

الجامعة العراقية - بغداد
الكلية العلمية - بغداد

Courses Contents of Biochemistry Department

BIOC 102: Basis of Biochemistry 2 Cr.Hr. (L2+F 0)

Prerequisite: --

Introduction of biochemical concepts, different biological and chemical principles, Structures and functions of the macro molecules (proteins, lipids, carbohydrates, nucleic acids, enzymes, hormones and vitamins) biosynthetic pathways, their biochemical approach to cellular function and different genetic processes.

Course Contents of Botany Department

BOTA 101: Principles of Botany (1). (Morphological and Anatomical Structures) 2 Cr. hr. (L1 + P3)

Prerequisite: (--)

Introduction, Root system; types and Structure - Adventitious Roots; Fibrous, Prop, Contractile, Aerial, Pillar, Respiratory, Climbing, Tuberos and Haustoria - Shoot system; the buds; types and structure - Branching of stems, Habits and stem metamorphosis - The leaves: structures, shapes, arrangements, types and metamorphosis - Introduction to plant structure and development, plant cell and its contents - Meristems and dermal tissue system - Ground and vascular tissue systems - Secretory and excretory tissue systems - Plant organs (Roots, stem and leaves).

BOTA 102: Principles of Botany (2) 3 Cr. hr. (L2 + P3)

Prerequisite: (--)

Plant systematic (6 weeks) Kingdom Prokaryotae – Kingdom Protista (algae) – Kingdom Plantae; Bryophytes, Pteridophytes, Spermatophytes (Gymnospermae and Angiospermae). Principles of plant ecology (4 weeks) Classification of ecosystem – Protected areas in the world – Phytoremediation. Plant physiology (5 weeks) Cell structure and function – Plant as a source of fuel – Photosynthesis. The molecular biology of the cell (6 weeks) Central Dogma of genetics - Omics - Steps for DNA and RNA analysis - Amplification of DNA - Blotting techniques - DNA sequencing - Bioinformatics. Plant tissue culture (3 weeks): Introduction to Plant cell, tissue culture, Biotechnology, Industrial plant tissue culture and biotechnology products.

Course Contents of Chemistry Department

✓ **CHEM 101: General Chemistry (1)** 3 Cr.Hr. (L3+P0)

Prerequisite (-)

Part 1: Organic Chemistry: Electronic effects in organic compounds (inductive, conjugation and resonance effects), formal charge, classification and nomenclature of organic compounds, preparation and reactions of Aliphatic Hydrocarbons: alkanes, alkenes and alkynes. Geometrical isomerism.

Part 2: Inorganic Chemistry: Electromagnetic radiation, the wave nature of particles, uncertainty principle, Schrödinger equation, the quantum numbers and atomic orbitals; electronic structure of elements; periodic table and periodic properties of elements; effective introduction to radioactivity and nuclear chemistry.

Part 3: Physical Chemistry: Gases, liquids, solutions of: gas in gas, gas in liquid and liquid in liquid. Colligative properties of solutions of solids in liquids.

CHEM 102: General Chemistry (2)

3 Cr.Hr. (L3+P0)

Prerequisite: (-)

Part 1: Organic Chemistry: Preparation and reactions of alkyl halides, structure and substitution reactions of benzene, preparation and reactions of arenes, preparation and reactions of aryl halides.

Part 2: Inorganic Chemistry: Chemical bonding, bonding types, Lewis structures and the octet rule; VSEPR model; dipole moment and polarity of molecules; valence bond theory and hybridization; molecular orbital theory; MOED of homo- and hetero-nuclear diatomic molecules.

Part 3: Physical Chemistry: Introduction to: chemical equilibria, ionic equilibria, chemical kinetics, electrochemistry, colloids and phase equilibria.

