

المحتوى العلمي للمقررات الدراسية للمرحلة العامة والمقررات المشتركة
Description of Course Content for General and Common Courses

GH 111 Arabic Language (3 Unit):

Prerequisite:-

- الكتابة:
- همزة الوصل - همزة القطع - رسم الهمزة المتوسطة والمتطرفة.
- النحو:
- الجملة الاسمية: المبتدأ والخبر - النواسخ (كان وأخواتها، إن وأخواتها) الفاعل - نائب الفاعل.
- الأدب والنصوص والموضوعان العامة: -
- أساليب الكتابة (الأدبي - العلمي - العلمي التأديب)
- كتابة التقرير العلمي.
- قصيدة وصف البركة للبحراني.
- قبة الصخرة، د. أحمد فكري.
- الألف اللينة - التاء المربوطة والمفتوحة - الألف الفارقة التنوين - بعض ما يحذف من الحروف - علاقات الترقيم.
- النحو:
- المفعول به - التمييز - تمييز العدد - تذكير العدد وتأنيثه استخدام المعاجم.
- النصوص والأدب: -
- قصيدة ابن زمرك في وصف فصور الحمراء.
- قصيدة الرندي في رثاء الأندلس.
- من تاريخ الهندسة عند العرب.

GH 112 English I (3 Units):

Prerequisite:

Objective: The English I course for First Year Students has been designed to enable them to communicate in written and spoken English. To develop their ability to deal with concepts used in scientific discussion and writing.

Reading Comprehension: Topics: Heat Energy, Atomic Structure, Ultrasonic, Periodic Table of Elements, Computers and some topics of general interest etc.

English in Communication: Parts of Speech, Punctuation, Simple Sentence Structure, Tenses, Passive Voice, Description of Lab Ware. Ordinal and Cardinal Numbers, Simple Geometry.

Laboratory Report Writing: Lay out of a report: Title, Abstract, Aim, Introduction/theoretical Background, Experiment and materials, Procedure, Results Discussion of Results, Conclusions, References, Appendices.

GS 130 Physics I (3 Units):

Prerequisite: ---

Mechanics (Measurements , Kinematics , Dynamics , Conservation laws), Elasticity and vibrations (Stress , strain , moduli , elastic media , Simple harmonic motion), Fluids

(Hydrostatic dynamics), Heat and Thermodynamics (Temperature, Heat , The first law of thermodynamics , The second law of thermodynamics).

GS 120 Mathematics I (3 Units): Prerequisite:

Sets, relations, Functions, Absolute values, Limits and Continuity , Derivatives, Trigonometric function, Application of derivatives and Differentiation , Minimum and Maximum , Mean Value Theorem.

GS 135 General Chemistry (3 Units): Prerequisite:-
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Systems of Units and Unit conversion, Chemical equations and Balancing of chemical equations, The Atom and atomic configuration, Periodic Table of Metals, Chemical Bonds, Gas Laws, Chemical and Ionic Equilibrium, Acid – Base Equilibrium in aqueous solutions, Introduction to Organic and Electro Chemistry.

GS 136 General Chemistry Laboratory (1 Unit):
Prerequisite: ---

Determinations of Acidic and Basic Radicals, and any related Experiments.

GH 113 English II (3 Units): Prerequisite:
GH 112

Objectives: The course is for those students who have gone through the first semester. It builds upon the work done in the previous semester and continues with the objectives to enhance the students' ability to communicate in written and spoken English. The following areas of scientific English are specially stressed upon.

Reading Comprehension: Topics: Latent heat, Bunsen burner, Spirit Burner, Computers, Kipp's Apparatus, alloys, Metals Distillation, Fire Extinguishers, Modern Atomic Theory, Refining Petroleum, Refrigerators.

English in Communication: Adjectival Clauses, Omission of Relative Pronouns, Use of Infinitive and Gerund, (Mathematical concepts: Powers and Roots, Dimensions of two/three dimensional figures, the use of graphs)

Introduction to Technical Report Writing. (Kinds of Technical Reports: The short informal report, the long informal report, the formal report (their format/structure and style).

