



## GUGC ONLINE APTITUDE TEST

### Testing Requirements and Guidelines

## Guidelines for the GUGC Online Aptitude Test

Applicants are required to take an aptitude test for admission at Ghent University Global Campus (GUGC). The test reflects the minimum level of knowledge that first-year students need to start the educational programmes at GUGC. It gives the Admissions Office an idea of applicants' academic levels.

The aptitude test is composed of 20 questions in Mathematics and Chemistry. The time limit to take the test is two hours. To check the sample test, you can download it on [admissions.ghent.ac.kr](https://admissions.ghent.ac.kr).

Since there is no limit on the number of tests, applicants can take the test multiple times. This allows you to submit the best score with your online application. The accumulated test-taking will not affect admissions. Each trial costs \$65.

The test is conducted online, and all test procedures will be recorded to prevent cheating.  
For admission at GUGC, the test score on the online aptitude test must be higher or equal to 14/20.

To take the GUGC Online Aptitude Test, you must prepare the following:

- Passport
- Computer with an operational web camera
- The Internet must be connected appropriately
- Cost: \$ 65 for each test
- Online Payment Method: Credit and debit cards (Master, Visa, Amex) for the registration fee

✂ Important Notes:

- 20 questions: 10 mathematics questions + 10 chemistry questions
- Exam Hour: 120 min.
- It is permitted to use books, note-taking materials, and a calculator during the exam.
- Using a cell phone and other devices is strictly prohibited.
- Download the final test result after taking the test. (\*final result only; you are not able to check right/wrong answers)
- The test scores are valid for two years.

If you have any queries, please contact the GUGC Admissions Office.

+82-32-626-4114 / [admission@ghent.ac.kr](mailto:admission@ghent.ac.kr)

## Prep: the list of topics – Mathematics

### A. Calculus

- Basic properties (such as increasing/decreasing, positive/negative, zeros) and graphs of polynomial functions, rational functions, irrational (root) functions
- Absolute value function
- One-to-one functions and their inverses
- Basic properties (such as increasing/decreasing, positive/negative, zeros) and graphs of exponential and logarithmic functions
- Limits and continuity
- Vertical, horizontal, and oblique asymptotes
- Definition of a derivative, intuitive definition of derivative derivatives of basic functions, chain rule
- Applications of derivatives: extreme values, concave upward/downward, l'Hospital rule
- Equation of the tangent line to the curve of a graph at a certain point
- Definition of an antiderivative, antiderivatives of basic functions
- The connection between derivatives and antiderivatives
- Definite integrals
- Techniques of integration: substitution rule, integration by parts, partial fractions

### B. Algebra

- Division of polynomials
- Binomial of Newton
- Solving equations and inequalities involving polynomial, rational, irrational, exponential, and logarithmic functions
- Solving systems of equations

### C. Trigonometry

- Degrees and radians
- Trigonometric functions sine, cosine, tangent, cotangent, and their graphs
- Fundamental identity, addition, and subtraction formulas, double-angle formulas, half-angle formulas, product-to-sum formulas, and sum-to-product formulas
- Proving trigonometric identities
- Trigonometric equations
- Trigonometry of right triangles

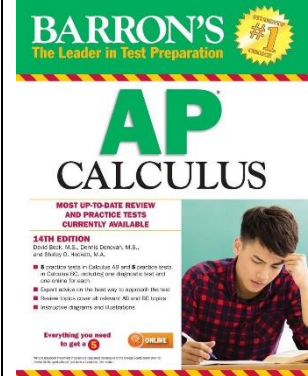
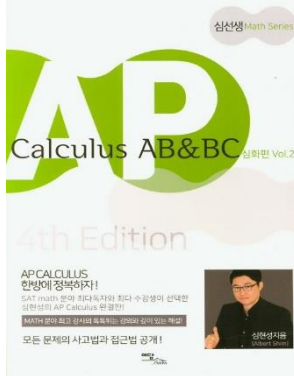
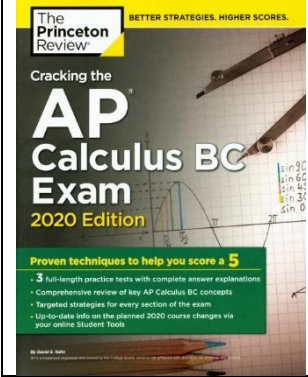
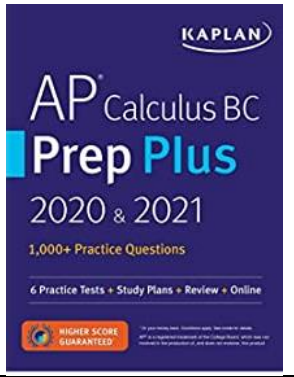
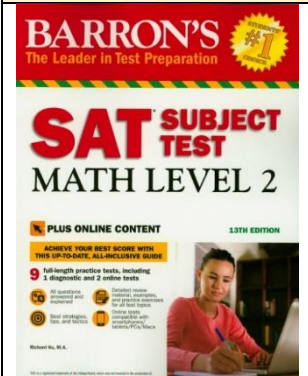
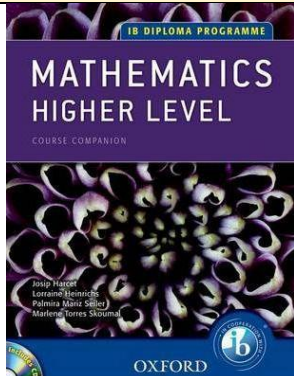
### D. Geometry