CHEM 103: Practical General Chemistry (1)

1 Cr.Hr. (L0 + P3)

Prerequisite: (-)

Part 1: Identification of inorganic salt (acid radical and basic radical). Classification of acid radical into: 1- Dilute HCl group (e.g., carbonate, bicarbonate). 2- Concentrated H₂SO₄ group (e.g., chlorine, bromine). 3- Miscellaneous group (sulfate, phosphate). Classification of basic radical into: Group 1 (e.g., lead). Group 2 (e.g. copper). Group 3 (e.g., aluminum). Group 4 (e.g. chromium). Group 5 (e.g. calcium). Group 6 (e.g. sodium). Scheme for identification acid radical and basic radical.

Part 2: Separation and identification of a mixture of two inorganic cations using centrifuge technique.

CHEM 104: Practical General Chemistry (2)

1Cr.Hr. (L0 + P3)

Prerequisite: (-)

Part 1: Classification of simple organic liquids. Identification of simple organic miscible liquids (aldehydes, ketones, acids and alcohols). Identification of simple organic immiscible liquids (aldehydes, amines, esters, and chloroform).

Part 2: Classification of simple organic solids. Scheme for identification of solid acids (aliphatic and aromatic) ammonium salt of acid, metallic salt of acid, amines and amine salts, amides and carbohydrates by main tests and confirmatory tests.

Course Contents of Entomology Department

ENTM 102 (General Entomology)

2 Cr.Hr. (L1+P2)

Prerequisite: (-)

1 hours / week for lectures, 2 hours / week for laboratory sessions, 2 credits for one term

Introduction: General characteristics of insects -Reasons of success of insects in life as a group - External features (Exoskeleton – body regions) - Internal body structure (systems): (Digestive - Circulatory - Nervous - Respiratory - Excretory - Reproductive and types of reproduction) - Development (nymphs – types of larvae – types of pupae) - Insect interrelationships with other living organisms: Insects and man:

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Courses Contents of the Geology Department

GEOL 101: Physical Geology

4 Cr. Hr. (L3+P3)

Prerequisite: (-)

Internal structure of the earth, Minerals and rocks and rock cycle, Primary and secondary geologic structures, Weathering and erosion, External geologic processes (wind, torrential rain, rivers, seas and oceans, groundwater, glaciers), Fast internal geologic processes (earthquakes and igneous activity), Slow internal geologic processes (isostasy and plate tectonics) and their relationship to orogenic and epeiorogenic movements, Interpretation of topographic contour maps and identification of different geomorphic features, Drawing outcrops of horizontal and inclined strata on geologic maps, Drawing outcrops of folded and faulted strata on geologic maps, Construction of geologic cross sections.

GEOL 102: Principles of Paleontology and Historical Geology

3 Cr. Hr. (L2+P3)

Prerequisite: (-)

Origin of the Earth - Fossils, rocks and heresies - Catastrophism and Uniformitarianism - Successive creations versus evolution - Relative time scale - Numerical time scale - The hierarchical system of classification - Numerical taxonomy (cladistics And phenetics) - Nature of the fossil record - Fossils through time - Life beginnings - From prokaryotes to eukaryotes - The Ediacara fauna - Paleozoic life - Mesozoic life - Cenozoic life - Human origins – Major features of life – Evolution – Extinction - Adaptive radiation - The distribution of fossils and ancient continents through time .

GEOL 104: Crystallography and Mineralogy

4 Cr. Hr. (L3+P3)

Prerequisite: (-)

Composition of the earth crust – Crystallography: crystal morphology, crystal symmetry, crystal form, crystal aggregates, intercepts, parameters and indices, the seven crystal systems (holosymmetrical classes) - Definition of a mineral – Crystallographic properties of minerals - Physical properties of minerals - Chemical properties of minerals - Crystal chemistry of minerals - Genesis and occurrence of minerals in nature - Classification of minerals – Systematic mineralogy.
Principles of Paleontology.

GEOL 106: Mineralogy**3 Cr. Hr. (L2+P2)****Prerequisite: (-)**

Composition of the earth crust - Definition of a mineral – Crystals and Crystallographic properties of minerals- Genesis of minerals - physical properties of minerals - Chemical properties of minerals - Crystal chemistry of mineral - Genesis and occurrence of minerals in nature - Classification of minerals - Systematic mineralogy.

