

**PLACEMENT EXAM TO QUALIFY FOR EXEMPTION FROM CHEM 2110
SPRING 2020**

Dates: Wednesday, May 20th , 12:00 – 2:00 PM

Exam to be held online. Students interested in taking the exam must send an e-mail to the Department of Chemistry no later than Monday, May 11. The e-mail must include the following information:

NAME (at it appears in CUNYFirst):

E-mail address:

EMPLID:

Please send this information to Ms. Virginia Tolone-Wilson VTWilson@brooklyn.cuny.edu **and** Ms. Margarita Rice Margarita.Rice@brooklyn.cuny.edu by Monday, May 11.

A detailed description of topics to be covered is given on the following page.

PLACEMENT EXAM TO QUALIFY FOR EXEMPTION FROM CHEM 2110 REVIEW MATERIALS

Book: (General Chemistry II Textbook Used in BC)

- Chemistry 2e (free e-book, <https://openstax.org/details/books/chemistry-2e>) by P. Flowers, K. Theopold, R. Langley and W. R. Robinson.

Topics to be Covered in the Exam:

1) “Atomic and Bonding Theories”

- Atomic Structure and Symbolism
- Electronic distribution of atoms.
- Periodic variations in element properties: Atomic Radius, Electronegativity, Polarizability.
- Lewis Model of Bonding: Ionic and Covalent Bonds, Lewis Symbols and Structures.
- Lewis Model of Bonding: Formal Charges, Octet Rule. .
- Valence-shell electron-pair repulsion theory
- Valence Bond Theory (Hybridization)
- Molecular Orbital Theory of Homonuclear Diatomic Orbitals
- Basic Principles of Resonance Theory
- Chirality and optical isomerism

2) “Organic Chemistry”

- Hydrocarbons
- Alcohols and Ethers
- Aldehydes, ketones, carboxylic acid and esters
- Amines and Amides.

3) “Organic Chemistry Reactions Elementary Steps”

- Bond formation and bond breaking
- Reaction Mechanisms, Free energy diagrams, transition states, reaction coordinates
- Curve arrow notation in simple acid/base reactions.