languages, Linguistics and Literature

GRK 101 Elementary Greek (3) Grammar and vocabulary, with reading of simple Greek. **HSL**

GRK 102 Elementary Greek (3) Continuation of 101. **HSL**

GRK 201 Intermediate Greek (3) Development of reading and translation skills. Emphasis on prose. Pre: 102 or equivalent. **HSL**

GRK 202 Intermediate Greek (3) Continuation of 201: emphasis on poetry. **HSL**

GRK 303 Greek Historians (3) Selections from Herodotus, Xenophon, and others. Pre: 201 and 202, or consent.

GRK 304 Greek Epic (3) Selections from Homer, Hesiod, and others. Pre: 201 and 202, or consent.

GRK 425 Greek Philosophy (3) Selections from Plato, Aristotle, and others. Pre: 303 and 304, or consent.

GRK 432 Greek Drama (3) Selections from Aeschylus, Sophocles, and Euripides. Pre: 303 and 304, or consent.

GRK 433 Greek Lyric (3) Selections from Sappho, Alcaeus, and others. Pre: 303 and 304, or consent.

GRK 490 Seminar in Greek Studies (3) Study of an author or phase in Greek studies. Repeatable. Pre: 303 and 304, or consent.

GRK 650 History of Greek Literature (3) Literature from Homer through Lucian. Pre: graduate standing or consent.

GRK 651 Seminar in Greek Literature (3) Study of an author, genre, period, or work. Repeatable. Pre: graduate standing or consent.

GRK 699 Directed Research (V) Pre: consent of department chair.

Hawaiian (HAW)

College of Languages, Linguistics and Literature

HAW 101 Elementary Hawaiian (4) Listening, speaking, reading, writing. Meets five hours weekly; daily lab work. **HSL**

HAW 102 Elementary Hawaiian (4) Continuation of 101. **HSL**

HAW 105 Intensive Elementary Hawaiian (8) Content of 101 and 102 covered in one semester. Meets two hours daily, Monday–Friday, plus lab work. **HSL**

HAW 131 Hawaiian for Reading Proficiency (3) Elementary course; emphasis on reading and translation.

HAW 132 Hawaiian for Reading Proficiency (3) Continuation of 131.

HAW 201 Intermediate Hawaiian (4) Continuation of 102. Meets five hours weekly; reading of traditional texts; daily lab work. Pre: 102 or equivalent. **HSL**

HAW 202 Intermediate Hawaiian (4) Continuation of 201. **HSL**

HAW 206 Intensive Intermediate Hawaiian (8) Content of 201 and 202 covered in one semester. Meets two hours daily, plus lab work. Pre: 102 or 105, or exam. **HSL**

HAW 261 Hawaiian Literature in Translation (3) Survey of Hawaiian literature, including prose narration and poetry with reference to Polynesian and Western themes and forms. **AHL3**

HAW 301 Third-Level Hawaiian (3) Continuation of 202. Conducted in Hawaiian. Advanced conversation and reading. Pre: 202 or equivalent.

HAW 302 Third-Level Hawaiian (3) Continuation of 301. Pre: 301.

HAW 321 Hawaiian Conversation (3) Systematic practice on various topics for control of spoken Hawaiian. Repeatable up to 6 credit hours. Pre: 202.

HAW 331 Hawaiian Composition (3) Intensive work in the grammatical, semantic, and pragmatic dimensions of composition writing in Hawaiian. Pre: 202.

HAW 332 Listening Comprehension and Transcription (3) Development of listening comprehension through transcription and discussion of tape recordings. Pre: 202.

HAW 345 Nupepa Hawai'i (3) Study of Hawaiian newspapers through reading and discussion. Includes field trips to various archives housing the newspapers. Pre: 302 (or concurrent), or consent.

HAW 373 Ka Mo'omeheu Hawai'i (3) A survey course on the study of traditional Hawaiian culture including origins, the socioeconomic system, land tenure, religion, values, and the arts. The course will be taught in Hawaiian. Pre: 302 (or concurrent); or consent.

HAW 401 Fourth-Level Hawaiian (3) Advanced reading, writing, and discussion in Hawaiian. Transcribing and translating Hawaiian language tapes. Translating English into Hawaiian, and Hawaiian into English. Pre: 302 or equivalent.

HAW 402 Fourth-Level Hawaiian (3) Continuation of 401.

HAW 425 Mo'olelo Hawai'i (3) Survey of the major works by Hawaiian scholars writing about the history and culture of Hawai'i including David Malo, Kamakau, Kepelino, and John Papa Ii. Pre: 302.

HAW 426 Ka'ao Hawai'i (3) Survey of the core literature written by Hawaiian scholars, including both historical and mythological epics and folk tales. Pre: 302.

HAW 428 Ka 'Olelo Kala'aina a Politika Hawai'i (3) Study of political language in Hawaiian through reading and discussion of speeches, essays, editorials, songs and poetry, and performance art. Readings are drawn from 19th and early 20th century Hawaiian newspapers and other primary sources. Pre: 302 or consent.

HAW 435 (Alpha) Problems in Translation (3) Problems in translation of: (B) legal documents; (C) newspapers; (D) religious writings. Pre: 302 or consent.

HAW 452 Structure of Hawaiian (3) Descriptive linguistic analysis. Intensive exercises in advanced grammar. Pre: 202 and LING 102, or consent.

HAW 454 History of the Hawaiian Language (3) Development from proto-Polynesian. Phonology, morphology, and grammar; history of research. Pre: 202 and 452, or consent.

HAW 463 Language for the Classroom (3) Examination of language needs in various classroom settings and introduction to new vocabulary in school content areas. Pre: 302, 452, and consent.

HAW 466 Kuleana Kula Kaiapuni (3) Examination of the political struggles of the Kula Kaiapuni (Hawaiian Immersion Program) – past and present. Special attention given to federal and state governments, Department of Education, and internal political struggles. Pre: 401 (or concurrent with consent).

HAW 470 Ho'omohala Ha'awina Kaiapuni Curriculum Development (3) Examination of curricular issues of indigenous language programs; weekly participation in an immersion classroom; development of materials. Repeatable once. Pre: 302 or consent.

HAW 471 Teaching in Hawaiian Language Immersion Program (3) Knowledge base for professional education; secondary school organization, curriculum, and instruction; individual and program goals. A–F only. Pre: HAW 302 and consent.

HAW 484 Hawaiian Poetry (3) Historical survey and analysis of poetry found in traditional chants, folk songs, modern poetry written in Hawaiian. Interpreting and composing Hawaiian poetry. Pre: 402, or 302 and consent.

HAW 490 Ka Makau'ōlelo A'o Kula Kaiapuni Hawai'i (1) This course will assess the linguistic competence of prospective Hawaiian language immersion teachers to assure that all teachers entering the state DOE Hawaiian Immersion Program meet the requirements of the program with respect to Hawaiian language proficiency. CR/NC only. Pre: 401, 402 (or concurrent), and 463 (or concurrent); or consent.

HAW 499 Directed Studies (V) Study of Hawaiian language through vernacular readings in various academic fields. Repeatable up to 6 credits. Pre: 302 and consent.

Hawaiian Studies (HWST)

School of Hawaiian, Asian, and Pacific Studies

HWST 107 Hawai'i: Center of the Pacific (3) An introduction to the unique aspects of the native point of view in Hawai'i and in the larger Pacific with regards to origins, language, religion, land, art, history, and modern issues. **AHL2**

HWST 107A Hawai'i: Center of the Pacific (3) An introduction to the unique aspects of the native point of view in Hawai'i and in the larger Pacific with regards to origins, language, religion, land, art, history, and modern issues. **AHL2**

HWST 270 Hawaiian Mythology (3) Survey of gods, 'aumakua, kupua, mythical heroes, heroines, and their kīno lau as the basis of traditional Hawaiian metaphor. Pre: HWST 107 or HAW 102.

HWST 281 Ho'okele I: Hawaiian Astronomy and Weather (3) An introduction to Hawaiian views of astronomy and weather, required as preparation for sailing Hokule'a in following semester. Restricted to majors. Repeatable once. Pre: 107 or consent.

HWST 281L Ho'okele I Laboratory (1) (1 3-hr Lab) Stargazing laboratory to accompany 281. Pre: 281 or concurrent.

HWST 282 Ho'okele II: Hawaiian Navigation (3) Hawaiian canoe design, navigation, sailing dynamics for double hulled canoes, and sail planning. Restricted to majors. Repeatable once. Pre: 281 or consent.

HWST 282L Ho'okele II Laboratory (1) (1 3-hr Lab) Sailing laboratory on double hulled canoe to accompany 282. Pre: 282 or concurrent.

HWST 301 Perspectives in Hawaiian Studies (3) Interdisciplinary lectures and discussions examining traditional and contemporary experiences in Hawaiian society and setting;

resources, methods, and techniques. Pre: HAW 202 or consent.

HWST 341 Hawaiian Genealogies (3) Survey of major Hawaiian chiefly lineages from the four main islands: Hawai'i, Maui, O'ahu and Kaua'i. Political history from the Kumulipo to Western contact. Pre: HAW 202.

HWST 342 Chiefs of Post-Contact Hawai'i (3) Survey of Hawaiian chiefs from 1778 to the present, including genealogy, political function, and historical impact. Pre: 107, 341, or HAW 201.

HWST 343 Myths of Hawaiian History (3) Thematic exploration of some common myths of Hawaiian history, including infanticide, slavery, feudalism, constant warfare, human sacrifice, and a limited pre-contact population, to determine the role of myth making in perceptions of Hawaiian history. Pre: junior standing or consent.

HWST 362 Pana O'ahu: Famous Place Names (3) A survey of the famous place names in each 'ahupua'a of O'ahu, including accounts of mythical heroes, heiau, fishponds, wind, rain names, and their metaphoric value in Hawaiian literature. Pre: 107, 270, or GEOG 101; and HAW 202.

HWST 390 Issues in Modern Hawai'i (3) Cultural and political aspects of the current Hawaiian movement; historical colonization; conflicts over tourism, the military, and agriculture; forms of native self-determination. Pre: junior standing or consent.

HWST 440 Mahele Land Awards (3) Practical guide to the researching of land awards and change in title for a single 'ahupua'a, 1848 to present. Focus on field trips. Pre: 342.

HWST 445 Hawaiian Institutions (3) Comprehensive analysis of institutions like Bishop Estate/Kamehameha Schools, OHA, Lili'uokalani Trust, Department of Hawaiian Home Lands and The Queen's Hospital. Pre: 342.

HWST 490 Senior Seminar in Hawaiian Studies (3) Critical examination of existing research; individual or team development, execution, and evaluation of selected projects. Pre: senior major in Hawaiian studies or consent.

HWST 494 Modern Pacific Women's Poetry (3) Critical examination of modern indigenous women's poetry from the Pacific Islands. Thematic concentration on land, family, sexual and national oppression. Pre: any two of the following (second may be taken concurrently): ENG 250, ENG 251, ENG 252, ENG 253, ENG 254, ENG 256, ENG 257; or consent. (Cross-listed as ENG 479)

HWST 499 Directed Reading/Research (V) Individual reading/research. Pre: 301, two upper division Hawai'i-related courses, and consent.

Health, Physical Education, and Recreation (HPER)

See Kinesiology and Leisure Sciences

Health Sciences and Social Welfare (HSSW)

College of Health Sciences and Social Welfare

HSSW 477 Southeast Asian Cultures in Health/Social Welfare (3) The study of cultures and their implications in the health and social welfare context for a number of countries in Southeast and South Asian region.

HSSW 478 Pacific Cultures in Health/Social Welfare (3) The study of cultures and their implications in the health and social welfare context for a number of countries in the Pacific region.

HSSW 651 Interdisciplinary Team Development (V) Theory, process, and practice of interdisciplinary team development related to community health care. Pre: graduate or senior standing in health-related field, or consent.

HSSW 680 Public Policy and the Elderly (3) Social, political, and economic antecedents and consequences of current policy. Distribution of public benefits. Elderly vis-à-vis other interest groups; distribution of benefits within the elderly population. Pre: consent and graduate standing.

Hindi (HNDI)

College of Languages, Linguistics and Literature

HNDI 101 Elementary Hindi (4) Listening, speaking, reading, writing. Structural points introduced inductively. Meets five hours weekly; daily lab work. **HSL**

HNDI 102 Elementary Hindi (4) Continuation of 101. **HSL**

HNDI 201 Intermediate Hindi (4) Continuation of 102. Meets five hours weekly; daily lab work. Pre: 102 or equivalent. **HSL**

HNDI 202 Intermediate Hindi (4) Continuation of 201. **HSL**

HNDI 301 Third-Level Hindi (3) Continuation of 202. Conversation and advanced reading. Pre: 202 or equivalent.

HNDI 302 Third-Level Hindi (3) Continuation of 301.

History (HIST)

College of Arts and Humanities

HIST 151 and 152 or consent is a prerequisite to all history courses numbered above 300.

HIST 151 World Civilization (3) Development of civilization from its prehistoric origins to 1500. Prerequisite for advanced courses.

HIST 152 World Civilization (3) Continuation of 151. Development of civilization from 1500 to the present. Prerequisite for advanced courses.

HIST 155 Non-Western Civilizations (3) Survey of historical and cultural development into their classical phases; restructuring under Western impact. Completes world civilizations requirement for transfer students with a two-semester course in Western civilization; not open

to students with 151 and 152, or 161A and 162A.

HIST 161A World Cultures in Perspective (3) Development of civilizations from prehistoric origins to 1500. Offered as discussion and/or problems course. Alternative for 151 and 152; freshmen in SSP only.

HIST 162A World Cultures in Perspective (3) Continuation of 161A. Development of civilization from 1500 to the present. Offered as discussion and/or problems course. Alternative for 151 and 152; freshmen in SSP only.

HIST 231 Modern European Civilization (3) Political evolution and major economic, social, and cultural development of European states. 1500–1800. **AHL2**

HIST 232 Modern European Civilization (3) Continuation of 231. Major political, social, economic, and cultural trends from Napoleon to the present. **AHL2**

HIST 241 Civilizations of Asia (3) Survey of major civilizations of Asia from earliest times to 1500; East Asia, Southeast Asia, South Asia. (Cross-listed as ASAN 241) **AHL2**

HIST 242 Civilizations of Asia (3) Continuation of 241. Survey of major civilizations of Asia from 1500 to the present; East Asia, Southeast Asia, South Asia. (Cross-listed as ASAN 242) **AHL2**

HIST 281 Introduction to American History (3) Interpretive survey from earliest settlement to 1865. A–F only. **AHL2**

HIST 282 Introduction to American History (3) Interpretive survey from 1865 to the present. **AHL2**

HIST 284 History of the Hawaiian Islands (3) Survey of state and local history from Polynesian chiefdoms to Hawaiian Kingdom to American territory and state.

HIST 288 Survey of Pacific Islands History (3) Survey of Pacific Islands from pre-colonial to modern times; early settlement, cultural contact, colonization, contemporary problems. **AHL2**

HIST 301 History of India and Pakistan (3) Historical survey of Indian society, economics, politics, religion, ideas, and institutions; origins, development, influence on culture, to 1500.

HIST 302 History of India and Pakistan (3) Continuation of 301. 1500 to the present.

HIST 305 History of Southeast Asia (3) Survey of development of civilizations and growth of nations in Southeast Asia, to the 18th century.

HIST 306 History of Southeast Asia (3) Continuation of 305, from 18th century to the present.

HIST 309 East Asian Civilizations (3) Characteristics of East Asian civilizations as they developed in pre-modern China; variant patterns in Japan and Korea; the modernization process to 1500.

HIST 310 East Asian Civilizations (3) Continuation of 309. Period after 1500.

HIST 311 History of China (3) Chinese civilization to the 17th century.

HIST 312 History of China (3) Continuation of 311. Period since the 17th century.

HIST 321 History of Japan (3) Survey of culture, government, economics, and institutions, to 1700.

HIST 322 History of Japan (3) Continuation of 321. Period from 1700.

HIST 323 Way of Tea in Japanese History and Culture (3) History and culture of Japan as revealed in study and practice of the tea ceremony (urasenke): Zen, aesthetics, calligraphy, architecture, ceramics, gardens, politics. (Cross-listed as ASAN 323)

HIST 324 The Samurai of Japan (3) A social, military, and cultural history of Japan's samurai (warrior) class.

HIST 327 History of Korea (3) Survey of political, economic, social, and cultural developments from earliest times to 1400.

HIST 328 History of Korea (3) Continuation of 327. From 1400 to the present.

HIST 331 Ancient Greece I (3) Political, social, and cultural history of the Minoan, Mycenaean, and Archaic periods.

HIST 332 Ancient Greece II (3) Political, social, and cultural history of the Classical and Hellenistic periods.

HIST 333 Ancient Rome: The Republic (3) Political, social, cultural history from the Etruscans to Augustus. Emphasis on discussion of literary and archaeological materials. (Alt. years: fall)

HIST 334 Ancient Rome: The Empire (3) Political, social, and cultural history from Augustus to 476 A.D. Emphasis on literary and archaeological materials. (Alt. years: spring)

HIST 335 Early Middle Ages 300–900 (3) Interaction of three major forces forming Western European civilization: Classical tradition, Christian religion, Germanic society.

HIST 336 High Middle Ages 900–1300 (3) Topical examination of Medieval European culture: economy, society, religion, politics, thought, and the arts.

HIST 337 European Intellectual History (3) Undergraduate seminar on great debates in Western thought. Discussion of primary source materials; the scientific revolution and Enlightenment. No auditors.

HIST 338 European Intellectual History (3) Continuation of 337. European thought from French Revolution to the present.

HIST 340 Comparative Economic Growth—Historical Perspective (3) Comparative historical studies of economic development since 1750 in Great Britain, France, Germany, Russia, U.S., China, Japan, and the European common market. Political, social, and cultural dimensions.

HIST 344 Modern Germany (3) Political, social, economic, and cultural history since 1547. Rise of Austria and Prussia, unification, Bismarckian era, World War I and Weimar Republic, Hitler's Third Reich, post-World War II.

HIST 345 France in the Old Regime (3) Major social, political, and intellectual developments: Renaissance, Reformation, religious wars, Richelieu, Louis XIV, Enlightenment, and Revolution.

HIST 346 Modern France (3) Political, social, economic, and intellectual developments from Revolution and Napoleon to the present.

HIST 347 Tudor-Stuart Britain (3) This course traces major developments in British politics, society, and culture between the late Medieval and Modern Eras. Pre: 151 and 152 or consent.

HIST 348 Modern England (3) Interaction of 17th-, 18th-, and 19th-century intellectual, political, economic, and social changes, which together produced the British Empire and modern Britain.

HIST 349 British Empire (3) Origins and expansion of the British empire between the seventeenth and twentieth centuries. Includes imperial policies affecting Britain, Australia, India, Ireland, and Southern Africa. Open to nonmajors. Pre: 151-152 or 161-162.

HIST 350 Introduction to Russian History and Civilization (3) Development of Russia as a unique society. Origins and outside influences; rise of Moscow; autocratic system and serfdom; Western impact and modernization; artistic and literary heritage; Revolutionary movement and 1917 Revolution; Soviet Union.

HIST 354 Introduction to Islamic History (3) Muhammad, the Arab conquests, the Caliphate; fundamentals of Islam; classical Islamic civilization; development of Islam into modern times with emphasis on the Middle Eastern heartland.

HIST 355 The Making of the Modern Middle East (3) Survey of developments that created the system of nation-states in the Middle East. History of the Ottoman Empire and the Republic of Turkey; Egypt; the Arab world; Israel and Iran. Recommended: 354.

HIST 356 Survey of African History (3) The history of Africa from earliest times to the present: the rise of indigenous civilizations, European and Muslim impact, colonialism and nationalism, and current issues.

HIST 360 U.S. Women's History to 1890s (3) A survey of history of U.S. women and gender relations up to 1890s. Emphasis on women's labor, women's involvement in social movement, development of suffrage movement, women's literary and popular culture. Pre: AMST 201 (or concurrent) or AMST 202 (or concurrent) or WS 151 (or concurrent), or consent. (Cross-listed as AMST 315 and WS 310)

HIST 361 U.S. Women's History since 1890s (3) A survey of history of U.S. women and gender relations since 1890s. Emphasis on social reform, suffrage and the New Woman, women's wartime labor, gender and the Cold War, second wave feminism, divisions among women. Pre: AMST 201 (or concurrent) or AMST 202 (or concurrent) or WS 151 (or concurrent); or consent. (Cross-listed as AMST 316 and WS 311)

HIST 371 U.S. Foreign Policy to 1900 (3) History of American foreign policy and diplomacy.

HIST 372 U.S. Foreign Policy in 20th Century (3) Presidential leadership, Congress and public opinion, and policy toward Latin America, Europe, Asia, and the Pacific.

HIST 373 American Thought and Culture (3) Politics, family, philosophy, technology, etc.; their interrelationship within the total society. Pre-Colonial to end of the 19th century. (Cross-listed as AMST 343)

HIST 374 American Thought and Culture (3) Continuation of 373: the 20th century. (Cross-listed as AMST 344).

HIST 375 The American City (3) Evolution since 17th century; role in contemporary American culture. Related problems, perceptions, values. (Cross-listed as AMST 321) (Alt. years: spring 98)

HIST 378 History of American Business (3) The evolution of business enterprise from colonial times to the present. Emphasis on entrepreneurship, technological change, labor-management relations, government-business relations, and economic thought. Case studies of industrial development. (Cross-listed as MGT 348).

HIST 379 American Empire (3) Examines the interplay between an "American culture of empire" and the rise of the United States as a superpower. Topics: imperialism and political culture, social movements and international affairs, race, gender and class relations. (Cross-listed as AMST 365)

HIST 391 History of Warfare (3) Classical and guerrilla warfare, revolution, and military systems and institutions.

HIST 392 History of Warfare (3) Continuation of 391, from 1850 to present.

HIST 393 U.S. Military History (3) Survey of development of American military forces from War of Independence to war in Vietnam.

HIST 394 History of Science to 1700 (3) Evolution of scientific thought and its cultural context. Antiquity to 1700.

HIST 395 History of Science since 1700 (3) Continuation of 394; science, technology, and society since 1700.

HIST 396 Introduction to the Study of History (3) Introduction to the discipline; current trends in Asian, European, American, and Pacific historiography. Pre: history major.

HIST 406 Modern Philippines (3) Survey of major developments from pre-colonial through Spanish and American colonial periods, the revolution, Japanese occupation, and post-war republic. Pre: 151 and 152, or 161A and 162A; or consent.

HIST 407 Modern Malaysia (3) History of Malay peninsula and northern Borneo, emphasizing developments since 18th century: trade, commerce, foreign migrations, pluralism, nationalism, and Islam. Pre: 151 and 152, or 161A and 162A; or consent.

HIST 408 Modern Indonesia (3) Indonesia from 14th century to present. Emphasis on period from late 18th-century Western colonial impact to struggle for independence and problems of nationhood. Pre: 151 and 152, or 161A and 162A; or consent.

HIST 409 Modern Indochina (3) General survey of the history of the Indochinese countries. Emphasis on the struggle for independence. Pre: 151 and 152, or 161A and 162A; or consent.

HIST 410 Twentieth-Century China (3) An examination of the political, intellectual, economic, cultural, and social transformations of China in the twentieth century. This lecture course studies critical events in the making of modern China and explores important issues in the modernization of Chinese life in the twentieth century. Pre: 151 and 152, or 161A and 162A; or consent.

HIST 411 Local History of Late Imperial China (3) Ch'ing government and Chinese society from local and regional perspectives; modes of control and disorder during the 19th century.

HIST 412 Local History of 20th-Century China (3) Sociopolitical change and continuity at local and regional levels since 1900, stressing provincial reform, Hsien and sub-Hsien politics, warlordism, Kuomintang tutelage, and the Chinese Communist movement and rule.

HIST 416 Chinese Intellectual History (3) An interpretive survey of Chinese ideas and values in their cultural, social and political settings from classical age to 1600. Pre: 241 and 242; or consent.

HIST 417 Chinese Intellectual History (3) Interpretive survey of Chinese thought from 1600 to the contemporary period, with special emphasis on the themes of cultural collision and change and tradition. Pre: 241 and 242; or consent.

HIST 418 China's Foreign Relations (3) Systematic review from traditional times, with emphasis on modern and contemporary history, analyses of foreign policy formulation, objectives, and implementation. Recommended: 312.

HIST 419 The Chinese Revolution (3) Origins, development, and meaning of modern revolution in China, 19th century to People's Republic. Recommended: 311 and 312.

HIST 420 People's Republic of China (3) Salient developments from 1949 to the present. Social revolution and modernization, critically relevant foreign relations. Recommended: 312 or 419.

HIST 421 Japanese Cultural History to 1600 (3) Genesis and development of Japanese aesthetic and literary traditions prior to founding of the Tokugawa Shogunate. Recommended: 321.

HIST 422 Tokugawa Japan (3) Japanese history and culture, 1600–1867. Recommended: 321.

HIST 423 Okinawa (3) Survey of social, cultural, economic, and political history from earliest times to present.

HIST 424 20th-Century Japan (3) Problems of Japan's political, economic, and social development since institutional consolidation of Meiji state (c.1890). Pre: 321 or 322, or consent.

HIST 425 Women in Japanese History (3) Survey of the changing political, social, economic, and cultural positions of women in Japan from ancient times to the present. Pre: one course in Japanese history or consent.

HIST 431 Ancient Near East: Pyramids and Writing Tablets (3) Civilizations of the Sumerians, Babylonians, Assyrians, ancient

Egyptians, Hittites, Hebrews, and Achaemenid Persians. Emphasis on discussion of literary and archaeological materials.

HIST 432 Crisis and Conflict in the Middle East (3) In depth study and analysis of major crises and conflicts in the Middle East since World War II: the Arab–Israeli Wars, revolutions in the Arab countries, the Turkish experiment with secularism, the Iranian/Islamic revolution, Afghanistan, the Gulf War. Recommended: 354 or 355.

HIST 433 Medieval Cultures (3) Topical study of cultural and crosscultural issues in the medieval period (circa 300–1500). Class discussion and written work emphasize analysis of primary source documents using cultural and world history theories. Regional focus and readings vary by semester. Repeatable once. Pre: 151 and 152, or 161A and 162A; upper division standing.

HIST 434 History of Christianity to 1500 (3) Historical analysis of the main traditions of Christianity and elements of diversity within Europe and in relation to other parts of the world. Focus on the interpretation of primary sources and discussion of cultural issues. Pre: 151 and 152, or 161A and 162A. (Alt. years: spring 2000)

HIST 435 The Renaissance 1300–1500 (3) Political, social, intellectual, and religious development. Emphasis on cultural history; humanism and its influence on thought and reforming movements. (Alt. years: fall 97)

HIST 436 The Reformation 1500–1600 (3) Political, social, intellectual, religious developments of Protestant and Catholic Reformation. Emphasis on cultural history; religious thought and impact on social and political developments. (Alt. years: spring)

HIST 439 The Darwinian Revolution (3) Social and intellectual origins of evolutionary thought and its continuing impact; emphasis on Darwin and the Victorian scientific community. Pre: 152 and one of BIOL 101, BOT 101 or ZOOL 101; or consent.

HIST 440 20th-Century Europe (3) Contemporary problems and their historical background.

HIST 441 Expansion of Europe (3) Historical processes in modern European colonization from 16th to 20th century; impact on non-Europeans in Asia and Africa. (Alt. years: fall)

HIST 443 Nazi Germany (3) Origins, establishment, and impact of Hitler's Third Reich. Recommended: 344. (Alt. years: spring)

HIST 444 The History of the Holocaust (3) The origins and progression of the Holocaust, the almost complete destruction of European Jews, and other Nazi genocidal policies. Open to non-majors.

HIST 445 French Revolution and Napoleon (3) Causes, course, and conduct of the Revolutionary and Napoleonic periods, their impact upon Europe; emphasis on the conflict of ideologies inherent in the Revolutionary process.

HIST 448 Imperial Spain and Portugal (3) The influence of Spain and Portugal on people and cultures in Europe, Africa, America, and Asia; Portugal's captivity and the defeat of the Spanish Armada.

HIST 452 History and Film (3) Lecture/discussion course introducing relationships between film and history. Explores how film reflects and shapes society, influences our sense of the past, and provides a way to understand that past. Considers historical issues since the French Revolution. Open to non-majors. Pre: 151 and 152; or consent.

HIST 453 Russian Intellectual History (3) Evolution of political/cultural ideas in 19th- and early 20th-century Russia. Pre: 350 or consent.

HIST 454 Tsarist Russia (3) Development of the Russian state to the 19th century. Kievan state and early development of culture and art; Mongol era; rise of Moscow, autocracy, and serfdom; Petrine reforms; Western impact; emergence as a major European power.

HIST 455 Russian Revolution (3) Origins in 19th-century; problems in Russian society; revolutionary ideologies and parties. Revolution of 1917 and the civil war; detailed study of relation between February and October revolutions.

HIST 456 Soviet Union (3) Establishment, political structure, economic system, society and culture, foreign policy. Characteristics, impact on its peoples, problems, post-Stalin "thaw."

HIST 457 Russia in East Asia and the Pacific (3) Siberia, Russian/Soviet Far East, Russian activities in Pacific basin; evolving relations with Asian and Pacific powers.

HIST 460 Native American History (3) A lecture and discussion course on the history of North American Indians from the seventeenth century to the present. Open to non-majors. Pre: 151 or 152 or consent.

HIST 461 Early America (3) Transit of European culture to North America; independence and the Constitution.

HIST 462 The Young American Republic 1783–1841 (3) Development of American society, the Constitution, Jeffersonianism, the age of Jackson.

HIST 463 American Civil War Era 1841–1877 (3) The crisis of the Union; antebellum society and culture, slavery, reform, sectionalism, the Civil War and Reconstruction.

HIST 464 Transformation of America 1877–1920 (3) Selected themes that explain major changes in American life during the late 19th and early 20th centuries, including the westward movement, consolidation of capitalism, world power diplomacy, popular culture, progressivism, and World War I.

HIST 465 The United States 1920–1948 (3) The Roaring Twenties, the Depression, New Deal, coming of World War II, America during the war, origins of the Cold War.

HIST 466 The U.S.: 1948 to the Present (3) The atomic age and the Cold War, the age of anxiety, the 1960s, the Vietnam War, the Reagan-Bush era, and beyond.

HIST 467 American Television History (3) A lecture/discussion course examining the impact of television on American society, culture and politics. Analyzed in depth are family sitcoms, presidential politics, Vietnam and the presentation of gender and ethnicity. Open to nonmajors.

HIST 468 Viva Las Vegas! (3) Upper-division lecture course on the historical and cultural significance of Las Vegas in twentieth-century America. Open to non-majors. Pre: 151 and 152, or consent.

HIST 470 American Show Business (3) History of American entertainment industry since 1880, with emphasis on businesses of recording, broadcasting, and film production. Role of entrepreneurs, invention, labor, politics, and culture. Impact of industry on American life. Pre: consent.

HIST 472 American Social History (3) Introduction to the new social history; interdisciplinary approaches to the study of the everyday lives of ordinary Americans in past generations. Pre: 281 and 282.

HIST 473 Slavery (3) Examines the origins, practices, and historical evolution of slavery from the 18th to the 20th century. Considers diverse forced labor regimes: chattel slavery, plantation agriculture, convict labor, "wage slavery," and patriarchal domination. Pre: AMST 201 or AMST 313 or ES 305 or ES 306 or HIST 152 or HIST 281; or consent. (Cross-listed as AMST 432)

HIST 474 (Alpha) Topics in United States History (3) (B) African Americans; (C) the West. (474C cross-listed as AMST 414)

HIST 475 Constitutional History of the U.S. (3) Origins, development of Constitution, Colonial to modern times.

HIST 477 American Labor History (3) Conditions of labor in major phases of American development; response of labor and community to changing work environment. Capitalism, unionism, race, gender, law, etc. Emphasis on 20th century. (Cross-listed as AMST 431)

HIST 478 Colonial Latin America (3) Pre-Columbian civilizations: Spanish and Portuguese colonization; political, economic, social, and religious evolution to 1810; independence.

HIST 479 Latin America since Independence (3) Political, economic, and social development since 1825; case studies from Brazil, Mexico, and Cuba.

HIST 481 Pacific Islands I (3) The Pacific past from first human settlement to the start of the colonial period; emphasis on historiography and analysis of islanders' responses to Euro-American intrusion.

HIST 482 Pacific Islands II (3) The colonial experience to the present.

HIST 483 United States in the Pacific (3) Growth of economic and political interests and policies.

HIST 484 The Hawaiian Kingdom 1819–1893 (3) Transformation of Hawai'i into a state influenced by American and European ideas and institutions and Asian peoples. Pre: 284.

HIST 485 History of 20th-Century Hawai'i (3) Formation of an American Hawai'i with its unique local culture from 1898 to the present. Pre: 284.