Courses Contents of the Geophysics Department**GEOP 102 : Geophysics Principles****3 Cr.Hr. (L2+P3)****Prerequisite: (-)**

Elastic waves, seismic waves, wavefront, raypath, Reflection coefficient, reflection amplitude, energy loss, seismic waves versus elastic constants, Reflection, refraction seismic, travel time-curves, first arrival, Introduction of DC electrical method, Resistivity basics, current flow and Ohm's law, resistivity for common earth materials, Current density and electric field, Gravitational attraction between celestial bodies. Temporal and spatial variations of the gravity field, Gravity anomaly over simple geometrical bodies, Susceptibilities of rocks, magnetization of rock materials, magnetic force, magnetic mono- and dipoles, lines of magnetic force. Earth's magnetic field, magnetic field elements, temporal magnetic field variations.

GEOP 104 : Magnetic Methods**3 Cr.Hr. (L2+P3)****Prerequisite: (-)**

The major concepts of magnetic properties of rocks, elements of the earth's magnetic field. Fundamentals of the magnetic field, nature of earth's magnetism i.e. variations with time, induced and remanent magnetization. Magnetic instrumentations, surveying procedure (on ground, in air and on sea) and processing of magnetic data. Methods of interpretation of magnetic maps and profile (qualitative and quantitative) such as separation of magnetic anomalies and reduction to the pole RTP techniques. Major concepts of magnetic interpretation such as nature of magnetic anomalies, ambiguity of magnetic data and the role of magnetic in exploration for minerals and hydrocarbons. Theories deals with the origin of the earth's magnetic field (Non-dynamo hypotheses and dynamo problems). Contribution of airborne magnetic surveys to geological mapping. Magnetic effects from buried magnetic bodies

GEOP 106 : Geothermal Methods**2 Cr.Hr. (L1+P2)****Prerequisite: (-)**

Introduction to geothermal methods: thermal properties of the rocks–temperature within the earth. Terrestrial heat flow: heat flow measurements- equality of continental and oceanic heat flow- regions of anomalous heat flow. Thermal prospecting methods and measuring techniques. Applications: Sulphide ore deposits prospecting- thermal water and hot vapour zones–salt and granite structures–lithology information from temperature logs.

STAT 101: Introduction to Statistics *(3 credit hours (2+2))

Introduction to descriptive statistics-Types of random variables (Discrete and continuous): Probability distributions and properties, mean, variance, moments, measures of skewness and kurtosis-Some special probability distributions: Discrete distributions as binomial and Poisson, Continuous distributions as uniform and normal-Sampling techniques (Introduction) -Sampling distributions: distribution of sample mean, t- distribution, χ^2 distribution and F distribution, sampling distribution of sample variance-Statistical tests of hypotheses: Tests of population mean, population variance, population proportions-Simple regression and correlation.

Course Contents of the Mathematics Department

MATH 101: Calculus I**4 Cr. Hr. (L3+Sc2)****Prerequisite: (-)**

Limits of one-variable functions - Continuity – Differentiability – Differentiation of Trigonometric functions, Exponential and Logarithmic functions, Inverse Trigonometric functions) - Applications of Differentiation (Extrema – Mean Value Theorem - Curve sketching - Related rates - L'Hopital's rule – Newton's method). Conic sections (Parabola, hyperbola and ellipse) – Antiderivatives - Indefinite and Definite integrals – Integration techniques. Examples and applications from physics, Chemistry, biological sciences, and Geological sciences will be given in this course.

MATH 102: Calculus II**3 Cr. Hr. (L3+Sc1)****Prerequisite : (-)**

Differentiation and integration of Hyperbolic and Inverse Hyperbolic functions- sequences and series (convergence tests) Taylor and Maclaurin expansions - Riemann Integral as a limit of sum- Applications of the definite integral (Area, arc length, volumes and surfaces of revolution) - Improper integrals – Polar coordinates- Area and arc length in polar coordinates. Examples and applications from physics, Chemistry, biological sciences, and Geological sciences will be given in this course.

