Required competencies and knowledge in chemistry for MSc Nutrition and Food Systems applicants

First-semester courses such as Human Nutrition and Food Chemistry require specific background knowledge and competencies. Here is more detail on your chemistry-related competencies to hit the ground running when starting your studies at UGent.

Competencies

1. Have insight into the different properties of chemical structures of organic compounds and their reactivity, applications and/or biological importance.
2. Determine and discuss properties of organic compounds such as nomenclature, stereochemistry, mesomerism, acid/base strength, nucleophilicity, electrophilicity and reactivity of a given structure.
3. Analyse a given (bio)synthetic scheme and identify and discuss the structures and transformations found within it
4. Recognise basic chemical reaction types and explain them mechanistically.
5. Predict simple organic reactions when the starting material, reagents and reaction conditions are given

Knowledge

Fundamental chemical concepts and laws of chemistry

- Stoichiometry
- Atomic structure
- Chemical bonding (ionic, covalent, metallic)
- Thermodynamics
- Reaction kinetics
- Intermolecular forces
- Gasses
- Liquids
- Solutions
- Chemical equilibrium
- Acid-base reactions

Organic chemistry:

- Structure and properties of molecules
- Chemical reactivity and stability
- Organic structures, reactivity and applications:
- Alkanes and cycloalkanes
- Alkenes and alkynes
- Dienes, polymers, terpenes and steroids
- Aromatic compounds, phenols, anilines and heteroaromatic compounds
- Stereochemistry

- Halogenated alkanes - Nucleophilic substitution and elimination
- Alcohols and thiols
- Ethers, epoxides and sulfides
- Amines and alkaloids
- Aldehydes and ketones
- Carboxylic acids and derivatives

How to find more information

If you would like to refresh your knowledge and prepare well, here are some places where you can find more information

- Go to the online self-study package https://chemint.ugent.be/basics/index.html. It contains examples and explanations (time to review the module: 1h30+ self-study: 2h).

- Do you prefer watching videos to understand the basic concepts of general chemistry? You can consult Taylor DeWitt's videos: https://www.youtube.com/channel/UCj3EXpr5v35g3peVWnVLoew or by expansion: Tyler DeWitt - YouTube. Y

You may also want to refresh some mathematical rules (important as well!!) before refreshing the basic chemistry concepts.