HIST 489 World Maritime History (3) A survey of world maritime history from earliest times to the present, with emphasis on the evolution of nautical technology, motives from

maritime enterprises, and the impact of cross-cultural encounters between oceanic peoples. (Cross-listed as OEST 489)

HIST 491 Woman's Place (3) Historical explanations of women's proper place and roles in the home, outside, and in the struggle for emancipation. (Cross-listed as WS 491)

HIST 492 Women in Revolt (3) Conditions under which women's protest develops. Women's rights movements in the 19th- and 20th-century. U.S., cross-cultural comparisons. Recommended: 491. (Cross-listed as WS 492)

HIST 495 (Alpha) History Colloquium (3) Extensive or intensive treatment of special problems. (B) Philippines and Indonesia; (C) U.S. foreign relations; (D) history in Oceania; (K) Chinese traditional government. Recommended for honors students. Pre: 372 (or concurrent) or consent for (C); consent for (B) and (K).

HIST 496 (Alpha) Senior Tutorial in History (3) Analysis of sources and evaluation of methods of historical writing. Research in field of special interest. Required for majors except those in Honors Program. (B) United States; (C) Europe; (D) Asia/Pacific; (E) comparative/World; (F) provisional topics. Pre: 396 (or concurrent).

HIST 499 Directed Reading (V) Individual projects in various fields. History majors with consent. Maximum 5 credit hours. (1) American; (2) Pacific; (3) Japanese; (4) European; (5) English; (6) Chinese; (7) Russian; (8) Hawaiian; (9) South Asian; (10) Southeast Asian; (11) Korean.

HIST 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

HIST 602 Seminar in Historiography (3) History of history and historians; philosophies of history.

HIST 609 Seminar in World History (3) Analysis, research, and discussion of themes and issues in study of history of humankind. Repeatable. Pre: graduate standing or consent.

HIST 610 Topics in World History (3) Selected themes—feudalism, economic and industrial development, etc.—important in global history. Topics pre-announced. Repeatable. Pre: 609.

HIST 611 (Alpha) Seminar in European History (3) Selected problems for reading and research. (B) ancient; (C) medieval (Pre: 335 or 336, or consent); (D) early modern (Alt. years: spring); (E) modern (Alt. years: fall); (G) intellectual.

HIST 612 Ethnographic History (3) Critical inquiry into historical representations of the "other" and ways in which modern historians have used culture and other anthropological concepts to write and think about the past.

HIST 613 Introduction to Cultural Studies (3) A graduate seminar designed to introduce history students to the multidisciplinary theories that are appropriate to cultural studies. A-F only. Repeatable once. Pre: history major or consent.

HIST 618 (Alpha) Advanced Readings in Russian History (3) (B) early Russia; (C) modern. Pre: 350 and graduate standing, or consent.

HIST 619 Research Seminar in Russian History (3) Repeatable. Pre: 618 and knowledge of Russian language, or consent.

HIST 620 Advanced Topics in Russian History (3) Seminar. Repeatable. Pre: appropriate 400-level Russian history or consent.

HIST 621 (Alpha) Russia in East Asia and the Pacific (3) (B) advanced readings; (C) advanced research on Siberia, Russian activities in the Pacific basin, evolving relations with Asian and Pacific powers. Repeatable. Pre: 457 and either 454 or 456; or consent.

HIST 630 History of American History (3) Graduate-level survey of American history, historians, historiography, and historical literature. Pre: graduate standing.

HIST 632 (Alpha) Advanced Readings in American History (3) Interpretations and literature of important themes and problems. (B) early America; (C) the Republic to 1877; (D) industrial America; (E) recent America. Repeatable. Pre: appropriate 400-level U.S. history course or consent.

HIST 634 (Alpha) Research in American History (3) (B) early America; (C) the Republic to 1877; (D) industrial America; (E) recent America; (F) foreign relations. Repeatable. Pre: for 634(F) only, 639(C); for all others, appropriate 400-level U.S. history course or consent.

HIST 639 (Alpha) Advanced Topics in American History (3) Seminar in advanced research and readings. (B) social and intellectual (Cross-listed as AMST 646); (C) diplomatic; (D) religious (Cross-listed as AMST 644); (E) the American city (Cross-listed as AMST 627 and ARCH 627); (K) business, labor, and technology (Cross-listed as AMST 647). Pre: graduate standing and consent.

HIST 654 Seminar: Mainland Southeast Asia (3) Studies in the histories of peoples and states of Myanmar, Thailand, Cambodia, Laos, and Vietnam. Repeatable. Pre: 306.

HIST 655 Seminar: Island Southeast Asia (3) Research and readings in the socioeconomic, political, and cultural history of Indonesia, Malaysia, and Philippines. Repeatable. Pre: 306.

HIST 661 (Alpha) Seminar in Chinese History (3) Problems and readings in political, social, and cultural history. (B) early; (C) middle; (D) modern. Repeatable.

HIST 662 Seminar: Islam and Islamic Civilization (3) Readings on the rise, spread, and development of Islamic cultures and civilizations throughout the world down to modern times. Repeatable. Pre: graduate standing or consent. Recommended: 354.

HIST 663 Seminar in Indian History (3) Problems and readings; influence of Indian culture on Southeast Asia. Individual reports. Repeatable.

HIST 665 (Alpha) Seminar in Japanese History (3) Problems, principal sources of bibliographic information. (B) traditional period to c.1600; (C) early modern 1600–1868; (D) 1868 to present; (E) 20th-century diplomatic.

HIST 667 (Alpha) Seminar in Korean History (3) Reading major interpretive works, and research in selected topics. (B) reading; (C) research. Pre: 327 and 328.

HIST 675 (Alpha) Seminar in Pacific History (3) Reading and research on major themes and issues. (B) South Pacific; (C) Micronesia; (D) 19th century; (E) 20th century. Pre: 481 and 482, or consent.

HIST 676 Pacific History Research Seminar (3) Writing Pacific history from primary sources in Hawaiian repositories. Repeatable. Pre: 675.

HIST 677 Seminar in History of Hawai'i (3) Reading seminar with short papers required. Covers Kingdom of Hawai'i and 20th-century Hawai'i in alternate years. Pre: 284. Repeatable. (Alt. years: fall)

HIST 680 Seminar in Military History (3) Bibliography, research tools, readings, and special problems in military history. Repeatable. Pre: graduate standing or consent.

HIST 690 Seminar in History of Science (3) Readings in the history of science and its social context. Repeatable.

HIST 699 Directed Research (V) Individual research topics. (1) American; (2) Pacific; (3) Japanese; (4) European; (5) English; (6) Chinese; (7) Russian; (8) Hawaiian; (9) South Asian; (10) Southeast Asian; (11) Korean. Restricted to Plan A (thesis) students. Maximum 2 credit hours. Repeatable. Pre: consent.

HIST 700 Thesis Research (V)

HIST 702 Institutional History of Korea (3) Major political, economic, and social institutions. Repeatable. Pre: 327 and 328. (Alt. years: spring)

HIST 705 Asian Research Material and Methods (3) Bibliography, reference tools, and research methods in sources on Asia in Western and Asian languages. Discussion of published and archival repositories. Repeatable. (Cross-listed as ASAN 705 and LIS 705).

HIST 711 Korean Historical Sources (3) Reading in Korean or classical Chinese of various forms of historical literature, literary sources, reference materials; reading knowledge of Korean or classical Chinese required. Repeatable. (Cross-listed as KOR 711) (Alt. years: fall)

HIST 713 Chinese Historical Literature (3) Reading and use of numerous genres of Chinese historical literature and documents. Chinese bibliography. Knowledge of Chinese required. Repeatable.

HIST 717 Chinese Intellectual History (3) Intensive study in Chinese thought and institutions. Repeatable. Pre: 311 and 312. Recommended: knowledge of Chinese.

HIST 718 Chinese Intellectual History (3) Continuation of 717. Repeatable.

HIST 721 China: Classic Antiquity to 750 (3) Foundations and elaborations of Chinese tradition. Repeatable. Pre: 311 and 312.

HIST 723 China from 750–1700 (3) Political, social, economic history; source materials, interpretive problems, rise of the gentry. Pre: knowledge of Chinese. Repeatable.

HIST 725 Contemporary China Seminar: Reading (3) Topical readings, research, and discussion, emphasizing PRC. Normal sequence emphasizes reading in 725, research in 726. Repeatable.

HIST 726 Contemporary China Seminar: Research (3) Continuation of 725. Repeatable.

HIST 800 Dissertation Research (V) Pre: consent.

Honors (HON)

Honors Programs

These courses are limited to students in the Honors Programs.

HON 120 Mathematical Modes of Thinking (3) Mathematics as both a language and a thought process expressed in that language. Historical and contemporary relations to culture.

HON 130 Contemporary Writing (3) Expository writing; classroom discussion of written products; introduction to debate. Limited to entering Honors Programs students.

HON 131 Disciplinary Reading and Writing (3) Writing about reading. Emphasis on various discourses associated with the common academic disciplines. Pre: 130.

HON 132 Varieties of Literary Experience (3) A far-ranging survey of world literature from Homer to the present. Development of critical skills. Pre: 131.

HON 133 Varieties of Literary Experience (3) A far-ranging survey of world literature from Homer to the present. Development of critical skills. Pre: 132.

HON 140 Structure in Music and Dance (3) Examining the languages of the musical arts. Emphasis upon the ways these arts are created and put together.

HON 170 Persons and Society (3) Interdisciplinary examination of the various branches of social science and their relation to each other and to society as a whole.

HON 171 Persons and Society (3) Interdisciplinary examination of the various branches of social science and their relation to each other and to society as a whole. Pre: 170.

HON 180 Values: Origins and Significance (3) Interdisciplinary examination of the origins of various values in different cultures and periods. Status and roles of values in contemporary society.

HON 181 Values: Origins and Significance (3) Interdisciplinary examination of the origins of various values in different cultures and periods. Status and roles of values in contemporary society. Pre: 180.

HON 491 Junior Honors Seminar (3) Students from different disciplines meet weekly for discussion of material presented by instructor in a multi-disciplinary format. Topics vary each semester. Required of, and limited to, candidates for Honors degree. CR/NC only.

HON 492 Honors Colloquium (3) Weekly meetings for discussion of enduring issues and problems of an interdisciplinary nature. Limited to candidates for Honors degree. CR/NC only.

HON 493 Senior Honors Thesis (2) Preparation of research paper under individual faculty supervision. Limited to candidates for Honors degree. Repeatable in different major. A-F only.

HON 494 Senior Honors Thesis (2) Preparation of research paper under individual faculty supervision. Limited to candidates for Honors degree. Repeatable in different major. A-F only. Pre: 493.

HON 495 Introduction to Research (3) Library research skills; lectures on research within a university setting; methodological issues for and across disciplines; special attention to defining a specific research problem. Limited to candidates for the Honors degree. CR/NC only.

HON 496 Senior Honors Project (3) Preparation of a research project or a performance project (with a research component) supervised by a faculty member. Limited to candidates for Honors degree. Repeatable in different major. A-F only. Pre: 495.

Selected Studies students also have the option of taking A-section courses from the following list:

- AH 100A Introduction to the Arts
- AMST 201A The American Experience
- AMST 202A Diversity in American Life
- AMST 211A Contemporary American Issues: Domestic
- AMST 212A Contemporary American Issues: World
- ART 101A Introduction to Visual Arts
- ART 103A Introduction to Fiber
- ASAN 241A Civilizations of Asia
- ASAN 242A Civilizations of Asia
- ASTR 110A Survey of Astronomy
- ASTR 140A Foundations of Astronomy
- BOT 101A General Botany
- CAS 110A Integrating Seminar I
- CAS 111A Integrating Seminar II
- CHEM 171A Principles of Chemistry
- CHEM 181A Honors General Chemistry
- ECON 120A Introduction to Economics
- ECON 131A Principles of Economics
- ENG 100A Composition I
- ENG 250A American Literature
- ENG 251A British Literature to 1800
- ENG 252A British Literature after 1800
- ENG 253A World Literature to 1600
- ENG 254A World Literature after 1600
- ENG 255A Short Story and Novel

- ENG 256A Poetry and Drama
- ENG 257A Themes in Literature
- ES 101A Introduction to Ethnic Studies
- GEOG 151A Geography and Contemporary Society
- GER 101A Elementary German
- GER 102A Elementary German
- GG 101A Introduction to Geology
- HWST 107A Hawai'i: Center of the Pacific
- HIST 161A World Cultures in Perspective
- HIST 162A World Cultures in Perspective
- HIST 241A Civilizations of Asia
- HIST 242A Civilizations of Asia
- HIST 281A Introduction to American History
- HIST 282A Introduction to American History
- IS 101A Information Literacy
- IS 291A Community Service Practicum
- IS 300A Field Study
- LIS 100A Libraries, Scholarship, and Technology
- LING 102A Introduction to the Study of Language
- MATH 100A Survey of Mathematics
- MATH 215A Applied Calculus I
- MATH 241A Calculus I
- MATH 242A Calculus II
- MICR 140A Microbiology Laboratory
- POLS 110A Introduction to Political Science
- PHIL 100A Introduction to Philosophy: Survey of Problems
- PHIL 101A Introduction to Philosophy: Morals and Society
- PHIL 102A Introduction to Philosophy: Asian Traditions
- PHIL 110A Introduction to Logic
- PHYS 170A General Physics I
- REL 150A Introduction to the World's Major Religion
- REL 151A Religion and the Meaning of Existence
- SOC 100A Introduction to Sociology
- SOC 218A Introduction to Social Problem
- SPAN 201A Intermediate Spanish
- SPAN 202A Intermediate Spanish
- SP 151A Personal and Public Speech

- SP 251A Principles of Effective Public Speaking
- WS 151A Introduction to Women's Studies

Horticulture (HORT)

College of Tropical Agriculture and Human Resources

HORT 120 (Alpha) Plants for People (1) The origins; social, cultural, and ceremonial traditions; culture; food and nutritional properties; and processing of a variety of tropical horticultural plants are presented, with tasting sessions and optional field trips. Topics will rotate among (B) beverage crops (eg. coffee, tea, chocolate, kava, fruit juices); (C) herbs, spices and flavoring (selection of examples to be determined); (D) tropical fruits (assortment offered depends on availability during semester); (E) ornamental plants (flowers, houseplants, popular landscape plants, bonsai, ethnic ornamentals). Pre: consent.

HORT 200 Introduction to Crop Science (3) Relation of plants, nutrients, environment, cultural practices to crop production. Pre: BOT 101 and CHEM 151 (or concurrent). (Cross-listed as AGRN 200)

HORT 300 Horticulture Production Systems (4) (3 Lec, 1 3-hr Lab) Comparisons and contrasts of crop management systems, techniques, and technologies in protected and open field production of horticultural crops. Pre: 200 or consent.

HORT 350 Tropical Landscape Horticulture (3) (2 Lec, 1 3-hr Lab) Concepts and techniques of landscape design and maintenance in the tropics. Pre: 200 and 369.

HORT 351 Enterprise Management (3) Overview of financial tools essential for developing new enterprises, analyzing business performance, obtaining bank financing, improving profitability and reducing risk. Other topics: personnel management, taxation, and business plans. (Students will become proficient with Excel.) Pre: upper division or graduate status; or consent.

HORT 364 Horticultural Practices (2) (1 Lec, 1 3-hr Lab) Techniques of culture and management of horticulture crops. Pre: 200 (or concurrent).

HORT 369 Ornamental Plant Materials (3) (2 Lec, 1 3-hr Lab) Identification, origin, use, and cultural requirement of trees, shrubs, vines, and groundcovers used in Hawaiian landscapes. Pre: 200.

HORT 401 Vegetable Crop Production (3) (2 Lec, 1 3-hr Lab) Crop biologies, requirements, and production techniques for commercial vegetable production in Hawai'i will be stressed. Pre: 300 or consent.

HORT 402 Flower Crop Production (3) Biology and production of cut flowers and blooming potted plants under field and protected cultivation in Hawai'i and globally. A-F only. Pre: 300 or consent.

HORT 403 Fruit Crop Production (3) (2 Lec, 1 3-hr Lab) Botanical aspects and horticultural management practices of selected tropical and subtropical fruit crops, with

emphasis on small scale commercial production in Hawai'i. Pre: 300 or consent.

HORT 404 Foliage Crop Production (3) (2 Lec, 1 3-hr Lab) Combined lecture-lab course on foliage crop production in Hawai'i. Crop biology, requirements and production techniques. Pre: 300 or consent.

HORT 420 Plant Propagation (3) (2 Lec, 1 3-hr Lab) Theoretical and applied aspects of seed and vegetative propagation technology involving fruits, flowers, vegetables, and landscape plants. Pre: 200.

HORT 421 Tropical Seed Science (2) Principles of seed science, seed physiology, seed production and genetic modification. Lab. Hawai'i's seed industry and biotechnology. A-F only. Pre: 200 or consent.

HORT 430 Nursery Management (3) (2 Lec, 1 3-hr Lab) Management practices in production and operations of commercial nurseries in Hawai'i. Pre: 200.

HORT 440 Tissue Culture (3) (2 Lec, 1 3-hr Lab) Application of plant tissue culture for horticulture; study of growth and development of plant tissues as influenced by chemical and environmental factors. Pre: 420 or consent. Recommended: BOT 410.

HORT 453 Plant Breeding (3) (2 Lec, 1 3-hr Lab) Application of genetics to crop improvement, breeding methods, breeding of plants in Hawai'i. Pre: BIOL 375.

HORT 460 Turfgrass Management (3) (2 Lec, 1 3-hr Lab) Selection, establishment, and maintenance of grasses for various types of turf. Pre: 200.

HORT 470 Principles of Plant Physiology (3) Integration of form and function from cellular to whole plant levels in processes from seed germination, through photosynthesis, growth, and morphogenesis, to flowering and senescence. Pre: CHEM 152 and BIOL 171; or consent. Co-requisite: 470L. (Cross-listed as BOT 470)

HORT 470L Principles of Plant Physiology Lab (1) (1 3-hr Lab) Principles of experimentation in plant physiology, includes individual investigations. Co-requisite: 470. (Cross-listed as BOT 470L)

HORT 473 Post-Harvest Physiology (3) Comparative physiological and biochemical processes during growth, maturation, ripening, and senescence in fruits, vegetables, and flowers related to changes in quality and storage life. Tropical commodities emphasized. Pre: 200, BIOL 171, or BOT 201; CHEM 152; or consent.

HORT 481 Weed Science (3) (2 Lec, 1 3-hr Lab) Weed classification, identification, adaptations for weediness; principles of weed control; properties, uses, and action of herbicides. Lab: pesticide application equipment and techniques, no-till farming, greenhouse and field experiments. Pre: 200 and CHEM 152.

HORT 491 Topics in Horticulture (V) Study and discussion of significant topics, problems. Offered by visiting faculty and/or for extension programs. Repeatable.

HORT 492 Internship (4) Integration and application of academic knowledge and critical skills emphasizing professional development.

Placement with an approved cooperating supervisor/employer. Pre: consent. (Cross-listed as AGRS 492 and ENTO 492)

HORT 499 Directed Study (V) Supervised individual instruction in field laboratory and library. Repeatable. CR/NC only. Maximum of 3 credit hours. Pre: 364.

HORT 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

HORT 601 Crop Modeling (3) (2 Lec, 1 3-hr Lab) Principles of modeling crop growth and development, model types, techniques, simulation. Modeling influence of climate/environment on phenology, growth, development of horticultural crops. Pre: AREC 310 and BOT 470. Recommended: AREC 210 or MATH 241.

HORT 603 Experimental Design (4) (3 Lec, 1 3-hr Lab) Design of experiments and variance analyses in biological and agricultural research. Pre: AREC 310 or ZOOL 631. Recommended: ZOOL 632. (Cross-listed as AGRN 603 and ANSC 603)

HORT 614 Cellular Genetics of Crops (3) (2 Lec, 1 3-hr Lab) Applications of molecular genetics and cytogenetics to crop improvement. Pre: 453 and ENBI 402.

HORT 615 Quantitative Genetics (3) Applications of quantitative genetics to crop and animal improvement. Pre: 603 or consent.

HORT 654 Communications in Agriculture (1) (3-hr Lec/Lab combination) Laboratory-type course for improving communication abilities. Presentations to lay audiences are emphasized. Hands-on experience in techniques and methods is provided.

HORT 664 Orchidology (3) (2 Lec, 1 3-hr Lab) Classification, culture, cytogenetics, breeding of orchids. Pre: BOT 101 and BIOL 375.

HORT 667 Horticultural Seminar (1) Presentation of research reports; reviews of current literature in horticulture.

HORT 674 Plant Growth and Development (3) Physiology of plant growth regulators, tropisms, circadian rhythms, translocation, photoperiodism and vernalization, germination, dormancy and senescence. Pre: BOT 470 and ENBI 402. (Cross-listed as BOT 674)

HORT 699 Directed Research (V) In-depth study of specialized problems. CR/NC only. Maximum of 8 credit hours. Pre: consent.

HORT 700 Thesis Research (V)

HORT 710 Mineral Nutrition of Tropical Crops (3) (1 2-hr Lec, 1 3-hr Lab) Mineral nutrition of plants in relation to plant metabolism, mechanisms of ion uptake, long-distance transport of solutes, and interactions at the root-soil interface. Special emphasis on problems associated with tropical crops. Pre: BOT 470 and SOIL 450; or consent. (Cross-listed as AGRN 710) (Alt. years)

HORT 711 Special Topics in Experimental Horticulture (V) Specialized topics from various areas in horticultural research such as experimental techniques, growth regulation, morphogenesis, genetics and breeding, culture and nutrition of tropical crops. Pre: consent.

HORT 800 Dissertation Research (V)

HPER

See *Kinesiology and Leisure Sciences (KLS)*

HSSW

See *Health Sciences and Social Welfare*

Human Resources Management (HRM)

College of Business Administration

HRM 200 Career Development (1)

HRM 351 Personnel Administration (3) Survey of the field covering recruitment, selection, training, appraisals, grievance handling, communications, discipline, safety, compensation, and benefits.

HRM 353 Leadership and Group Dynamics (3) Develop understanding of theory and research on managerial, entrepreneurial leadership and creativity in organizations. Topics include leadership, decision making, motivation, personality, and rewards within group settings.

HRM 354 Organizational Change and Effectiveness (3) Identify and evaluate methods to promote an effective change transition through efficient integration of corporate goals with the organizational culture.

HRM 399 Directed Reading and Research (V) Reading and research in a special area within the major field under direction of faculty member(s). Project must include statement of objectives, outline of activities planned, results expected, and how they are to be reported and evaluated. Must be approved in advance by the department chair and faculty adviser.

HRM 453 Personnel Compensation (3) Selected topics. Emphasis on trends, recent issues, job evaluation, incentive systems, salary administration, executive compensation, profit sharing, benefit programs, retirement plans. Pre: 351.

HRM 455 The Staffing Process (3) Contemporary practices and trends in personnel planning for a competent work force; legal constraints, recruitment and selection, differential placement, training, career programming. Pre: 351.

HRM 663 Personnel Administration (3) Analysis and critical evaluation of basic issues, policies, and trends in personnel administration.

HRM 664 Training and Development (3) Covers issues in design, delivery, and assessment of training, theoretical background of training and development process, types of training process, cross cultural and other types of diversity training and development of training modules. A-F only.

HRM 665 Compensation (3) Survey of compensation methods and procedures including job evaluations, incentive systems, salary administration, fringe benefits, appropriate legislation, policies and strategy issues of compensation systems. A-F only.

HRM 666 Health, Safety, and Security (3)

This course is concerned primarily with the safety and mental health management process which is a complex activity requiring experts from many disciplines such as industrial hygiene, occupational medicine and safety engineering, safety legislation is covered. A-F only.

HRM 667 The Staffing Process (3) Recruiting and selection to optimize organizations including job design, job analysis, recruitment and selection methods, such as types of interviews and assessment centers, within legislative environment. A-F only.

HWST

See *Hawaiian Studies*

Ilokano (ILO)

College of Languages, Linguistics and Literature

ILO 101 Elementary Ilokano (4) Listening, speaking, reading, writing. Structural points introduced inductively. Meets five hours weekly; daily lab work. **HSL**

ILO 102 Elementary Ilokano (4) Continuation of 101. **HSL**

ILO 111 Intensive Elementary Ilokano (6) Listening, speaking, reading, writing. Structural points introduced inductively. Intensive vocabulary development and basic conversation. **HSL**

ILO 112 Intensive Elementary Ilokano (10) **HSL**

ILO 201 Intermediate Ilokano (4) Continuation of 102. Meets five hours weekly; daily lab work. Pre: 102 or equivalent. **HSL**

ILO 202 Intermediate Ilokano (4) Continuation of 201. **HSL**

ILO 212 Intensive Intermediate Ilokano (10) **HSL**

ILO 301 Third-Level Ilokano (3) Continuation of 202. Conversation, advanced reading, composition. Meets three times weekly. Pre: 202 or equivalent.

ILO 302 Third-Level Ilokano (3) Continuation of 301.

ILO 401 Fourth-Level Ilokano (3) Continuation of 302. Conducted in Ilokano. Advanced reading, writing, and conversation. Contemporary Ilokano literature; cultural and historical topics. Pre: 302 or equivalent.

ILO 402 Fourth-Level Ilokano (3) Continuation of 401.

ILO 424 Introduction to Ilokano for Interpreters (3) Techniques for interpreting Ilokano into English and vice versa. A-F only. Pre: 302 or consent.

ILO 451 Structure of Ilokano (3) Introduction to phonology, morphology, and syntax. Pre: 202 or consent.

Indo-Pacific Languages (IP)

College of Languages, Linguistics and Literature

In addition to the languages normally offered by the department, other languages commanded by individual faculty members may be offered if demands and staff permit, e.g., classical Arabic, Asilulu, Avestan, Balinese, Javanese, Malaysian, Old Persian, Sudanese, and Tongan. Interested students should consult the department chair. Language concentrations in certain other degree programs, e.g., through the Liberal Studies Program, may be arranged. Inquire at the department office.

IP 101 Directed Elementary Language Study (4) Directed study of a South Asian, Southeast Asian, or Pacific language not regularly listed by the department. Pre: consent.

IP 102 Directed Elementary Language Study (4) Continuation of 101.

IP 199 Introductory Language Study (V) Introduction to a South Asian, Southeast Asian, or Pacific language not regularly offered. Contact hours and credits determined by student interests and faculty resources. Repeatable up to 8 credit hours. Pre: consent.

IP 201 Directed Intermediate Language Study (4) Continuation of 102. Pre: consent.

IP 202 Directed Intermediate Language Study (4) Continuation of 201.

IP 261 Topics in Indo-Pacific Literature/Culture (V) Study of a literature or culture of the Indo-Pacific area through readings in various fields in English. Repeatable up to 6 credit hours. Pre: consent.

IP 273 (Alpha) Introduction to Indo-Pacific Language and Culture (3) Introduction in English to language(s) and culture(s) of Indo-Pacific country or region. (B) Indian; (C) Southeast Asian; (D) Polynesian **AHL3**; (E) Philippines **AHL3**. Pre: 101 and 102 courses in relevant language or consent.

IP 299 Intermediate Language Study (V) Intermediate study of a South Asian, Southeast Asian, or Pacific language not regularly offered. Contact hours and credits determined by student interests and faculty resources. Repeatable up to 8 credit hours. Pre: at least 6 credit hours of elementary study in the same language.

IP 301 Directed Third-Level Language Study (3) Continuation of 202. Pre: consent.

IP 302 Directed Third-Level Language Study (3) Continuation of 301.

IP 361 Southeast Asian Literature in Translation (3) Survey in English of traditional and modern literatures of Southeast Asia.

IP 363 Philippine Literature in English (3) Critical survey of 20th-century Philippine literature written in English; cultural values. Pre: one of ENG 250–257 or consent.

IP 365 South Asian Literature in Translation (3) Survey of traditional and modern literatures of South Asia; literature written originally in English.

IP 366 South Asian Literature in Translation (3) Survey of traditional and modern literatures of South Asia; a vernacular literature to be determined by faculty resources and student interest.

IP 367 Modern Philippine Drama and Film (3) Philippine culture as represented in modern drama and film; zarzuela, psychological drama, theater of protest, Philippine drama in Hawai'i. Pre: one of ENG 250–257.

IP 369B Study Abroad: Western Samoa (3)

IP 369E Study Abroad: Vietnam (3)

IP 395 Polynesian Folklore in Translation (3) Traditional Polynesian genres (legends, myths, folktales, fables, proverbs, songs, riddles, jokes) examined in translation and culturally and structurally interpreted. Pre: one of ENG 250–257.

IP 396 Philippine Literature and Folklore in Translation (3) Philippine folk literature translated into English: epics, myths, legends, and other folklore. Classic works of vernacular writers. Pre: one of ENG 250–257 or consent. **AHL3**

IP 399 Third-Level Language Study (V) Third-level study of a South Asian, Southeast Asian, or Pacific language not regularly offered. Contact hours and credits determined by student interests and faculty resources. Repeatable up to 6 credits. Pre: at least 6 credits of intermediate study of the same language.

IP 401 Directed Fourth-Level Language Study (3) Continuation of 302. Pre: consent.

IP 402 Directed Fourth-Level Language Study (3) Continuation of 401.

IP 411 Ilokano Literature in Translation (3) Overview of Ilokano literature from the early writings to the major works of contemporary writers. A–F only. Pre: ILO 101, one of ENG 250–257, ENG 363, or ENG 396; or consent.

IP 427 (Alpha) Topics in Samoan Literature (3) (B) Writings of Albert Wendt. Pre: SAM 227 or one of ENG 250–257; or consent. (C) Samoan Women Writers. Pre: SAM 227 or one of ENG 250–257 or WS 254; or consent.

IP 431 Rizal's Literary Works in Translation (3) Interpretation and analyses of Rizal's novels *Noli* and *Fili* as they relate to the social, political, and historical context of the Spanish regime in the Philippines. Pre: 363 or 396 or ENG 250; or consent.

IP 470 Folklore (3) Theory and method of comparative and analytical folklore study, with special applications to Pacific traditions. Pre: ANTH 200. (Cross-listed as ANTH 470)

IP 499 Directed Studies (V) Study of a Pacific, South Asian, or Southeast Asian language through vernacular readings in various academic fields. Repeatable. Pre: third-level language and consent.

IP 699 Directed Research (V) Repeatable. Pre: consent.

Indonesian (IND)

College of Languages, Linguistics and Literature

IND 101 Elementary Indonesian (4)

Emphasis on the development of communicative competence in both oral and written language. Daily lab work. **HSL**

IND 102 Elementary Indonesian (4)

Continuation of 101. **HSL**

IND 112 Intensive Elementary Indonesian (10) **HSL**

IND 201 Intermediate Indonesian (4)

Continuation of 102. Meets five hours weekly; daily lab work. Pre: 102 or equivalent. **HSL**

IND 202 Intermediate Indonesian (4)

Continuation of 201. **HSL**

IND 212 Intensive Intermediate Indonesian (10) **HSL**

IND 301 Third-Level Indonesian (3)

Continuation of 202. Conducted in Indonesian. Meets three hours a week. Reading, discussion, composition, and projects. Pre: 202.

IND 302 Third-Level Indonesian (3)

Continuation of 301.

IND 303 Accelerated Third-Level Indonesian (6)

IND 401 Fourth-Level Indonesian (3)

Continuation of 302. Conducted in Indonesian. Meets three hours a week. Readings in various materials; speaking in various settings. Pre: 302.

IND 402 Fourth-Level Indonesian (3)

Continuation of 401.

IND 452 Structure of Indonesian (3)

Introduction to grammar; some sociolinguistic background. Pre: 302 or equivalent.

IND 454 History of Indonesian (3) Social and linguistic development of Indonesian from roots in earlier Malay to contemporary form and function. Pre: 202 and 452, or consent.

IND 461 Modern Indonesian Literature (3)

Selected readings, 1900 to present. Discussion and composition. Pre: 402 or consent.

Industrial Relations (IR)

College of Business Administration

IR 361 Labor Problems (3) Problems and economics of labor; history, structure, government, activities of trade unions.

IR 463 Collective Bargaining/Dispute Settlement (3) Principles and concepts of collective bargaining; methods of settling disputes over rights and interests. Pre: 361.

IR 465 Labor and Social Legislation (3) Evolution, interpretation, and application of labor and social welfare legislation with special emphasis on impact of labor-management relations. Pre: 361.

IR 467 Labor-Management Relations/Public Sector (3) Review and analysis of basic factors that distinguish private from public employment relations; examination of the development of recent legislation and programs at the federal, state, and municipal levels. Specific consideration given to current problems on the Mainland and Hawai'i. Pre: 361 or consent.

IR 469 Labor Problems in Asia (3) Survey and comparison of labor markets, economic development, and the role of trade unions in developing countries with particular reference to Asia and the Pacific. Pre: 361.

IR 665 Labor Relations (3) Critical evaluation of theories and models of trade unionism and labor relations; evolution and contributions to social sciences.

IR 666 International Collective Bargaining (3)

IR 667 International Collective Bargaining (3) Expanded and comparative analysis of wage determination systems through collective bargaining in selected developed and underdeveloped countries—the impact of industrialization and international trade on wage-setting.

Information and Computer Sciences (ICS)

College of Natural Sciences

ICS 101 Tools for the Information Age (3)

Fundamental concepts and terms of computer technology, application software for problem solving, computer technology trends and impact on individuals and society. Co-requisite: 101L.

ICS 101L Tools for the Information Age Lab (1)

Using computers and application software: survival skills, written communications, spreadsheets, computer communications, presentation software. Co-requisite: 101.