MATH 104: Fundamental Concepts of Mathematics**3 Cr. Hr. (L3+Sc1)****Prerequisite : (-)**

Set theory (Operations – Partition - Relations – Cardinality – Counting Methods), **Mathematical Logic** (Propositional logic, Predicate Logic, Methods of proof), Functions (Types – Image & Pre-Image - Composition – Inverse), Polynomial equations (Cardan's & Ferrari – relation between coefficients and roots), Determinants and matrices, Partition Systems of linear equations. Simple Algebraic Structures (Group – uniqueness of identity and inverse – residue classes). Number systems (Binary – Octal – Decimal – Hexadecimal). Introduction to Graph theory (Definitions - Examples – adjacent matrix – incident matrix – degree Matrix).

MATH 112: Mechanics I**3 Cr. Hr. (L3+Sc1)****Prerequisite : (-)**

Vector algebra - Static of rigid body: Forces, Moment, Couples, Equilibrium of rigid body - Kinematics: Transformation of coordinate system, Relative motion, Motion w.r.t. rotational reference frame - Newton's laws of motion: Force, Momentum, Angular momentum, Work, Energy, Power, Conservative forces and potential, Conservation of energy, Impulsive forces, Elastic impact - Rectilinear particle motion: Uniform acceleration, Resisted motion, Simple Harmonic motion and damped oscillations, Elastic strings, and springs, Changing mass problems - Particles dynamics in two and three dimensions: Problems in two and three dimensions, Projectile motion under gravity, damped oscillations, Elastic strings, and springs, Changing mass problems - Particles dynamics in two and three dimensions: Problems in two and three dimensions, Projectile motion under gravity.

MATH 114: Mechanics (Static and Mechanics of Particles/ for chemistry and Geology Students) **3 Cr. Hr. (L2+P 2)****Prerequisite: (-)**

1.Vector algebra. 2. Static of particle 3. Static of rigid body: Moment of force - Couples- Equivalent forces and couples - Equivalent system of forces - Equilibrium of rigid body in two dimensions – Friction - Virtual work - Center of gravity - Stability of equilibrium. 4.Kinematics: Kinematics of a particle - Relative motion. 5. Newton's laws of motion: Mass, space, time, force, momentum, angular momentum - Newton's laws of motion - Work, energy and power - Conservative forces and potential - Conservation of energy, momentum, and angular momentum - Impulsive forces. 6. Rectilinear particle motion: Uniform acceleration - Resisted motion - Simple Harmonic motion and damped oscillations - Elastic strings and springs. 7. Particles dynamics in two dimensions : Projectile motion under gravity.

COMP 102: Introduction to Computers**3 Cr.Hr. (L2+P2)****Prerequisite: (-)**

This course provides the fundamental concepts of computers including types of hardware and software, Internet and the web, web browsers and servers, HTML and web pages, HTML basics, formatting web pages, inserting hypertexts, tables and multimedia inside a web page, history of the internet, how the internet works, domain names, internet protocols, differences between the web and the internet, dynamic web pages, JavaScript basics, web pages that compute, basic internet security, meaning of encryption, securing a computer, user accounts and passwords, anti-virus software.

COMP 104: Computer Programming (1)**3Cr.Hr (L2+P 2)****Prerequisite: (-)**

This course provides the fundamental concepts and skills of computer programming using a high-level computer programming language. There is an emphasis on both the principles and practice of computer programming. Students learn how to design, write, and debug computer programs. No knowledge of programming is assumed. Topics should include data types, operators, conditional statements, loop statements, arrays, structures, functions and an overview of pointers. Throughout the semester, problem solving skills will be stressed and applied to solving computing problems. Weekly laboratory experiments will provide hands-on experience in topics covered in this course.

