Course Title	Foundations of Chemistry I				
Course Code	FEP090				
Course Type	Compulsory				
Level	Certificate (5A)				
Year / Semester	1st Year /1st Semester				
Teacher's Name	TBA				
ECTS	N/A	Lectures / week	3 Hours/14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	This course is designed to provide students with a broad understanding of the fundamental principles of chemistry. Students will familiarize themselves with basic concepts and principles of inorganic chemistry such as structure of atoms and molecules, orbitals, chemical bond formation, the electronic effects, the periodic table and periodic properties of elements. This course aims to provide the students with the required background for further understanding of stereochemistry that leads to the chemistry of complexes, an indispensable tool for the understanding of multiple biological processes, such as enzymatic reactions.				
Learning Outcomes	Upon successful completion of this course students will be able to: • Recall basic concepts such as: atom, molecule, atomic and molecular orbitals, and chemical bond • Predict basic physicochemical properties of molecules based on their chemical structure • Perform simple chemical calculations and write simple chemical reactions • Recognize, name and classify inorganic compound • Define molecular geometry Classify organic compounds				
Prerequisites	None		Co-requisites	None	

<table>
<tr><td>Course Content</td><td>

Structure of the atom, hydrogen atom, atomic orbitals, electron configuration, hybridization, periodic table
Chemical bonds (covalent, non-covalent), structure of molecules, molecular orbitals.
Solutions, electrolytes, acids, bases, salts, pH, buffers.
Structure of molecules, Lewis structures, multiple bonds, elementary solid state. Metal Bond, liquid state, gaseous state.
Thermodynamics: free energy, enthalpy, entropy, equilibrium, stoichiometry, Mole definition, pressure, volume, temperature, concentration, solution, chemical reaction kinetics, activation parameters.
Chemical reactions: classification, types, chemical equilibrium, chemical kinetics, oxidation-reduction reactions. Theory of acids and bases, chemical reactions, energy, basicity, acidity, nucleophilicity, electrophiles.
Spectroscopy.
Stereochemistry, complex chemistry principles, nomenclature of inorganic compounds

</td></tr>
<tr><td>Teaching Methodology</td><td>Online</td></tr>
<tr><td>Bibliography</td><td>Ebbing D, Gammon S.D, General Chemistry, Brooks Cole, Latest edition.

Murrel J.N, Kettle S.F, Tedder J.M. The Chemical bond, John Wiley & Sons Ltd., Latest edition</td></tr>
<tr><td>Assessment</td><td>
<table>
<tr><td>Examinations</td><td>60%</td></tr>
<tr><td>Assignments</td><td>30%</td></tr>
<tr><td>Class Participation & Attendance</td><td>10%</td></tr>
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<tr><td>Language</td><td>English</td></tr>
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Course Title	Foundations of Biology I				
Course Code	FEP092				
Course Type	Compulsory				
Level	Certificate (5A)				
Year / Semester	1st Year /1st Semester				
Teacher's Name	TBA				
ECTS	N/A	Lectures/ week	3 Hours/14 weeks	Laboratories /week	N/A
Course Purpose and Objectives	The objective of the course is to familiarize students with the basic structure and function of prokaryotic and eukaryotic cells, their major components and organelles, the way by which genetic information is organized within the cell and the mechanism used for DNA replication, transcription and translation. Students will also be acquainted with concepts related to normal cell function such as membrane transport, cellular respiration, cell division, and apoptosis.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Compare prokaryotic and eukaryotic cells and be able to recall differences and similarities in terms of morphology and cellular organelles • Describe basic characteristics of viruses and prions • Describe the relationship and mode of communication between neighboring cells and between cells and their extracellular environment. • Recall the structure and role of cell membrane and describe and compare the different transmembrane transport mechanisms and their importance in cellular physiology. • Cellular respiration • Explain the way by which DNA is organized in the cell • Describe the basic principles of DNA replication, transcription and translation • Describe the mechanisms of cellular division, the phases of the cell-division cycle and its regulatory mechanisms.				

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<tr><td></td><td colspan="3">Discuss the effects of aging on the cellular structure and function and to understand the process of apoptosis.
Describe the nature of progenitor stem cells and their principal characteristics.</td></tr>
<tr><td>Prerequisites</td><td>None</td><td>Co-requisites</td><td>None</td></tr>
<tr><td>Course Content</td><td colspan="3">Normal Structure and Function of Prokaryotic and Eukaryotic Cells.
Relationships between Cells and their Environment.
Transport Mechanisms through Membranes.
Cellular respiration
DNA organization, replication, transcription and translation
Cell Division Mechanisms, the Cell-Division Cycle and Control Mechanisms.
Effects of Ageing and Apoptosis.
Progenitor stem Cells.
Cell Differentiation.</td></tr>
<tr><td>Teaching Methodology</td><td colspan="3">Online</td></tr>
<tr><td>Bibliography</td><td colspan="3">Molecular Biology of the Cell; Alberts, B./ Hopkin, K./Johnson, A.; Garland Science.

iGenetics: A Molecular Approach; Russel, Peter; Pearson.