ICS 111 Introduction to Computer Science I (3)

Overview of computer science, writing programs. Pre: 101 or consent. Co-requisite: 111L. **NS3**

ICS 111L Introduction to Computer Science I Lab (1)

Programming exercise, demonstration and discussion of computer equipment, techniques, issues. Co-requisite: 111.

ICS 141 Discrete Mathematics for Computer Science I (3)

Logic, sets, functions, matrices, algorithmic concepts, mathematical reasoning, counting techniques, probability theory, relations, equivalences, partial orderings, graphs. Pre: 111 (or concurrent) or consent.

ICS 211 Introduction to Computer Science II (3)

Algorithms and their complexity, introduction to software engineering, data structures, searching and sorting algorithms, numerical errors. Pre: 111 and 141 (or concurrent), or consent.

All students wishing to enroll in ICS courses above 211 must meet the prerequisite grade requirement of B or higher in ICS 111 (and 111L) and 211 prior to registering for the course.

ICS 212 Program Structure (3) Program organization paradigms, programming environments, implementation of a module from specifications, the C and C++ programming languages. Pre: 211 or consent.

ICS 241 Discrete Mathematics for Computer Science II (3)

Recursive algorithms, program correctness, structured programs, graph theory, trees and their applications, probability theory, Boolean algebra, introduction to formal

languages and automata theory. Pre: 111 and 141; or consent.

ICS 311 Algorithms and Data Structures (3)

Data structures, including arrays, records, pointers, trees, and graphs, storage management, algorithms for searching and sorting, mathematical analysis of algorithms. Pre: 141 and 211, or consent.

ICS 312 Machine-Level and Systems Programming (3)

Machine organization, machine instructions, addressing modes, assembler language, subroutine linkage, linking to higher-level languages, interface to operating systems, introduction to assemblers, loaders and compilers. Pre: 211 and 212 (or concurrent), or consent.

ICS 313 Programming Language Theory (3)

Syntax, control structures, data binding and scope, language styles, programming in LISP and Prolog, language and automata theory. Pre: 141 and 212, or consent.

ICS 321 Data Storage and Retrieval (3)

Data storage devices, timing and capacity, programming for files, hashed and indexed files, introduction to relational database systems. Pre: 141 and 211, or consent.

ICS 331 Logic Design and Microprocessors (3)

Basic machine architecture, microprocessors, bus organization, circuit elements, logic circuit analysis and design, microcomputer system design. Pre: 312 or consent. Co-requisite: 331L.

ICS 331L Logic Design and Microprocessors Lab (1)

Use of laboratory tools, measurement and construction techniques, hardware debugging, interfacing techniques, microcomputer circuitry and construction. Co-requisite: 331.

ICS 412 Operating Systems (3)

Operating system structure, process creation and management, memory allocation and management, scheduling, protection. Pre: 212 and 312, or consent.

ICS 413 Software Engineering I (3)

System specification, modeling and analysis, prototyping, hierarchical design, program design methods, cost estimation, project management, computer-aided software design. Team-oriented software-design project. Pre: 311 or consent.

ICS 414 Software Engineering II (3)

Continuation of 413. Project management, quality, and productivity control, testing and validation, team management. Team-oriented software-implementation project. Pre: 413.

ICS 415 Introduction to Programming for the Web (3)

Introduction to emerging technologies for construction of World Wide Web (WWW)-based software. This course covers the programming and scripting languages used for the creation of dynamic WWW sites and client-server programming. Students will be expected to complete a medium-sized software project that uses all the languages and concepts discussed in the class. Pre: 311 or consent.

ICS 421 Database Systems (3)

Principles of database systems, data modeling, relational models, database design, query languages, query optimization, concurrency control data security. Pre: 311 and 321, or consent.

ICS 422 Data Processing (3) Role of data processing in organizations, programming practices, ethics, COBOL language, sequential and indexed file processing, report writing, on-line transaction processing. Pre: 321 or consent.

ICS 424 Application Frameworks (3) Experience producing applications with at least two different applications frameworks. A-F only. Pre: 212, 311, and 313; or consent.

ICS 431 Computer Architecture (3) Memory management, control flow, interrupt mechanisms, multiprocessor systems, special-purpose devices. Pre: 331.

ICS 441 Theory of Computation (3) Grammars, sequential machines, equivalence, minimalization, analysis and synthesis, regular expressions, computability, unsolvability, Gödel's theorem, Turing machines. Pre: 313.

ICS 442 Analytical Models and Methods (3) Applications of mathematical methods in computer science with emphasis on discrete mathematics, numerical computation, algebraic models, operations research. Pre: MATH 216 or MATH 242 or MATH 252.

ICS 451 Data Networks (3) Network analysis, architecture, digital signal analysis and design; circuit switching, packet switching, packet broadcasting; protocols and standards; local area networks; satellite networks; ALOHA channels; examples. Pre: 141 and 212, or consent.

ICS 461 Artificial Intelligence I (3) Survey of artificial intelligence: natural language processing, vision and robotics, expert systems. Emphasis on fundamental concepts: search, planning, and problem solving, logic, knowledge representation. Pre: 311.

ICS 463 Human Computer Interaction (3) Application of concepts and methodologies of human factors, psychology and software engineering to address ergonomic, cognitive, and social factors in the design and evaluation of human-computer systems. Pre: 311 or consent.

ICS 464 Introduction to Cognitive Science (3) Introduces basic concepts, central problems, and methods from cognitive science. Identifies contributions from disciplines such as cognitive psychology, linguistics, artificial intelligence, philosophy, and neuroscience. Pre: 311 or consent.

ICS 465 Introduction to Hypermedia (3) Basic issues of interactive access to information in various formats on computers. Available hardware and software: editing, integration, programming. Implementation of a sample information system. Pre: 311.

ICS 471 Probability, Statistics, and Queuing (3) Introduction to: probability, Markov chains, queuing theory, statistical inference, and regression. Emphases on computer system applications and statistical computing and simulation. Pre: 141 or consent.

ICS 481 Introduction to Computer Graphics (3) Fundamentals of computer graphics including graphics hardware, representation, manipulation, and display of two- and three-dimensional objects, use of commercial software. Pre: 311 and either MATH 216, MATH 242, or MATH 252; or consent.

ICS 491 Special Topics (3) Reflects special interests of faculty. Oriented toward juniors and seniors. Pre: consent.

ICS 499 Computer Project (V) Individual or small-group projects in system design or application under faculty supervision. Pre: 313 or 321, or consent.

ICS 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

ICS 611 Compiler Theory and Construction (3) Design and implementation of compilers, syntactic and semantic descriptions of programming languages, algorithms for syntactic analysis and object code generation. Pre: 312 or consent.

ICS 612 Theory of Operating Systems (3) Advanced study in operating systems theory and design with emphasis on case studies and distributed systems. Pre: 412.

ICS 613 Advanced Software Engineering (3) Fundamental software engineering procedures, including planning, estimation, design, testing, process definition and improvement, and software quality assurance. Measurement techniques are used to support empirically-driven software process improvement throughout the course. Pre: 414 or consent.

ICS 614 Software Entrepreneurship (3) Provides in-depth practice with technologies and practices important to establishing and growing a high technology business by technically-skilled individuals. A-F only. Pre: 413 or consent.

ICS 621 Analysis of Algorithms (3) Analysis and design of algorithms: modeling, comparison, measures, applications. Pre: 311.

ICS 622 Systems Modeling and Evaluation (3) Mathematical modeling, analysis, optimization, and simulation techniques, applications to design and evaluation of computer software systems. Pre: 412, 440, and 471; or consent.

ICS 623 Data Security (3) Classical ciphers, current encryption standards, public key cryptography, authentication, digital signatures, security in operating systems and databases. Pre: 321 and 412, or consent.

ICS 641 Theory of Computation (3) Advanced topics in formal languages, automata, computability, computational complexity. Pre: 440 or consent.

ICS 651 Computer Networks (3) Elementary principles of modern computer networking. Detailed coverage of overall architecture and the physical, data link, and network layers, with emphasis on the network layer. Pre: 451.

ICS 661 Artificial Intelligence II (3) Current issues in artificial intelligence, including expert systems, knowledge representation, logic programming, learning, natural language processing. Pre: 461.

ICS 662 Computer Algebra (3) Use of computers and non-numeric mathematics, including algebra and calculus, theory and applications. Pre: 440 or consent.

ICS 663 Pattern Recognition (3) Nature of the problem in pattern recognition and clustering; explanation of various algorithms. Pre: MATH 371.

ICS 664 Human-Computer Interaction (3) Studies of human performance in designing and using information systems. Emphasizes concepts and methodologies from human factors,

psychology, and software engineering relating to human performance. Pre: 413.

ICS 665 User Interfaces and Hypermedia (3) Advanced concepts in construction of interfaces between computers and their users. Hypermedia information structures, guidelines, problems, and tradeoffs. Discussion of selected readings, implementation of prototypes. Pre: 465.

ICS 667 Advanced HCI Design Methods (3) Advanced analytical and empirical methods for the design and evaluation of usable, useful, and robust human-computer interfaces. Students will apply selected methodologies to a major system design project. Pre: 463 or 465; or consent.

ICS 671 Applied Regression Analysis (3) Fitting a straight line by least squares, multiple regression, hypothesis testing, examination of residuals, dummy variables, stepwise regression, analysis of variance, nonlinear estimation, computer assignments. Pre: 471.

ICS 672 Time Series Analysis (3) Least squares and maximum likelihood theory, application to stationary and nonstationary parametric time series model fitting. Pre: 671.

ICS 673 Multivariate Analysis (3) Matrix algebra, multiple and partial correlation, factor analysis, canonical correlation, discriminant analysis with applications. Pre: 471. Recommended: 671.

ICS 681 Computer Graphics (3) Selected advanced topics in computer graphics. Substantial project required. Pre: 481 or consent.

ICS 682 Numerical Computation (3) Selected topics in numerical analysis, mathematical software, and scientific computation; examples include sparse matrix methods, finite element methods, mathematical programming. Repeatable. Pre: 440 or consent.

ICS 690 Seminar in ICS (1) Series of talks on advanced research topics. CR/NC only.

ICS 691 Topics in Software (3) Reflects special interests of faculty in advanced programming, systems programming, software systems. Repeatable. Pre: consent.

ICS 692 Topics in Theoretical Computer Science (3) Reflects special interests of faculty in theoretical computer science. Repeatable. Pre: consent.

ICS 699 Directed Reading/Research (V) Pre: graduate standing and consent.

ICS 700 Thesis Research (V) Research for master's thesis.

ICS 800 Dissertation Research (V)

Information Technology Management (ITM)

College of Business Administration

ITM 310 Topics in IS/ITM for Nonmajors (3) This course provides varied opportunities to study information system and decision science topics relevant to general managers. Pre: consent (not open to MIS majors).

ITM 352 Programming Application Systems (3) Introduction to applications programming. Fundamentals, essential logic, file handling, report writing. Emphasis on systems development and disciplined programming. Pre: ICS 101 or equivalent, or consent.

ITM 353 Information Systems Analysis and Design (3) Analysis and design of systems in organizations. Includes role of general systems concepts, systems development life cycle, identifying systems requirements, logical and physical design. Pre: 352 and BUS 311; or consent.

ITM 354 Database Systems (3) Introduction to database management and data structures, including database planning and design, normalization, relational and network data models, and physical organization and implementation. Pre: 352 and 353, or consent.

ITM 357 Networking (3) Basic concepts in data networking, standards, architectures. Local and wide area networks. PC networking. The Internet. Telephony and Carriers. Pre: 352 and BUS 311 or consent.

ITM 360 Current Topics—Decision Sciences (3) Repeatable with permission of department chair. Pre: BUS 311 or consent of instructor.

ITM 366 Information Systems in Organizations (3) Practice of information systems in organizations. Capstone course for MIS majors. Pre: 352, 353, 354, 357 and graduating semester; or consent.

ITM 385 Electronic Commerce (3) Survey of electronic commerce technologies and business strategies, with an emphasis on technology and application development. The development of Web-based and multimedia applications; the impacts of EC on business strategy; legal and ethical issues. A-F only. Pre: BUS 311 or consent.

ITM 387 (Alpha) Advanced Topics in Decision Sciences (3) Computerized management information systems, operations research, or business statistics: (B) risk assessment and business decisions; (C) advanced topics in COBOL; (D) introduction to systems software; (E) advanced technology in MIS; (F) systems development practicum; (G) database systems; (H) impact of advanced technology on organizations; (J) simulation modeling and analysis; (K) decision support systems. Repeatable with permission of department chair. Pre: varies with topic.

ITM 396 Methods of Scientific Research (3) Study of fundamentals of research methodology; planning, organizing, and executing a research project; techniques of gathering data; analysis and interpretation of data; strategy of presenting findings. Pre: BUS 310.

ITM 399 Directed Reading and Research (V) Reading and research in special area of major under direction of faculty member(s). Project must include statement of objectives, outline of activities planned, results expected, and how they are to be reported and evaluated. Must be approved in advance by the department chair and the faculty adviser.

ITM 451 Nonparametric Methods (3) Techniques for estimation of parameters and testing hypotheses that require no assumption about the form of the distribution function;

application to business problems. Pre: BUS 310. (Cross-listed as QM 451)

ITM 453 Sample Design (3) Theory and practice in the selection and statistical treatment of probability samples most appropriate for estimating characteristics of diverse populations. Pre: BUS 310. (Cross-listed as QM 453)

ITM 454 Experimental Design (3) Analysis of variance techniques for identification and measurement of factors or treatments which affect productivity or quality of output in action systems. Pre: BUS 310. (Cross-listed as QM 454)

ITM 455 Applied Regression Analysis (3) Application of multiple regression analysis to practical business problems. Related techniques of analysis of variance and co-variance, and discrimination analysis also discussed. Pre: BUS 310. (Cross-listed as QM 455)

ITM 614 Operations Research for Management I (3) Operations research methods from managerial viewpoint. Emphasis on application of deterministic models to management decision-making. Pre: BUS 610 or consent.

ITM 615 Operations Research for Management II (3) Operations research models under risk and uncertainty including game theory, decision theory, Markov chains, replacement theory, and queuing theory. Emphasis on applications in the business environment. Pre: BUS 610 or consent.

ITM 660 Current Topics in Decision Sciences (3) Selected current practices and trends in decision sciences and MIS. May be repeated with change in topic. Pre: BUS 615 or consent.

ITM 680 Statistical Decision Theory (3) Modern statistical decision theory as applied to business. Topics include probabilistic models, decision making under uncertainty, and Bayes decision rules. Pre: BUS 610.

ITM 683 Management of Information Systems (3) Nature of organizational information systems. Concepts and impact of modern information technology, including computer hardware and software, database management, data communications and telecommunications, office automation. Pre: BUS 615 or consent.

ITM 684 Decision Support Systems (3) Theory and technology of management information systems with emphasis on decision support systems. Includes characteristics of MIS and DSS, technology support for decision making, integration of decision models, data analysis, and human-computer interaction. Pre: BUS 615 or consent.

ITM 685 Electronic Commerce (3) Fundamentals of electronic commerce technology and business strategy issues. The use of the Internet for marketing, supply-chain management, and retailing; an overview of networking technologies; the development of Web-based applications; policy, legal and ethical issues. A-F only. Pre: BUS 615C or consent.

ITM 686 Computer Simulation (3) Computer simulation as a research and analysis tool, present and potential uses of simulation models, technology of model construction, and the use of computer simulation for studying systems. Pre: BUS 615 or consent.

ITM 687 (Alpha) Seminar in Decision Sciences (3) Computerized management information systems, operations research, or business statistics: (B) data management and database approach; (C) impact of information technology on organizations; (D) telecommunications; (F) business forecasting methodology; (G) project investment decisions; (H) applied decision analysis; (I) risk assessment and business decisions; (J) data communication; (K) end-user computing; (M) communication and technology. May be repeated for credit. Pre: BUS 615 or consent.

Insurance (INS)

College of Business Administration

INS 300 Principles of Insurance (3) Analysis and treatment of pure risks; utilization of insurance programs to provide protection against financial losses caused by property losses; third-party claims and premature death.

INS 311 Property and Casualty Insurance (3) Treatment of risk of financial loss of personal and business property and resulting loss of income occasioned by fire and allied perils. Forms of insurance used by individual business executives and firms including crime, transportation, liability, and worker compensation. Pre: 300.

INS 331 Life Insurance (3) Treatment of the risk of premature death through use of various life insurance policies. Policy forms, calculation of premiums, reserves, non-forfeiture values, underwriting, regulation of policy provisions, related coverage. Pre: 300.

Interdisciplinary Studies (IS)

IS 101A Information Literacy (3) Examines scholarly discourse in the information and technology age. Introduces the nature of investigation and presentation in an academic environment. Practice in research and information technologies to think critically and analytically about education and community issues. A-F only.

IS 291A Community Service Practicum (V) Supervised fieldwork in community agency, arranged by student. Repeatable one time. Pre: written proposal approved by Honors director and appropriate faculty adviser.

IS 300A Field Study (V) Pre-arranged systematic field investigation of selected topics. Repeatable three times. Pre: written proposal approved by Honors director and appropriate faculty member.

IS 311 Independent Study Tutorial (V) Comprises a full-semester load. Not open to freshmen or students on probation. Pre: acceptable proposal and consent of Honors director and appropriate faculty adviser.

IS 312 Independent Study Tutorial (V) Continuation of 311.

IS 369 British Life and Culture (3) For Study Abroad Program students participating in the UHM Semester in London. Emphasis is placed on understanding within historical contexts important issues for contemporary British

society — particularly those of class, power, gender, and race. A-F only. Pre: participation in London Semester Program.

IS 489 Environmental Practicum (3) Field experience in study and abatement of environmental problems under faculty direction. Project proposal, narrative activity log, and documentary report are required. Pre: upper division standing, courses in appropriate discipline, and consent.

IS 610 Field Study in Gerontology (V) Individually designed field experience for advanced certificate in gerontology students. Placements arranged at community programs, research sites, and special projects at the Center on Aging. Repeatable.

IS 611 Interdisciplinary Seminar in Gerontology (3) Understanding of gerontology as an interdisciplinary field of study and application of such understanding to both theoretical and applied aspects of aging. Repeatable.

International Cultural Studies (CUL)

College of Social Sciences

CUL 609 Faculty Seminar Series (1) Seminar consists of a series of presentations by certificate faculty on topics of ongoing research. Presentations will open current debates about theory and method in cultural studies. A-F only. Co-requisite: 610.

CUL 610 International Cultural Studies: History and Theory (3) Seminar on the history and theory of interdisciplinary cultural studies. The politics of culture are examined in comparative perspective, focusing on their significance for identity formation, intercultural relations, and global flows of images, people and capital. Approaches to the study of media and popular culture are taken up in terms of their relevance for contemporary issues, especially in Hawai'i and the Asia/Pacific/U.S. region. A-F only. Co-requisite: 609.

CUL 750 International Cultural Studies: Research Project (3) Directed reading and research culminating in a project that engages issues in international cultural studies. Types of projects include scholarly essays, community-based projects, performances or exhibitions. Written statement of purpose and self-evaluation required. A-F only. Pre: 609 and 610.

Interpretation and Translation (IT)

College of Languages, Linguistics and Literature

Students must pass a screening examination in order to enroll in all of the following courses (except 401, 403, and 404). Students may enroll for the (A) translation, (B) interpretation, or (C) translation and interpretation programs.

IT 401 Principles of Translation (3) This course aims to make the student aware of the translation process and the criteria for evaluating translations. It includes readings and discussions of the translation process, terminology research as well as intensive practice in precise writing, paraphrasing, and summarizing. Pre: at least 300-level proficiency in a second language.

IT 402 Professional Orientation (1) Survey course. Translation as a profession. Professional history. Professional organizations. Deontological principles underlying working conditions. Contracts. Professional certification and licensing. Repeatable once. Pre: 401, senior or graduate standing, and pass CITS screening exam. Co-requisite for translation students: 412, 414, 422, and 452. Co-requisite for interpretation students: 432, 442, and 452.

IT 403 Principles of Interpretation (3) This course is designed to develop an awareness of the principles and the current issues involved in interpretation. The theoretical principles, ethics, and underlying techniques will be discussed in reference to conference, court, community, etc., interpreting. Pre: at least 300-level proficiency in a second language.

IT 404 Basics of Interpretation (2) Furnishes practical information through readings and discussions about the interpretation practice and profession. Develops an awareness through hands-on practice of the skills involved in the field of consecutive and simultaneous interpretation. Pre: at least 300-level proficiency in a second language.

IT 405 Principles of Court Interpretation (3) Introduction to the theoretical principles, ethics, practical techniques, and current issues surrounding the practice and profession of court and other legal interpreting. Repeatable once only.

IT 406 Community Interpreting (2) Basic principles, ethics and skills involved in community interpreting; practical information about the community interpreter's role and profession; practice of various community interpreting situations and techniques. Repeatable once.

IT 411 (Alpha) Translation Skills (English) (2) Language specific course. Basic techniques and procedures used in bilingual translation of nonfiction texts. Emphasis on the stylistic, syntactic, cultural, lexical, and terminological problems. Translation into English only. (G) general skills; (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: senior or graduate standing and pass CITS screening exam. Co-requisite: 401, 413, 421, and 451.

IT 412 (Alpha) Technical Translation (English) (3) Translation of nonfiction texts into English. Forms and formats. Emphasis on editing target version and producing camera-ready copy. (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: 411, senior or graduate standing, and pass CITS screening exam. Co-requisite: 402, 414, and 452.

IT 413 (Alpha) Translation Skills (Second Language) (2) Language specific course. Basic techniques and procedures used in bilingual translation of nonfiction texts. Emphasis on the stylistic, syntactic, cultural, lexical, and terminological problems. Translation from English into student's working languages. (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: senior or graduate standing, and pass CITS screening exam. Co-requisite: 401, 411, 421, and 451.

IT 414 (Alpha) Technical Translation (into Second Language) (3) Translation of nonfiction texts from English into student's working languages. Forms and formats. Emphasis on editing target version and producing camera-ready copy. (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: 413, senior or graduate standing, and pass CITS screening exam. Co-requisite: 402, 412, 422, and 452.

IT 421 Research Tools and Technological Aids for Translation (2) Word processing, graphics, spreadsheet, database management, and communication programs for professional practice. Reference and bibliographic searches. Traditional and nontraditional resources. Repeatable once. Pre: senior or graduate standing, and pass CITS screening exam. Co-requisite: 401, 411, and 451.

IT 422 Computer-Assisted Translation (2) (1 Lec, 1 1.5-hr Lab) The use of computers as aids in the translation process. Basic desktop publishing and technical writing. Computer aids for terminology studies and glossary building. Repeatable once. Pre: 421, senior or graduate standing, and pass CITS screening exam. Co-requisite: 402, 412, 452.

IT 431 (Alpha) Pre-Consecutive Techniques (3) Introduction to consecutive interpretation. Abstraction, noting, and recall of information. (G) general skills; (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: senior or graduate standing, and pass CITS screening exam. Co-requisite: 401, 441, and 451.

IT 432 (Alpha) Consecutive Interpretation (3) Extensive note-taking and note-reading in a bilingual context. Focuses on the translation of numbers, acronyms, initials, and economic and financial information. (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: 431, senior or graduate standing, and pass CITS screening exam. Co-requisite: 402, 422, and 452.

IT 441 (Alpha) Pre-Simultaneous Techniques (3) Introduction to simultaneous interpretation. Focus on multitasking, attention, shadowing, EVS, and pacing. (G) general skills; (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: senior or graduate standing, and pass CITS screening examination. Co-requisite: 401, 431, and 451.

IT 442 (Alpha) Simultaneous Interpretation (3) Simultaneous interpretation of speeches. Focus on the study of formulaic and frozen language characteristically used in international meetings. (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: 441, senior or graduate standing, and pass CITS screening exam. Co-requisite: 402, 432, and 452.

IT 451 (Alpha) Pre-Sight Translation (3) Basic course. Study of the linguistic (discourse analysis) and communicative (public speaking) skills needed for translation and interpretation work. (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: senior or graduate standing, and pass CITS screening exam. Co-requisite for translation students: 401, 411, and 421. Co-requisite for interpretation students: 401, 431, and 441.

IT 452 (Alpha) Sight Translation (3) Basic course. Focus on the ability to translate orally information from a written text. Emphasis on improving linguistic (discourse analysis) and communicative (public speaking) skills. (J) Japanese; (K) Korean; (M) Mandarin; (S) Spanish; (O) other. Repeatable once. Pre: 451, senior or graduate standing, and pass CITS screening exam. Co-requisite for translation students: 402, 412, 414, and 422. Co-requisite for interpretation students: 402, 432, and 442.

IT 499 Directed Reading/Studies (V)

IP

See *Indo-Pacific Languages*

IR

See *Industrial Relations*

Italian (ITAL)

College of Languages, Linguistics and Literature

Students choosing Italian for the language requirement should realize it may not be offered if demand is limited.

ITAL 101 Elementary Italian (4) Conversation, laboratory drill, grammar, and reading. **HSL**

ITAL 102 Elementary Italian (4) Continuation of 101. **HSL**

ITAL 160 Intensive Elementary Italian Abroad (V) Intensive course of formal instruction on the first-year level in Italian language and culture in Italy. **HSL**

ITAL 201 Intermediate Italian (3) Reading, conversation, laboratory drill, composition. Pre: 102. **HSL**

ITAL 202 Intermediate Italian (3) Continuation of 201. Pre: 201. **HSL**

ITAL 258 Intermediate Italian Abroad (3) Intensive course of full-time formal instruction in Italy on the second-year level in Italian language and culture. Pre: 102 or 160 or equivalent. **HSL**

ITAL 259 Intermediate Italian Abroad (3) Continuation of 258. **HSL**

ITAL 260 Intensive Intermediate Italian Abroad (V) Intensive course of formal instruction on the second-year level in Italian language and culture in Italy. For semester programs only. Pre: 102 or 160. **HSL**

ITAL 358 Third-Level Italian Abroad (3) Intensive course of full-time formal instruction in Italy on the third-year level in Italian language and culture. Pre: 202 or 259 or 260 or equivalent.

ITAL 359 Third-Level Italian Abroad (3) Continuation of 358.

ITAL 360 Intensive Third-Level Italian Abroad (V) Intensive course of formal instruction on the third-year level in Italian language and culture in Italy. For semester programs only. Pre: 202 or 260 or equivalent.

ITAL 458 Fourth-Level Italian Abroad (3) Intensive course of full-time formal instruction in Italy on the fourth-year level in Italian language, linguistics, culture, and literature. Pre: 359 or 360 or equivalent.

ITAL 459 Fourth-Level Italian Abroad (3) Continuation of 458.

ITAL 460 Intensive Fourth-Level Italian Abroad (V) Intensive course of formal instruction on the fourth-year level in Italian language and culture in Italy. For semester programs only. Pre: 360 or equivalent.

Japanese (JPN)

College of Languages, Linguistics and Literature

All students taking language courses in this program for the first time must take a regularly scheduled placement test; those with no background must come to the Department of East Asian Languages and Literatures for a brief interview. A grade of C or better is required in the prerequisite courses for continuation.

JPN 100 Elementary Japanese, Special (3) Same material as 101, covered more quickly for students with some language background. Pre: placement test. **HSL**

JPN 101 Elementary Japanese (4) Listening, speaking, reading, writing, grammar. Meets one hour, four times a week, plus lab work. Pre: placement test or consent. **HSL**

JPN 102 Elementary Japanese (4) Continuation of 100 or 101. Pre: 100 or 101; or consent. **HSL**

JPN 105 Accelerated Elementary Japanese (8) Content of 101 and 102 covered in one semester. Meets two hours, four times a week, plus lab work. Pre: consent. **HSL**

JPN 201 Intermediate Japanese (4) Continuation of 101 and 102. Meets one hour, four times a week, plus lab work. Pre: 102, 105, or placement test; or consent. **HSL**

JPN 202 Intermediate Japanese (4) Continuation of 201. Pre: 201 or placement test; or consent. **HSL**

JPN 205 Accelerated Intermediate Japanese (8) Content of 201 and 202 covered in one semester. Meets two hours daily, Monday–Friday, plus daily lab work. Pre: 102, 105, or consent. **HSL**

JPN 213 Second-Year Japanese for Business/TIM (4) Specific aspects of Japanese language and culture intended to meet the social demands and working requirements of business and/or travel industry management. Meets four hours a week plus lab work. Pre: 102, 105, or consent; and business or TIM major. **HSL**

JPN 214 Second-Year Japanese for Business/TIM (4) Continuation of 213. Pre: 201, 213, or consent; and business or TIM major. **HSL**

JPN 258 Intermediate Japanese Abroad (4) Intensive course of formal instruction on the second-year level in Japanese language and culture in Japan. Pre: 102. **HSL**

JPN 259 Intermediate Japanese Abroad (V) Continuation of 258. A–F only. Pre: 201 or consent. **HSL**

For key to symbols and abbreviations, see the first page of this section.

JPN 301 Third-Year Japanese (4) Transitional course employing four skills (listening, speaking, reading, writing) and grammar training to prepare students to address academic content in Japanese. Meets one hour, four times a week, plus lab work. Pre: 202, 205, or placement test; or consent.

JPN 302 Third-Year Japanese (4) Continuation of 301. Pre: 301 or placement test; or consent.

JPN 305 Accelerated Third-Year Japanese (8) Content of 301 and 302 covered in one semester. Meets two hours daily, Monday–Friday, plus daily lab work. Pre: 202 or 205; or consent.

JPN 307 Special Japanese Reading and Writing (3) For bilingual students whose aural and spoken skills in Japanese were acquired informally. Emphasis on reading and writing through 301 level. Pre: placement test. **HSL**

JPN 308 Special Japanese Reading and Writing (3) Continuation of 307. Pre: 307 or placement test. **HSL**

JPN 315 Third-Year Japanese Aural Comprehension (3) Training in strategies for listening to various types of spoken material presented in narrations, interviews, news broadcasts, and lectures, etc. Pre: 302 or consent.

JPN 350 Introduction to Japanese Linguistics (3) Introduction to major areas of linguistic description as applied to Japanese language. Pre: 302 or 305.

JPN 358 Third-Level Japanese Abroad (4) Intensive course of full-time formal instruction on the third-year level in Japanese language and culture in Japan. Pre: 202.

JPN 359 Third-Level Japanese Abroad (4) Continuation of 358. Pre: 301 or 358.

JPN 370 Language in Japanese Society (3) Review of the use of Japanese respect language in relation to social structure, interpersonal relationships, and ways of thinking. Pre: 302, 305, or consent.

JPN 399 Directed Third-Level Reading (V) For those who need special assistance, e.g., reading texts in area of specialization or at a pace more rapid than those of standard courses. CR/NC only. Repeatable. Pre: consent.

JPN 401 Fourth-Level Japanese Reading (3) Continuation of 301 and 302 with emphasis on development of reading skills. Pre: 302, 305, or placement test.

JPN 402 Fourth-Level Japanese Reading (3) Continuation of 401. Pre: 401 or placement test.

JPN 405 Fourth-Level Japanese Reading: Accelerated (6) Content of 401 and 402 covered in one semester. Meets daily Monday–Friday. Pre: 302, 305, or placement test.

JPN 407 (Alpha) Readings in Original Texts (3) (B) newspapers and magazines; (C) social sciences; (D) humanities; (E) modern literature. Pre: 402, 405, or consent.

JPN 415 Japanese Aural Comprehension (3) Training in comprehension of spoken material presented in news broadcasts, documentary narration, formal lectures, etc. Pre: 402, 405, or consent. May be concurrent with 407.

JPN 420 Fourth-Level Spoken Japanese (3) Training in oral communication skills in varied social contexts. Pre: 402 or 405.

JPN 421 Japanese Composition (3) Writing skills refined through practice in various styles (essays, letters, etc.). Pre: 402, 405, or consent.

JPN 425 Japanese Translation (3) Training in techniques of translating Japanese into English. Pre: 407 or consent.

JPN 451 Structure of Japanese (3) Introduction to phonology, morphology, syntax, and semantics of modern colloquial Japanese. Pre: 402 or 405, and 350 or LING 320; or consent.

JPN 458 Fourth-Level Japanese Abroad (3) Intensive course of full time instruction on the fourth-year level in Japanese language and culture in Japan. Pre: 302.

JPN 459 Fourth-Level Japanese Abroad (3) Continuation of 458. Pre: 401 or 458.

JPN 461 Introduction to Classical Japanese (3) Basic classical Japanese grammar to develop reading skills. Pre: 407 or consent.

JPN 466 Readings in Classical Japanese (3) Introduction to major genres of prose and poetry. Repeatable once with permission. Pre: 461 or consent.

JPN 485 (Alpha) Advanced Reading in Modern Japanese (3) (B) literature; (C) nonfiction. Repeatable once. Pre: 407E and one of 407B, 407C, or 407D; or consent.

JPN 490 Advanced Language Study: Japanese (3) Advanced course in spoken and written Japanese stressing intensive research using the Internet, electronic mail in Japanese and conventional media. Oral presentations, written reports and journal writing. Repeatable. Pre: 485 or equivalent and consent.