COMP106: Logic Design**3Cr.Hr (L2+P 2)****Prerequisite: (-)**

This course provides a detailed knowledge of the basics to understand and construct elementary digital circuits. Topics typically include basic definitions, digital systems, binary logic (storage, registers, logic gates, and truth tables), theorems and properties of a Boolean algebra, Boolean functions, canonical and standard forms. K-Map methods (2, 3, and 4 variables), POS and SOP simplifications, Don't-Care conditions, NAND, NOR, and Exclusive-OR implementations,combinatorial circuits design procedure, binary adder/subtractor, binary multiplier, decoders, encoders, multiplexers and de-multiplexers.

COMP 108: Computer Science for Mathematics**3Cr.Hr (L2+P2)****Prerequisite: (-)**

This course provides an introduction to computers and how to solve mathematical problems using computers. The course begins with the fundamentals concepts of programming and then, shows how real-

world problems can be solved computationally using one of a recent computer programming languages such as C++, some Mathematical packages (Maple or Mathematica) for symbolic computing, or the programming language Matlab for numerical computing.

STAT 102: Probability Theory (I)

3 Cr. Hr. (L3+Sc1)

Prerequisite: -

Random experiment-Sample space-Events-Probability axioms-Counting techniques-Conditional probability-Independence-Mutually exclusive events-Bayes theorem-Random variables ,Distribution functions and properties-Probability generating function ,Characteristic functions and applications-Markov's inequality ,types of convergence ,Weak law of large numbers ,Kintchine's law of large numbers , Chebyshev's inequality and the central limit theorem-The Poisson distribution as an approximation to the binomial distribution.

Course contents of the Microbiology Department

MICR 102: Microbiology

2 Cr.Hr. (L1+P2)

Prerequisite (-)

Historical introduction to the science of Microbiology; Differences between Prokaryotes and Eukaryotes; How microorganisms are isolated and classified; Benefits and harms of microorganisms. Introduction to Viruses, Replication in viruses; Classification of viruses; Examples of RNA and DNA viruses; Viral diseases. Shape and arrangement of bacterial cells; Types of bacterial staining techniques; Characteristics of Gram positive and Gram negative bacteria; The bacterial growth and reproduction; Nutrition and respiration in bacteria. Main characteristics of kingdom Fungi; Reproduction in fungi; Differences between bacteria & fungi; Classification of fungi; Reproduction in fungi; Fungal infections "Mycoses".

Course Contents of Physics Department

PHYS 101: General Physics I (Electricity and Magnetism)

4Cr. Hr. (L3 +P3)

Prerequisite(-)

The course is concerned with electric and magnetic phenomena. The laws of electricity and magnetism control the operation of devices such as radios, televisions, electric motors, computers, and other electronic devices. The interatomic and intermolecular forces responsible for the formation of solids and liquids are electric in origin. The course describes the electric force and the motion of a charged particle in a uniform electric field. The relationship between magnetism and electricity is discussed. The forces that act on moving charges and on current carrying wires in the presence of a magnetic field are examined. The source of the magnetic field is described as well.

PHYS 102: General Physics III: Waves and Optics

3Cr. Hr. (L3 +1P)

Prerequisite (-)

The course is studying the periodic motion such oscillating pendulum or spring. The simple harmonic motion is considered to understand mechanical waves, such as sound waves and seismic waves. Studying the concepts of oscillations and wave model are needed to understand the origin and nature of

electromagnetic waves such as light, and how they propagate through space. The reflection of light at the boundary between two media and the refraction that occurs as light travels from one medium into another are discussed. Reflection and refraction are studied as light forms images due to mirrors and lenses and how they are used in telescopes and microscopes.

PHYS 103: General Physics II: Mechanics

3Cr. Hr. (L3 +SC1)

Prerequisite (-)

In this course mechanics is concerned with the motion of objects that are large relative to atoms and move at speeds much slower than the speed of light. Mechanical systems can be used to describe natural phenomena such as waves and the transfer of energy by heat. The laws of conservation of energy and momentum introduced in mechanics retain their importance in the fundamental theories of other areas of physics. Classical mechanics is successful in describing the motions of different objects, such as planets, rockets, and baseballs. The laws of classical mechanics will be described to examine a wide range of phenomena that can be understood with these fundamental ideas.