The Cell (0); Geoffrey M. Cooper and Robert E. Hausman; Sinauer Associate.

Molecular Medicine; Trent, R.; Academic Press.</td></tr>
<tr><td>Assessment</td><td colspan="3"><table><tr><td>Examinations</td><td>60%</td></tr><tr><td>Assignments</td><td>30%</td></tr><tr><td>Class Participation & Attendance</td><td>10%</td></tr><tr><td></td><td>100%</td></tr></table></td></tr>
<tr><td>Language</td><td colspan="3">English</td></tr>
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Course Title	Foundations of Physics I				
Course Code	FEP094				
Course Type	Compulsory				
Level	Certificate (5A)				
Year / Semester	1st Year /1st Semester				
Teacher's Name	TBA				
ECTS	N/A	Lectures/ week	3 Hours/14 weeks	Laboratories/ week	N/A
Course Purpose and Objectives	The main objective of this course is to introduce students to basic principles, concepts and applications of modern physics that are related and useful to biomedical sciences.				
Learning Outcomes	Upon completion of this course students will be able to: • Recall the basic concepts of waves and acoustics. • Explain the physical principles of ultrasound and the interaction of ultrasound with matter. • Describe the properties of geometrical optics, the function of magnifying lenses, the basic principle of simple optical microscope, as well as the function of the vision sensor. • Recall the origin of LASER radiation and its behavior when passing through matter. • Describe the physical principles of electromagnetic waves and electromagnetic radiation. • Describe the modern physics applications in life sciences and medicine in general. • Explain the factors affecting the flow of fluids and gases through pipes or tubes.				
Prerequisites	None	Co-requisites	None		
Course Content	• Introduction and Fundamental Physics: Units of measurements, physical quantities, unit conversion, International System of Units, Scientific Notation, position, velocity, acceleration, force, Newton's law, work and energy, gravity, center of mass				

	• Waves and Resonance: Resonance, wave concepts, traveling waves, waves at a boundary, standing waves and resonance. • Acoustics: Sound waves, intensity of the sound wave, producing sound, the human ear: physiology and function, the Doppler Effect in sound. • Ultrasound: Generation and detection of ultrasound, ultrasound propagation mechanisms, ultrasound-tissue interactions, biomedical applications of ultrasounds, protection in diagnostic applications. • Electric Forces and Fields: Electric charge, Coulomb's Law, Conductors and Insulators, Electric Fields, Electric Potential Energy. Electric Current: Electric current and Resistance, Ohm's Law and electrical measurements. • Magnetic Fields: Magnetic Fields and forces, torque and force on a magnetic dipole. • Electromagnetic radiation: Electromagnetic waves, characteristics of electromagnetic radiation, propagation of electromagnetic radiation, electromagnetic spectrum, interactions of electromagnetic waves with biological tissue, risk limits. • Geometric Optics: optical properties of matter, light at an interface, optical fibers, application of optical fibers in medicine • Optical Lenses and Devices: optical lenses, the human eye, optical microscope • LASER Radiation: laser radiation, types of laser devices, laser-tissue interactions, applications of laser in biology and medicine, laser safety • Flow of fluids and gases through pipes or tubes
Teaching Methodology	Online
Bibliography	Physics of the Life Sciences, by J. Newman. University Physics with Modern Physics, by H. Young & R. Freedman. Fundamentals of Physics, by D. Halliday, R. Resnick, and J. Walker. Schaum's Outline of College Physics, by F.J. Bueche, E. Hecht.