JPN 495 Internship Program (3) Analysis of intercultural communication processes under faculty supervision through participation in an organization serving native speakers of Japanese. Pre: 302 and 370 (or concurrent), or consent.

JPN 499 Directed Fourth-Level Reading (V) For those who need special assistance, e.g., in reading texts in area of specialization or at a pace more rapid than those of standard courses. Primarily for graduate students from other departments. CR/NC only. Repeatable. Pre: consent.

JPN 601 Japanese Phonology and Morphology (3) Introduction to the phonology and morphology of modern colloquial Japanese. Pre: LING 320 or consent.

JPN 602 Japanese Syntax and Semantics (3) Introduction to theories of syntax, sentence structure, parts of speech, constituency, grammatical relations and case marking, word order, passives, causatives, tense, aspect, and embeddings. Pre: LING 320 or consent.

JPN 604 Introduction to Japanese Language Pedagogy (3) Training in the identification and analysis of general problems in Japanese language learning, teaching, and testing by examining theoretical issues and conducting classroom research. Pre: 407 or equivalent, 451 and 605 (or concurrent); or consent.

JPN 605 Research Methodology in Japanese Linguistics and Language Teaching (3) Japanese-specific training in the formulation of testable hypotheses, in basic statistical and other evaluation techniques, and in the organization and presentation of ideas and data in paper, abstracts, etc. Pre: 407 or equivalent.

JPN 606 Introduction to Japanese Sociolinguistics (3) Introduces theories of language use and provides training in the methodology and analysis of Japanese sociolinguistics. Pre: 370, 407 or equivalent, and 605 (or concurrent); or consent.

JPN 610 (Alpha) Japanese Poetry (3) Historical survey of major poetic types. Repeatable once with consent. (B) classical; (C) medieval Edo; (D) modern. Pre: 466 or consent for (B) and (C); 485 or consent for (D).

JPN 611 (Alpha) Modern Japanese Literature (3) Representative literary works, emphasis on fiction. Repeatable once with consent. (B) Meiji-Taisho (1868–1926); (C) Showa-Heisei (1926–present). Pre: 485 or consent.

JPN 612 Edo Literature (3) Critical reading and analysis; emphasis on prose. Repeatable once with consent. Pre: 466 or consent.

JPN 613 Medieval Japanese Literature (3) Critical reading and analysis of Kamakura and Muromachi literature, emphasis on prose. Repeatable once with consent. Pre: 466 or consent.

JPN 614 Classical Japanese Literature (3) Critical reading and analysis of Heian literature; emphasis on prose. Repeatable once with consent. Pre: 466 or consent.

JPN 620 Practicum: Teaching Japanese Language (V) This course is designed for graduate students pursuing Japanese language teaching and learning, while developing teaching skills, curriculum competence, and leadership. Pre: 604 or EALL 601, or consent.

JPN 631 History of the Japanese Language (3) Survey, theories of origin; related topics in linguistic methodology. Pre: 461 and 601, or consent.

JPN 632 Teaching Japanese as a Second Language (3) Practical overview of major problems; motivation; adult second language learning; communicative and linguistic competence; practical classroom techniques of teaching and testing. Pre: 604 and 605; or consent.

JPN 633 Japanese Sociolinguistics (3) Variations in language form and use depending on social factors. Pre: 601 or 602 (or concurrent), 605 and 606; or consent.

JPN 634 Advanced Japanese Syntax and Semantics (3) Theoretical problems in description of Japanese; contributions of Japanese linguistic study to syntactic theory. Pre: 602 or consent.

JPN 640 Themes in Japanese Literature (3) Intensive study of selected themes in Japanese literature, primarily in the modern period. Content to be announced. Open to non-majors. Repeatable with consent. Pre: 485 or equivalent, or consent.

JPN 641 Traditional Literary Theory (3) Reading and analysis of major works of literary theory and criticism from the classical, medieval, and Edo periods. Pre: 466 or consent.

JPN 642 Kambun (3) Introduction to kambun [the Japanese manner of reading and writing classical Chinese], with critical reading of kambun by Japanese authors. Pre: 461 or consent.

JPN 650 (Alpha) Topics in Japanese Linguistics (3) (C) Japanese/English contrastive analysis (Pre: 601 and 602); (G) structure; Pre: 634 (H) historical change; Pre: 631 (K) history of Japanese language studies (*Kokugo-gaku-shi*); Pre: 631 (M) morphophonemics; Pre: 601 (P) pedagogy; Pre: 632 (S) sociolinguistics; Pre: 633.

JPN 699 Directed Research (V) CR/NC only. Pre: consent of chair.

JPN 710 (Alpha) Research Seminar in Japanese Literature (3) (M) modern; Pre: 611 (P) pre-modern; Pre: 612, 613, or 614.

JPN 730 (Alpha) Research Seminar in Japanese Linguistics (3) (C) Japanese/English contrastive analysis; Pre: 451, or 601 and 602 (G) structure; Pre: 634 (H) historical change; Pre: 631 (K) history of Japanese language studies (*Kokugo-gaku-shi*); Pre: 631 (M) morphophonemics; Pre: 601 (P) pedagogy; Pre: 632 (S) sociolinguistics; Pre: 633.

Journalism (JOUR)

College of Social Sciences

JOUR 150 The Press and Society (3) Communications media in theory and practice. Development, role, influence; rights, responsibilities, problems, issues, and trends. **SS**

JOUR 205 News Writing (3) Fundamentals of news style, reporting, ethics. Pre: minimum grade of B in 150 or ENG 100 (no ELI 100); or consent.

JOUR 206 News Editing (3) Training in editing news material for accuracy, clarity, and relevance. Headline writing. A–F grading only. Pre: 205 or consent.

JOUR 307 Photojournalism (3) Production, selection, and use of photographs for publications. Storytelling with black and white action and feature photos. Students must have a 35mm single lens reflex camera and supply own black and white film and photographic paper. Pre: 205.

JOUR 315 Public Affairs Reporting (3) Writing about governmental affairs, contemporary issues by using techniques of interviewing and of analyzing library materials plus court, legislative, real property, and other public records. A–F grading only. Pre: 206 (or concurrent) or consent.

JOUR 316 Advanced Editing (3) Intensive training in editing, planning, and organizing stories and visual elements for publication; news judgment; managing projects. Pre: 206 or consent.

JOUR 320 Public Relations (3) Current practice and problems in systematic use of media and techniques to influence the public. Pre: 205 or consent.

JOUR 325 Magazine Writing (3) Writing nonfiction articles for magazines, newspapers, and newsletters; preparing material for specific audience; marketing articles. Pre: 206 (or concurrent).

JOUR 327 Interpretive Journalism (3) Writing articles of news analysis, editorials, and critical reviews. Pre: 206 (or concurrent) or consent.

JOUR 360 Journalism History and Trends (3) Development of the news media and trends that may affect the future of journalism. Pre: upper division standing.

JOUR 365 Media and the Law (3) Function of American legal system as it relates to news media. Libel, copyright, freedom of information, free press vs. fair trial, regulation of broadcasting. A–F grading only. Pre: upper division standing or consent.

JOUR 366 Broadcast News Writing and Editing (3) Writing and editing of news for radio and television. Lectures and assignments to develop the special skills required. Pre: 205 or consent.

JOUR 385 Practicum (1) Working on campus student or quasi-professional publications under professional and faculty supervision. CR/NC only. Repeatable. Pre: 205 or consent.

JOUR 390 (Alpha) Journalism Workshops (V) Short-term intensive workshops in journalism and mass communication skills and projects. (B) workshop in new media; (C) workshop in reporting; (D) workshop in editing; (E) workshop in broadcast journalism; (F) workshop in public relations. Repeatable one time. A–F only. Pre: 206 or consent.

JOUR 407 Advanced Photojournalism (3) Computer experience in the creation, manipulation, and editing of color news, feature, sports, and documentary images. Study of the ethical and legal dimensions of electronic imaging. Pre: 307 or consent.

JOUR 410 Writing for Public Relations (3) Techniques of researching, planning, and writing public relations messages for a variety of audiences and media. Pre: 206 and 320, or consent.

JOUR 412 Contemporary Public Relations (3) Advanced research, planning, and writing techniques for production and dissemination of persuasive messages, research reports, and campaign proposals, as applied to specialized contemporary public relations practice. Pre: 410 or consent.

JOUR 415 Advanced Reporting (3) Intensive training in reporting and writing in sensitive news areas for advanced students; fieldwork. A–F grading only. Pre: 315 or consent.

JOUR 420 Advanced Public Relations (3) Application of traditional and innovative techniques to establish relationships, develop understanding and goodwill, and solve complex contemporary public relations problems. A–F grading only. Pre: 206 and 320, or consent.

JOUR 425 Publication Layout and Design (3) Visual display concepts and procedures for newsletters, brochures, newspapers, magazines. Pre: 206 and upper division standing.

JOUR 436 Broadcast News Reporting (3) Reporting, writing, scripting, on-air delivery, producing for broadcast news. Laboratory and fieldwork. A–F grading only. Pre: 315 (or concurrent) and 366; or consent.

JOUR 445 Specialized Reporting (3) Coverage of a selected field or beat, developing background materials, news sources, and story ideas. A–F grading only. Pre: 315.

JOUR 460 Journalistic Ethics (3) Ethics and responsibility in journalism. Case studies. Research paper required. Pre: 315 and senior standing, or consent; 365 and PHIL 101 recommended.

JOUR 466 Advanced Broadcast News (3) Preparation of TV news public affairs programs and mini-documentaries; delivery on air; use of videotape recorders in reporting. Pre: 315 (or concurrent) and 366; or consent.

JOUR 475 International News Coverage (3) Evaluation of coverage and selection of foreign news by American news media; emphasis on news of Asia and Pacific. Techniques of foreign correspondence. International flow of news. Pre: upper division standing.

JOUR 485 Fieldwork (3) Internship in media or PR operations under professional and faculty supervision. CR/NC only. Pre: one of 315, 320, 366, or 425; and consent.

JOUR 499 Directed Research (V) Individual research projects. Pre: senior standing and consent of department chair.

JOUR 515 Advising School Publications (2)

Kinesiology and Leisure Science (KLS)

College of Education

Students registering for 101–186, 323, 331–338, 371–374, and 487 will be requested to complete a medical history form and a liability disclaimer form on the first day of instruction. All students taking 393, 394, 493, and 494 must be immunized for hepatitis B virus prior to admission in the class.

KLS 101 Physical Fitness (1) Conditioning exercises and activities to develop and maintain physical efficiency. Motor fitness tests administered to measure status and progress.

KLS 102 Aerobic Fitness: Beginning (1) Aerobic fitness improvement upon completion of course. Learning and practicing safe total body workout routines done to music. Developing an individual fitness program and recording progress in that program.

KLS 103 Swimming: Beginning (1) Adjusting to and immersing in water, floating, sculling; correct arm stroke, leg kick, breathing techniques and their coordination. (Student to provide own swimming attire approved by instructor.)

KLS 104 Swimming: Intermediate (1) Perfecting and integrating basic strokes with added emphasis for distance and speed. (Student to provide own swimming attire approved by instructor.) Pre: 103 or consent.

KLS 105 Swimming: Advanced (1) Correct techniques used in competitive swimming, racing starts, correct turning techniques, long-distance swimming. (Student to provide own swimming attire approved by instructor.) Pre: 104 or consent.

KLS 106 SCUBA Diving: Beginning (1) Learning watermanship, equipment handling skills, and the knowledge to become safe divers. Additional costs for equipment, diver manual, dive tables, and certification fee.

KLS 110 Golf: Beginning (1) Rules, etiquette, grip, stance, drive, normal iron shots, approach shots, putting.

KLS 111 Golf: Intermediate (1) Corrective work on basic swing mechanics and rhythm; adjustments for bunker play, uphill lies, downhill lies, short game around and on the green; handicapping and match play competition. Pre: 110 and consent.

KLS 112 Golf: Advanced (1) Improving drive, fairway wood shots, long iron shots, control shots, trouble shots, putting, course management, competitive strategy, problems in rules. Greens fees paid by students for play on courses. Pre: 111 and consent.

KLS 115 Bowling (1) Rules, etiquette, arm swing, approach, execution, scoring, spare pickups. Students pay charge for use of alley.

KLS 118 Rifle Marksmanship (1)

KLS 120 Badminton (1) Rules, etiquette, grip, forehand and backhand strokes, serving, smash, drive, net play, offensive and defensive strategy; singles and doubles play.

KLS 123 Folk and National Dances (1) Popular dances of various national groups, including square dances.

KLS 124 Dances of Hawai'i (1) Background and fundamentals of hula. Selected dances with and without instruments.

KLS 125 Dances of Hawai'i: Advanced (1) Advanced techniques in hula movements. Selected dances taught will be more complex, including work with instruments. Individual choreography will be emphasized. Pre: 124 or consent.

KLS 126 Social Dance: Western (1) Social dances including fox trot, waltz, swing, line dances, and other popular dances. Basic steps, rhythm pattern, styling, and variations are taught. Social etiquette is stressed.

KLS 127 Social Dance: Latin (1) Social dances of a Latin flavor including rhumba, cha-cha, tango, samba, and others. Basic steps, rhythm pattern, styling, and variations are taught. Social etiquette is stressed.

KLS 130 Tennis: Beginning (1) Rules, etiquette, grip, forehand and backhand strokes, serving, volleying; singles and doubles play.

KLS 131 Tennis: Intermediate (1) Corrective work in three basic strokes and in net play; the lob, drop shot, overhead smash, and half-volley; applying spin in basic strokes; basic strategy in singles and doubles play. Pre: 130 or consent.

KLS 132 Tennis: Advanced (1) Improving upon the strokes introduced in 130 and 131; advanced competitive strategy; problems in rules; officiating; elements of tournament play. Pre: 131 or consent.

KLS 135 Volleyball (1) Rules, serving, passing, setting up, spiking, blocking, offensive and defensive team play strategy.

KLS 137 Basketball (1) Rules, passing, shooting, dribbling, rebounding, individual defensive and offensive maneuvers; team offense and defense.

KLS 151 Adapted and Prescribed Exercises (1) Small group and individual guidance and instruction for students recommended by student health service. Pre: consent.

KLS 152 Weight Training (1) Kinesiology of lifting and weight training, various types of exercises and methods of training with resistance.

KLS 153 Weight Training: Advanced (1) Advanced weight training methods and training systems with particular emphasis on applicability to performance in competitive sports. Pre: 152.

KLS 154 Tumbling and Rebound Tumbling (1) Single and combination stunts on tumbling mats and trampoline, balancing stunts; techniques of spotting; safety procedures.

KLS 156 Heavy Apparatus (1) Single and combination stunts on side horse, horizontal bar, parallel bars, still rings; techniques of spotting; safety procedures.

KLS 160 Judo (1) Rules, etiquette, method of falling and breaking the fall, simple throws and their counters, simple holds and breaking of such holds, randori. (Student to provide own gi.)

KLS 161 Aikido (1) Rules, etiquette, basic rolls, simple holds and the breaking of such holds, specific physical conditioning exercises. (Student to provide own gi.)

KLS 163 T'ai Chi Ch'uan (1) Classic forms of t'ai chi ch'uan.

KLS 164 Karate: Beginning (1) Rules, etiquette, basic stances, blocks, thrusts, kicks, ippon kumite, and selected kata. (Student to provide own gi.)

KLS 165 Karate: Intermediate (1) Emphasis on improving the basic techniques (stances, punches, kicks, forms, and sparring); introduction to combination techniques. (Student to provide own gi.) Pre: 164.

KLS 167 Wrestling: Beginning (1) Rules: fundamental defensive and offensive maneuvers and competitive strategy, i.e., takedowns, reversals, escapes, and pinning combinations; conditioning exercises.

KLS 170 Yoga: Beginning (1) Experiencing yoga and its effects on body, mind and consciousness of individual. Course encompasses exercise, breathing techniques, deep relaxation, meditation, practice in concentration, and yogic postures.

KLS 171 Yoga: Intermediate (1) Corrective work and improvement of basic techniques. Exercise sets and combinations designed to develop endurance, flexibility, muscle and nerve strength, meditation, and deep relaxation technique. Pre: 170 or consent.

KLS 173 Water Polo (1) Fundamentals of basic water polo skills, namely, ball handling, passing, shooting, dribbling plus a brief introduction into beginning techniques of individual offense and defense. Pre: 104 or

consent. (Student to provide own swimming attire approved by instructor.)

KLS 180 Soccer and Speedball for Physical Educators (1) Half semester of each sport, covering basic skills, rules, etiquette, offensive and defensive strategies, position play, and playing of game. Primarily for KLS majors; others admitted on space-available basis.

KLS 181 Sport Proficiency: Net (2) Knowledge, skill development, positioning and strategy of various net type games (e.g., badminton, pickleball) are introduced within a tactical framework. Primarily for KLS majors; others are admitted on space-available basis. Repeatable once. A-F only.

KLS 182 Sport Proficiency: Target/Striking (2) Knowledge, skill development, etiquette and strategy of various target and striking type games (e.g., softball, golf, archery) are introduced within a tactical framework. Primarily for KLS majors; others are admitted on space-available basis. Repeatable once. A-F only.

KLS 183 Sport Proficiency: Field/Invasion (2) Knowledge, skill development, positioning, offensive and defensive strategies of various field/invasion type games (e.g., flag football, team handball) are introduced within a tactical framework. Primarily for KLS majors; others are admitted on space-available basis. Repeatable once. A-F only.

KLS 184 Sport Proficiency: Fitness (2) Knowledge introducing program implementation, promoting healthy lifestyles, and modeling of appropriate behaviors of fitness activities (e.g., aerobics, personal fitness) across the life-span are introduced. Primarily for KLS majors; others are admitted on space-available basis. Repeatable once. A-F only.

KLS 185 Floor Exercise Gymnastics (1) An entry-level course designed to develop students' knowledge of men's and women's gymnastics floor exercise routines, including injury prevention, skill progression, spotting techniques, and routine choreography. Primarily for KLS majors; others admitted on space-available basis.

KLS 186 Track and Field for Physical Education (1) Knowledge, skills, and rules of various track and field events. Organization of track meets and strategy in competition. Primarily for KLS majors; others admitted on space-available basis.

KLS 195 Personal Health and Wellness (3) Scientifically based information will be presented to help the student make decisions and take responsibility for his/her own health and health-related behaviors. The student will develop a personal, daily physical activity/exercise program, in which he/she will participate and be monitored.

KLS 201 School Health Problems: Elementary (2) Responsibilities of elementary school teacher in recognizing and meeting pupils' needs, emphasizing teacher's role in health instruction, health services, school health policies.

KLS 202 School Health Problems: Secondary (2) Responsibilities of secondary school teacher in recognizing and meeting pupils' needs, emphasizing health instruction, health services, healthful school living, school health policies.

KLS 203 Foundations of Physical Education (3) Physical Education as a professional field. Overview of history, philosophy, and current practices in Physical Education. Survey of psychological and sociological foundations of exercise and sport. KLS majors or approval. Repeatable one time. A-F only. Recommended: 195

KLS 204 Introduction to Coaching Athletics (2) Nature, responsibilities, personal and professional requirements of coach. Scientific principles applicable to coaching methodology and athletic competition.

KLS 205 Introduction to Sports Medicine (3) Overview of the entire area of sports medicine. Students briefly review major musculoskeletal relationships, types of injuries, and concepts of treatment.

KLS 208 Recreation Services in Contemporary Society (3) Theories and philosophies in recreation: history; contemporary issues; roles in modern society; relationship to health, physical education, and exercise science.

KLS 232 Safety and Risk Management (2) Understanding the fundamental principles and techniques of safety and accident-prevention programming emphasizing school, home, public places, on the job, and motor vehicle situations.

KLS 238 Outdoor Recreation Management (3) Objectives and values of outdoor recreation; characteristics and determinants of programs; planning, organization, leadership, and facilities for recreational uses of natural environments. Pre: 208 or consent of instructor.

KLS 241 Health Education Curriculum (2) Objectives of school health program, emphasizing scope and sequence of health instruction; critical examination of health curriculum guides from various states. Pre: 201 or 202.

KLS 249 Programming and Leadership (3) Factors in planning and leading recreation programs; characteristics and responsibilities of leadership in relation to nature, scope, and resources of a variety of programs. Pre: 208 or consent.

KLS 253 Applied Musculoskeletal Anatomy (3) Gross human anatomy, emphasizing identification and description of parts of musculoskeletal system; selected applications to motor activity. Primarily for physical education majors, but open to others with consent. Pre: PHYL 141 and PHYL 141L and PHYL 142 (or concurrent) and PHYL 142L (or concurrent).

KLS 254 Exercise and Sport Physiology (3) Emphasis on physiological responses to exercises and physical training as related to strength, muscular endurance, circulo-respiratory endurance. Primarily for physical education majors, but open to others with consent. Pre: 253 (or concurrent) or consent.

KLS 263 Introduction to Sport Biomechanics (3) Concepts and scientific principles essential to efficient human movement; proper application of kinesiological and mechanical principles to fundamental movements and selected complex motor skills. Pre: 253, PHYS 100, and MATH 140 or equivalent; or consent.

KLS 270 Introduction to Physical Education (2) Methods and materials in teaching physical activities program; techniques in leadership;

selection of activities and program evaluation for K-12 licensure. Majors only. Repeatable once. A-F only.

KLS 271 Evaluation in Health Education (2) Processes involved in assessing school health education program with emphasis on measurement criteria and instruments, interpretation of data and content, organization and conduct of evaluation program. Pre: 201 or 202.

KLS 302 School's Role in Community Health (2) Functional interrelationships between school and other community health organizations in solving school-community health problems. Pre: consent.

KLS 310 Coaching of Football (2) Theory and strategy of offensive and defensive football coaching. Emphasis on coaching philosophy, selecting and developing an offense and defense, organizing practices, special situations, scouting, and training and conditioning. Pre: 204 or consent.

KLS 311 Coaching of Basketball (2) Theory and strategy of offensive and defensive basketball coaching. Emphasis on coaching philosophy, selecting and developing an offense and defense, organizing practices, special situations, scouting, and training and conditioning. Pre: 204 or consent.

KLS 312 Coaching of Baseball (2) Theory and strategy of offensive and defensive baseball coaching. Emphasis on coaching philosophy, selecting and developing an offense and defense, organizing practices, special situations, scouting, and training and conditioning. Pre: 204 or consent.

KLS 313 Coaching of Volleyball (2) Theory and strategy of offensive and defensive volleyball coaching. Emphasis on coaching philosophy, selecting and developing an offense and defense, organizing practices, special situations, scouting, and training and conditioning. Pre: 204 or consent.

KLS 323 Music and Rhythm in Physical Education (2) Use of music in physical education program, emphasizing selection of appropriate music for specific activities as expressive or creative movement, movement exploration, rhythmic gymnastics, dancing. Pre: consent.

KLS 329 Managing Recreation Services (3) Administrative framework and procedures pertinent to the operation of agencies providing recreational services to the various publics. Pre: 208 or consent.

KLS 331 Water Safety Training (3) Theory and methods of advanced lifesaving and water safety leading to American Red Cross Water Safety Instructor (WSI) certification. Pre: 104 or consent. (Student to provide own swim attire approved by the instructor.)

KLS 332 Emergency Care and First Aid Training (2) Practicum in training of persons to become qualified in emergency care knowledge, basic life support, and first aid skills. First Aid and CPR certificates may be earned.

KLS 333 Movement Education (2) Experiential learning of basic motor skills for teachers of elementary school children. Emphasis given to exploratory (indirect) approach.

KLS 334 Upper Elementary Movement Education (2) Development of skills and concepts of games, dance, and gymnastics for grades three–seven. Emphasis given to designing appropriate learning activities. Pre: 333 (or concurrent) or consent.

KLS 335 Coaching of Track and Field (2) Techniques and rules of sprints, distance runs, relays, hurdles, long jump, high jump, pole vault, shot put, discus, and javelin throws; conduct of track and field meets; specific conditioning and training problems. Pre: 204.

KLS 336 Coaching of Swimming (2) Theory and methods of coaching competitive swimming. Technical, organizational, and administrative aspects. Emphasis on stroke mechanics and training methods. Pre: 204 or consent.

KLS 337 Fieldwork in Recreation I (5) Initial supervised leadership experience in recreational agencies. One hour per week in class discussion sessions. For recreation majors only. Pre: consent of recreation adviser.

KLS 338 Fieldwork in Recreation II (5) Second phase of supervised leadership experience in recreational agencies. One hour per week in class discussion sessions. For recreation majors only. Pre: consent of recreation adviser.

KLS 339 Special Recreation (3) Special recreation as a professional field. Overview of special recreation services. Emphasis on recreation services for special populations. Pre: 208 or consent.

KLS 371 Teaching Techniques—Net (2) Teaching techniques and methods of selected net sports/activities. These include sports/activities that emphasize the tactical approach in court space. Primarily for KLS majors. Repeatable once. A-F only. Pre: 181, 253, 254, 263 (or concurrent), and 270 (or concurrent); or consent.

KLS 372 Teaching Techniques—Target/Striking (2) Teaching techniques and methods of selected target/striking sports/activities. Including sports/activities that emphasize the tactical approach in sports (e.g., softball, golf, archery). Primarily for KLS majors. Repeatable once. A-F only. Pre: 182, 253, 254, 263 (or concurrent), and 270 (or concurrent); or consent.

KLS 373 Teaching Techniques—Field/Invasion (2) Teaching techniques and methods of selected field/invasion sports/activities. These include sports/activities that emphasize the tactical approach in field space. Primarily for KLS majors. Repeatable once. A-F only. Pre: 183, 253, 254, 263 (or concurrent), and 270 (or concurrent).

KLS 374 Teaching Techniques—Fitness (2) Teaching techniques and methods of selected fitness sports/activities. These include fitness sports/activities that emphasize promoting a healthy lifestyle. Primarily for KLS majors. Repeatable once. A-F only. Pre: 184, 253, 254, 263 (or concurrent), and 270 (or concurrent).

KLS 384 Drugs and Society (3) Introduction to psychoactive drugs and their effects; drug regulations; education and rehabilitation programs; psycho-social variables related to the decisions to use/abuse drugs. Pre: 195 or consent.

KLS 385 Physical Fitness for Physical Education Teachers (1) Diagnosis and prescription for basic health and fitness problems, scientific principles of training, guidelines for exercise; essentials of scientifically based individualized physical fitness program. Pre: 254.

KLS 393 Athletic Training Observation I (1) Introductory-level observations and experiences within the profession of athletic training. This practicum is a requirement for entry to the KLS Master's Program. A-F only. Pre: consent.

KLS 394 Athletic Training Observation II (1) Introductory-level observations and experiences within the profession of athletic training. This practicum is a requirement for entry to the KLS Master's Program. A-F only. Pre: 393, 415 or consent.

KLS 399 Directed Reading (V) Individual problems. Limited to senior majors in health education, physical education, athletic training, or recreation with a minimum GPA of 2.75 in major field.

KLS 401 Current Trends in Health (3) Critical analysis of current problems and trends in basic health education areas that contribute to healthful living in community, home, school. Pre: 201 or 202, or consent. Recommended: 302.

KLS 402 Teaching Practicum in Physical Education (2) Field experience in teaching physical education activities program in private and public schools; techniques in leadership; selection of activities and program evaluation for K-12 licensure. Repeatable one time. A-F only. Pre: 253, 254, 263, 270, and 371-374; or consent. Co-requisite: 404.

KLS 404 K-12 Teaching Methods in Physical Education (3) Methods and materials in teaching physical education activities program; techniques in leadership; selection of activities and program evaluation for K-12 licensure. Repeatable one time. A-F only. Majors only. Co-requisite: 402.

KLS 405 Teaching Residency (9) Full-time supervised experience in elementary and secondary school level. Repeatable one time. A-F only. Pre: 402 and 404; requirements for registration listed under "student teaching"; or consent. Co-requisite: 406.

KLS 406 Seminar in Teaching Residency (3) Analysis and resolutions of issues in teaching residency; teaching strategies and techniques; curriculum planning; professional growth and development. Repeatable one time. A-F only. Pre: 402 and 404; or consent. Co-requisite: 390.

KLS 415 Prevent/Care of Athletic Injuries (3) An examination of the most recent practices and procedures in the prevention and care of athletic and sports injuries. Observational field experiences in athletic training will be required. A-F only. Pre: 253, 254, 263, ANAT 301, ANAT 301L, ANAT 302, ANAT 302L or consent.

KLS 419 Athletic Training Administration (3) An examination of the administration and organization of athletic training programs. Field experiences in athletic training will be required. A-F only. Pre: 415 or consent.

KLS 420 Lower Extremity Assessment (3) An examination of the pathology of injuries to the lower extremities and their care and treatment. Field experiences in athletic training will be required. A-F only. Pre: 253, 254, 263, 415, ANAT 301, ANAT 301L, ANAT 302, ANAT 302L or consent.

KLS 421 Upper Extremity Assessment (3) An examination of the pathology of injuries to the upper extremities and their care and treatment. Field experiences in athletic training will be required. A-F only. Pre: 253, 254, 263, 415, 420, ANAT 310, ANAT 301L, ANAT 302, ANAT 302L or consent.

KLS 423 Curriculum and Supervision (3) Effective program development, planning, and supervision, including issues in legal liability and administration of all aspects of physical education programming in grades K–12. Repeatable once. A-F only. Pre: 253 (or concurrent), 254 (or concurrent, 263, and 270; or consent. Majors only.

KLS 428 Current Issues in Leisure Services (3) Philosophical foundations and current and emerging issues in leisure services management and programming. Coverage of leisure research and its implications to practice. Pre: 208, 238, 249, and 329; or consent.

KLS 429 Evaluating and Marketing Leisure Services (3) Basic methods in marketing, planning, evaluating programs and problem-solving methods, survey research, research design, data analysis, and report generation for park, recreation, and tourism systems. A-F only. Pre: 208 and 329 (or concurrent); or consent.

KLS 434 Techniques of Officiating (2) Techniques used by officials in selected sports, emphasizing general concepts of role of official and working knowledge of basic mechanics of officiating. Primarily for physical education and recreation majors.

KLS 437 Camp Resources and Planning (2) (1 Lec, 1 3-hr Lab) Combined lecture and lab course for camp counselors and camp leadership. Plan and evaluate camp experiences for children and youth, including those with disabilities. Includes fieldtrips. Pre: 331 and 332; or consent.

KLS 438 Practicum in Camping (V) Supervised leadership at a camp setting with children and youth, including those with disabilities. Day or residential camps. One full week camping for each credit hour. Maximum of four credit hours. Pre: 437 (or concurrent) or consent.

KLS 443 Physical Education for Students with Disabilities (3) Basics of various disabilities, assessment of physical and motor skill status, individualized activity programs for children and youth with disabilities; relationships among school/community/agency providing special programs and services. Pre: 253 and SPED 404, or consent. (Cross-listed as SPED 443)

KLS 474 Introduction to Tests and Measurement in Physical Education (3) Basic measurement theories, statistical tools and tests used in the measurement and evaluation of physical education knowledge, motor performance, and physical fitness factors.

KLS 476 Motor Learning and Performance (3) Basic consideration is kinesthesia, motor ability, fatigue, developmental factors, practice, motivation in relation to motor learning and human performance. Pre: EDEP 311 or consent.

KLS 477 Motor Development and Learning (3) Motor development through the life span with emphasis on developmental principles, fundamental patterns, and factors affecting motor learning performance. Function of memory, practice, knowledge of performance, and motivation are incorporated.

KLS 480 Nutrition in Exercise and Sport (3)

KLS 481 Introduction to Research in KLS (3) Research methods in the study of physical activity, types of research, statistical concepts and techniques, and reporting research results.

KLS 482 Commercial Recreation (3) Overview of leisure services and trends in commercial, private and employee recreation, and resort and recreational tourism. The social, economic, and environmental significance is examined. Pre: 208, 329, and 428; or consent.

KLS 483 Recreation Planning and Maintenance (3) Examination of social, economic, and environmental factors of recreation and tourism development. Emphasis on methods, processes, citizen participation, design issues/regulations, and land use. Pre: 208, 238, and 329; or consent.

KLS 484 Mood and Behavior Modifiers (3) Identification of substances used by man to modify mood and behavior; sociological problems resulting from their use, misuse, or abuse; analysis of motivations involved in their use, misuse, abuse, or nonuse. Skills in self-awareness, values and alternative training. Implications for health education. Pre: 195 and 202 (or concurrent).

KLS 485 Family Life and Sex Education (3) Physiological, psychological, and sociological aspects of sexuality; analysis of related problems such as venereal diseases, abortion, and contraception. Analysis of sex education in schools, K–12. Implications for health education. Pre: 202, 253, and consent.

KLS 487 Lab: Physical Fitness Assessment (4) Laboratory techniques and procedures for physical fitness assessment. Interpretation of testing results and individual exercise program prescription. Pre: 253, 254, 263, 481, ANAT 301, and ANAT 302; or consent.

KLS 488 Internship: Physical Fitness Assessment (4) Application of various testing procedures on human subjects with different physical capacities. Pre: 487.

KLS 493 Athletic Training Observation III (1) Advanced-level observations and experiences within the profession of athletic training. This practicum is a requirement for entry to the KLS Master's Program. A-F only. Pre: 393, 394, 415, 419 or consent.