PHYS 104: General Physics IV: Heat and properties of matter

3Cr. Hr. (L3+SC1)

Prerequisite (-)

This course studies ideal gases on the macroscopic scale. It is concerned with the relationships among such quantities as pressure, volume, and temperature. Gases on a microscopic scale, using a model that represents the components of a gas as small particles shall be examined. The chapter focuses on the concept of internal energy, the processes by which energy is transferred, the first law of thermodynamics, and some of the important applications of the first law. In kinetic theory, gas molecules move about in a random fashion, colliding with the walls of their container and with each other. Heat Engines, entropy, and the second law of thermodynamics are also discussed.

PHYS 106: Experimental Physics (I)

2 Cr. Hr. (L0+P4)

Prerequisite (-)

Determination of the acceleration due to gravity by means of a simple pendulum. Verification of Boyle's law of gases. Determination of the coefficient of viscosity of a liquid by the falling-sphere viscosimeter (Stoke's Method). Determination of the specific heat of a solid by the mixture method. Determination of the power of the convex lens. Determination of the power of the concave mirror. Verification of the equivalent power law of two thin lenses separated by a distance. Determination of the width of a single slit by Fraunhofer diffraction. Determination of the velocity of sound using resonance tube and its end correction.

Course Contents of the Zoology Department

ZOOL 101: General Zoology (1)

2 Cr.Hr. (L1+P2)

Prerequisite (-)

Functional Morphology: A basic understanding of the structure and function of the vertebrate body - The digestive, respiratory, circulatory, lymphatic, urinary, muscular, nervous and endocrine systems - Introduction to homeostasis, nutrition and metabolism - Anatomy and physiology of different body systems and their interrelationships and how these systems cooperate together under control of the nervous and endocrine systems.

ZOOL 102: General Zoology (2)

3Cr.Hr. (L2+P2)

Prerequisite (-)

Cytology, Embryology and Histology: Introduction to the basic concepts of cytology (prokaryotes, eukaryotes, cell organelles, cell cycle, mitosis and meiosis) and embryology. Histology: the main types of animal tissues (epithelial, connective, muscular, and nervous tissues).

Systematic Invertebrate: Principles of nomenclature and classification of the animal kingdom. Morphology and biology of representative examples and general reviews of the main taxonomic units of the Protozoa, Porifera, Coelenterata, Platyhelminthes and aschelminthes.

Name of Graduate:**National ID:****Degree Awarded: B.Sc. in specialism:****GPA: out of 4 Letter Grade: ()****Equivalent Grade:****Date of Graduation:**✓ **INCO102: Introduction to computer****0 Cr.Hr. (L 1+ P 0)****Prerequisite : (-)**

Introduction to computer system- Function of computer- Types of computer- application of computer-Computer networks- E-Commerce-The Internet and WWW.

✓ **SAFS 101: Security and Safety in Lab****1Cr.Hr.(L1+P 0)****Prerequisite: (-)**

The Safety management aspect of the course teaches students:

Basic definitions and Workplace safety programs and their purpose- Who's responsible for workplace safety programs- Challenges for those practicing safety-critical connections and work site analysis- Safety and special hazards- Implement a state of the art safety program. Accident Prevention Program- What are the risks from electricity? Fire and Fire Extinguishers. Biological Hazards in Medical and Research Laboratories. Chemical Hazards. Understanding MSDS. First Aid.

