



Fahad Bin Sultan University

College of Sciences and Humanities

Service Courses: Course Descriptions

ARAB 101 Basic Academic Arabic **3(3, 0, 0)¹**

The primary aim of this course is to offer comprehensive training in fundamental Arabic grammar, syntax, and morphology. The course places a strong emphasis on equipping students with the necessary skills to effectively utilize Arabic for academic papers, official correspondence, and professional reports.

ARAB 201 Advanced Academic Arabic **3(3, 0, 0)**

In this course, students will have the opportunity to engage in detailed textual analysis of a wide range of classical and contemporary literary and professional Arabic texts. The purpose of studying these selected texts is to enrich students' understanding and admiration of the Arabic language and its literature, while also reinforcing their analytical and writing abilities.

Prerequisite: ARAB 101

ASTR 150 Introduction to Astronomy **3(3, 0, 0)**

This is a basic Astronomy course that introduces students to the subject starting by a brief history on old astronomy and continues throughout the latest discoveries in the field. Despite the straightforward nature of the course, it strongly emphasizes the scientific methods as fundamental tools of understanding the physical laws that govern our universe.

Prerequisite: MATH 200

CHEM 101 General Chemistry I **3(3, 0, 0)**

An introduction to chemical principles covering atomic structure, chemical bonding, Molecules & Compounds, stoichiometry, gas laws, Chemical Composition, acid-base and solubility equilibria and solution.

CHEM 101L General Chemistry I Lab **1(0, 0, 2)**

Weekly introductory applied and simulated laboratory sessions which include an introduction to chemical principles covering significant figures, accuracy and precision, chemical bonding, precipitation reactions, stoichiometry, chemical equilibrium, qualitative analysis, acid-base titration and solubility, CHEM LAB computer simulation.

Pre- or co-requisite: CHEM 101

¹ Credits (Lecture, Tutorial, Lab/Practical)

CHEM 102 General Chemistry II**3(3, 0, 0)**

This course covers the nature and composition of matter, atoms and molecules, solutions, chemical bonding and chemical structure, molecules and materials, energy and chemistry, thermodynamics, entropy and the second law, chemical kinetics, chemical equilibrium, gas laws, chemical reactions, equilibria, kinetics, electrochemistry, corrosion and redox reactions.

Prerequisite: CHEM 101

CHEM 150 Chemistry and Society**3(3, 0, 0)**

This course provides students with a broad survey of the applications and uses of Chemistry in several aspects of daily practical life. It would cover selections from the following topics: atmospheric chemistry and global warming, chemistry of petroleum and plastics, cosmetics, pharmaceuticals and antiseptics, food and its technology, a brief introduction to the chemistry of life (Biochemistry), electrochemistry and solar cells, and even simple introduction to nanomaterials and nanotechnology.

ENGL 101 Basic Academic English I**3(3, 0, 0)**

This course aims to equip students with the essential writing skills they need at sentence and paragraph levels. The course emphasizes fluency in the writing process through use of invention strategies, drafting, revising, and editing in order to produce well-organized, coherent, and unified paragraphs. It also reviews some of the basics of English grammar and provides training in reading comprehension and oral expression.

ENGL 102 Basic Academic English II**3(3, 0, 0)**

This course aims to improve students' composition skills and enable them to identify and produce paragraphs of diverse styles. Students will also be trained in writing short expository essays of various types, including narrative, descriptive, cause and effect, and comparative essays. Furthermore, students will have the opportunity to improve oral expression through debates and discussions.

Prerequisite: ENGL 101

ENGL 203 Advanced Academic English I**3(3, 0, 0)**

This course aims to improve students' effective communication and reasoning skills essential for proper comprehension and critical reading of academic texts. Students are expected to develop other useful skills such as note-taking, summarizing and outlining as well as writing expository and argumentative essays.

Prerequisite: ENGL 102

ENGL 204 Advanced Academic English II**3(3, 0, 0)**

This course aims to enhance students' language skills that have already been acquired in previous courses and put them to use to improve their ability to write a research paper on a relevant topic. These skills include essentially comprehension, critical reading of texts, and writing expository and argumentative essays. Emphasis will be placed on proper researching, note taking, and documentation. Oral presentation skills and proficiency in presenting arguments will be tested and refined when students present their papers in class.

Prerequisite: ENGL 203

ENGL 206 Technical Writing**3(3, 0, 0)**

This course aims to introduce students to technical writing fundamentals, stylistic elements, and applications. The course focuses on practical techniques for planning,

writing, and editing technical documents such as reports; proposals; abstracts; cover letters, CVs and resumes; professional correspondence (memos, emails, and letters); and instructions.