KLS 494 Athletic Training Observation IV (1) (5 2-hr Practicum) Advanced-level observations and experiences within the profession of Athletic Training. This practicum is a requirement for entry to the KLS Master's Program. A-F only. Pre: 393, 394, 415, 419, 420, 493 or consent.

KLS 581 (Alpha) Practicum in KLS: Teaching Methods/Techniques (1) For in-service teachers to upgrade subject matter and develop teaching methods and materials for instruction. Repeatable. Pre: teaching experience or consent.

KLS 582 (Alpha) Practicum in KLS: Teaching Methods/Techniques (2) For in-service teachers to upgrade subject matter and develop teaching methods and materials for instruction. Repeatable. Pre: teaching experience or consent.

KLS 583 (Alpha) Practicum in KLS: Administration (1) For in-service teachers/administrators to upgrade subject matter and develop methods and materials for physical education administration. Repeatable. Pre: teaching or administrative experience or consent.

KLS 584 (Alpha) Practicum in KLS: Administration (2) For in-service teachers/administrators to upgrade subject matter and develop methods and materials for physical education administration. Repeatable. Pre: teaching or administrative experience or consent.

KLS 585 (Alpha) Practicum in KLS: Coaching Methods/Techniques (1) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials for athletic coaching. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 586 (Alpha) Practicum in KLS: Coaching Methods/Techniques (2) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials for athletic coaching. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 587 (Alpha) Practicum in KLS: Health/Wellness (1) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials in health/wellness. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 588 (Alpha) Practicum in KLS: Health/Wellness (2) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials in health/wellness. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 589 (Alpha) Practicum in KLS: Athletic Training/Sports Medicine (1) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials in athletic training/sports medicine. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 590 (Alpha) Practicum in KLS: Athletic Training/Sports Medicine (2) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials in athletic training/sports medicine. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 591 (Alpha) Practicum in KLS: Sports Psychology (1) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials in sport psychology. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 592 (Alpha) Practicum in KLS: Sports Psychology (2) For in-service coaches/teachers/administrators to upgrade subject matter and develop methods and materials in sport psychology. Repeatable. Pre: coaching, teaching, or administrative experience or consent.

KLS 593 (Alpha) Practicum in KLS: Recreation/Leisure Science (1) For in-service recreation personnel to upgrade subject matter and develop methods and materials in recreation. Repeatable. Pre: recreation service experience or consent.

KLS 594 (Alpha) Practicum in KLS: Recreation/Leisure Science (2) For in-service recreation personnel to upgrade subject matter and develop methods and materials in recreation. Repeatable. Pre: recreation service experience or consent.

KLS 601 Physiology of Exercise (4) Physiological bases of modern physical training methods and sports science. Lectures, laboratory, and field experience. Pre: 253 and 254, or ANAT 301 and 302, or PHYL 301 and 302, or PHYL 401. (Cross-listed as PHYL 601)

KLS 602 Metabolic Analysis (3) Theory and practice of metabolic analysis of human performance examining each of the power systems used in energy production during exercise and how to use this information to prescribe exercise programs. Pre: 480, 601, graduate standing; or consent.

KLS 603 Advanced Theories of Fitness and Human Movement (3) Scientific laws and principles relevant to man's physical and social environment in relation to physical fitness and human movement. Pre: 203, 253, 254, and 263; or consent.

KLS 604 Body Composition and Weight Management (3) Analysis of the theory and practice used in the assessment of body composition and human physique. Includes strategies for implementing changes in body composition. Pre: 480, 601, graduate standing; or consent.

KLS 605 Social Psychological Aspects of Youth Sports and Leisure (3) Survey of advanced theory and practice in youth sports and leisure science. Research in area selected by student. Preparation and presentation of research paper. The seminar will focus on the study of social and psychological concepts concerning youth sport and leisure behavior in various settings. Repeatable one time.

KLS 606 Advanced Program Design and Planning in Recreation (3) Current theory and practice in recreation program design and planning applied to selected settings with emphasis on Hawai'i and the Asia/Pacific region.

KLS 607 Scientific Principles of Physical Conditioning (3) Application of physiological principles to physical conditioning and athletic performance. Pre: graduate standing or consent.

KLS 608 Muscular Strength and Power Development (3) Interpretation of scientific principles of muscular strength and power development. Examination of muscular adaptations to increased and decreased use. Pre: graduate standing or consent.

KLS 609 Athletic Training, Clinical I (3) (1 Sem, 5 3-hr Practicum) Practicum in which the student will perform the duties and responsibilities of a student athletic trainer. This practicum is to be completed during the first semester post admission into the program. A-F only. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, or consent.

KLS 610 Athletic Training, Clinical II (3) (1 Sem, 5 3-hr Practicum) Practicum in which the student will perform the duties and responsibilities of a student athletic trainer. This practicum must be completed during the second semester post admission to the program. A-F only. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, KLS 609, or consent.

KLS 611 Athletic Training, Clinical III (3) (1 Sem, 5 3-hr Practicum) Culminating practicum in which the student will perform the duties and responsibilities of a second year graduate student athletic trainer. A practical field experience in athletic training will be required. A-F only. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, KLS 609, KLS 610, or consent.

KLS 612 Athletic Training, Clinical IV (3) (1 Sem, 5 3-hr Practicum) Culminating practicum in which the student will perform the duties and responsibilities of a second year graduate student athletic trainer. A practical field experience in athletic training will be required. A-F only. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, KLS 609, KLS 610, KLS 611, or consent.

KLS 613 Athletic Training, Clinical V (3) (1 Sem, 5 4-hr Practicum) Advanced practicum in which the NATA certified graduate student athletic trainer will work with interscholastic or inter collegiate athletic teams at a high school, college, or university. Certification eligible graduate students will perform athletic training duties under the supervision of a NATA certified athletic trainer. A-F only. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, KLS 611, KLS 612, or consent.

KLS 614 Athletic Training, Clinical VI (3) (1 Sem, 5 4-hr Practicum) Advanced practicum in which the NATA certified graduate athletic trainer will work in an allied health or research setting. A-F only. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, KLS 611, KLS 612, or consent.

KLS 615 Head, Neck, and Spine Evaluation (3) (2 Lec, 1 3-hr Lab) Examination, care and treatment of neurological/neuromuscular conditions and pathology of the head, neck, spine, and trunk. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, or consent.

KLS 616 Advanced Orthopedic Assessment (3) (2 Lec, 1 3-hr Lab) Advanced knowledge and skills of athletic training as they are specifically applied to the understanding, treatment, and rehabilitation of sport-related injuries. (e.g. epidemiology, legal, ethical concerns, sports psychology, pharm, drug abuse, health issues) Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, or consent.

KLS 617 Therapeutic Modalities (4) (3 Lec, 1 3-hr Lab) The physiology principles and operational procedures and operational procedures of contemporary Therapeutic modalities as they related to the care and treatment of athletic injuries. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, or consent.

KLS 618 Therapeutic Exercise (4) (3 Lec, 1 3-hr Lab) Concepts and principles of comprehensive rehabilitation programs (e.g. therapeutic goals and objectives, exercise selection, methods of evaluation and recording progress, progression and return to competition criteria, and the physiological effects of tissue trauma and inactivity). Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, or consent.

KLS 620 Seminar in Athletic Training (1) This course is designed to provide the student with analytical skills and practical experience relative to research as it applies to sports related injuries. Repeatable five times. Pre: ANAT 301, ANAT 301L, ANAT 302, ANAT 302L, KLS 393, KLS 394, KLS 415, KLS 419, KLS 420, KLS 421, KLS 493, KLS 494, or consent.

KLS 623 Administration in Kinesiology and Leisure Science (3) Current problems, trends, and strategies in the administration of physical education, recreation, sport and fitness programs in school and non-school settings. Pre: 423 (or concurrent). (Cross-listed as EDEA 623)

KLS 634 Adapted Physical Education (3) Factors essential to practice of adapted physical education; disabilities, problems, and needs of physically challenged pupils with emphasis on accepted procedures for meeting these needs. Pre: 253, 254, and 263; or consent. (Cross-listed as SPED 634)

KLS 640 Seminar in Physical Education (3) Trends, research, and problems in instruction in physical education. Pre: 390, 391, 643, and teaching experience; or consent. (Cross-listed as TECS 640O)

KLS 641 Seminar: Exercise/Sport Science and Leisure (3) Review of selected current literature in exercise/sport science and leisure studies. Practice of presentation in group setting. Pre: 673 (or concurrent) and EDEP 629 (or concurrent) or EDCI 632 (or concurrent).

KLS 643 Public School Curriculum for Physical Education (3) Detailed examination of contents of adequate curriculum for physical education in public schools, K-12. Pre: 343, 390, and 391, or consent. (Cross-listed as TECS 643)

KLS 663 Biomechanics of Human Motion (3) Principles of motion as applied to sport and physical rehabilitation. Introduction to the technology used in the analysis of motion. Pre: consent.

KLS 673 Research Methods in KLS (3) The use of experimental designs/models in physical education research with emphasis on understanding the concepts, applications, and interpretations of statistical analysis. Pre: TECS 632 or EDEP 601 (or concurrent).

KLS 699 Directed Reading and/or Research (V) Individual reading and/or research. Pre: consent of instructor and department chair.

KLS 700 Thesis Research (V) Research for Master's thesis.

Korean (KOR)

College of Languages, Linguistics and Literature

All students taking language courses in this program for the first time must take a regularly scheduled placement test; those with no background must come to the Department of East Asian Languages and Literatures for a brief interview. A grade of C or better is required in the prerequisite courses for continuation.

KOR 101 Elementary Korean (4) Listening, speaking, reading, writing, grammar. Meets one hour, four times a week, plus lab work. Pre: placement test and consent. **HSL**

KOR 102 Elementary Korean (4) Continuation of 101. Pre: 101 or consent. **HSL**

KOR 201 Intermediate Korean (4) Continuation of 101 and 102. Meets one hour, four times a week, plus lab work. Pre: 102 or placement test; or consent. **HSL**

KOR 202 Intermediate Korean (4) Continuation of 201. Pre: 201 or placement test; or consent. **HSL**

KOR 301 Third-Level Korean (3) Continuation of 201 and 202. Major emphasis on comprehension of modern written Korean. Chinese characters. Pre: 202 or consent.

KOR 302 Third-Level Korean (3) Continuation of 301. Pre: 301 or consent.

KOR 399 Directed Third-Level Reading (V) For those who need special assistance, e.g., in reading texts in area of specialization or at a pace more rapid than those of standard courses. Offered if staff available. CR/NC only. Repeatable. Pre: consent.

KOR 401 Fourth-Level Korean (3) Continuation of 302. Pre: 302 or consent.

KOR 402 Fourth-Level Korean (3) Continuation of 401. Pre: 401 or consent.

KOR 420 Korean Composition (3) Training in modern structural and stylistic techniques; writing on designated themes. Repeatable once. Pre: 402 or consent.

KOR 451 Structure of Korean (3) Introduction to phonology, morphology, and history. Pre: 202 or consent.

KOR 452 Structure of Korean (3) Introduction to syntax and semantics. Pre: 202 or consent.

KOR 463 Introduction to Traditional Korean Literature (3) Critical readings from earliest times and presentations that emphasize genre, style, and context. Pre: 402 or consent.

KOR 464 Introduction to Modern Korean Literature (3) Critical readings of 20th-century materials and presentations that emphasize context and the development of style. Pre: 402 or consent.

KOR 470 Language and Culture of Korea (3) Relation of Korean language to literature, history, philosophy, social structure, values, and interpersonal relationships; social and regional varieties. Pre: 402 or consent.

KOR 481 Selected Readings in Korean (3) Selected readings in various disciplines. Repeatable once with consent. Pre: 402 or consent.

KOR 499 Directed Fourth-Level Reading (V) For those who need special assistance, e.g., in reading texts in area of specialization or at a pace more rapid than those of standard courses. Primarily for graduate students from other departments. CR/NC only. Repeatable. Pre: consent of department chair.

KOR 613 (Alpha) Korean Verse (3) Intensive and analytical reading of selected works of Korean lyric and didactic verse (e.g., *hyangga*, *changga*, *hanshi*, *sijo*, *kasa*, free form): (M) modern; Pre: 464 or consent (T) traditional; Pre: 463 or consent.

KOR 614 (Alpha) Korean Narrative (3) Intensive and analytical reading of selected works of Korean narrative (e.g., myth, *p'ansori*, shaman song, essay, biography, fiction): (M) modern; Pre: 464 or consent (T) traditional; Pre: 463 or consent.

KOR 615 (Alpha) Korean Drama (3) Intensive and analytical reading of selected materials in Korean performing arts (e.g., spectacle, farce play, mask dance, staged narratives, theatrical drama): (M) modern; Pre: 464 or consent (T) traditional; Pre: 463 or consent.

KOR 631 History and Dialects of Korean Language (3) Survey of various hypotheses on the genetic relationship of Korean; evolution of Korean from the 15th century to the present; Korean dialects. Pre: 451 and 452, or consent.

KOR 632 Korean Phonology and Morphology (3) Review of Korean vocalic and consonantal phonology. Phonological and morphological analysis of Korean derivation and inflection. Pre: 451 and 452, or consent.

KOR 633 Korean Syntax and Semantics (3) Review of theoretical problems in Korean syntax and semantics; different approaches; and contributions of Korean linguistic study to syntactic and semantic theory. Pre: 452 or consent.

KOR 634 Korean Sociolinguistics (3) Variations in form and use depending on sociocultural factors. Role of language in politics, mass media, group identity, bilingualism, and intercultural communication. Pre: 401, 402, 470, or consent.

KOR 640 Literary Translation of Korean (3) The art and craft of translating traditional and modern Korean literary works into English. Repeatable. Pre: 463 and 464, or consent.

KOR 699 Directed Research (V) CR/NC only. Pre: consent.

KOR 711 Korean Historical Sources (3) Systematic reading in Korean or classical Chinese of various forms of historical literature, literary sources, reference materials; use of reference materials. Pre: reading knowledge of Korean or classical Chinese. (Cross-listed as HIST 711)

KOR 720 Research Seminar in Korean Literature (3) Advanced study of an author, school, period, genre, or problem leading to a research paper. Repeatable. Pre: consent.

KOR 730 Research Seminar in Korean Language (3) Advanced study in history and dialects, phonology and morphology, syntax and semantics, and sociolinguistics and pedagogy leading to a research paper. Repeatable. Pre: consent.

Languages and Literatures of Europe and the Americas (LLEA)

College of Languages, Linguistics and Literature

Courses given in English do not require knowledge of a foreign language. None of the courses count toward requirements for any undergraduate major in the department. Many, like the literature courses, may count toward the University's humanities requirement.

CLASSICS

LLEA 122 Greek and Roman Mythology (3) Principal myths of Greek and Roman literature. **AHL3**

LLEA 123 Greek and Latin Elements in English (3) Important roots, prefixes, and suffixes for building a literary vocabulary.

LLEA 124 Greek and Latin Elements in Scientific Terminology (3) Important roots, prefixes, and suffixes for building a scientific vocabulary.

LLEA 227 Introduction to Greek Literature (3) Major writers: emphasis on Homer, drama, and philosophy. **AHL3**

LLEA 228 Introduction to Roman Literature (3) Major writers: emphasis on Vergil, satire, and novel. **AHL3**

FRENCH

LLEA 237 French Film (3) Study of French film history and technique. A-F only. Pre: freshman standing. **AHL3**

LLEA 264 French Culture for Americans (3) Study of the shared cultural and historical foundations of France and the United States both past and present. A-F only. Pre: ace student.

LLEA 335 French Literature Since 1800 (3) Rapid reading in translation; lectures, discussions, reports. Pre: junior standing or one course in French language or literature. **AHL3**

LLEA 336 French African Literature (3) Black African literature in French in 20th century. Major themes of negritude, national political unity, colonialism, traditional culture. Pre: junior standing or one course in French language or literature. **AHL3**

LLEA 339 French Literature as Film (3) Exploration of the distinction between literature and film as artistic genres as well as study of major works of literature in respect to the present, from the Middle Ages through the 20th century. Pre: sophomore standing. **AHL3**

LLEA 364 Survey of French Civilizations (3) A historical survey of the development of French and Francophone cultures. The course is interdisciplinary, dealing with politics, music, art, other forms of cultural expression, and daily life.

GERMAN

LLEA 241 Civilization of German Peoples and Country (3) Cultural and artistic heritage of the German-speaking countries; art, music, literature, and philosophy of ideas in Germany, Austria, and Switzerland. Beginnings to 1871.

LLEA 242 Civilization of German Peoples and Country (3) Continuation of 241. Post-1871.

LLEA 338 German Film (3) Introduction to German film, film theory, and film analysis. Viewing and discussion of exemplary German films from Expressionism through new German cinema. Pre: two courses from English 250–257.

LLEA 340 Classical German Literature (3) Readings in translation from dramatic works of Lessing, Goethe, Schiller. Philosophic and aesthetic views of leading writers of the Enlightenment, Storm and Stress, and classical periods. **AHL3**

LLEA 342 German Expressionism (3) Search for the “new man” after World War I. Readings in shorter prose, drama, and lyric poetry. **AHL3**

LLEA 343 Modern German Literature (3) Perspective of reality and poetic representations in the 20th century, including influences from Oriental and Eastern philosophy. **AHL3**

LLEA 410 German Idealism (3) Origin, impact in other disciplines and movements. Readings from Fichte, Schelling, Hegel, etc. Pre: PHIL 100.

RUSSIAN

LLEA 350 Russian Short Story (3) Origin and development (19th and 20th century); periods, themes, styles, and major authors. Pre: 3 credit hours from one of ENG 250–257.

LLEA 351 19th-Century Russian Literature (3) Survey in English of major writers from Pushkin through Chekhov; lectures, discussions, short papers. Pre: 6 credit hours from ENG 250–257 or consent. **AHL3**

LLEA 352 Russian Literature 1900–1950 (3) Survey in English of major Russian writers from 1900–1950. Pre: 6 credit hours from ENG 250–257 or consent. **AHL3**

LLEA 353 20th-Century Russian Arts and Culture (3) Aspects of culture (literature, film, theater, music, arts, etc.) in 20th-century Russian society. Pre: 6 credit hours from HIST 151 and 152; or consent.

LLEA 354 Russian Literature Today (3) Survey in English of contemporary authors and their works for perspective of reality and poetic representation. Pre: 3 credits from ENG 250–257.

LLEA 355 Russian Film (3) A study of Russian film from the 1920's to the present. Pre: sophomore standing or consent.

SPANISH

LLEA 261 Hispanic Civilization (3) Way of life of Spanish-speaking peoples. Civilization of Peninsular Spain.

LLEA 262 Hispanic Civilization (3) Way of life of Spanish-speaking peoples. Civilization of Latin America.

LLEA 360 Spanish Peninsular Literature (3) Reading and discussion of classic works of Spanish literature. Pre: junior standing or consent. **AHL3**

LLEA 362 Latin American Literature (3) Reading and discussion of classic works of Latin American literature. Pre: junior standing or consent. **AHL3**

LLEA 363 U.S. Latino Culture and Literature (3) The culture and history of U. S. Latinos through an analysis of their literature and arts and their sociopolitical relationship to the U. S. mainstream culture. Pre: junior standing or consent. **AHL3**

LLEA 365 Hispanic Film (3) Introduction to Hispanic film (Spain and Latin America), history, theory and techniques. Viewing and discussion of films from the 1920's (Buñuel) to the present (Almodóvar). Pre: sophomore standing or consent.

GENERAL AND GRADUATE COURSES

LLEA 270 Freaks and Monsters (3) Monsters, freaks and otherness in literature, film, history and medicine. Suitable for non-literature majors. Pre: sophomore standing or consent.

LLEA 371 Europeans in the Pacific (3) European presence in the Pacific, in relation to literature, art, culture, civilization. Not applicable to language requirement. **AHL3**

LLEA 480 Classical Foundations of European Literature (3) Greek-Roman origin and evolution of main genres of European literature: epic, lyric, drama, satire, and novel. Works which greatly influenced medieval to modern literature. Pre: junior standing and 6 credit hours in literature courses at 400 level or above.

LLEA 481 Basic Literary Movements (3) Renaissance, the baroque, Classicism, Romanticism, realism, and contemporary trends in Europe and Latin America. MA candidates in European languages read works in their area of concentration in the original. Pre: junior standing and 6 credit hours in literature courses at 400 level or above.

LLEA 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

LLEA 630 Seminar in Research Methods (V) (1) French; (2) Spanish; (3) German; (4) Classics; (5) Russian. Study of source materials; basic research tools and methods.

LLEA 680 (Alpha) Topics in Literature (3) Study in English of a topic, period, or genre; aesthetic considerations common to European literatures: (B) the modern novel; (C) European literature as a path to self-knowledge; (D) Middle Ages; (E) introduction to literary theory. MA candidates in European languages read works in their major in the original. Pre: graduate standing or consent of department chair.

LLEA 681 (Alpha) Topics in Language (3) Study in English of topics, periods, etc., in the languages taught in the department: (B) comparison of Romance languages; (C) interpersonal communication; (D) social perspectives. Repeatable. A–F only. Pre: graduate standing or consent.

LLEA 682 Masterpieces of Medieval Welsh Literature (3) Key prose and poetry underlying the Arthurian tradition in Europe. Language instruction leading to reading knowledge of medieval Welsh. Pre: consent.

LLEA 683 Hispanic Cultural Studies (3) Critical overview of contemporary theories on hispanic culture. Issues of identity such as mestizaje, hybridity, and pluralism will be discussed from a hemispheric perspective. A–F only. Pre: consent.

LLEA 699 Directed Research (V) Pre: consent of department chair.

LLEA 700 Thesis Research (V)

LANGUAGE COURSES

LLEA 199 Directed Language Study (V) Study in European languages not taught regularly, depending on demand and staff. Pre: consent of department chair.

LLEA 399 Directed Reading (V) Pre: limited to senior majors with a minimum cumulative GPA of 2.7 or a minimum GPA of 3.0 in major, and consent of department chair.

Lao (LAO)

College of Languages, Linguistics and Literature

LAO 101 Elementary Lao (4) Listening, speaking, reading, writing. Structural points introduced inductively. Daily lab work. **HSL**

LAO 102 Elementary Lao (4) Continuation of 101. **HSL**

LAO 112 Intensive Elementary Lao (10) **HSL**

LAO 201 Intermediate Lao (4) Continuation of 102. Daily lab work. Pre: 102 or equivalent. **HSL**

LAO 202 Intermediate Lao (4) Continuation of 201. **HSL**

LAO 212 Intensive Intermediate Lao (10) **HSL**

Latin (LATN)

College of Languages, Linguistics and Literature

LATN 101 Elementary Latin (3) Grammar and vocabulary, with reading of simple Latin. HSL

LATN 102 Elementary Latin (3) Continuation of 101. HSL

LATN 201 Intermediate Latin (3) Development of reading and translation skills. Emphasis on prose. Pre: 102 or equivalent. HSL

LATN 202 Intermediate Latin (3) Continuation of 201: emphasis on poetry. HSL

LATN 303 Roman Historians (3) Selections from Caesar, Sallust, and others. Pre: 201 and 202, or consent.

LATN 304 Roman Epic (3) Selections from Virgil, Ovid, and others. Pre: 201 and 202, or consent.

LATN 425 Roman Philosophy (3) Selections from Lucretius, Cicero, and Seneca. Pre: 303 and 304, or consent.

LATN 432 Roman Drama (3) Selections from Plautus, Terence, and Seneca. Pre: 303 and 304, or consent.

LATN 433 Roman Lyric (3) Selections from Catullus, Horace, and others. Pre: 303 and 304, or consent.

LATN 438 Roman Novel (3) Selections from Petronius and Apuleius. Pre: 303 and 304, or consent.

LATN 445 Roman Satire (3) Selections from Horace and Juvenal. Pre: 303 and 304, or consent.

LATN 490 Seminar in Roman Studies (3) Study of an author or phase in Roman studies. Repeatable. Pre: 303 and 304, or consent.

LATN 650 History of Roman Literature (3) Literature from Plautus through Apuleius. Pre: graduate standing or consent.

LATN 651 Seminar in Roman Literature (3) Study of an author, genre, period, or work. Repeatable. Pre: graduate standing or consent.

LATN 660 Literature of Roman Republic (3) Selections from major prose and poetry. Pre: graduate standing or consent.

LATN 661 Literature of Roman Empire (3) Selections from major prose and poetry. Pre: graduate standing or consent.

LATN 699 Directed Research (V) Pre: consent of department chair.

Law (LAW)

School of Law

LAW 501 Pre-Admission Seminar (4) Special seminar for pre-admission students. Credits in this seminar do not count toward requirements for the JD degree. CR/NC only.

LAW 502 Pre-Admission Seminar (4) Special seminar for pre-admission students. Credits in this seminar do not count toward requirements for the JD degree. CR/NC only. Pre: 501.

LAW 503 Wildlife and Natural Resources (V) Seminar covering federal and Hawai'i laws that govern the management of wildlife resources, with a particular focus on wildlife conflicts arising in Hawai'i.

LAW 504 Legal Method Seminar (3) Development of lawyering skills with special emphasis on legal research, argument, writing, and the psychological and ethical dimensions of lawyering.

LAW 505 Appellate Advocacy (2) Appellate brief writing and oral advocacy. Pre: 504.

LAW 506 Legal Research (1) The objective of the course is to introduce the student to the primary and secondary sources used in legal research. Lectures and library exercises are designed to compliment each other so that students will learn the various starting points for doing legal research.

LAW 507 Employment Discrimination (3) A study of the law of employment discrimination.

LAW 508 Negotiation and Alternative Dispute Resolution (V) Lawyers negotiate settlements in almost all their cases. This class presents a "hands-on," skill-building approach to the newest ideas, as well as centuries-old techniques, about the skill lawyers will use most often in their private practice - negotiation. The class also examines the rapidly developing field of alternative dispute resolution (ADR), including mediation, facilitation, arbitration, and court-annexed ADR. (Cross-listed as CE 614)

LAW 509 Contracts I (3) Survey of the law relating to the formation, validity, performance, and breach of contracts and the remedies for breach.

LAW 509L Contracts Tutorial I (1) Pre-admission program course. CR/NC only.

LAW 510 Contracts II (3) Continuation of 509. Pre: 509.

LAW 510L Contracts Tutorial II (1) Continuation of 509L. Pre: 509L.

LAW 511 Professional Responsibility (2) Introductory consideration of selected topics relating to functions, structure, and responsibilities of the legal profession and its future role in society.

LAW 512 Environmental Compliance and Regulated Industries (V) In depth study of the federal and state environmental laws that impact modern businesses and industries, and exploration of the compliance issues that arise under the statutes, regulations and case law.

LAW 513 Criminal Justice (4) Examination of substantive rules, enforcement procedures, and rationales of criminal law in the United States

LAW 514 Law and Society in Japan (V) An extended historical review of the foundations of Japanese law in society: Japan's adoption and adaptation of Chinese legal doctrines, continental European legal structures and ideas, and American influences. Consideration of the structure of contemporary law in Japan: a look at the various players in the legal system, some important legal doctrines, and the real-world operation of Japan's laws today.

LAW 515 Business Reorganization in Bankruptcy (V) Examination of the rights and remedies available to a failing business and its creditors when the business seeks to reorganize its business and financial affairs under chapter 11 of the federal bankruptcy code. The course is structured as a "practicum," which tracks a single business through restructuring and emphasizes the practical and strategic aspects of lawyering. Pre: 554 (or concurrent). Recommended: 562.

LAW 516 Civil Procedure I (3) Study of pre-trial, trial, and appellate procedures in the federal and Hawai'i courts.

LAW 516L Civil Procedure Tutorial I (1) Pre-admission program course. CR/NC only.

LAW 517 Civil Procedure II (3) Continuation of 516. Pre: 516.

LAW 517L Civil Procedure Tutorial II (1) Continuation of 516L. Pre: 516L.

LAW 518 Real Property Law I (V) Basic course in property ownership, development, regulation. Emphasis on theory.

LAW 519 Real Property Law II (3) Contract of sale, equitable conversion, deed. Pre: 518.

LAW 520 Advanced Legal Studies (V) In-depth analysis and discussion of selected current legal topics in a particular subject area, which will vary in different semesters.

LAW 521 Elder Law (V) Introduction to the myriad legal issues that confront the elderly, such as age discrimination, elder abuse, estate planning, living wills, entitlement to government benefits, and guardianship.

LAW 522 Torts I (2) Introduction to law, policy of civil recovery for injury, process of tort law application.

LAW 523 Torts II (3) Continuation of 522. Intentional torts, nuisance, defamation, privacy, and misrepresentation. Pre: 522.

LAW 524 Advanced Torts and Insurance Law (V) Advanced study of several areas of torts, compensation and insurance law and policy of considerable contemporary importance to practicing lawyers. Recent developments in Hawai'i tort and insurance law.

LAW 526 Group Directed Study (V) Designed for maximum flexibility, this course allows a professor to work with a small number of students on a reading/discussion project of mutual interest. Pre: consent.

LAW 527 Topics in Environmental Law (V) An entry-level course focusing on current topics and developments in environmental law.

LAW 528 International Environmental Law (3) Study of the international regulation of activities and processes used to prevent environmental degradation and to preserve resources of environmental value. Pre: 585 (or concurrent).

LAW 529 Environmental Litigation Seminar (2) Seminar on the techniques, law, and strategy involved in federal and state court environmental litigation.

LAW 530 Second-Year Seminar (4) Seminar required for spring semester of all second-year law students. Substantial paper required. Topics announced in previous fall semester. Placement by lottery.

LAW 531 Corporations (V) Principal emphasis in the areas of agency and partnership and in the formation, control, management, and regulation of corporations.

LAW 532 Health Care Law (3) Introduction to medical jurisprudence, forensic medicine, presentation of medical evidence, medical ethics, the health-care industry, managed health-care services, financed health care, life and death decisions, and the role of government in health care.

LAW 533 Constitutional Law I (3) Introduction to judicial function in constitutional cases, jurisdiction of the U.S. Supreme Court, and discretionary barriers to judicial review.

LAW 534 Constitutional Law II (3) Advanced course in constitutional law with special emphasis on rights secured by the First, Fifth, and Fourteenth Amendments to the Constitution of the United States. Pre: 533.

LAW 535 Intellectual Property (3) Law relating to the property rights of ideas—copyrights, patenting, trademarks.

LAW 536 (Alpha) Moot Court Team (1) An honors program for students who prepare for and compete in national advocacy. Repeatable one time. CR/NC only. (C) client counseling team; (E) environmental law moot court team; (H) Native American moot court team; (J) Jessup international moot court team; (O) other. Pre: selection by competition.

LAW 537 Moot Court Board (1) Research for and preparation of materials for appellate advocacy. Students selected by faculty. CR/NC only.

LAW 538 Conflict of Laws (3) Problems respecting the law applicable in transactions or to relationships with elements in more than one state.

LAW 539 Remedies (V) This course principally examines both practice aspects and theoretical underpinnings of equitable remedies. Frequently, compensatory damages cannot adequately protect clients or provide them with the relief they need. Topics include temporary restraining orders, preliminary and permanent injunctions, restitution and unjust enrichment, specific performance, and equitable defenses such as unclean hands, laches, and estoppel. Practice issues concerning appeal, jury trials, and the relationship of equity to law are also explored.

LAW 540 Hazardous Waste Law (2) Examination of major federal statutes, regulatory and case law, and Hawai'i counterparts. Policies behind hazardous waste laws and their impact on individuals, community, and businesses.

LAW 541 Criminal Procedure (3) Issues of free press and fair trial, illegal search and seizure, arrest and confession, speedy trial, double jeopardy are covered through student interactions as defense or prosecution attorneys and as judges.

LAW 542 Advanced Civil Procedure (V) Addresses various aspects of complex litigation and recent criticism of the civil litigation system itself. Theoretical in emphasis. Developed from two directions: (1) a study jurisprudential material concerning adversarial dispute resolution, the substance/procedure dichotomy and value-identification; and (2) in-depth analysis of procedural aspects of complex cases

with special focus on new procedural rules aimed at reducing waste and delay.

LAW 543 Evidence (V) "Objection, your Honor!" This course examines the rules of evidence that govern trials in both federal and Hawai'i courts and will focus on such topics as hearsay, witness examination, impeachment, physical and demonstrative evidence, expert testimony, writings, relevance, judicial notice, and presumptions.

LAW 544 Race, Culture, and Law (V) U.S. cases and legal theory emphasizing law in the social construction of racial categories, shifts in race-based anti-discrimination law, and the interaction of culture and law in judicial decision-making. Repeatable.

LAW 545 Law Review (1) Students selected for the *Law Review* editorial board have responsibility for editorial research, writing, and production of the *Law Review* published by the School of Law. CR/NC only.

LAW 546 Asian-Pacific Law Journal (1) Students selected for the Asian-Pacific Law and Policy Journal editorial board have writing, researching, editorial and production responsibility for publication of the Journal. Repeatable five times. CR/NC only.

LAW 548 Immigration Law (2) An introduction to U.S. Immigration and Nationality Law: a brief overview of historical development of immigration law; analysis of exclusion and deportation grounds and remedies; the study of both immigrant and nonimmigrant visa applications and petitions. Current law on asylum and refugee applications and U.S. citizenship and naturalization requirements.