✓ **HURI101: Human Rights****0 Cr .Hr. (L1+Sc 0)****Prerequisite : (-)**

المحتوى العلمي لمادة حقوق الانسان

- تعريف حقوق الانسان
- منظمة الامم المتحدة - نص ميثاق الامم المتحدة
- دور الامم المتحدة في صيانة حقوق الانسان

المعاهدات- الرقابة- الاغاثة و المساعدات الاخرى- حفظ السلام- التدابير التجارية و الدبلوماسية- محاكم جرائم الحرب

- الاعلان العالمي لحقوق الانسان
- مجلس الامن: الاعضاء الدائمين - الاعضاء غير الدائمين
- وجود مصر في مجلس الامن و حصولها على مقعد العضوية الغير دائمة
- منظمات حقوق الانسان في الاسلام و انواعها
- حرمة النفس - حرية العقيدة - حق المساواة - حقوق الملكية
- حقوق الطفل - منظمة الامم المتحدة للاطفال اليونيسيف
- وثيقة عقد حماية الطفل المصري
- قانون الطفل: الرعاية الصحية للطفل - الرعاية الاجتماعية - الرعاية البدنية

- تعليم الطفل: مرحلة التعليم الاساسي-الثانوي (العام-الفني)
- رعاية الطفل العامل و الام العاملة و الضوابط لذلك
- رعاية الطفل المعاق و تأهيله
- المعاملة الجنائية للاطفال
- المجلس القومي للطفولة و الامومة
- ميثاق الطفل الذي أقره الازهر الشريف
- حقوق الطفل في الاسلام
- الحقوق العامة للمواطن
- الحق في الحياة-الحق في الجنسية - الحق في الامن- الحق في الزواج
- الحق في الملكية - الحق في الحرية - الحق في التنقل وحرية الاقامه
- الحقوق السياسية: حق المشاركة السياسية - حق الانتخاب - حق الترشح

ENGL102: English-1**2Cr.Hr. (L2+ Sc 0)****Prerequisite: (-)**

Grammar

Parts of speech

(Nouns-Pronouns-Adjectives-Verbs-Adverbs-Preposition-Conjunction)

Vocabulary

(Scientific Abbreviation)

Writing

Differences between (quotation-paraphrasing-summarizing)

ENGL201: English-2**2Cr.Hr. (L2+ Sc 0)****Prerequisite: ENGL102**

Grammar

Sentence Structure

Parts of sentences(subject-predicate-complement)

Punctuation(End marks- Commas-Semicolon-Quotation marks-apostrophe-Parentheses-Brackets)

Vocabulary

Confusing Words

Word roots(Latin and Greek)

Homophones

Writing

Writing academic paragraphs

Characteristics of good paragraph\

SCTH 301 : Scientific Thinking**1 Cr .Hr. (L1+Sc0)****Prerequisite: (-)**

Introduction, Basics of scientific thinking, Types of thinking, Thinking Behavior, Theory and Hypothesis, Experimental Controls, The Scientific Methodology, Statistics, Biostatistics, Presentation tools and techniques, Application, Discussion on selected topics, Open Discussion, Revision.

ETHR 302: Research Ethics 1 Cr. Hr. (L1+P 0)**Prerequisite: (-)**

Defining ethics - Understanding the ethical dimensions and pillars upon which scientific research is based - The ethical qualities that the researcher must possess - Comparing the results of research based on ethics and others - Knowledge of intellectual property rights and patents - Studying various examples of modern research in different fields of science and the ethical frameworks associated with it. Familiarity with international treaties and agreements with ethical frameworks in scientific research. Evaluate research ethically. Ethical aspects in different research stages such as authorship, conflicts of interest, plagiarism, research misconduct, conducting research on animals and animal protection law. Conducting research on human beings, taking into account justice and the human interest and informed consent.

SKIL 401 : Work Skills**1 Cr .Hr. (L1+Sc0)****Prerequisite: (-)**

Introduction, Job Market Characteristics, Creating a Dynamite Job Portfolio-1, Creating a Dynamite Job Portfolio-2, Future Job Market, Time Management, Job Searching Tools, Personality Discovery, Mastering the Interview-1, Mastering the Interview-2, Presentation Skills, Company Structure, Discussion, Revision.