FREN 101 Basic French 1

3(3, 0, 0)

This course is designed for students who have no or very little knowledge of French. It introduces fundamentals of grammar, pronunciation and vocabulary. The course will also focus on developing students' basic communication skills through classroom drills and language lab work.

HUM 343 Career Preparation

3(2, 0, 1)

This course is designed to help students integrate their academic education and training with career planning and development. The students are introduced to the systematic process of employment through which they can explore career options and make decisions in relation to their interests, abilities, and values. The students will learn how to invest their educational experience in future work and how to be competitive candidates in the market, representing themselves through using persuasive language with fluency and confidence. The course provides students with the skills required to further pursue their educational and professional development. Moreover, the students will be introduced to the ethics and the nature of the industry in addition to the techniques of employment preparation, job seeking, decision making, goal planning, and effective communication.

Prerequisite: Passing 100 credits

MATH 110 Mathematics I

3(3, 0, 0)

The course focuses on mastery of critical skills and exposure to new skills necessary for success in subsequent math courses. Topics include fundamental concepts of Algebra, exponents and radicals, fractions, ratios, percentages, analytic geometry, linear equations, linear systems, linear inequalities, absolute value, quadratic equations, functions, graphs of functions, linear functions, quadratic functions, exponential and logarithmic equations and functions.

MATH 120 Mathematics II

3(3, 0, 0)

The course involves fundamentals and skills mainly college algebra, geometry, and trigonometry. Topics include fundamentals concepts of trigonometric functions, complex numbers, geometry, matrices, vectors, sequences and series, descriptive statistics, data analysis, and probability concepts.

Prerequisite: MATH 110

MATH 101 Calculus I

3(3, 0, 0)

Calculus of one variable: limits, continuity, differentiation, chain rule, maxima and minima, curve plotting, Roll's theorem, integration by substitution, definite integrals with applications to areas, volumes and arc length, fundamental theorem of integral calculus, exponential and logarithmic functions, trigonometric functions, parametric equations, analytic geometry in space.

Prerequisite: MATH 120

MATH 102 Calculus II

3(3, 0, 0)

Methods of integration; inverse trigonometric functions; limits; sequences and series; tests for convergence; Taylor approximations; Taylor series; polar coordinates; complex numbers: Cartesian and polar representation of complex numbers, mathematical operations with complex numbers.

Prerequisite: MATH 101

MATH 201 Calculus and Analytic Geometry III **3(3, 0, 0)**

Multivariable calculus: partial derivatives, directional derivatives, chain rule, tangent planes, maxima and minima, Lagrange multipliers, cylindrical and spherical coordinates, multiple integrals, substitutions, line and surface integrals, theorems of Green, Gauss and Stokes.

Prerequisite: MATH 102

MATH 202 Differential Equations **3(3, 0, 0)**

First-order differential equations; linear differential equations of second and higher order; homogeneous and non-homogeneous with constant coefficients; power series solutions; Bessel functions and Legendre polynomials; Laplace transforms; inverse Laplace transforms; initial value problems; Fourier Series.

Prerequisite: MATH 201

MATH 203 Mathematics for Social Sciences I **3(3, 0, 0)**

Factorization of polynomials, second degree equations, equations for straight lines, inequalities, systems of linear equations, Gaussian elimination, curve plotting, derivatives, maxima and minima, limits, algebra of exponents, the exponential and logarithmic functions. The emphasis is on applications.

MATH 204 Mathematics for Social Sciences II **3(3, 0, 0)**

This course is a continuation of MATH 203 where the emphasis is on applications. Determinants matrix inversion, combinatorics, introduction to probability, methods of integration, approximations of definite integrals, differential equations, multivariable functions, partial derivatives, chain rule, constrained and unconstrained optimization.

Prerequisite: MATH 203

MATH 211 Discrete Mathematics **3(3, 0, 0)**

This course covers logical reasoning, sets, relations and functions, modular arithmetic, mathematical induction, recurrence relations, counting methods, inclusion-exclusion, binomial theorem, elementary probability, introduction to graphs and trees, recursive algorithms, and some Boolean algebra.

MATH 215 Linear Algebra **3(3, 0, 0)**

Number representations and round-off errors; systems of linear equations and Gaussian elimination; vectors, matrices, determinants; vector spaces, subspaces and dimension; orthogonal projection and least-squares approximation; eigenvalues, eigenvectors; root finding; approximation of functions; integration; solving initial value problems.