GS 131 Physics II (3 Units): Prerequisite:
GS 130

Electrostatics (Electric charge , Coulombs law , The electric field , Gauss law example , Electric potential , example), Capacitors and Dielectrics, DC Circuits (Electric current , Resistance , Ohms law Kirchhoff first and second law), The Magnetic Field , Amperes Law (The Biot - Savart , Amperes law , Faradays law , Lenz law), AC Current (Inductance , Energy stored in a magnetic field , Alternating circuits , Power in AC circuits

), Optics (Propagation of light , Reflection and refraction , Types of images, plane and spherical mirrors , spherical refraction surfaces , thin lenses) .

GS 132 Physics Laboratory (1 Units):

Prerequisite: ---

Verification of Ohms law, Determination of unknown resistance, some measurement using a cathode ray tube, Determination of change magnetic field, Determination of the capacity, Measurement of focal length of an Inaccessible converging law. Measurement of Radii of curvature of converging lens, Measurement of focal length of diverging lens.

GS 121 Mathematics II (3 Units):

Prerequisite:

GS 120

Transcendental Functions and their inverse , Integration and its Applications, Methods of Integrations, Polar Coordinates , Introduction to Complex Numbers, Multiple Integrals, Application of Definite, Integrals , Sequences and series.

GE 140 Engineering Mechanics I (3 Units):

Prerequisite: ---

Introduction (Definitions , Newton's laws , units.), Concurrent forces on a particle (Analysing forces and determining the resultant of forces, Concurrent forces in plane , Concurrent forces in space), Rigid Bodies (Equivalent forces , principle of Transmissibility ,Moment of a force acting on a rigid body about a point, Moment of a force acting on a body about a given Axis, Moment of a couple Reduction of a system of forces on a body to a resultant force only).Equilibrium of rigid bodies (Forces acting on a rigid body and structures ,Kinds of supports and reactions, Drawing free body diagrams and calculating reactions), Analysis of trusses , (Method of joints, Method of sections) , Determining the centroid (centre of area) of Certain area by Dividing the area into certain areas and by Integration.

GE 142 Engineering Drawing (2 Units):

Prerequisite:

Introduction, definitions, terminology and general rules. Tools used in engineering drawing and methods of its use, geometrical processes, engineering curves, kinds of lines and it's applications, Arabic engineering alphabetic, English engineering alphabetic, drawing scale and dimension, isometric projection, inclined projection, normal projection (isometric and oblique drawing), deduction of third projection, sections and it's types (complete, half, revolved, partial and its application).

GH 214 History of Islamic & Arabic Culture (2 Units)

Prerequisite:

GH 111

تهدف هذه المادة الى تعريف الطالب بمفهوم الحضارة والفرق بينهما وبين الثقافة والمدنية وتعريف الطالب بمقومات ودعائم النظم الحضارية الاسلامية، وكيفية الاستفادة من كل انجازات الحضارة الاسلامية واسباب نجاحها وكيفية الحفاظ على بقائها حتى الان، بالإضافة الى تعريف الطلبة بتطور

الفن والرسم المعماري والهندسي عند العرب ودراسة العلوم المساعدة للهندسة كعلم الرياضيات والجبر وحساب المثلثات.

GS 222 Mathematics III (3 Units):
GS 120

Prerequisite:

Fundamental concepts - Differential equations of the first order - Equations with separable variables - Homogeneous equations - Linear equations - Exact and non-exact equations - Differential equations of higher order - Linear differential equations with constant coefficients , Solution of non-exact equations - Applications of the differential equations of the second order - System of linear differential equations with constant coefficients, Laplace Transform and its applications, Fourier Series and Integrals , Introduction to Partial differential Equations.