LAW 549 Admiralty Law (3) Introduction to U.S. maritime law and admiralty jurisdiction emphasizing development of rules of maritime law and rights of seamen and maritime workers.

LAW 550 Corporate and Partnership Taxation (3) Examines tax aspects of formation, operation, reorganization, and liquidation of partnerships and corporations. Pre: 531, 567.

LAW 552 Wills and Trusts (3) Disposition of family wealth. Making of wills: creation, enforcement, administration, and termination of trusts, intestate succession, including probate.

LAW 553 Antitrust Law (3) Historical and legal background of governmental regulation of private property with emphasis on antitrust and anti-competitive practices.

LAW 554 Secured Transactions (V) Introduction to Uniform Commercial Code, particularly Article 9—reducing risk of nonpayment by obtaining an interest in borrowers' property.

LAW 555 (Alpha) Externship (V) Legal work for judges and attorney supervisors in public agencies, private law firms, and the legislature. (H) Hawai'i; (P) Pacific. CR/NC only. Pre: consent.

LAW 556 Asian Comparative Labor Law (3) Area studies of Asian legal systems and issues, focusing on administration of Asian labor laws in a comparative context. Possible effects on foreign direct investment and foreign migrant contract workers. Comparison of Chinese, Japanese and other legal approaches in dealing with common issues. Required research paper in lieu of examination.

LAW 557 Negotiable Instruments, Payment Systems and Credit Instruments (2) A study of the Uniform Commercial Code provisions that deal with commercial paper (Article 3), bank collections and deposits (Article 4), funds transfers (Article 4A) and letters of credit (Article 5), as well as material on alternative payment systems, including credit cards, electronic fund transfers and related federal law.

LAW 559 Labor Law I (3) Regulation of union-management relations under state and federal laws.

LAW 561 Administrative Law (3) Procedure and remedies for resolving controversies between citizens and government officials exercising administrative power.

LAW 562 Debtors' and Creditors' Rights (V) Bankruptcy laws and rules, laws of liens, receiverships. Pre: 554 or consent.

LAW 563 Trial Practice (2) Examination of sequential stages of pre-trial and trial practice in a problem setting. Topics include investigation, pleadings, motions, discovery, voir dire examination, opening statements, direct and cross examination, closing argument, selected evidentiary problems, post-trial motions, and appellate practice. Students engage in simulated exercises, and their work is critiqued. CR/NC only. Pre: 543 or consent.

LAW 564 Pre-Trial Litigation (2) Theory and practice of civil pre-trial litigation with focus on pleading, discovery, and pre-trial motions. CR/NC only.

LAW 566 American Legal History (3) Development of American law. Law as an instrument of social progress.

LAW 567 Federal Income Taxation (V) An introduction to the federal income taxation of individuals. The tax consequences of a variety of common transactions are explored, but primary emphasis is given to the theory and policy considerations that underlie specific rules. Students are expected to develop proficiency in the use of the Internal Revenue Code and Treasury Regulations.

LAW 568 Family Law (3) Legal forms of—and responses to—formation, maintenance, and dissolution of the family. Marriage, annulment, divorce, alimony, separation agreements, child custody and adoption, parentage.

LAW 569 Sales (V) In-depth study of Uniform Commercial Code, Article 2—domestic sales of goods, including warranties, manner, time and place of performance, buyers' and sellers' remedies for breach of contract, limitations of freedom of contract.

LAW 571 Federal Courts (3) An examination of the jurisdiction and law-making powers of the federal courts, including standing issues, the appellate jurisdiction of the Supreme Court, the federal-question and diversity-of-citizenship jurisdiction of the federal district courts, the immunities from suit in the federal courts possessed by governmental entities and officers, intervention by federal courts in state proceedings, and choice of law in the federal courts. Particular emphasis is placed on relevant Federal Rules of Civil Procedure. Co-requisite: 533.

LAW 572 International Protection of Human Rights (V) The growing body of international human rights laws, including procedural law and role of non-governmental organizations.

LAW 573 Jurisprudence (3) Relationships between the concepts of law and morality with views of legal and moral philosophers.

LAW 574 State and Local Government Law (3) City, town, county, district governments: administrative organization; regulatory powers; police power; local governmental taxation; relationship between local, state, and federal government.

LAW 575 Topics in International Legal Studies (V) Selected topics presented by faculty members or visiting scholars, focusing upon subjects in the Pacific and Asian area. (C) China; (J) Japan; (K) Korea; (P) Pacific; (S) Southeast Asia.

LAW 576 Directed Study and Research (V) Individual research and writing under the direction of faculty.

LAW 577 U.S. – Japan Business Transactions (V) Focus on the legal environment facing foreign businesses operating in Japan. Includes consideration of the business environment and culture, issues relating to governmental oversight, contract consciousness, corporate law, and dispute resolution. Uses the example of an actual joint venture between an American and a Japanese company as a tool for studying the relevant issues from a practical perspective.

LAW 578 Chinese Business Law (V) Introduction to Chinese business and commercial law; focus on domestic business law and property regulations, foreign investment vehicles, investment protection statutes, and dispute resolution.

LAW 579 International Business Transactions (V) Examines five or six international business transactions from the perspective of a lawyer advising a client on the tax, trade, antitrust, exchange control, and other legal aspects of the transactions.

LAW 580 Land Use Management and Control (3) Survey course of public land use management.

LAW 581 Native Hawaiian Rights (V) Status and evolution of rights of native Hawaiians to the land and its usufructs. Potential of utilizing native rights based on statute, custom, and use to fashion new and expanded rights.

LAW 582 Environmental Law (3) Basic policy questions and problems concerning environment. Examination of federal and Hawaiian statutes. Focus on environmental problems of Hawai'i.

LAW 583 Real Estate Development and Financing (V) Federal and state laws in the practice of real estate development and financing law. Condominium, securities, subdivision, consumer protection, and mortgage areas. Pre: 519.

LAW 584 Civil Rights (2) This course focuses on the civil rights of Americans and introduces alternative remedies and procedures for securing these rights.

LAW 585 International Law (3) Evolving process of formulating rules to govern nations and peoples of the world in their attempts to

solve problems recognized as requiring global solutions.

LAW 586 Law and Society in China (V) Overview of the historical foundations of Chinese law and introduction to the present legal system in the People's Republic of China.

LAW 587 Asian Comparative Law (3) Introduction to the civil law tradition, focusing on East and Southeast Asia. Review of comparative law study and the historical development of civil law. Examination of the structure and role of the courts, the judicial process, constitutional law and administrative law in Western Europe and in the Asian civil law countries.

LAW 588 Legal Aspects of Water Resources and Control (2) Legal aspects of water and water rights with focus on Hawai'i.

LAW 589 Labor and Employment Law (3) Employment law, statutory rights affecting the employment relation, and alternative contract provisions to secure the parties' intentions. Focus on the practical application of labor and employment law. Materials relating to the unionized employment relationship. Emphasis on the labor arbitration process and possibly, to issues regarding internal union affairs.

LAW 590 (Alpha) Workshops in Legal Process (V) (B) prosecution clinic; (C) defense clinic; (G) estate planning workshop; (H) legal aid clinic; (I) native Hawaiian rights clinic; (J) family law clinic; (M) mediation clinic. Repeatable for (I) only. Pre: 543 for (B); 552 and 567, or consent for (G); 581E for (I); 568 for (J).

LAW 591 Government Contract Law (3) Introduction to Government Contract Law is a primer on statutory, regulatory, and decisional laws that shape the government procurement process. This course covers contract relationships between private party contractors and Federal, State, and local governments. This course examines the federal acquisition process, bids and proposals, and contract award controversies before judicial and administrative tribunals. This course reviews socioeconomic contracting provisions and programs and Qui Tam litigation. Repeatable one time. Spring only.

LAW 592 Domestic Ocean and Coastal Law (3) Examination of the history of United States and Hawai'i sea-use law; comprehensive coverage of modern issues concerning the use of the sea including special Hawaiian problems.

LAW 593 International Ocean Law (2) Examination of the history of international sea-use law, including comprehensive coverage of modern problems and issues concerning the use of the sea among nations. Repeatable once.

LAW 594 Pacific Islands Legal Systems (V) Study of substantive rules of one or more Pacific Islands jurisdictions, development of legal systems, relationship of legal systems to culture and tradition.

Library and Information Science (LIS)

College of Natural Sciences

LIS 100 Libraries, Scholarship and Technology (3) Use of libraries and information technology for scholarly investigation; examines information literacy, critical thinking, digital libraries, university role in knowledge creation. A-F only. (Cross-listed as CAS 101)

LIS 100A Computer and Information in Arts and Humanities (3) An introduction to computer application for students in arts and humanities. Includes coverage of computers in writing, information storage and retrieval, specific applications in arts and humanities disciplines.

LIS 500 Master's Plan B/C Studies (1)

LIS 591 Library and Information Studies Workshop (1) Designed for in-service librarians and other information specialists needing to update their professional skills, focus on a particular topic, or learn new approaches and concepts. Repeatable for credit. Credits earned in these courses cannot be applied for graduate degrees.

LIS 592 Library and Information Studies Workshop (2) Designed for in-service librarians and other information specialists needing to update their professional skills, focus on a particular topic, or learn new approaches and concepts. Repeatable for credit. Credits earned in these courses cannot be applied for graduate degrees.

LIS 593 Library and Information Studies Workshop (3) Designed for in-service librarians and other information specialists needing to update their professional skills, focus on a particular topic, or learn new approaches and concepts. Repeatable for credit. Credits earned in these courses cannot be applied for graduate degrees.

LIS 601 Introduction to Reference and Information Services (3) Lecture/discussion course on principles and practice of reference services in libraries, information centers, online communities. Nature of reference work, information needs, information literacy. Bibliographic control, evaluation/use of materials, reference interviews, search techniques, field component.

LIS 605 Basic Cataloging and Classification (3) Introductory cataloging and classification covering AACR2, Library of Congress and Dewey decimal classification systems, LC subject headings, use of OCLC.

LIS 606 Advanced Cataloging and Classification (3) Continuation of 605 with retrieval techniques from card to online catalogs, Precise, extensive use of MARC, utilization of bibliographic utilities. Pre: 605 or consent.

LIS 610 Introduction to Library and Information Science (3) Lecture/discussion course on role of libraries, their social utility in information societies. History and future of libraries in changing technological world. Information professions, information ethics, intellectual freedom, intellectual property, information access, national/international library developments.

LIS 612 History of Books and Libraries (3) History of print communication: the recording, preservation, and transmission of knowledge. Development of libraries through the early 20th century as instruments of communication and cultural transmission.

LIS 615 Collection Development (3) Criteria and tools for selecting library materials and maintaining an acquisitions program. Structure of the book trade.

LIS 618 Government Documents (3) Sources, types, and uses of government documents of United States and international agencies. Pre: 601 or consent.

LIS 619 Conservation of Library Materials (3) Nature of library materials and processes that cause their deterioration; procedures useful in combatting deterioration. Point of view of administrator rather than practitioner.

LIS 620 Preservation Management (3) Strategies for establishing preservation programs in libraries and archives, including planning, survey, disaster planning, grantsmanship, policy and power development. Pre: 619 or consent.

LIS 642 Media Technology and Resources (3) Overview of the use of media technology and the development of media collections and services in libraries. Use and integration of new emerging technologies, including problems and issues.

LIS 647 The Systems Approach to Library Operations (3) Systems analysis; techniques, benefits, and limitations with focus on libraries. Structured, top-down solutions are stressed.

LIS 650 Management of Libraries and Information Centers (3) Basic theories and principles of administration for effective management of public, academic, and special libraries and information centers, with emphasis on planning, organizing, staffing, directing, and control. Administrative aspects of public and technical services, facilities, planning, evaluation, public relations, interagency cooperation, and the management of change in bureaucratic organizations.

LIS 652 Introduction to Archives Management (3) Study of archival principles and management theories applicable to all types of archives. Includes policy, appraisal, computer, and micrographic applications, ethical and legal issues.

LIS 653 Seminar in Archival Studies (3) Theory of archival studies from historical and contemporary perspectives. Includes public administration, legislation, and relationship to other repositories. Pre: 652 or consent.

LIS 660 Information Sources and Systems in Science (3) Bibliographical structure and sources in the basic and applied sciences, including physics, chemistry, biology, medicine, agriculture, engineering. Field component. Pre: 601 or consent.

LIS 661 Information Sources and Systems in Humanities (3) Lecture course on information structures of humanities disciplines, including fine arts, theater arts, literature, music, religion, philosophy. Information cycle, print and digital reference information seeking research in the humanities. Field component. Pre: 601.

LIS 662 Information Sources and Systems in Social Science (3) Lecture course on information structures of social and behavioral science disciplines, including anthropology, sociology, psychology, education, business, history. Information cycle, print and digital reference services, information-seeking research in the social sciences. Field component. Pre: 601.

LIS 663 Basic Online/CD-ROM Database Searching (3) A study of the use of online and CD-ROM databases for interactive retrieval of bibliographic, full text and directory information. Learning the concepts of interactive searching, strategy development, interface and search engine characteristics and essential database content evaluation. Practical experiences in the query languages of various online and CD-ROM systems. Pre: 601.

LIS 664 Abstracting and Indexing for Information Services (3) Lecture course on theory and practice of enhancing subject access to documents, impact of indexing vocabulary on retrieval; types of controlled vocabularies; evaluation of abstracts in professional databases, creation of abstracts for special local and regional documents. Pre: 670.

LIS 665 Teaching Information Technology Literacy (3) Lecture course on history, theories, principles, and concepts of library and information literacy instruction, learning theory and user-based research methods. Examines program design, administration, and evaluation. Field component. Pre: 601.

LIS 667 Advanced Online/CD-ROM Database Searching (3) Lecture course on advanced features of online, Web-based, CD-ROM databases and software (natural language searching, similarity searching by image attributes, term mapping, etc.). Methodologies for evaluating qualitative/quantitative contents, accessibility of databases, capabilities of search software. Pre: 663.

LIS 668 The Information Industry (3) Overview of the information industry, with special emphasis on electronic publishing and entrepreneurial possibilities. Covers current and future products, services, and enabling technologies. Pre: 663.

LIS 670 Introduction to Information Storage and Retrieval (3) A survey of practices, problems, and theory relating to processing, storage, and retrieval of information in libraries, information centers, and database search services. Non-conventional and automated techniques are stressed.

LIS 672 Library Automation (3) Survey of theories, concepts, methods, and practices relating to the automation of library operations. Concentrates on systems employing supermicrocomputers, minicomputers, or mainframes. Pre: 605 or consent.

LIS 673 Information and Records Management (3) Introduction to the basic theories, methodologies, and technologies applicable to the management of operating records and internal data in organizations. Pre: 670 or consent.

LIS 674 Database Design and Creation (3) Lecture course on design, database marketing, and creation of textual numerical databases from the information specialist and database producer

viewpoints. Covers need analysis, record content and structuring, software choice and design marketing. Pre: 670.

LIS 676 Expert Systems for Library and Information Environment (3) Artificial intelligence applications. DBM pattern recognition, automatic indexing, user interfaces for integrated library systems. Pre: 670.

LIS 677 Human Dimension in Information Systems (3) Lecture course on human element in information systems, including physical, cognitive, and affective behaviors in interactions with non-automated and computerized information systems. Information retrieval system use research, qualitative and quantitative research methods, cognitive science research. Pre: 670.

LIS 679 Library Systems Operation and Interpretation (3) The management and operation of automated library systems. Topics include typical systems librarian responsibilities, the computer room, hardware operation and maintenance, communications and networks, security, and human factors. Practical aspects of actual operating systems are emphasized. Pre: 672.

LIS 680 Seminar for Beginning School Librarians (1) Series of five seminar meetings on topics, issues for beginning school librarians. Emphasis on building skills and support networks to help entry level professionals create effective school library programs. CR/NC only.

LIS 681 Books and Media for Children (3) History and criticism of children's literature. Contemporary books and media. Trends in book publishing and media production. Developmental needs and interests of children. Selection and evaluation. Research studies.

LIS 682 Books and Media for Young Adults (3) History and criticism of literature for young adults. Contemporary books and media. Trends in media for young adults. Developmental needs and interests of adolescents. Selection and evaluation. Research studies.

LIS 683 Services in Libraries (3) Planning and implementing services and programming in public and school libraries. Trends, issues, concerns, networking, competencies, developmental needs and interests, research, preparing grant proposals.

LIS 684 Administration of School Library Media Centers (3) Effective management of school library media centers. Philosophy and objectives, standards, personnel, facilities, resources, budget, services, library instruction, public relations, program planning and evaluation.

LIS 685 Traditional Literature and Oral Narration (3) Analysis of Pacific and Asian traditional literature emphasizing cultural values. To be used as source material for storytelling.

LIS 686 Information Literacy and Learning Resources (3) Emphasis on a process approach to information literacy and integration of information literacy instruction with components of elementary and secondary curricula. Covers evaluation and use of print and nonprint/electronic resources in various content areas. (Cross-listed as ETEC 686)

LIS 687 Information Sources for Hawaiian Studies (3) Survey of reference and research materials in Hawaiian studies. Includes historical and contemporary works, arts, humanities, social and natural sciences, AV, and other non-book sources.

LIS 688 Pacific Islands Information Resources (3) The study of reference and bibliographical materials for the three major culture areas of the region—Melanesia, Micronesia, and Polynesia (excluding Hawai'i).

LIS 689 Asian-American Resources for Children and Youth (3) Study of Asian-American resources for young people: socio-historical roots, evaluation and selection, curricular and program uses in a multicultural context.

LIS 690 Internship (3) The internship is jointly sponsored by the school and library agencies. Selection is based on interviews, tests and possession of required competencies. Selection is by agency. CR/NC only. Pre: 601

LIS 693 Special Topics in Librarianship (V) Course reflects interests of visiting and permanent faculty. Topics such as human relations, service to special groups, networks, reprography, etc.

LIS 694 Special Topics in Information Technology (V) This is an open-ended course intended to provide a mechanism for allowing special topics in such areas as information transfer, networks, library information systems, and information management.

LIS 695 Seminar in Research in Librarianship (3) Various methodologies and application to problems of librarianship. Evaluation of research studies; developing, writing, and critiquing proposals. Experience with statistical packages for data analysis.

LIS 696 Practicum in Librarianship (V) Skill development and application of academic study through observation and practice in a fieldwork program with accompanying seminar. Required for school library certification in Hawai'i. Repeatable once. CR/NC only. Consent of practicum coordinator required.

LIS 699 Directed Reading and/or Research (V) Individualized program of directed reading and/or research outside the scope of regularly titled course.

LIS 700 Thesis Research (V) Research for master's thesis. Pre: 695.

LIS 701 Seminar in International Librarianship (3) Comparative librarianship with emphasis on Asia and/or the Pacific Islands; professional organizations, international agencies, influence of world literacy and social, cultural, political factors.

LIS 705 Asian Research Materials and Methods (3) Literature of Asia in Western and Asian languages; bibliography, reference tools, research methods, sources, published and archival repositories. (Cross-listed as ASAN 705 and HIST 705)

LIS 715 Seminar in Information Policy and Planning (3) Public and organizational information policy and planning in society; public access; impact and control of computers and information technology. Pre: 610.

Linguistics (LING)

College of Languages, Linguistics and Literature

LING 102 Introduction to the Study of Language (3) Nature and workings of language; its role in culture and history. AHL3

LING 170 The Language of Children (3) Survey of findings about the child's acquisition of language.

LING 320 General Linguistics (3) Approaches, concepts, component areas of linguistics; its development as a science.

LING 331 Computer Applications (3) Background; uses for machine translation, dictionary programs, speech synthesis, grammar modeling, etc. Pre: 320 (or concurrent) or consent.

LING 344 Languages of the World (3) Survey of major language families; typological classification and language universals; writing systems, "contact" languages. Variety of grammatical structures illustrated by selected languages. Pre: 320 or consent.

LING 345 The Polynesian Language Family (3) Introduction to the language family of Hawaiian, Samoan, Maori, Tahitian, Tongan, etc. Theories of migration and settlement. Influence of present-day languages upon sound system, grammar, and vocabulary of proto-Polynesian. Pre: 102 and some familiarity with a Polynesian language, or consent.

LING 346 The Philippine Language Family (3) Introduction; phonological and grammatical systems; historical developments; emphasis on Filipino, Cebuano, and Ilokano. Pre: 102 and a Philippine language or enrollment in Ilokano or Filipino, or consent.

LING 347 Pidgin and Creole Languages (3) Nature, history, structure, geographical distribution. Pre: 102.

LING 410 Articulatory Phonetics (3) Intensive training in recognition, reproduction, and recording of human speech sounds; preparation for fieldwork with unrecorded languages and for clinical work in speech pathology. Fall only.

LING 414 Introduction to Linguistic Anthropology (3) Ethnographic study of speech and language. Pre: consent. (Cross-listed as ANTH 414)

LING 420 Morphology (3) Theory of word structure; analysis of a variety of morphological types. Pre: 320 (or concurrent). Spring only.

LING 421 Introduction to Phonological Analysis (3) Phonological analysis and theory. Pre: 410 (or concurrent). Fall only.

LING 422 Introduction to Grammatical Analysis (3) Syntactic analysis and grammatical theory. Pre: 421 (or concurrent). Fall only.

LING 440 Semantics (3) Linguistic semantics, including lexical and logical semantics, and an introduction to speech acts. Pre: 320 or consent.

LING 451 Induction of Linguistic Structure (3) Phonological and grammatical structures of a previously uncoded language are determined

by linguistic analysis of data obtained from speakers of the language. Pre: 102 or 320.

LING 452 Induction of Linguistic Structure (3) Continuation of 451. Pre: 451.

LING 470 Children's Speech (3) Individual strategies, baby talk, language socialization, language variation including multilingualism. Relation of cognitive to language development. Pre: 320.

LING 499 Directed Research (V) Repeatable up to 3 credit hours. CR/NC only. Pre: one 400-level linguistic course and consent.

LING 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

LING 611 Acoustic Phonetics (3) Stream of speech analyzed according to acoustic properties and function in given languages; articulatory correlates. Use of sound spectrograph. Pre: 410.

LING 615 The Nature of Language (3) Language as a communication system, current theories of grammar, meaning, sociolinguistics, linguistic change and comparison.

LING 616 Biological Foundations of Language (3) Human anatomy and neurology in relation to language and linguistic theory. Pre: 422.

LING 621 Phonology (3) Phonological theory and problems of analysis. Pre: 421. Spring only.

LING 622 Grammar (3) Grammatical theory and problems of analysis. Pre: 422. Spring only.

LING 623 Semantics and Pragmatics (3) Ways in which the interpretation of sentences in natural language depends upon the literal meaning of propositions and their logical (semantic) and conversational (pragmatic) inferences. Pre: 422 or consent.

LING 624 Discourse Grammar (3) Phonological, grammatical, semantic, and pragmatic dimensions of spoken and written discourse, placing the level of sentence grammar in context. Pre: 622 (or concurrent) or consent.

LING 625 Mathematical Properties of Natural Languages (3) Construction of logical and other mathematical systems that mirror properties of natural languages. Pre: 622 or background in formal logic.

LING 630 Field Methods (3) Work with native speakers of lesser-known languages to develop techniques for data collection and analysis. Repeatable. Pre: 421 and 422.

LING 631 Language Data Processing (3) Preparation of language data for computer processing; use ready-made programs; write simple language processing programs using SNOBOL4. Applications to student's research. Pre: 422.

LING 635 Language Variation (3) Review of various approaches to class, style, regional, and other variation; including sociolinguistics, dialectology, and studies of language contact, diglossia, pidgins, and creoles. Pre: 622.

LING 640 (Alpha) Topics in Linguistics (3) History of the discipline, schools of linguistic thought, current issues, etc. Repeatable. (E) English linguistics; (F) phonology and phonetics; (G) general; (H) history of the

discipline; (S) sociolinguistics; (T) theory; (X) syntax; (Y) psycholinguistics. Pre: consent.

LING 645 The Comparative Method (3)

Introduction to historical-comparative linguistics; attention to both Indo-European and languages with few or no written records. Pre: 421 and 422, or consent. Fall only.

LING 646 The Comparative Method (3)

Continuation of 645. Pre: 645. Spring only.

LING 650 Advanced Linguistic Analysis (3)

Advanced problems; discussion of theory and techniques in morphology and syntax. Repeatable. Pre: 621, 622, and consent.

LING 651 Advanced Linguistic Analysis (3)

Advanced problems; discussion of theory and techniques in phonology. Repeatable. Pre: 650.

LING 660 Historical Linguistics (3)

Survey of research in history of particular languages or language families. Repeatable. Pre: 645.

LING 661 Proto-Austronesian (3)

Introduction to Austronesian comparative linguistics; Dempwolff's reconstruction and subsequent modifications; problems of subgrouping. Pre: 645.

LING 662 Indo-European (3)

Reconstruction of proto-Indo-European, based mainly on five older languages (Sanskrit, Classical Greek, Latin, Old Church Slavic, Gothic). Pre: 645.

LING 663 Indo-European (3)

Continuation of 662. Pre: 662.

LING 670 Developmental Linguistics (3)

Survey of the literature in language acquisition; emphasis on relation to linguistic theory. Pre: 410, 421, and 422.

LING 699 Directed Research (V)

CR/NC only. Repeatable. Maximum 6 credit hours. Pre: graduate standing and consent.

LING 700 Thesis Research (V)

Repeatable up to 12 credit hours.

LING 750 (Alpha) Seminar (3)

Reporting and discussion of current research in linguistics. Repeatable. (C) language data processing; (E) ethnolinguistics; (F) phonology and phonetics; (G) general; (M) semantics; (Q) language acquisition; (R) written language; (S) sociolinguistics; (T) theory; (X) syntax; (Y) psycholinguistics. Pre: consent.

LING 751 Literacy and Language (3)

A survey of the literature on literacy, emphasizing origins and development, varieties of scripts, and the cognitive and social aspects of visual language. Pre: 422 or consent.

LING 760 Problems in Comparison and Prehistory (3)

Reconstruction, classification, divergence measures, dialect geography, other historical-comparative studies. Repeatable. Pre: 645, 660, 661, 662, or 663 where applicable.

LING 770 Areal Linguistics (3)

Structures of languages of various areas of the world; diffusion. Repeatable. Pre: 622.

LING 799 Apprenticeship in Teaching Linguistics (V)

An experience-based introduction to college-level teaching; doctoral students serve as student teachers to professors; responsibilities include supervised teaching and participation in planning and evaluation. Repeatable. Pre: admission to doctoral program and consent.

LING 800 Dissertation Research (V)

Management (MGT)

College of Business Administration

MGT 320 Fundamentals of Entrepreneurship (3)

Covers the role of new ventures and entrepreneurship in the world economy, the formation, funding, marketing, structure and implementation of business ventures.

MGT 321 Productivity Management (3)

Improving organization productivity with an emphasis on supply chain management principles in terms of scheduling, inventory, quality control techniques, through most current practices. Pre: BUS 310 and 315.

MGT 322 Operations Management Applications (3)

Project/venture management application or project/venture management techniques such as planning methods; PERT/CPM forecasting; application of most current practices. Pre: BUS 310 and 315.

MGT 341 Behavior in Organizations (3)

Contributions made by sociology, psychology, and related behavioral sciences to the understanding and prediction of human behavior in organizations. Pre: BUS 315.

MGT 342 Multinational Business Management (3)

Introduction to the unique problems and challenges in managing multinational business enterprises. Systems approach to the management process in such multinational firms stressed. Pre: BUS 315.

MGT 343 Comparative Management Systems: United States and Japan (3)

Similarities and differences in managers, in process of management, and in relevant environmental constraints in Japan and the United States. Pre: BUS 315.

MGT 344 Seminar in Management (3)

In-depth analysis of selected current practices and trends in administration. May be repeated with change in topic. Pre: consent.

MGT 348 History of American Business (3)

The evolution of business enterprise from colonial times to the present. Emphasis on entrepreneurship, technological change, labor-management relations, government-business relations, and economic thought. Case studies of industrial development. (Cross-listed as HIST 378).

MGT 350 (Alpha) Topics in Management (3)

Advanced domestic and international management topics. (B) Chinese management and industrial relations. Pre: BUS 315.

MGT 399 Directed Reading and Research (V)

Reading and research in a special area within the major field under direction of faculty member(s). Project must include statement of objectives, outline of activities planned, results expected, and how they are to be reported and evaluated. Must be approved in advance by the department chair and faculty adviser.

MGT 460 Asia Pacific Business Systems (3)

Business systems in Asia Pacific countries including Japan, Korea, China, Taiwan, Singapore, and Hong Kong in terms of particular organization strategies and how they relate to the industrial trade policies. Pre: BBA core excluding BUS 345, or consent.

For key to symbols and abbreviations, see the first page of this section.

MGT 605 Production and Operations Management (3)

MGT 643 (Alpha) Advanced Organizational Behavior (3)

(B) experiential learning (EL); (C) organizational development (OD) and major concepts in organizational behavior.

MGT 644 Comparative Management (3)

Cross-cultural analysis of the values and environmental constraints that shape management patterns and policies. Emphasis on Pacific area nations.

MGT 645 New Venture Management (3)

Technical aspects of entrepreneurship, components and requirements for developing a business plan.

MGT 646 Production and Operations Management (3)

MGT 648 International Business: Environment and Enterprise (3)

MGT 650 Management Topics (3) In-depth analysis of selected current practices and trends in administration. May be repeated with change in topic. Pre: consent.

MGT 660 Negotiation (3) Theory and practice of negotiation. Exploration of appropriate strategies, tactics, and communication techniques. Study of dyadic multi-party, cross-cultural, and assisted negotiations.

MGT 670 (Alpha) International Management and Industrial Relations (3)

Selected topics in international management and industrial relations: (B) Chinese management systems; (C) Japanese management systems; (D) management of multinational corporations; (E) Asian/Pacific entrepreneurship; (F) contemporary issues in international business foreign direct investment; (G) cross-cultural communication in international business; (H) interactive strategies in Asian culture; (I) international human resource management; (J) international joint ventures; (K) international management of technology; (M) Korean management systems; (N) multinational corporation and environmental issues; (O) strategy of the multinational corporation; (P) international transfer of technology. Pre: consent.

MGT 697 Knowledge-based Strategy (3)

Introduces students to knowledge-based theory of the firm and provides structured learning environment to apply this theory to identify business development and investment opportunities. Pre: BUS 613 or consent.

Marketing (MKT)

College of Business Administration

MKT 311 Consumer Behavior (3) Analysis of consumer behavior and motivation; principles of learning, personality, perception, and group influence, with emphasis upon mass communication effects. Pre: BUS 312 or consent. (Cross-listed as PSY 385)

MKT 321 Marketing Research (3) Research aids to marketing management; nature of the research process; planning research including problems of sampling and measurement; experimental and non-experimental methods and techniques; analysis of data. Pre: BUS 310 and BUS 312, or consent.

MKT 331 Marketing Communications (3) In-depth coverage of the major communication tools used in marketing such as advertising, sales promotion, public relations and the internet. Emphasis on integrated marketing communications. Pre: BUS 312 or consent.

MKT 332 Integrated Communication Campaigns (3) Management of integrated marketing communications campaigns. Includes: conducting target market and competitor research, developing creative content and media strategies, production of communication materials and completion of major real world project. Pre: 331 and BUS 312.

MKT 341 Retailing Management (3) Principles, functions, and analysis of opportunities and problems in retailing: location and layout; merchandise planning; buying and selling; organizational forms and design; expense analysis and control; coordination of store activities. Pre: BUS 312 or consent.

MKT 351 Professional Selling (3) Emphasis on selling technique, social-psychological principles of persuasion, and interpersonal communication. Lecture, discussion, and application of relevant principles and techniques. CR/NC only. Pre: BUS 312 or consent.

MKT 352 Sales Management (3) Course delves into the Sales Management process. Through a variety of activities, students gain experience in sales planning, recruiting and training sales people, methods of motivating and compensating, territory management and sales team communications. Pre: 351, BUS 312, or consent.

MKT 361 Seminar in Marketing (3) Study and discussion of significant topics and problems in the field of marketing. May be repeated with change in topic. Pre: consent and usually senior standing.

MKT 362 Internet Marketing (3) Examines use of Internet in the marketing of goods and services; for example new product development, marketing research, direct sales and marketing communications on the World Wide Web. Real world projects provide opportunities for application. Pre: BUS 311 and BUS 312; or consent.

MKT 363 Database Marketing (3) This course focuses on the evolving fields of database marketing. Students learn optimal ways of developing and using a customer database to design, implement and evaluate direct, loyalty and other marketing programs. A-F only. Pre: BUS 311 and MKT 321; or consent.

MKT 371 Marketing Management (3) Real world decision-making simulation providing strategic experience in a group setting. Pre: BUS 312 or consent.

MKT 381 Multinational Marketing (3) Principles and topics related to international marketing, with emphasis on strategic planning and applications. Pre: BUS 312 or consent.

MKT 391 Marketing Strategies (3) Decision-making by the marketing executive; integration of all elements of the marketing program based on actual business situations. Pre: 311, 321, and one other marketing course above 311; or consent.

