

First Semester					Second Semester				
No	subject	the hours		units	No	subject	the hours		units
		theoretical	Practical				Practical	Practical	
1	Optics I	3	-	3	1	Optics II	3	-	3
2	Electricity	2	2	3	2	Magnetism	2	2	3
3	Mechanics I	2	2	3	3	Mechanics II	2	2	3
4	Mathematics I	2	-	2	4	Mathematics II	2	-	2
5	Computers	1	2	2	5	Analytical Chemistry	3	-	3
6	Geophysics	2	2	3	6	Astronomy	2	-	2
7	Human rights	2	-	2	7	Human rights	2	-	2
8	English	2	-	2	8	English	2	-	2
9	Arabic	2	-	2	9			-	
Total		18	8	22	Total		18	4	20
Total hour at week		26			Total hour at week		22		
Total number of units for the first year= 22+20= 42									

First Semester

- **Optics I**

Nature and propagation of light, Reflection and refraction at plane surfaces, Reflection and refraction at spherical surfaces, Dispersion, Rainbow, Lenses.

- **Electricity**

Charge and the Electric field, Gauss's law, Electric Potential, Capacitors and dielectrics, Current and Resistance, calculation of the Electric Field, Field Lines.

- **Mechanics I**

Review and Terminology, Vectors, Motion in Two and Three dimensions, Force and motion,

- **Mathematics I**

The Rate of Change of Function, Limits, Derivatives of algebraic functions, Applications.

- **Computers**

Matlab, Starting U, Matlab as a Calculator, Numbers & Formats, Variables, Suppressing output, Built – In Functions, – Vectors, Keeping a record, Plotting Elementary Functions, – Keyboard Accelerators, Copying to and from Word and other applications, Script Files, Products , Division & Powers of Vectors, Examples in Plotting, Matrices – Two – Dimensional Arrays, Systems of Linear Equations, Characters , Strings and Text ,Loops, Function m-files, Further Built – in Functions, Plotting Surfaces, Timing, On– Line Documentation, Reading and Writing Data Files, Graphic User Interfaces, Command Summary.

- **Geophysics**

Introducing Geology and an overview to important concept, Rocks, Geologic structures, Earth quake, Geophysics, Geophysical methods, Electrical methods, Seismic methods.

Second Semester

- **Optics II**

Lens aberrations, Optical instruments , Interference, Diffraction, Resolving power, Resolving power of an optical instruments.

- **Magnetism**

The magnetic field, The definition of B, Magnetic force and current, Torque on a current loop, The Hall effect, Circulating charge, Cyclotron and synchrotrons, Amperes' law, Lines of B, Two parallel conductor, B of a Solenoid, Faraday's law of induction, Faraday's experiments, Faraday's law of induction, Lenz's law, Time varying magnetic fields, Inductance and relative motion, Inductance, Mutual inductances.

- **Mechanics II**

Energy and Work, Center of mass and linear momentum, The center of mass, Newton's second law for a system of particles, Linear momentum, Collision and impulse, Conservation of linear momentum, Systems with varying mass: A rocket, Rotation, The rotation variable, Angular momentum, Rotation with constant angular acceleration,

Kinetic energy of rotation, Torque, Newton's second law for rotation, Rolling, Torque and angular momentum, Oscillation.

- **Mathematics II**

Integration , Applications and definite integral, Transcendental functions, Hyperbolic functions, Methods of integration, Plane analytic geometry Distance between two points, The circle, The parabola, The ellipse, The hyperbola.

- **Analytical Chemistry**

calculations used in analytical chemistry, principle of titration, Calculations by using the molar concentration in titrations, Calculations by using the Normality & Normal concentration, Titration curves in acid – base titration & the effect of concentration, The pH value and Buffer solution, Indicators uses in the volumetric titration, Precipitation titration in titrimetric, Complex metric titrations, Standard electrodes potentials and cell potentials, Equilibrium constants for oxidation – Reductions titrations.

- **Astronomy**

Overview of the History of Astronomy, Arab astronomical instruments Science ephemeris, Kepler's laws, Scientists in Astronomy: Galileo galilei, Newton, Orion , Nebula, ecliptic and zodiac, the seasons, precession terrestrial planets, giant planets, Planets: Mercury, Venus, mars, Jupiter, Saturn, Uranus, Neptune, Pluto, bode's law, Minor plantes, meteorite and meteors, Descartes's hypothesis, buffon's hypothesis, chamberlain Moulton hypothesis, Jeans–Jeffrey's hypothesis, hypothesis.– Henry Russell, Nebular Hypothesis, The sun, Stefan – Boltzmann, Planck's law, wine's law, solar atmosphere, The photosphere, chromospheres, chromospheres, Moon, sidred period, Lunar Eclipse, solar Eclipse.