GS 223 Mathematics IV (3 Units):
GS 222

Prerequisite:

Matrices, basic algebraic operations, reduced forms, rank and inverse solutions of systems of linear equations. Determinants and their properties. Vector spaces, subspaces, intersection and sum of subspaces, linear independence, spanning set, bases and dimension, line transformations and matrices of linear transformations, Eigen values and Eigen vectors. Vector Analysis, Vector function and its derivatives (grade, div, curl). Theorems of Green, Gauss, and Stokes.

GS 324 Statistics and Probability (3 Units):

Prerequisite:

Statistics: Collection of data , Arithmetic mean, Median and Mode , Measures of Variation, Range, Mean deviation, Standard Deviation, The Moments, The Ratio of Moments , The Skewness, The Kurtosis, Correlation and Regression Theorems, Kinds of correlation, Calculation of correlation coefficient.

Probability: Definitions, The experiment, The event, the sample space, Distributions, Expectations and Variance, Theorem of samples, Theorem of statistical estimation, the estimators, the point estimations, unbiased ness, sampling estimation of normal distribution.

GE 346 Numerical Methods in Engineering (3 Units):
Prerequisite: GS 222

Solution of linear equation (Gauss elimination methods, iterative methods, Solution of nonlinear equation (Iterative methods, the approximate method, Newton's – Raphson method). Interpolation (Difference tables, Newton's interpolation formula, Sterling's formula, Lagrange's method. Numerical differentiation (Approximation of derivatives, formulas for numerical differentiation), Numerical integration (Simpson's rules, Trapezoidal method, Romberg's integral) Numerical Solution of initial value differential equations (Euler's method, Picard's method, Rung-Kutta methods), Finite difference method for boundary value differential equations, elliptic equations and parabolic equations.

GS 228 Introduction to Computer Science (3 Units):

Prerequisite:

Theoretical Part: Computer Definition ,Computer Components ,Computer languages, Flow Charts, The Steps of Solving Problems by Computer, Introduction Visual BASIC, Variables & Constant, Arithmetic Operations, String Operations, Comparison Operations, Logical Operations, Operators, Control Statements, Arrays, Subroutines, Some of the V.B. Functions, The most Important Tools and some of their properties & events.

Laboratory Part: Work area, Menu Bar, Form, Tool bar, Project Window, Tool box, Properties box.

GE 243 Descriptive Geometry (2 Units):
GE 142

Prerequisite:

Purpose of study of descriptive geometry, various kinds of projection and projection methods, Monn'g projection, point projection, line projection, plane projection, problems of location, auxiliary and additional planes, actual faces for inclined surfaces, cylindrical bodies, cone, prism, intersection.

GE 244 Engineering Workshop (2 Units):

Prerequisite: ---

Introduction to production Engineering, physical characteristics of materials, fundamentals of Engineering measurement, casting, forging, welding, carpentry, metal forming and cutting by scraping, drawing, milling, drilling, rolling, and scraping. Engineering management, industrial safety and professional health. Training on using hand tools and production management and maintenance.

GH 218 Technical Report Writing (1 Unit):

Prerequisite: ---

Objective: The course is intended to develop the students' ability to deal with concepts in scientific discussions and writings. It is to improve their concepts of Technical English enabling them to write Technical Reports, Technical essays as well as Business letters. The course lays stress upon the following areas of technical English:

- Different types of technical reports: The Short Informal Report, The Long Informal Report and the Formal Report; their format structure and style (Foreword and Summary: Organizing Main Points for Non-specialist Readers; Details or Discussion: Organizing Details for Specialist Readers; The Abstract; conclusions and recommendations, etc.); Feasibility and Project Report; articles on technical topics and business letters.

-Technical terms of importance to Engineering, with emphasis on spelling, and usage in sentences; technical terms used in computer applications.

-Symbols, abbreviations, glossaries, nomenclature, titles and sub-titles, tabular, graphical and pictorial presentation of data and the like, with examples.

- The course will also abreast the students with concepts of research. The following main points are stressed upon:

- Selecting a suitable subject., Writing a tentative thesis sentence, Developing a preliminary bibliography, Taking notes, Writing précis and paraphrases, Developing the first draft, Preparing the final documentation notes, Formatting the final draft.