Prerequisite: MATH 102

MATH 225 Numerical Computing **3(3, 0, 0)**

This course is intended for engineering and computing students. It introduces students to the formulation, methodology, and techniques for numerical solution of mathematical problems. This course covers: Root finding of nonlinear equations by using Bisection, Newton-Raphson, Fixed Point and Secant methods, approximation of functions, numerical integration and discrete summation by using Trapezoidal, Simpson, Romberg and Gauss methods, Solving initial value problems, Monte-Carlo (Simulation) methods. Implementations and analysis of the algorithms are stressed. Projects using MATLAB.

Prerequisite: MATH 215

PHE 101 Physical Education 1**1(0, 0, 1)**

This course is designed to promote the students' physical fitness through participation in a variety of individual and team activities including, but not limited to, football, volleyball, basketball and track and field. The course focuses on skills, proficiency, and playing courtesies. Students will learn the importance of being fit; improve their team-working skills and enhance collegial competitiveness, thus leading to healthier lifestyles and balanced personalities.

Prerequisite: None

PHYS 101 General Physics I**3(3, 0, 0)**

Measurements, motion in one dimension, vectors, motion in two dimensions, Newton's laws with applications, work and energy, circular motion, linear momentum and collisions, rotation and angular momentum, oscillations, and gravity.

Co-requisite MATH 101

PHYS 101L General Physics I Lab**1(0, 0, 2)**

Basic laboratory techniques and methods; taking measurements, data evaluation and report writing with application to selected experiments related to Newtonian mechanics, vibrations, light and optics including density of metals, free fall motion, addition and resolution of vectors, conservation of linear momentum, conservation of energy, simple pendulum, Hook's law, measuring focal length, and index of refraction.

Pre- or co-requisite: PHYS 101

PHYS 102 General Physics II**3(3, 0, 0)**

Electrostatics, current, resistance, Ohm's law, Kirchhoff's laws, RC circuits, magnetostatic theory, Ampere's law, Biot-Savart law, Faraday's law, LR circuit, RLC circuits, and a qualitative discussion of Maxwell's equations.

Prerequisite: PHYS 101

PHYS 102L General Physics II Lab**1(0, 0, 2)**

Basic laboratory techniques and methods; taking measurements, data evaluation and report writing with application to selected experiments in electricity and magnetism including electrostatics, magneto-statics, Coulomb and current balance, DC and AC circuits, linear and nonlinear circuit elements, Kirchhoff's laws, oscilloscope in AC measurements, charge and discharge of a capacitor, filters, damped oscillations, inductors and measurement of magnetic induction fields.

Pre- or co-requisite: PHYS 102

SOCS 101 Islamic Civilization I**3(3, 0, 0)**

This course surveys of Arab Islamic civilization tracing its intellectual and cultural development from pre-Islamic times to the present. Emphasis will be placed on the major contributions of Arab Islamic civilization.

SOCS 201 Islamic Civilizations II**3(3, 0, 0)**

Islamic civilization; Islamic law & governance, human rights laws, state and human rights in Islam, education, ethics & morality, war, peace, aggression, self-defense theory, sovereignty, life and death, human dignity, etc.

Pre-requisite: SOCS 101

SOCS 203 The History of the Kingdom of Saudi Arabia**3(3, 0, 0)**

This course sheds light on the historical foundations and roots of the Kingdom of Saudi Arabia, covering three eras and their efforts to establish unity. It examines the conditions in the Arabian Peninsula before the founding of the first Saudi State and the conflicts with opponents. The course also examines the political, administrative, urban, and educational planning of the contemporary Kingdom of Saudi Arabia. It also covers the emergence of oil and its impact on the country's growth, highlighting various manifestations of development during King Salman bin Abdulaziz's reign.

Prerequisite: None

STAT 130 Elementary Statistics

3(3, 0, 0)

This course is intended to introduce students to the basic concepts and logic of statistical reasoning, give them introductory-level practical ability to properly interpret appropriate descriptive and inferential methods, and help them gain an appreciation for the diverse applications of statistics and its relevance to their lives and fields of study.

Prerequisite: MATH 200 (Foundation Math II)

STAT 230 Probability and Statistics

3(3, 0, 0)

This course is intended for engineering and computing students. A course on random variables, laws of probability, probability distributions, expectation and variance, moment generating functions, joint distributions, independence, probability models, Chi-square, Student's t and f distributions, estimation, confidence intervals, the central limit theorem, significance tests, regression.

Prerequisite: MATH 201