Course Title	General and Inorganic Chemistry				
Course Code	BMS110				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	1st Year / 1st Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 Hours/14 weeks	Laboratories / week	2 Hours/14 weeks
Course Purpose and Objectives	• This introductory course is taught in the first semester of studies when students of the Biomedical Sciences Program are expected to 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. • Finally, students will get acquainted with the chemical laboratory, basic chemical techniques, good laboratory practice and safety regulations when performing chemical experiments.				
Learning Outcomes	Upon successful completion of this course the student 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 compounds • Define molecular geometry • Describe a chemical laboratory as well as basic techniques used for the study of simple molecules				

<table>
<tr><td></td><td colspan="3">• Apply safety rules when performing laboratory exercises in chemistry</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">Theory
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
Laboratory exercises
The chemical laboratory, description of basic safety principles.
Familiarization with basic chemical utensils and devices-Basic Laboratory Techniques
Assessment of physical constants
Preparation of solutions, mass and density of solutions
pH measurement and buffer solutions, salt solubility
Chemical reactions.
Molecular weight
Charles’s Law
Chromatography
Titration
Spectrometrylab
Laboratory report writing</td></tr>
<tr><td>Teaching Methodology</td><td colspan="3">Face- to- face</td></tr>
</table>

Bibliography	Ebbing D, Gammon S.D, General Chemistry, Brooks Cole.
Assessment	Examinations 60% Assignments 30% Class Participation & Attendance 10% 100%
Language	English

Course Title	Laboratory Calculations in Biomedical Sciences				
Course Code	BMS115				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	1st Year / 1st Semester				
Teacher's Name	TBA				
ECTS	6	Lectures/ week	3 Hours/ 14 weeks	Laboratories /week	N/A
Course Purpose and Objectives	This course aims to help students remember and familiarize themselves with basic calculations used in the laboratory so that their smooth entry into the laboratories is ensured. Students will learn to make calculations and mathematical conversions for making buffers, dilutions, and mixtures. Particular emphasis will be given to the development of their ability to perform calculations for the most frequently confronted problems encountered in the laboratory.				
Learning Outcomes	Upon successful completion of the course, students will be able to: • Explain the procedure of weighing out solids • Explain the procedure of measuring liquids and mixing them • Explain the procedure of measuring the pH of a solution • Convert metric measurements into scientific notation • Calculate the Molarity of a liquid given the formula weight • Explain how to make a dilution from a concentrated stock solution. • Perform basic calculations using Excel software				
Prerequisites	None	Co-requisites	None		
Course Content	**Theory**: • Metric System • Concentrations (Molarity, Percent solutions) • Dilutions • Chemical Mixtures, Solutions, and Dilutions (Mixtures and Solutions; Water and Glassware for Solution Making;				

<table>
<tr><td></td><td>Volumes, Amounts, and Concentrations; Formulas for Solutions; Examples: Making Solutions; Making Dilutions; Working with Stock Solutions)
• Use excel software in basic calculations (e.g. calculation of mean, standard deviation, standard error, student T-test)</td></tr>
<tr><td>Teaching Methodology</td><td>Face- to- face</td></tr>
<tr><td>Bibliography</td><td>David R. Caprette; Quantitative Methods: Solutions & Dilutions.

F. Stephenson, Academic Press. Calculations for Molecular Biology and Biotechnology: A Guide to Mathematics in the Laboratory.</td></tr>
<tr><td>Assessment</td><td><table><tr><td>Examinations</td><td>70%</td></tr><tr><td>Assignments/Lab</td><td>20%</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>English</td></tr>
</table>

Course Title	Physics for Biomedical Sciences				
Course Code	BMS140				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	1st Year / 2nd Semester				
Teacher's Name	TBA				
ECTS	3	Lectures / week	2 Hours/14 weeks	Laboratories / week	0 Hours/
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 studentσ 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.				
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.				

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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

</td></tr>
<tr><td>Teaching Methodology</td><td>Face- to- face</td></tr>
<tr><td>Bibliography</td><td>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.</td></tr>
<tr><td>Assessment</td><td>
<table>
<tr><td>Examinations</td><td>70%</td></tr>
<tr><td>Assignments/Lab</td><td>20%</td></tr>
<tr><td>Class Participation & Attendance</td><td>10%</td></tr>
<tr><td></td><td>100%</td></tr>
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Language	English

Course Title	Basic Epidemiology				
Course Code	BMS205				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	2nd Year / 3rd Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 Hours/14 weeks	Laboratories / week	0 Hours
Course Purpose and Objectives	This course provides an introduction the core principles, concepts and methods used in epidemiologic research, including epidemiologic measures, sources of data, causal inference, confounding and bias, methods for synthesizing secondary data and epidemiological study designs.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Apply the principles and concepts of epidemiology as a scientific discipline to a study relevant to population health • Explain the role and contribution of epidemiology to health • Examine the sources of population and disease information, and the use of secondary data in research • Examine the different epidemiological study designs • Analyse the different type of bias in epidemiologic studies • Calculate, apply, and interpret epidemiological measures • Analyse the criteria for characterizing the causality of associations • Critically interpret the epidemiologic literature and determine their use in evidence-based public health				
Prerequisites	None	Co-requisites	None		
Course Content	**Theory** • Critical evaluation of a public health problem in terms of magnitude, person, time, and place				

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Sources of population and disease information, and secondary data
Calculation and interpretation of measures of disease frequency and association.
Issues related to the evaluation of chance, bias, and confounding
Assessment of association versus causation in the interpretation of study results
Examination of design features and uses of epidemiological study designs (experimental and observational), their strengths and merits
Basic principles and methods of the design, conduct and interpretation of epidemiologic studies
Critically appraise epidemiologic studies and determine their use in research evidence

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<tr><td>Teaching Methodology</td><td>Face- to- face</td></tr>
<tr><td>Bibliography</td><td>Rothman, K.J., Greenland, S. and Lash, T.L. eds
Modern epidemiology. Lippincott Williams & Wilkins.

Webb, P., Bain, C. and Page, A. Essential epidemiology: an introduction for students and health professionals. Cambridge University Press.

Friis RH, Sellers TA. Epidemiology for public health practice. Jones & Bartlett Publishers.</td></tr>
<tr><td>Assessment</td><td>
<table>
<tr><td>Examinations</td><td>70%</td></tr>
<tr><td>Assignments</td><td>20%</td></tr>
<tr><td>Class Participation & Attendance</td><td>10%</td></tr>
<tr><td></td><td>100%</td></tr>
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<tr><td>Language</td><td>English</td></tr>
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Course Title	English for Health Sciences III				
Course Code	EHL102				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	As appropriate				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours/ 14weeks	Laboratories / week	None
Course Purpose and Objectives	This ESP course is geared for students of 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	EHL101 or English Placement Test	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	Face-to-face
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. Other material given by the instructor
Assessment	Examination(s) 60% Projects/Assignments 30% Class Participation and Attendance 10% 100%

Language	English

Course Title	Academic skills				
Course Code	HLS100				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	1st Year / 2nd Semester				
Teacher's Name	TBA				
ECTS	3	Lectures / week	2 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	**Theory**				

	- University organization - 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
Teaching Methodology	Face- to- face
Bibliography	Langman, John. *Reading and study skills*. McGraw-Hill. Additional books may be proposed by the instructor(s) of the course.
Assessment	Examinations 70% Assignments 20% Class Participation & Attendance 10% 100%
Language	English