- Points, coordinates, and equations
- Equation of a circle
- Equation of a line

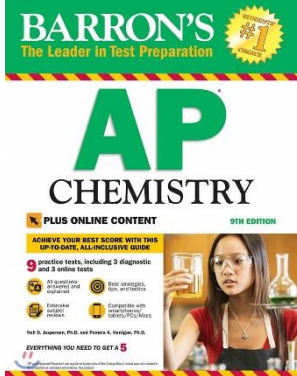
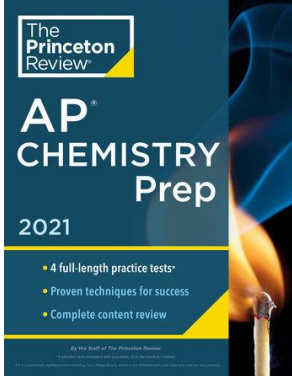
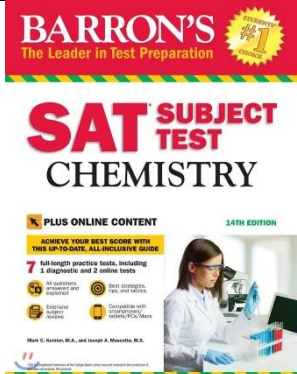
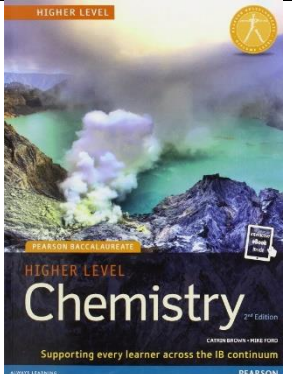
## Prep: the list of topics – Chemistry

- Elements, mixtures
- Lavoisier Law
- Symbolic representation of atoms and molecules, atomic mass, unit of atomic mass, electrons, and nucleons (protons and neutrons)
- Oxidation number, ion, and in charge
- Reactions between bases and acids
- Reaction equations: ion-exchange reactions, precipitation reactions, combustion reactions, synthesis reactions
- pH calculations, titration, and titration reactions
- Bohr atom model, Bohr-Sommerfeld model, electron spin, Pauli rule
- Energy levels: s, p, d, f, and orbital (basic knowledge)
- Electronegativity, electron pairs
- Covalent and ionic bonds, metal bonds
- Lewis notation from binary compounds and polyatomic compounds
- Polar and apolar compounds
- Intermolecular forces
- Nomenclature of inorganic and organic compounds and ions (basic level)
- Stoichiometry: molar mass, molar volume, Avogadro constant, ideal gas law, mass density
- Concentration and concentration units, calculation of masses, volumes, concentrations, excess and limiting reagentia
- Reaction rate: factors influencing reaction rate, explanation via collision theory model
- Chemical equilibrium: equilibrium constant, factors influencing chemical equilibrium, calculations with equilibrium data
- Redox reactions: completion of redox reactions and interpretation of oxidation and redactors Sigma and pi bonds
- Solubility of ionic compounds

## List of Recommended Study Guides Books - Mathematics

AP Calculus			
Book Cover	Title	Book Cover	Title
	<b>Barron's AP Calculus</b> Difficulty: Advanced		<b>AP Calculus AB &amp; BC</b> Difficulty: Basic
	<b>Princeton Review AP Calculus BC</b> Difficulty: Basic		<b>KAPLAN AP Calculus BC</b> Difficulty: Intermediate
SAT		IB	
Book Cover	Title	Book Cover	Title
	<b>BARRON's SAT MATH Level 2 Subject Test</b> Difficulty: Basic		<b>IB Math HL Textbook – OXFORD</b> Difficulty: Basic

## List of Recommended Study Guides Books - Chemistry

AP Chemistry			
Book Cover	Title	Book Cover	Title
	<b>Barron's AP Chemistry</b> Difficulty: Advanced		<b>Princeton Review AP Chemistry</b> Difficulty: Basic
SAT		IB	
Book Cover	Title	Book Cover	Title
	<b>Barron's SAT Subject Test Chemistry</b> Difficulty: Advanced		<b>IB Chemistry HL – Pearson</b> Difficulty: Basic