MKT 399 Directed Reading and Research (V) Reading and research in a special area of major under direction of faculty member(s). Project must include statement of objectives, outline of activities planned, results expected, and how they are to be reported and evaluated. Must be approved in advance by the department chair and the faculty adviser.

MKT 410 Software Tools in Marketing (3) This course focuses on computer software tools designed to help managers make more informed marketing decisions. Through hands-on experience, students learn software skills useful in marketing management, marketing research, sales and advertising. A-F only. Pre: BUS 310 and BUS 312; or consent.

MKT 411 (Alpha) Topics in Marketing (3) Selected topics in marketing. (B) entrepreneurial marketing; (C) Asia market analysis. Pre: BUS 312 or consent.

MKT 651 Advanced Marketing Management (3) A case course in the application of advanced marketing methods. Pre: BUS 615 or consent.

MKT 652 Japanese Marketing Systems (3) Specialized study of Japanese marketing systems, considers both global and domestic marketing activities in the context of the Japanese economy. Pre: BUS 615 or consent.

MKT 653 International Marketing Management (3) Integrated and comparative approach to international marketing management. Emphasis on the development of a competitive strategy in a global environment. Applications to both developing and industrialized markets. Pre: BUS 615 or consent.

MKT 654 Marketing Communications Management (3) Emphasis on developing integrated advertising, sales promotion, public relations and internet communication strategies that build brand equity. Includes relevant customer behavior and real world applications. Pre: BUS 615 or consent.

MKT 655 Marketing Research Methodology (3) Research aids to marketing management: problem specification, hypothesis formulation, sample design, questionnaire construction, data collection, analysis, and policy recommendations. Pre: BUS 615 or consent.

MKT 656 Creativity in Marketing (3) Thought processes that relate to creativity. Through a series of exercises, students experience enriched creativity and enhanced communication skills. Pre: BUS 615 or consent.

MKT 657 Services Marketing (3) Conceptual understanding of distinctive aspects of services, services management, and services research. Pre: BUS 615 or consent.

MKT 690 Advanced Seminar in Marketing (3) Significant topics, problems in marketing. May be repeated with change in topic. Pre: BUS 615 or consent.

Mathematics (MATH)

College of Natural Sciences

MATH 100 Survey of Mathematics (3) Selected topics designed to acquaint nonspecialists with examples of mathematical reasoning. May not be taken for credit after 215 or higher.

MATH 111 Introduction to Mathematics (3) Study of concepts and properties of number systems. Prospective elementary education majors only; not applicable to Arts and Sciences core requirements. Pre: two years of high school algebra, one year of geometry, and precalculus assessment; or consent.

MATH 140 Trigonometry and Analytic Geometry (3) Functions, with special attention to polynomial, rational, exponential, logarithmic, and trigonometric functions, plane trigonometry, polar coordinates, conic sections. Pre: two years of high school algebra, one year of plane geometry, and precalculus assessment.

MATH 190 Basic and Fortran Programming (1) An introduction to numerical algorithms and programming in Basic and Fortran. Pre: one semester of calculus (or concurrent), or consent.

MATH 203 Calculus for Business and Social Sciences (3) Basic concepts; differentiation and integration; applications to management, finance, economics, and the social sciences. Pre: two years high school algebra, one year plane geometry, and precalculus assessment.

MATH 215 Applied Calculus I (4) Basic concepts; differentiation, differential equations and integration with applications directed primarily to the life sciences. Pre: C or better in 140 or precalculus assessment.

Math 215A Applied Calculus I (4) Basic concepts; differentiation, differential equations and integration with applications directed primarily to the life sciences. Pre: C or better in 140 or precalculus assessment.

MATH 216 Applied Calculus II (3) Differential calculus for functions in several variables and curves, systems of ordinary differential equations, series approximation of functions, continuous probability, exposure to use of calculus in the literature. Pre: 215 or consent.

MATH 241 Calculus I (4) Basic concepts; differentiation with applications; integration. Pre: a grade of C or better in 140 or 215 or precalculus assessment.

MATH 242 Calculus II (3) Integration techniques and applications, series and approximations, differential equations. Pre: a grade of C or better in 241 or 251 or a grade of B or better in 215; or consent. Co-requisite: 242L.

MATH 242L Calculus Computer Lab (1) Introduction to symbolic computer software for solving calculus problems, graphing functions and experimenting with calculus concepts. No knowledge of computers required. Co-requisite: 242.

MATH 243 Calculus III (3) Vector algebra, vector-valued functions, differentiation in several variables, and optimization. Pre: A grade of C or better in 242 or 252 or a grade of B or better in 216 and 242L (or concurrent).

MATH 244 Calculus IV (2) Multiple integrals; line integrals and Green's Theorem; surface integrals, Stokes's and Gauss's Theorems. Pre: 243 or consent.

MATH 251 Accelerated Calculus I (4) Basic concepts; differentiation with applications; integration. Pre: a grade of A in 140 or precalculus assessment and consent.

MATH 252 Accelerated Calculus II (3)

Integration techniques and applications, series and approximations, differential equations, introduction to vectors. Pre: a grade of C or better in 251 or a grade of B or better in 241 and consent. Co-requisite: 242L.

MATH 253 Accelerated Calculus III (4)

Vector calculus; maxima and minima in several variables; multiple integrals; line integrals, surface integrals and their applications. Pre: 252.

MATH 301 Introduction to Discrete Mathematics (3)

Symbolic logic, sets and relations, algorithms, trees and other graphs. Additional topics chosen from algebraic systems, networks, automata. Pre: one semester of calculus from mathematics department and one semester programming; or consent. Recommended: 190.

MATH 302 Introduction to Differential Equations I (3)

First order ordinary differential equations, constant coefficient linear equations, oscillations, Laplace transform, convolution, Green's function. Pre: 216 or 243 (or concurrent) or 253 (or concurrent), or consent.

MATH 303 Introduction to Differential Equations II (3)

Constant coefficient linear systems, variable coefficient ordinary differential equations, series solutions and special functions, Fourier series, partial differential equations. Pre: 302, 311 (or concurrent); or consent.

MATH 311 Introduction to Linear Algebra (3)

Algebra of matrices, linear equations, real vector spaces and transformations. Pre: 243 or 253 (or concurrent) or consent.

MATH 321 Introduction to Advanced Mathematics (3)

Formal introduction to the concepts of logic, finite and infinite sets, functions, methods of proof and axiomatic systems. Pre: 243 or 253 (or concurrent) or consent.

MATH 351 Foundation of Euclidean Geometry (3)

Axiomatic Euclidean geometry and introduction to the axiomatic method. Pre: 243 or 253, and 321 (or concurrent); or consent.

MATH 352 Non-Euclidean Geometries (3)

Hyperbolic, other non-Euclidean geometries. Pre: 351 or consent.

MATH 371 Elementary Probability Theory (3)

Sets, discrete sample spaces, problems in combinatorial probability, random variables, mathematical expectations, classical distributions, applications. Pre: 216 or 242 or 252 or consent.

MATH 373 Elementary Statistics (3)

Estimation, tests of significance, the concept of power. Pre: 371 or consent.

MATH 402 Partial Differential Equations I (3)

Integral surfaces and characteristics of first and second order partial differential equations. Applications to the equations of mathematical physics. Pre: 243 or 253, or consent. Recommended: 244 and 302.

MATH 403 Partial Differential Equations II (3)

Laplace's equation, Fourier transform methods for PDEs, higher dimensional PDEs, spherical harmonics, Laplace series, special functions and applications. Pre: 402 or consent.

MATH 405 Ordinary Differential Equations (3)

Systems of linear ordinary differential equations, autonomous systems, and stability theory applications. Optional topics include series solutions, Sturm theory, numerical methods. Pre: 302 and 311, or consent.

MATH 407 Numerical Analysis (3)

Numerical solution of equations, interpolation, least-squares approximation, quadrature, eigenvalue problems, numerical solution of ordinary and partial differential equations. (These topics are covered in the year sequence 407–408.) Pre: 311 and one semester programming; or consent. Recommended: 190.

MATH 408 Numerical Analysis (3)

Continuation of 407. This is the second course of a year sequence and should be taken in the same academic year as 407. Pre: 407 or consent.

MATH 411 Linear Algebra (3)

Vector spaces over arbitrary fields, minimal polynomials, invariant subspaces, canonical forms of matrices; unitary and Hermitian matrices, quadratic forms. Pre: a grade of B or better in 311 or consent.

MATH 412 Introduction to Abstract Algebra (3)

Introduction to basic algebraic structures. Groups, finite groups, abelian groups, rings, integral domains, fields, factorization, polynomial rings, field extensions, quotient fields. (These topics are covered in the year sequence 412–413.) Pre: 311 or consent.

MATH 413 Introduction to Abstract Algebra (3)

Continuation of 412. This is the second course of a year sequence and should be taken in the same academic year as 412. Pre: 412 or consent.

MATH 414 Operations Research: Discrete Models (3)

Techniques of mathematical programming. Topics may include linear programming, integer programming, network analysis, dynamic programming, and game theory. Pre: 311 or consent.

MATH 416 Operations Research: Probabilistic Models (3)

Queuing theory, inventory theory, Markov chains, simulation. Pre: 311 and 371, or consent.

MATH 420 Introduction to the Theory of Numbers (3)

Congruences, quadratic residues, arithmetic functions, distribution of primes. Pre: 311 or consent.

MATH 421 Topology (3)

Geometric and combinatorial topology. Surfaces, homology, Euler characteristics, winding numbers. Jordan curve theorem. Pre: two courses from 311, 321, 351, 411, 412, or 420; or consent.

MATH 431 Advanced Calculus (3)

Topology of \mathbb{R}^n , continuous functions, Riemann integration, sequences and series, uniform convergence, implicit function theorems, differentials and Jacobians. (These topics are covered in the year sequence 431–432.) Pre: three courses from 311, 321, 412, 413, 420, 455, 471, or consent.

MATH 432 Advanced Calculus (3)

Continuation of 431. This is the second course of a year sequence and should be taken in the same academic year as 431. Pre: 431 or consent.

MATH 442 Vector Analysis (3)

Vector operations, wedge product, differential forms, and smooth mappings. Theorems of Green,

Stokes, and Gauss, both classically and in terms of forms. Applications to electromagnetism and mechanics. Pre: 244 or 253, and 311; or consent.

MATH 443 Differential Geometry (3)

Properties and fundamental geometric invariants of curves and surfaces in space; applications to the physical sciences. Pre: 244 or 253, and 311; or consent.

MATH 444 Complex Variable (3)

Analytic functions, complex integration, introduction to conformal mapping. Pre: 244 or 253, and 311; or consent.

MATH 449 (Alpha) Topics in Undergraduate Mathematics (3)

Advanced topics from various areas: algebra, number theory, analysis, and geometry. Repeatable. Pre: consent.

MATH 454 Axiomatic Set Theory (3)

Sets, relations, ordinal arithmetic, cardinal arithmetic, axiomatic set theory, axiom of choice and the continuum hypothesis. Pre: 321 or graduate standing in a related field or consent. Not open to mathematics graduate students.

MATH 455 Mathematical Logic (3)

A system of first order logic. Formal notions of well-formed formula, proof, and derivability. Semantic notions of model, truth, and validity. Completeness theorem. Pre: 454 or consent.

MATH 471 Probability (3)

Probability spaces, random variables, distributions, expectations, moment-generating and characteristic functions, limit theorems. Continuous probability emphasized. Pre: 244 or 253 (or concurrent), and 371; or consent.

MATH 472 Statistical Inference (3)

Sampling and parameter estimation, tests of hypotheses, correlation, regression, analysis of variance, sequential analysis, rank order statistics. Pre: 471 or consent.

MATH 475 Combinatorial Mathematics (3)

Finite configurations. Topics may include counting methods, generating functions, graph theory, map coloring, block design, network flows, analysis of discrete algorithms. Pre: 311 or consent.

MATH 499 Directed Reading (V)

Limited to advanced students who must arrange with an instructor before enrolling. Repeatable once for a maximum of 3 credits each.

MATH 500 Master's Plan B/C Studies (1)

Enrollment for degree completion. Pre: Master's Plan B or C candidate and consent.

MATH 511 Writing and Problem Solving (2)

Exploration of topics in algebra, analysis, and geometry, with emphasis on writing skills, experimentation, mathematical thinking, and problem solving. Enrollment limited to mathematics teachers.

MATH 602 Ordinary and Partial Differential Equations (3)

Classical existence and uniqueness theory for ODEs and PDEs, qualitative properties, classification, boundary value and initial value problems, fundamental solutions, other topics. (These topics are covered in the year sequence 602–603.) Pre: 402, 431, 432, 442, or consent.

MATH 603 Ordinary and Partial Differential Equations (3)

Continuation of 602. This is the second course of a year sequence and should be

taken in the same academic year as 602. Pre: 602.

MATH 607 Numerical Analysis (3) Perron-Frobenius theory, nonnegative matrices, matrix numerical analysis, iterative methods, discrete approximation to partial differential equations. Pre: 402, 407, 408, or consent.

MATH 611 Modern Algebra (3) Modules, Sylow theorems, Jordan-Holder theorem, unique factorization domains, Galois theory, algebraic closures, transcendence bases. (These topics are covered in the year sequence 611–612.) Pre: consent.

MATH 612 Modern Algebra (3) Continuation of 611. This is the second course of a year sequence and should be taken in the same academic year as 611. Pre: 611.

MATH 613 Group Theory (3) Sylow theorems, solvable groups, nilpotent groups, extension theory, representation theory, additional topics. Pre: consent.

MATH 615 Ring Theory (3) Ideal theory in Noetherian rings, localization, Dedekind domains, the Jacobson radical, the Wedderburn-Artin theorem, additional topics. Pre: consent.

MATH 618 Lattice Theory (3) Introduction with applications to general algebra. Partially ordered sets, decomposition theory, representations of lattices, varieties and free lattices, coordinatization of modular lattices. Pre: 612 or consent.

MATH 619 Universal Algebra (3) Introduction to basic techniques, including subalgebras, congruences, automorphisms and endomorphisms, varieties of algebras, Mal'cev conditions. Pre: 612 or consent.

MATH 621 Topology (3) Properties of topological spaces; separation axioms, compactness, connectedness; metrizable; convergence and continuity. Additional topics from general and algebraic topology. (These topics are covered in the year sequence 621–622.) Pre: consent.

MATH 622 Topology (3) Continuation of 621. This is the second course of a year sequence and should be taken in the same academic year as 621. Pre: 621.

MATH 625 Differentiable Manifolds I (3) Differentiable structures on manifolds, tensor fields, Frobenius theorem, exterior algebra, integration of forms, Poincaré Lemma, Stokes's theorem. Pre: 411, 432, and 622; or consent.

MATH 631 Theory of Functions of a Real Variable (3) Lebesgue measure and integral, convergence of integrals, functions of bounded variation, Lebesgue-Stieltjes integral and more general theory of measure and integration. (These topics are covered in the year sequence 631–632.) Pre: consent.

MATH 632 Theory of Functions of a Real Variable (3) Continuation of 631. This is the second course of a year sequence and should be taken in the same academic year as 631. Pre: 631.

MATH 633 Functional Analysis (3) Linear topological spaces, normed spaces, Hilbert spaces, function spaces, function algebras, operator theory. Pre: consent.

MATH 635 Potential Theory (3) Primary classical and modern analysis pertaining to Dirichlet's problem. Integral equations, extremum problems, Brownian motion. Pre: 632 or consent.

MATH 637 Calculus of Variations (3) Simple variational problems, first and second variation formulas. Euler-Lagrange equation, direct methods, optimal control. Pre: 432 or consent.

MATH 644 Analytic Function Theory (3) Conformal mapping, residue theory, series and product developments, analytic continuation, special functions. (These topics are covered in the year sequence 644–645.) Pre: consent.

MATH 645 Analytic Function Theory (3) Continuation of 644. This is the second course of a year sequence and should be taken in the same academic year as 644. Pre: 644.

MATH 649 (Alpha) Topics in Mathematics (3) Commutative rings, function theory, geometric topology, transformation groups, etc. Repeatable. Pre: consent.

MATH 655 Set Theory (3) Axiomatic development, ordinal and cardinal numbers, recursion theorems, axiom of choice, continuum hypothesis, consistency and independence results. Pre: consent.

MATH 657 Recursive Functions and Complexity (3) Recursive, r.e., Ptime, and Logspace classes. Nondeterminism, parallelism, alternation, and Boolean circuits. Reducibility and completeness. Pre: 455, ICS 441, or consent.

MATH 671 Advanced Probability (3) Independence and conditioning, martingales, ergodic theory, Markov chains, central limit theorem. Pre: 631 or consent.

MATH 672 Stochastic Processes (3) Stationary, Gaussian, and Markov processes. Pre: 671 or consent.

MATH 681 Graph Theory (3) Connected graphs and digraphs. Graph embeddings. Connectivity and networks. Factors and factorizations. Coverings. Coloring. Applications. Pre: 311 or consent.

MATH 699 Directed Reading and Research (V) Maximum of 3 credit hours. Repeatable three times. Pre: graduate standing and consent.

MATH 700 Thesis Research (V) Research for master's thesis. Pre: consent.

MATH 799 Apprenticeship in Teaching (V) An experience-based introduction to college-level teaching; students serve as student teachers to professors; responsibilities include supervised teaching and participation in planning and evaluation. Open to graduate students in mathematics only. Repeatable once. CR/NC only. Pre: graduate standing in mathematics and consent.

MATH 800 Dissertation Research (V) Research for doctoral dissertation.

MDHX

See Medical History

Mechanical Engineering (ME)

College of Engineering

Preference in registration is given to declared engineering majors. Please consult the current Schedule of Courses for confirmed offerings each semester.

ME 113 Introduction to Engineering Design I (2) (1 Lec, 1 2-hr Lab) Introductory experience in analysis, synthesis, design, and computer-aided modeling. Teamwork and project required. Pre: high school physics or consent.

ME 213 Introduction to Engineering Design II (2) (1 Lec, 1 2-hr Lab) Introductory experience in communication, presentation, professional ethics, social responsibility, engineering economics, quality control, and computer-aided drafting. Teamwork and project required. Pre: 113.

ME 301 Mechanical Engineering Experimentation (2) (1 Lec, 1 2-hr Lab) Design of test setups and procedures to determine the performance of a product. Pre: junior standing.

ME 311 Thermodynamics (3) Basic laws, closed and open systems. Work, heat, concept of entropy. Properties of pure simple substances. Ideal gases. Introduction to power and refrigeration cycles. Pre: PHYS 170.

ME 312 Applied Thermodynamics (3) Gas mixtures, generalized thermodynamic relationships, combustion and thermochemistry, chemical equilibrium, power and refrigeration cycles. Pre: grade of C or better in 311.

ME 322 Mechanics of Fluids (3) Incompressible and compressible ideal fluids, effects of viscosity. Similitude, boundary layer flow, elementary gas dynamics. Pre: CE 271, and grade of C or better in ME 311.

ME 331 Material Science and Engineering (3) Electronic, atomic, and crystalline structure of materials and their effect on the mechanical, electrical, optical, and magnetic properties of engineering metals, ceramics, polymers, and composites. Pre: CHEM 171 and MATH 242.

ME 341 Manufacturing Processes (3) Manufacturing components. Energy requirements for various manufacturing methods. Selection and design of manufacturing methods to obtain components with desired size/shape/properties. Pre: 331 or consent.

ME 341L Manufacturing Processes Lab (1) (1 2-hr Lab) Manufacturing laboratory: tension/compression tests, cold rolling, welding, casting, statistical process control, programming and milling using a CNC machine. Pre: 341 (or concurrent) or consent.

ME 360 Computer Methods in Engineering (3) Numerical solutions for algebraic and transcendental equations, simultaneous linear algebraic equations, integration and differentiation; integration of ordinary differential equations. Engineering applications. Pre: EE 150 and MATH 244.

ME 371 Mechanics of Solids (3) Stress, strain, and constitutive relations for elastic solids. Design of shafts, beams, columns, and

cylinders. Failure theories, statically indeterminate systems. Pre: CE 270 and MATH 244.

ME 372 Component Design (3) Design, analysis, and selection of machine components: shafts, screws, fasteners, welds, rolling contact bearings, journal bearings, gears, clutches, brakes, belts, and roller chains. Pre: mechanical drawing, 113, and 371; or consent.

ME 374 Kinematics/Dynamics Machinery (3) Velocity and acceleration analysis of planar mechanisms; kinematic synthesis of linkages, cams, and gears; static and dynamic force analysis of mechanisms; balancing of machinery. Pre: MATH 244 and CE 271.

ME 375 Dynamics of Machines and Systems (3) Lumped-parameter modeling of dynamic physical systems. Methods of analysis, including transform techniques. Time response and frequency response. Modal analysis. Pre: 374.

ME 401 Measurements Lab (2) (1 Lec, 1 2-hr Lab) Design of engineering instrumentation. Techniques and procedures associated with carrying out measurements within the constraints of cost, time, and accuracy. Pre: 375

ME 403 Advanced Mathematics for Engineers I (3) Applications of ordinary differential equations, Laplace transform, vector field theory, matrices, line integrals. Pre: MATH 244.

ME 417 Air Conditioning and Refrigeration (3) Principles, design, and performance of refrigeration and air-conditioning systems. Pre: 312 and 422 (or concurrent).

ME 418 Power and Propulsion (3) Principles, performance, and design of gas turbine power plants and propulsion systems. Pre: 312 and 422 (or concurrent).

ME 422 Heat Transfer (3) Steady and transient conduction. Fundamentals of radiation and convection. Heat exchangers. Pre: 322.

ME 424 Introduction to Gas Dynamics (3) One-dimensional compressible flow involving change of area, friction, heat transfer. Normal and oblique shocks. Prandtl-Meyer flow. Application to nozzles, diffusers, airfoils. Pre: 312 and 322.

ME 433 Failures in Materials (3) Analysis of component failures due to imperfections, fatigue, brittle fracture, wear, corrosion, bending, impact, and overload. Fracture mechanics. Case studies. Pre: 331 or consent.

ME 434 Materials Selection for Design (3) Methodology for the selection of materials for mechanical applications to prevent mechanical failure and environmental degradation. Design considerations associated with the use of metals, ceramics, polymers, and composites. Pre: 341, 341L, and 371.

ME 435 Experimental Methods in Materials Research (3) (1 Lec, 2 2-hr Lab) Common experimental techniques in materials testing and research: x-ray diffraction, optical and electron microscopy, thermal and mechanical properties, electrochemical methods—theory and hands-on experience. Pre: 341 and consent.

ME 436 Corrosion Engineering (3) Basics of corrosion processes and emphasis on corrosion control. Thermodynamics and kinetics of corrosion, metal alloys and their behavior, corrosion control techniques (cathodic protec-

tion, anodic protection, coatings, and inhibitors). Pre: 341 and 341L, or consent.

ME 446 Advanced Materials Manufacturing (3) (2 Lec, 1 2-hr Lab) Introduction to anisotropic materials, advanced manufacturing techniques for composite and intelligent materials, joining of composites, thin film processing and stereolithography, computer aided manufacturing and rapid prototyping, manufacturing process optimization, open-ended manufacturing projects. Pre: 341, 341L, and senior standing; or consent.

ME 451 Feedback-Control Systems (3) Principles of linear control. Design methods for feedback-control systems. Application to physical dynamic systems such as industrial robots. Pre: 375 or consent.

ME 452 Robotics (3) Principles and design methods for autonomous systems. Pre: senior standing.

ME 453 Energy Conversion Systems (3) Energy conversion and its impact on the environment. Conventional, hydroelectric, nuclear fission and fusion, solar, wind, ocean, geothermal, and biomass power; energy storage, transmission, and conservation. Pre: 312, 322, and 422 (or concurrent); or consent.

ME 454 Geothermal Energy, Resources, and Utilization (3) Sources, distribution, environmental aspects of development. Chemical and physical properties of geothermal fluids; principles of energy conversion methods. Pre: 312 or 422 (or concurrent).

ME 455 Nuclear Power Engineering (3) Nuclear reactor principles. Reactor heat transfer, heat generation, and removal. Design and analysis of reactor power plants. Pre: 312 and 422 (or concurrent).

ME 465 Computer Graphics for Design (3) Two- and three-dimensional representations of solid bodies. Programming projects from conception through demonstration. Graphics primitives; data structures; transformations; hidden-line removal; animation. Pre: senior/graduate standing in engineering or ICS, or consent.

ME 473 Mechanical Vibrations (3) Response of machines and systems to transient and periodic excitation. Vibration isolation and transmissibility. Modal analysis of multi-degree-of-freedom systems. Applications to design. Pre: 371, 375, or consent.

ME 474 Fundamentals of Acoustics (3) Plane and spherical acoustic waves. Transmission, reflection, radiation, and absorption. Near and far fields, radiation patterns. Applications to noise control. Instruments. Pre: 375, EE 211, or consent.

ME 481 Design Project I (3) (1 1-hr Lec, 2 2-hr Lab) Engineering ethics, engineering design methodology, design process, project planning, decision making, materials selection, economic analysis, quality control, finite element analysis, initiation of an open-ended design project. A-F only. Pre: 372 or consent.

ME 482 Design Project II (3) (1 Lec, 2 2-hr Lab) Continuation of design project initiated in ME 481. Extension of conceptual design to final design and a prototype. Analysis, materials and part selection, synthesis of working systems. Computer-aided design and finite element

modeling. Manufacturing specifications, shop drawings, and a final report are required. A-F only. Pre: 375 and 481, or consent.

ME 491 Special Topics in Mechanical Engineering (3) Specialized topics in thermosciences, mechanics, materials, systems, or design. Pre: consent.

ME 492 Special Topics in Mechanical Engineering (3) Specialized topics in thermosciences, mechanics, materials, systems, or design. Pre: consent.

ME 499 Project (V) Investigation of advanced problems in mechanical engineering design or development. Student must find faculty sponsor before registering. Pre: senior standing.

ME 500 Master's Plan B/C Studies (1)

ME 611 Classical Thermodynamics (3) Critical study of foundations of thermodynamics. Definitions, laws and corollaries. Chemical, electrical, magnetic systems. Determination of equilibrium states. Pre: 312.

ME 612 Advanced Thermodynamics (3) Advanced classical thermodynamics and fundamentals of statistical thermodynamics. Availability; exergy; entropy generation minimization; thermoeconomics; statistics; quantum mechanics; ideal and dense gases; kinetic theory. Pre: 312, 322, and 422; or consent.

ME 617 Thermal Environmental Engineering (3) Physiological response to thermal environment, designs of passive and active cooling systems, student project. Pre: 417 or consent.

ME 621 Conduction Heat Transfer (3) Steady and unsteady heat conduction with and without heat sources in solids. Analytical, numerical, graphical, analog methods for solving heat conduction problems. Pre: 422.

ME 622 Convection Heat Transfer (3) Heat transfer in laminar and turbulent boundary layers. Analogy between heat, momentum, mass transfer. Pre: 422 and 626.

ME 623 Radiation Heat Transfer (3) Radiant interchange among surfaces. Gaseous radiation. Combined conduction, convection, and radiation heat transfer. Pre: 422 and senior standing.

ME 625 Numerical Methods in Fluid Mechanics and Heat Transfer (3) Integration of ordinary differential equations. Finite difference solutions of partial differential equations with applications to conduction and convection. Introduction to finite element methods. Pre: 422 and EE 150.

ME 626 Viscous and Turbulent Flows (3) Navier-Stokes and energy equations, their formulation, properties; some exact solutions; laminar boundary layers; laminar stability, transition, turbulence; turbulent boundary layers. Pre: 322.

ME 627 Environmental Heat, Mass, and Momentum Transfer (3) Heat and mass transfer in Earth's interior with applications to geothermal and petroleum reservoir engineering. Pre: 422 or consent.

ME 628 Chemical Reactor Analysis and Design (3) Chemical kinetics with heat and mass transfer. Balance equations applied to

selected ideal reactors. Departures from ideality. Pre: 422 and 627.

ME 629 Renewable Energy Engineering I: Biomass (3) (1 Lec, 2 2-hr Lab) Experimental methods and theory of thermochemical biomass conversion: static and dynamic temperature and mass measurements, thermogravimetry, differential scanning calorimetry, GCMS and HPLC techniques. Pre: consent.

ME 631 Advanced Materials Science (3) Properties of materials interpreted from the atomistic viewpoint. Crystal structure and defects. Thermodynamics of solids; phase transformations; experimental techniques. Pre: 331.

ME 635 Corrosion Theory (3) Application of electrochemical theory and materials science to corrosion and oxidation reactions. Effect of environment, especially marine. Cathodic protection, coatings, inhibitors, treatment of water systems. Pre: 331.

ME 636 Fundamentals of Electrochemistry (3) Thermodynamics of cells, electrode kinetics, mass transfer by migration and diffusion, microelectrode techniques, forced convection, impedance, double-layer structure, and absorbed intermediates in electrode processes. Pre: consent.

ME 642 Mechanical Behavior of Engineering Materials (3) Mechanical property tests. Stress concentrations. Fracture mechanics; applications to materials failures and to selection of materials; emphasis on mechanical engineering applications. Pre: consent.

ME 646 Mechanics and Design Composites (3) Introduction to composites; anisotropic elasticity and laminate theory; hygrothermal effects; composite beams, columns, rods, plates, and shells; energy method; failure theories; joining of composites, computer-aided design in composites. Pre: 371 or consent.

ME 651 Automatic Control (3) Linear optimal feedback control, discrete time optimal control, fundamentals of adaptive control, application to motion and force control of robot arms and manipulators. Pre: 451, EE 451, or consent.

ME 657 Methods of Search and Optimization (3) Modeling, theory, numerical methods for constrained and unconstrained parameter optimization. Linear, nonlinear programming of deterministic systems. Applications. Pre: consent.

ME 662 Computer Vision (3) Image formation, filtering, edge detection and other forms of image enhancement, segmentation of image into meaningful regions, techniques for analyzing motion, creation of models representing scene and image understanding. Psychological and physiological aspects of human vision will be discussed. Pre: graduate standing.

ME 671 Continuum Mechanics (3) Cartesian tensors in mechanics, coordinate transformations, analysis of stress and strain, principal values, invariants, equilibrium and compatibility equations, constitutive relations, field equations. Problems in elasticity. Pre: 371 or CE 370, or consent. (Cross-listed as CE 671)

ME 672 Finite Element Analysis (3)

Introduction to finite element analysis and design in mechanical engineering. Applications to machine design, vibrations, elasticity, heat transfer. Pre: 371, 360, or consent.

ME 675 Digital Spectral Analysis (3) System identification using discrete Fourier transform (DFT) methods. Deterministic and random signal analysis. Windows, aliasing, FFT; Z-transform and DFT; real-time data acquisition and analysis using microcomputers. Pre: 375, EE 315, ICS 445, or consent.

ME 678 Advanced Dynamics (3) Lecture course on rigid-body dynamics. Topics include: dynamical systems; motion representation and constraints; Newtonian mechanics; Lagrangian mechanics; Hamilton's principle; stability analysis; introduction to multibody dynamics. Pre: 375 or equivalent; or consent.

ME 691 Seminar (1) Current problems in all branches of mechanical engineering. All graduate students are required to attend; registrants are expected to present talks. Pre: graduate standing.

ME 696 Advanced Topics in Mechanical Engineering (V) Highly specialized topics in thermosciences, mechanics, materials, system, or design. Pre: consent.

ME 699 Directed Reading or Research (V) Directed study on subject of mutual interest to student and a staff member. Student must find faculty sponsor before registering. Pre: graduate standing.

ME 700 Thesis Research (V) Thesis for degree of MS in mechanical engineering. Pre: admission to candidacy and consent of thesis adviser.

ME 799 Directed Instruction (V) Student assists in undergraduate classroom and/or project instruction under the direction and close supervision of faculty member. CR/NC only. Pre: admission to PhD candidacy or consent.

ME 800 Dissertation Research (V) Research for doctoral dissertation. Pre: candidacy for PhD in mechanical engineering.

Medical History (MDHX)

School of Medicine

MDHX 606 Medical History (1) Philosophy and history of medicine with special reference to contributions from the Pacific Islands and Asia, and interrelationships of historical, ethical, social, and scientific aspects of medicine.

MDHX 699 Directed Research (V)

Medical Technology (MEDT)

School of Medicine

MEDT 151 Introduction to Medical Technology I (2) Designed to acquaint student with relationship of medical technology to the medical field.

MEDT 251 Introduction to Medical Technology II (2) (1 Lec, 1 3-hr Lab) Designed to acquaint student with basic principles of medical technology. Pre: 151, CHEM 161 and CHEM 161L, and BIOL 171 and BIOL 171L (or concurrent).

MEDT 301 The Clinical Laboratory I (3) (2 Lec, 1 3-hr Lab) Theory and practical application of clinical laboratory methods for 366. MT-patient and MT-health team relationships. Pre: PHYL 301 (or concurrent) and junior standing in program.

MEDT 302 The Clinical Laboratory II (3) (2 Lec, 1 3-hr Lab) Continuation of 301. Pre: 301 and PHYL 302 (or concurrent).

MEDT 331 Clinical Lab Management (1) Student will become familiar with fundamental administration of a clinical laboratory to include technical, personnel, and financial management areas. CR/NC only. Pre: consent.

