



UNIWERSYTET
WARMIŃSKO - MAZURSKI
W OLSZTYNIE

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN
SCHOOL OF MEDICINE

Syllabus for Entrance Examinations

CHEMISTRY

General Chemistry

Students should be familiar with the following concepts:

Basic terminology used in organic and general chemistry

The most common functional groups used in organic chemistry

The most common elements used in organic and biochemistry

Names and symbols of relatively common periodic table elements as well as polyatomic ions

Periodic trends in general chemistry – electronegativity, atomic size, ionization energies

The Octet rule - Valence electrons and their tendencies to react

Acid / Base chemistry - pH, pKa, pKb, Ka and Kb

Common types of reactions in general chemistry

Common types of reactions in organic chemistry

Bonding and inter / intra molecular forces

The ideal gas law and its variants, random molecular motion

States of matter – phase diagrams, basic characteristics of solids and gases

Basic physical chemistry – specific heat, spontaneity, Gibbs free energy, endothermic versus exothermic reactions, density characteristics

Reduction / Oxidation reactions – oxidation numbers

Nuclear chemistry – half lives, basic types of radiation

Biological Chemistry

Students should be familiar with the following concepts:

Basic terminology used in biochemistry

The most common functional groups used in biochemistry – lipids, proteins and nucleic acids and what their function is inside and outside of the cellular environment

Common types of reactions in biochemistry

Buffer systems

Enzymes – types of inhibition, substrates versus inhibitors

Chirality – types of stereoisomers, their similarities and differences

Carbohydrate chemistry – Fischer projections, Hawthorne projections

Primary, secondary, tertiary and quaternary structure

Basic laboratory techniques – centrifugation, fractionation, solubility,