Assessment	Examinations 60% Assignments 30% Class Participation & Attendance 10% 100%
Language	English

Course Title	English for Health Sciences I				
Course Code	FEP096				
Course Type	Compulsory				
Level	Certificate (5A)				
Year / Semester	1st Year /1st Semester				
Teacher's Name	TBA				
ECTS	N/A	Lectures/ week	3 Hours/14 weeks	Laboratories/ week	N/A
Course Purpose and Objectives	This course is geared for students in the Health and Life Sciences at the B2 CEFR level. Through a variety of texts that commonly appear in the related fields and exposure to various structures of the language in context, this course aims at helping students broaden their command of English. This entails the practice and development of all four language skills.				
Learning Outcomes	By the end of this course, students are expected to be able to: • Interpret and discuss meaning in texts related to the fields of Health and Life Sciences applying reading strategies • Analyze and interpret statistical data related to Health and Life Sciences • Compose cohesive and coherent texts related to the fields of Health and Life Sciences • Research, organize and present orally a topic in the related fields in a formal setting • Use more complex grammatical structures to express meaning in the related field • Respond to a variety of aural messages in contexts related to healthcare				
Prerequisites	None	Co-requisites	None		
Course Content	Students develop their competence in analyzing and reviewing a variety of materials of scientific content related to Health and Life Sciences. Students improve their ability to read texts, understand extended spoken discourse, develop their writing, and participate actively in discussions. Students are also encouraged to develop their study skills.				

	Reading skills: Through a variety of reading texts related to the fields of Health and Life Sciences, students develop their comprehension as well as their vocabulary. Skills such as skimming, scanning and inferencing are reinforced. Students also analyze and discuss statistical data such as tables, graphs and pie-charts. **Writing skills:** Students are guided through the various stages of writing after improving their sentence, word selection, and paragraph skills. Students compile a series of individual short assignments such as instructions, emails, letters and reports on selected topics. Students are also introduced to research and documentation related to Health and Life Sciences fields. **Listening skills:** Students develop their listening skills through the use of video and aural material in the related domains. **Speaking Skills:** Speaking skills are also developed through a variety of oral activities related to the fields of Health and Life Sciences including an oral presentation in a formal setting. **Grammar:** Consolidation of grammatical structures may be covered such as tenses, reported speech, conditionals, wish forms, passive structures and linking words.
Teaching Methodology	Online
Bibliography	*Career Paths Medical*. Virginia Evans, Jenny Dooley, Trang M. Tran, M.D. Express Publishers. *Writing for the Health Professions*. Karl Terryberry. Delmar Learning Thomson. *Medical Writing: A Guide for Clinicians, Educators and Researchers*. Robert B. Taylor MD. Springer.

Assessment	Examination(s) 60% Projects/Assignments 30% Class Participation and Attendance 10% 100%
Language	English

Course Title	Academic Skills I				
Course Code	FEP098				
Course Type	Compulsory				
Level	Certificate (5A)				
Year / Semester	1st Year /1st Semester				
Teacher's Name	TBA				
ECTS	N/A	Lectures/ week	3 Hours/14 weeks	Laboratories/ week	N/A
Course Purpose and Objectives	The main aim of the course is the development of certain academic skills that are needed to ensure smooth incorporation of freshmen into the academic environment. Particular emphasis will be given to the development of perception, written and oral skills, as well as the introduction of ways to study, understand and present academic essays, work independently or in teams, and learn to document and support scientific information.				
Learning Outcomes	Upon successful completion of this course, students should be able to: • Recall the academic organization of a university and explain the academic procedures and regulations • Develop simple research skills to support a piece of scientific information • Develop skills for independent and team-based work • Summarize basic concepts, principles and stages of a research project, report or essay • Apply basic use of Excel • Demonstrate written and oral expression skills of good scientific merit • Apply proper ways of citing appropriate literature during report or essay writing • Understand the consequences of plagiarism and be familiarized with ways of proper academic and scientific conduct				
Prerequisites	None	Co-requisites	None		
Course Content	• University organization				

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Academic procedures and regulations, program requirements, organization of studies
Study preparation, time management, study skills, note taking, preparing for and taking exams
Development of the four skills (Listening, Reading, Writing, Speaking)
Proper Structure and writing of a Scientific report/essay
Main types of scientific studies and scientific evidence
Preliminary research concepts and principles: types of research, research protocols, conducting research, ethics in research, writing and presenting original research
References Managing Systems
Basic use of Excel software (calculation of mean, standard deviation, standard error)
Ways and tips on searching literature: Library and Electronic sources (Internet)
Scientific essay/ research paper understanding (abstract, composition, paraphrasing, etc.)
Technical writing, writing and presentation of written work
Oral presentation of individual and group projects using modern technological means
Academic Ethics in essay writing.

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<tr><td>Teaching Methodology</td><td>Online</td></tr>
<tr><td>Bibliography</td><td>Langman, John. Reading and study skills. McGraw-Hill.</td></tr>
<tr><td>Assessment</td><td>
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<tr><td>Examinations</td><td>60%</td></tr>
<tr><td>Assignments</td><td>30%</td></tr>
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