MEDT 366 Clerkship (2) Clerkship in an affiliated lab. CR/NC only. Pre: 301 and 302.

MEDT 431 Medical Parasitology (3) (2 Lec, 1 2-hr Lab) Diagnosis of parasitic diseases by laboratory methods; outstanding features of life cycles, classification and medical significance of parasites. Pre: MICR 351 or consent. (Cross-listed as TRMD 431)

MEDT 451 Basic Hematology (3) (2 Lec, 1 3-hr Lab) Fundamental study of blood in normal and pathological states: formation, development, and classification of blood cells. Pre: 366 or consent.

MEDT 457 Clinical Lab Methods and Analyses I (3) Principles and methods of assessing disease states using laboratory tests. Emphasis on clinical biochemistry and instrumentation. Pre: 471 or consent.

MEDT 457L Clinical Lab Methods and Analyses Lab I (2) (1 6-hr Lab) Lab experiments illustrating fundamental principles and methods of clinical laboratory analyses. Co-requisite: 457.

MEDT 458 Clinical Lab Methods and Analyses II (3) Continuation of 457.

MEDT 458L Clinical Lab Methods and Analyses Lab II (2) (1 6-hr Lab) Continuation of 457L. Co-requisite: 458.

MEDT 464 Immunohematology (3) (2 Lec, 1 3-hr Lab) Antigen-antibody relationships in human blood, study of blood groups, clinical problems in transfusion. Pre: MICR 461 or consent.

MEDT 471 Clinical Biochemistry (4) Biochemical processes in human health and disease states. Repeatable one time. Pre: BIOC 441 or BIOL 405 or CMB 405. Spring only. (Cross-listed as BIOC 471)

MEDT 495 Special Topics in Medical Technology (V) Acquaints student with role of the medical technologist and overlap of major sciences in clinical situations to help student develop qualities unique to med technology. CR/NC only. Pre: consent.

MEDT 499 Directed Reading and Research (V)

MEDT 591 Clinical Training in Medical Technology (26) Application of theory and simulated laboratory experiences in immuno-hematology, clinical chemistry, microbiology, parasitology, hematology, coagulation, urinalysis, immunology, to meet stated career entry-level competencies. Pre: BS in MEDT.

MEDT 690 Seminar in Medical Technology (1) Analysis of research and recent literature pertaining to various aspects of medical technology. Pre: consent.

MEDT 695 Special Topics in Medical Technology (2) Current research, discoveries, inventions, methods, and/or techniques in clinical laboratory medicine. Pre: consent.

Medicine (MED)

School of Medicine

MED 531 Internal Medicine Clerkship (16) Required course for third-year medical students, 11-week duration. Ambulatory care and hospital-based experience in a spectrum of medical problems. Application of skills and techniques to solve clinical problems. CR/NC only. Pre: BIOM 555.

MED 532 Internal Medicine Longitudinal Clerkship (5) Year-long clerkship in ambulatory setting. Application of history-taking and physical examination skills for evaluation and care of clinical problems. Emphasis on primary and preventive care, clinical decision-making, and outpatient management of patients with complex problems. Repeatable twice. Pre: third-year standing and concurrent registration in 532 courses.

MED 541 Advanced Medicine Clerkship (V) Required course for fourth-year medical students, variable duration depending on progress. Advanced experiences in ambulatory and hospital-based medical care. Proficiency in this course may be established by examination by third- and fourth-year students. CR/NC only. Pre: fourth-year standing and completion of 531 or 532.

MED 545 (Alpha) Unit VII Electives in Medicine (V) Elective course for fourth-year medical students involving more advanced study of selected topics within internal medicine than was possible in 531. Repeatable once. CR/NC only. Pre: 531 or 532.

MED 546 (Alpha) Unit VII Electives in Medicine (V) Fourth-year electives in which students study selected topics within field of medicine. (B) extramural electives in medicine (miscellaneous); (C) internal medicine seminar; (D) infectious disease; (E) internal medicine sub-internship; (F) research in bioethics. Repeatable once for (B)–(E); not repeatable for (F). CR/NC only. Pre: 531 or 532 for (B) and (C); 541 for (E); and strong writing skills for (F). Background in humanities/literature recommended for (F). Co-requisite: 545 for (C).

MED 599 Directed Research (V) Pre: consent.

Meteorology (MET)

School of Ocean and Earth Science and Technology

MET 101 Introduction to Meteorology (3) For nonscience majors and prospective science teachers. Basic atmospheric physics, sun-Earth-atmosphere interrelationships, pollution, major weather systems, weather forecasting, weather of Hawai'i. NS2

MET 101L Introduction to Meteorology Lab (1) (1 3-hr Lab) Exercises with meteorological data and measurement systems. Characteristics of Hawaiian winds, temperatures, and rainfall. Pre: 101 (or concurrent). NS2

MET 200 Descriptive Meteorology (3) Atmospheric variables and gas laws, radiation processes, thermodynamics, clouds and precipitation, atmospheric circulations, mid-latitude and tropical systems, forecasting, weather applications, climate. Pre: PHYS 152L (or concurrent).

MET 302 Atmospheric Physics (3) Energy and thermodynamics, statics and stability, physical processes of cloud formation, radiation and Earth-atmosphere heat balance, kinetic theory, optical effects. Pre: MATH 242 and PHYS 272, or consent.

MET 303 Introduction to Atmospheric Dynamics (3) Scalar and vector development of basic laws of hydrodynamics, equations of motion, kinematics, divergence and vorticity, viscosity and turbulence, introduction to numerical weather prediction, general circulation. Pre: 302 and MATH 244, or consent.

MET 305 Meteorological Instruments and Observations (3) (2 Lec, 1 3-hr Lab) First- and second-order measurement systems. Response of wind, temperature, and recording instruments. Discussion of advance system including radar. Planning of field programs. Pre: PHYS 152 and PHYS 152L, or PHYS 272 and PHYS 272L; or consent.

MET 310 Global Environmental Change (3) Global environmental change problems such as carbon dioxide and the greenhouse effect, acid rain, chlorofluorocarbons and the ozone layer, global deforestation and the effect on climate, etc. Pre: one environmentally oriented science course. (Cross-listed as OEST 310 and OCN 310)

MET 310L Global Environmental Change Laboratory (2) (1 2-hr Lab) Laboratory course to supplement MET 310. Quantitative aspects of global environmental change will be addressed through problem-solving and computer modeling. A-F only. Pre: MATH 241, MATH 242, PHYS 170, PHYS 170L, CHEM 161, and CHEM 161L; or consent. Co-requisite: 310. (Cross-listed as OCN 310L and OEST 310L)

MET 402 Applied Atmospheric Dynamics (3) Advanced concepts in dynamics: vorticity, cyclogenesis, jet streams, fronts, mesoscale circulations. Pre: 303 or consent.

MET 405 Satellite Meteorology (3) (2 Lec, 1 3-hr Lab) Orbital elements, ephemerides, viewing geometry; radiation, satellite sensors; interpreting satellite data; applications to synoptic meteorology and forecasting. Pre: 302 or consent.

MET 406 Tropical Meteorology (3) History; tropical clouds and hydrometeors; typhoons; monsoons; local and diurnal effects. Pre: 303 or consent.

MET 412 Meteorological Analysis Lab (3) (2 3-hr Lab) Techniques of portraying and analyzing atmospheric structure and weather systems in middle and high latitudes; modern methods of forecasting extratropical systems. Pre: 303 (or concurrent) or consent. (Alt. years)

MET 416 Tropical Analysis Lab (3) (2 3-hr Lab) Techniques of portraying and analyzing atmospheric structure and weather systems in tropical and equatorial regions; forecasting tropical systems. Pre: 303 (or concurrent) or consent.

MET 600 Atmospheric Dynamics I (3) Governing equations for moist atmospheric motions, approximations, basic theoretical models, boundary layer dynamics, atmospheric waves, quasi-geostrophic theory for mid-latitudes. Pre: 303 and MATH 402 or MATH 405; or consent.

MET 601 Atmospheric Dynamics II (3) Overview of dynamic meteorology, numerical weather prediction, geophysical fluid instabilities, approximate dynamical systems, atmospheric general circulation, stratospheric dynamics. Pre: 600 or consent.

MET 606 Cumulus Dynamics (3) Dynamics of convective systems: tornadoes, waterspouts, squall lines. Interactions with synoptic scale. Pre: 620 or consent. (Alt. years)

MET 607 Mesoscale Meteorology (3) Scale analysis. Observational and theoretical aspects of mesoscale circulation systems. Pre: 600 or consent. (Alt. years)

MET 610 Tropical Climate and Weather (3) Climate and general circulation of the tropics; El Niño and Southern Oscillation; intraseasonal oscillation; trade winds; tropical weather systems; energy balance; typhoons. Pre: 303 or consent.

MET 616 Monsoon Meteorology (3) Synoptic components of monsoons, regional and temporal variability, numerical models, research exercises. Pre: 610 or consent. (Alt. years)

MET 620 Physical Meteorology (3) Molecular kinetics, atmospheric thermodynamics, cloud physics, precipitation processes, atmospheric electricity, scattering and absorption of solar radiation, absorption and emission of infrared radiation, radiative transfer. Pre: 302 or consent.

MET 621 Cloud Physics (3) Physical processes attending formation and subsequent history of clouds and cloud particles. Pre: 620 or consent. (Alt. years)

MET 631 Statistical Meteorology (3) Probability; frequency distributions of atmospheric variables; linear models; time series analysis (frequency and time domain); principal component analysis; statistical weather forecasting and verification. Pre: MATH 371. (Alt. years)

MET 636 Air Pollution Meteorology (3) (2 Lec, 1 3-hr Lab) Advanced treatment of theoretical diffusion expression (K-theory, Taylor's statistical hypothesis, similarity theory) and empirical diffusion expressions (Gaussian model with modification and sensitivity analysis, box models). Pre: consent. (Alt. years)

MET 665 Small-Scale Air-Sea Interaction (3) Observations and theory of small-scale processes which couple the atmosphere and ocean boundary layers, including introduction to turbulence theory and parameterization of turbulent fluxes. Pre: MATH 402 and MATH 403 (or their equivalents) and either OCN 620 or MET 600; or consent. (Cross-listed as OCN 665)

MET 666 Large-Scale Ocean-Atmosphere Interactions (3) This lecture/seminar course introduces physical oceanography and meteorology students to the state-of-the-art theories and observations of large-scale ocean-atmosphere interaction, as well as conveying the fundamental understanding that has been developed during the past 30 years. Emphasis will be on phenomena such as El Niño/Southern Oscillation, the North Atlantic Oscillation, the Pacific Decadal Oscillation, and global climate change. Repeatable one time. Pre: 600 or OCN 620; or consent. (Cross-listed as OCN 666)

MET 699 Directed Research (V) Pre: consent.

MET 700 Thesis Research (V)

MET 745 Mid-latitude Dynamic Meteorology (4) (3 Lec, 1 3-hr Lab) Scale analysis of equations of motion; quasi-geostrophic system of forecasting; initial value problem; general circulation; programming exercise to compute energy interaction terms. Pre: 601 and consent. (Alt. years)

MET 746 Tropical Dynamic Meteorology (4) (3 Lec, 1 3-hr Lab) Instability theory; numerical integration procedures; special problems in numerical analysis in tropics; programming exercises of numerical integration. Pre: 601 and consent. (Alt. years)

MET 752 Special Topics in Meteorology (3) Concentrated studies on selected atmospheric problems. Repeatable. Pre: 600 or consent.

MET 765 (Alpha) Seminar in Meteorology (1) Participation in departmental seminars and presentation of a seminar on: (B) literature review of a specific topic; (C) research results. Repeatable. Pre: consent.

MET 800 Dissertation Research (V)

Microbiology (MICR)

College of Natural Sciences

MICR 130 General Microbiology (3) Role of microorganisms; how they affect people, property, and the environment. A basic survey course covering broad aspects of biochemistry, genetics, molecular biology, and physiology; host-parasite relationships, public health, bacterial, mycotic and viral diseases; epidemiology; ecology of soils and water; environmental pollution; food microbiology; industrial applications at an introductory level. Discussion groups optional. Not open to those with credit in 351 or equivalent. **NS1**

MICR 140 Microbiology Laboratory (2) (2 2-hr Lab) Primarily for students in nursing and dental hygiene. Pre: 130 (or concurrent). **NS1**

MICR 301 Microbiology Seminar (1) Seminars by the department faculty on current topics. Repeatable once. Pre: 130 or 351 (or concurrent); or consent.

MICR 351 Biology of Microorganisms (3) Anatomy, chemistry, physiology, genetics, development, and environmental interactions of microorganisms. Pre: BIOL 171 or equivalent, CHEM 272, and CHEM 272L; or consent. Co-requisite: 351L. Recommended: BIOL 275/275L. **NS1**

MICR 351L Biology of Microorganisms Lab (2) (2 3-hr Lab) Laboratory exercises to accompany 351. Pre: CHEM 272, CHEM 272L, and BIOL 171, or equivalent.

MICR 394 Marine Biotechnology (4) A lecture and laboratory course on both the theory and practice of developing commercial products from marine microorganisms. The course will cover all stages of product development including marine environments likely to contain microorganisms that can make products of interest, screening microbes for desired products, optimization of product production and large-scale production systems. Open to students from microbiology, ocean engineering and other ocean sciences. Pre: consent. (Cross-listed as ORE 394)

MICR 431 Microbial Physiology (3) Fundamental physiological and metabolic processes of bacteria; emphasis on growth, functions of cell structures, varieties of energy metabolism, metabolic regulation, and differentiation at the prokaryote level. Pre: 351 and BIOC 441, or consent.

MICR 431L Microbial Physiology Lab (2) (2 3-hr Lab) Components and metabolism of the bacterial cell; emphasis on techniques of analysis of metabolism and molecular structure. Co-requisite: 431.

MICR 451 Biology of Bacteria (3) Detailed study of physiology, structure, and taxonomy of major groups of bacteria; their growth in nature, laboratory, and industry. Pre: 351.

MICR 451L Biology of Bacteria Lab (2) (2 3-hr Lab) Selected experiments in cultivation, physiology, and taxonomy of major groups. Pre: 351 and 451 (or concurrent).

MICR 461 Immunology (3) Structure and biological actions of antigens and antibodies; fundamentals of antibody synthesis; the relation of immunology to biology and medical sciences. Pre: 351 or BIOL 172; or consent. Recommended: BIOL 275/275L.

MICR 461L Immunology Lab (2) (2 3-hr Lab) Basic exercises and experiments in immunology, immunochemistry, immunobiology to illustrate principles of 461. Co-requisite: 461 or consent.

MICR 463 Microbiology of Pathogens (3) Host-parasite relationships in microbial diseases of humans and animals with emphasis on bacterial pathogens. Pre: 351, 461, and 461L; or consent. Co-requisite: 463L or consent.

MICR 463L Microbiology of Pathogens Lab (2) (2 3-hr Lab) Characterization of bacterial pathogens. Isolation, identification, and diagnosis. Co-requisite: 463 or consent.

MICR 470 Microbial Pathogenesis: Molecular Aspects (3) Fundamental mechanisms of infectious diseases at the molecular level. Emphasis on the role of genetics in host-pathogen interactions. Pre: 351/351L or consent. (Alt. years)

MICR 475 Bacterial Genetics (3) Genetic analysis and molecular basis of transmission replication, mutation, and expression of heritable characteristics in prokaryotes. Pre: 351.

MICR 475L Bacterial Genetics Lab (2) (2 3-hr Lab) Techniques for study of transfer and expression of prokaryotic genes: transformation,

conjugation, transposon mutagenesis, preparation and analysis of plasmid and chromosomal DNA. Pre: 475 (or concurrent).

MICR 485 Microbes and Their Environment (3) Distribution, diversity, and roles of microorganisms in terrestrial, freshwater, and marine ecosystems. Importance of bacteria in pesticide degradation, bioremediation of oil spills, sewage treatment, biocontrol, food fermentation. Pre: BIOL 172 and CHEM 272; or consent.

MICR 485L Microbes and Their Environment Lab (2) (2 3-hr Lab) Techniques for study of interaction of microorganisms with and within their natural habitats; symbiosis between microorganisms and plants and animals; role of microorganisms in element cycling; food fermentation by bacteria. Pre: 351 and 485 (or concurrent); or consent.

MICR 490 Animal Virology (3) Fundamental concepts; comparison of physical, chemical, and biological properties of representative animal viruses and host-virus relationships at cellular and whole animal level. Pre: 351, 461, BIOC 441, and consent. Co-requisite: 490L.

MICR 490L Animal Virology Lab (2) (2 3-hr Lab) Basic experimental techniques; emphasis on use of animal cell culture systems. Pre: 351, 461, BIOC 441, and consent. Co-requisite: 490.

MICR 499 Microbiological Problems (V) Directed reading and research. Limited to senior majors with a minimum cumulative GPA of 2.7 or a minimum GPA of 3.0 in microbiology, or consent.

MICR 500 Master's Plan B/C Studies (1) Enrollment for degree completion. Pre: master's Plan B or C candidate and consent.

MICR 625 Advanced Immunology (3) Detailed reports and discussions on selected advanced topics and current research literature. Pre: 461, BIOC 601, and BIOP 601; or consent. (Alt. years: spring only)

MICR 631 Rhizobium-Legume Symbiosis (1) Rhizobium infection process, nodule formation, genes involved in nodulation and nitrogen fixation and recent advances in rhizobium-legume symbiosis will be discussed as both lectures and student seminars. Pre: 351, 431, 475, or 485. (Spring only)

MICR 632 Advanced Microbial Physiology (3) Selected topics. Pre: 431 or consent. (Alt. years: spring only)

MICR 641 Ultrastructure of Cells (3) Cellular structures, common and specialized, of eukaryotes and prokaryotes; correlating macromolecular structure with cell functions. Pre: BIOL 406 and either BIOC 441 or BIOC 601.

MICR 642 Antibiotics (3) History and applications of antibiotics; antibiotic resistance mechanisms; discovery and approval of new antibiotics; sources of antibiotics; role in nature. Pre: 431, 451, or 463; or consent.

MICR 646 Plant-Bacterial Interactions (3) Diagnosis, molecular biology, genetics, and infection mechanisms of bacterial plant pathogens and symbionts. Pre: one of MICR 351, MICR 475, or BIOC 481; or consent. (Cross-listed as PPTH 646)

MICR 653 Methods in Microbiology Oceanography (3)

MICR 655 Advanced Virology (3) Detailed reports and discussions on selected advanced topics and current research literature. Pre: 463, 490, either BIOC 441 or BIOC 601, and consent. (Alt. years: fall only)

MICR 661 Regulations of Gene Expressions in Microorganisms (3) Critical discussions of research literature on regulation of gene expression and metabolism in bacterial and fungal systems. Pre: 475, 632, 671, BIOC 601, BIOC 602, and consent. (Alt. years: fall only)

MICR 671 Advanced Microbial Genetics (3) Directed study and discussion of research literature on bacterial and bacterial virus mutation, genetic recombination, evolution and control mechanisms. Pre: 475, BIOC 601, and consent. (Alt. years: spring only)

MICR 680 Advances in Microbial Ecology (3) Highlights in microbial ecology; interaction of microorganisms with abiotic and biotic components of their environments. Modern techniques for study of autecology and synecology of microorganisms. Pre: 485 or consent. (Alt. years: spring only)

MICR 681 Host-Parasite Relationships (3) Mechanisms of pathogenicity of microorganisms and defense mechanisms of human and animal hosts. Review of contemporary literature. Pre: 463 or consent. (Alt. years: fall only)

MICR 685 Molecular and Cellular Bacterial Pathogenesis (3) Detailed examination of the molecular and cellular mechanisms of bacterial pathogenesis. Overview of key literature, synthesis of scientific problems into research proposals. Pre: 431, 463, or 470; or consent. (Alt. years: spring only)

MICR 690 Seminar (1) Required of graduate students. Repeatable.

MICR 699 Directed Research (V) Selected problems in microbiology. Pre: consent.

MICR 700 Thesis Research (V)

MICR 795 Special Topics in Microbiology (V) Selected topics in any aspect of microbiology. Repeatable.

MICR 800 Dissertation Research (V)

Military Science (MSCI)

ROTC Programs

A weekly one-hour leadership laboratory is required for courses numbered 200 and above. This laboratory is optional for the 100-level courses. The laboratory includes practical application of leadership skills, drills and ceremonies, basic soldiering skills, and Army Physical Fitness Training (APFT).

MSCI 101 Military Physical Training (1) Conditioning exercises and activities to develop and maintain a physical fitness level; requires presenting physical training instruction and meeting, or exceeding, army physical fitness test (APFT) requirements.

MSCI 105 Introduction to Military Science I (2) Provides an initial glimpse of the military and the role that it plays in society. Develops the student's comprehension of the American defense system as it evolved as the result of changes in the American society. Typical subjects include ethics, leadership, effective goal setting, managing time and effort, and the tradition of a citizens' army.

MSCI 105L Introduction to Military Science I Lab (1) Practical application in adventure training, one-rope bridges, rifle marksmanship, land navigation, drill and ceremonies, physical training. Pre: 105 (or concurrent).

MSCI 106 Introduction to Military Science II (2) Continuation of 105. Provides instruction in military-related subjects of general student interest, i.e., confidence-building field trips, supervising an individual exercise program, development of individual soldiering skills, and leadership and professional ethics for the military. Introduction to armed forces evolutions, overview of the Department of Defense, application of force in international relations.

MSCI 106L Introduction to Military Science II Lab (1) Practical application in adventure training, one-rope bridges, rifle marksmanship, land navigation, drill and ceremonies, physical training. Pre: 106 (or concurrent).

MSCI 205 Intermediate Military Science I (3) Basic concepts of military leadership. Familiarization with the concept of leadership, the five types of leadership power, the decision-making process, and the styles of leadership. Involves military skills and related adventure-type training and basic individual survival skills. Leadership laboratory required 1.5 hours per week, consisting of practical application of leadership skills, drill and ceremonies, land navigation, first aid, and army physical fitness training.

MSCI 206 Intermediate Military Science II (3) Individual and small-unit military skills. Practical applications include combat first aid; basic wilderness survival skills; land navigation; and a knowledge of key military jobs, duties, and responsibilities. Involves field training to provide hands-on experience. Leadership laboratory required 1.5 hours per week, consisting of practical application of leadership skills, drill and ceremonies, land navigation, first aid, and army physical fitness training.

MSCI 207 ROTC Basic Camp (6) Six-week summer course conducted at Ft. Knox, Kentucky. Substitutes for ROTC basic course (105, 106, 205, and 206) and fulfills course requirement for admission to ROTC advanced courses. Credit will be given for 207 or basic courses, but not both. Pre: consent.

MSCI 305 Leading Small Organizations I (4) (2.5 Lec, 1.5-hr Lab) Series of practical opportunities to lead small groups and receive personal assessments and encouragement. Uses small unit defensive tactics and opportunities to plan/conduct training. Includes field training sessions, student taught classes, and presentations/briefings. Co-requisite: 101. Pre: 105, 106, 205, and 206; or consent.

MSCI 306 Leading Small Organizations II (4) (2.5 Lec, 1.5-hr Lab) Analyze tasks and prepare written or oral guidance for team members to accomplish tasks. Delegate tasks and

supervise. Examine and apply lessons from leadership case studies. Examine importance of ethical decision-making. Includes field training sessions, student taught classes and presentations/briefings. Co-requisite: 101. Pre: 105, 106, 205, 206, and 305; or 305 and consent.

MSCI 307 ROTC Advanced Camp (6) Six-week summer field training exercise conducted at Fort Lewis, Washington. Arduous and intensified leadership training is conducted throughout the six-week period. Required for U.S. Army commissioning. Pre: 305, 306, and consent.

MSCI 399 Directed Reading and Research (V) Limited to military science students who have had at least one previous military science course for which a grade of B or higher was earned and a cumulative GPA of 2.0 or better. Pre: consent.

MSCI 405 Leadership Challenges and Goal Setting (4) (2.5 Lec, 1.5-hr Lab) Plan, conduct and evaluate activities of the ROTC cadet organization. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Includes field training sessions, student taught classes and presentations/briefings. Co-requisite: 101. Pre: 105, 106, 205, 206, 305, and 306; or 305, 306, and consent.

MSCI 406 Transition to Lieutenant (4) (2.5 Lec, 1.5-hr Lab) Continues the methodology from 405. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as related to leading as an officer in the Army. Prepare for a future as a successful Army officer. Includes field training sessions, student taught classes and presentations/briefings. Co-requisite: 101. Pre: 105, 106, 205, 206, 305, 306, and 405; or 305, 306, 405, and consent.

Music (MUS)

College of Arts and Humanities

Applied music courses appear at the end of this section.

MUS 106 Introduction to Music Literature (3) Elements, styles, and forms of music, from listener's standpoint. **AHL1**

MUS 107 Music in World Cultures (3) Folk, popular, and art music from major regions of the world, with emphasis upon Asia and the Pacific; representative styles and regional characteristics. **AHL1**

MUS 108 Fundamentals of Western Music (3) Fundamental concepts in organization of music as expressive medium in Western culture. Roles of composer, performer, and listener. Notation as mode of communication. Discovery and verification of ideas through laboratory experience. **AHL1**

MUS 114 University Chorus (1) Performance of choral literature from Renaissance to present. Previous choral experience not required. Repeatable. **AHL1**

MUS 121 (Alpha) Class Instruction I (1)

Basic principles of performance; relevant problems in literature. (B) voice; (C) piano; (D) guitar; (E) guitar: pop/folk. Repeatable in different sections. Cannot be audited. **AHL1**

MUS 122 (Alpha) Class Instruction II (1)

Basic principles of performance; relevant problems in literature. (B) voice; (C) piano; (D) guitar; (E) guitar: pop/folk. Repeatable in different sections. Cannot be audited. Pre: 121 or consent. **AHL1**

MUS 123 (Alpha) Pacific Music Performance Class (1)

Basic principles of performance of Pacific music. Relevant problems at elementary level. (B) slack key guitar. Repeatable once.

MUS 125 First-Level Secondary Piano (1)

Piano as secondary performance field; application of theory to problems in improvising, harmonizing, creating accompaniments, transposing, and sight-reading at keyboard. For music majors. Pre: consent.

MUS 126 First-Level Secondary Piano (1)

Piano as secondary performance field; application of theory to problems in improvising, harmonizing, creating accompaniments, transposing, and sight-reading at keyboard. For music majors. Pre: consent.

MUS 127 (Alpha) Asian Music Performance Class (1)

Basic principles of performance of Asian music. Relevant problems in literature at elementary level. (B) koto; (C) shamisen; (D) South Indian singing; (E) shakuhachi. Cannot be audited. Pre: consent. **AHL1**

MUS 128 (Alpha) Asian Music Performance Class (1)

Basic principles of performance of Asian music. Relevant problems in literature at elementary level. (B) koto; (C) shamisen; (D) South Indian singing; (E) shakuhachi. Cannot be audited. Pre: consent. **AHL1**

MUS 150 Introduction to Music Learning

(1) Introduction to learning processes in music. Foundations, principles, and programs in music learning. Observation of instructional settings kindergarten through university, private and public, individual and group. Required for admission to music Ed program.

MUS 151 String Techniques and Methods

(2) For students preparing to teach instrumental music. Performance techniques, materials, and pedagogy for string instruments. Pre: 150 or consent.

MUS 152 Instructional Techniques and Methods: Lower Strings (2)

Continuation of 151. Pre: 150 or consent.

MUS 153 Woodwind Techniques and Methods (2)

Similar to 151 and 152. Pre: 150 or consent.

MUS 154 Woodwind Techniques and Methods (2)

Continuation of 153. Pre: 150 or consent.

MUS 155 Percussion Techniques and Methods (2)

Similar to 151 and 152. Pre: 150 or consent.

MUS 156 Brass Techniques and Methods (2)

Similar to 151 and 152. Pre: 150 or consent.

MUS 180 Basic Theory and Aural Skills (3)

Fundamentals of music theory, notation, sight-singing, and dictation.

MUS 199 Recital Attendance (0)

Attendance at approved departmental concerts. Required of all music majors (BMus, six semesters; BA and BEd, four semesters). Repeatable. CR/NC only.

MUS 225 Second-Level Secondary Piano (1)

Continuation of 125–126; increased emphasis on piano literature up to intermediate level. Pre: 126 or consent.

MUS 226 Second-Level Secondary Piano (1)

Continuation of 225.

MUS 251 Diction for Singers (2)

Diction and phonetics of English, Italian, and liturgical Latin for singers and choral conductors. Pre: 232B or consent.

MUS 252 Diction for Singers (2)

Diction and phonetics of French and German for singers and choral conductors. Pre: 232B or consent.

MUS 253 Basic Experiences of Music (3)

(3 Lec, 1 1-hr Lab) Music fundamentals: time, pitch, media, musical expression, form. Use of rhythm instruments, recorder, 'ukulele, bells, autoharp, keyboard, etc.; listening; movement; notation; analysis of music. **AHL1**

MUS 261 Music Research Techniques (1)

Introduction to library sources and research in music.

MUS 265 History of Western Music to 1750 (3)

Development of Western music from its origins to 1750. Styles, schools, composers. Pre: 282 or consent. **AHL1**

MUS 266 History of Western Music After 1750 (3)

Development of Western music from 1750 to the present. Styles, schools, composers. Pre: 282 or consent. **AHL1**

MUS 281 Theory I (2)

Materials and organization of music; analysis, writing, and keyboard application. Pre: 180 or consent. Co-requisite: 283 or consent.

MUS 282 Theory II (2)

Continuation of 281. Pre: 281 or consent. Co-requisite: 284 or consent.

MUS 283 Aural Training I (1)

Problems in perception, identification, and notation of musical sounds. Emphasizes sight-singing. Cannot be audited. Pre: 180 and ability to sing diatonic melodies at sight, or consent. Co-requisite: 281 or consent.

MUS 284 Aural Training II (1)

Continuation of 283. Pre: 283 or consent. Co-requisite: 282 or consent.

MUS 285 Theory III (2)

Detailed study of theory: writing, analysis, keyboard application. Pre: 282. Co-requisite: 287.

MUS 286 Theory IV (2)

Continuation of 285. Pre: 285. Co-requisite: 288.

MUS 287 Aural Training III (1)

Advanced problems in perception, identification, and notation of musical sounds. Sight-singing. Pre: 284. Co-requisite: 285.

MUS 288 Aural Training IV (1)

Advanced problems in perception, identification, and notation of musical sounds. Sight-singing. Pre: 287. Co-requisite: 286.

MUS 289 Introductory Practicum in Music Composition (2)

Original composition; specific approaches to creative writing. Repeatable. Pre: 282 or consent.

MUS 311 (Alpha) Ethnic Music Ensembles I (1)

Performance of literature for groups of various sizes and kinds at introductory level. (B) Hawaiian; (C) Japanese; (D) Chinese; (E) Korean; (F) Okinawan; (G) Philippine; (H) gamelan; (I) gagaku; (J) Tahitian; (K) Oceanic; (M) other. Repeatable. Pre: upper division standing or consent.

MUS 312 Hula/Chant Ensemble (2)

Ancient style. Repeatable once. Pre: upper division standing or consent.

MUS 325 Conducting (1)

Problems in directing instrumental and choral ensembles. Score reading, rehearsal techniques, and basic interpretive problems. Pre: 282.

MUS 326 Conducting (2)

Continuation of 325.

MUS 353 Music in the Elementary School (2)

Music concepts and literature appropriate for elementary schools. Basic materials and procedures. Not for majors in elementary school music (vocal/general). Pre: 108 and EDCI 312 (or concurrent).

MUS 354 Music Education: Elementary (2)

Required for K-12 music specialists. Scope and nature of music in children's lives; planning, teaching, learning, and evaluating music in elementary curriculum. Not open to those with credit in 353. Pre: 150, 286, and TECS 312C (or concurrent); or consent.

MUS 355 Music: Secondary Instrumental (2)

Objectives, materials, procedures of instrumental music in secondary school. Pre: 151, 152, 153, 154, 155, 156, 326 (or concurrent), 354, and TECS 312D (or concurrent); or consent.

MUS 356 Music: Secondary Vocal/General (2)

Objectives, materials, procedures of general and choral music in secondary school. Pre: 121B, 150, and TECS 312D (or concurrent); or consent.

MUS 358 Piano Pedagogy (2)

Concepts, materials, and procedures for class and individual instruction in piano. Pre: 282 or two semesters of 232C.

MUS 359 Piano Pedagogy (2)

Continuation of 358.

MUS 370 Music in Modern America (3)

Varieties of music, including jazz and other popular forms; relevant antecedents. Pre: sophomore standing; freshmen with consent only. **AHL1**

MUS 381 Counterpoint (3)

Form, texture, and style in music literature from Renaissance to present. Formal analysis and writing. Contrapuntal textures and forms. Pre: 265, 266, and 286.

MUS 382 Form and Analysis (3)

Form, texture, and style in music literature from Renaissance to present. Formal analysis and writing. Larger forms with various textures; recent contemporary approaches to continuity. Pre: 265, 266, and 286.

MUS 383 Orchestration (3)

Basic principles of scoring for orchestra and band; instrumental ranges, timbres, transpositions; transcribing or composing for band, orchestra, and chorus. Pre: 286 or consent.