



Study Guide for Student Placement Assessments

General Information

Each new student at LTU is asked to complete placement assessments as part of the orientation and registration process. The results of these assessments will be used by your advisor to determine the appropriate entry-level courses in a number of key subject areas. The entire process is designed to ensure that the courses you take will offer you the best opportunity for success and the greatest support for your major program. These are not exams that you pass or fail, but instruments designed to measure where you stand right now so that we can select appropriate courses based on your current knowledge and abilities. This study guide has been developed to help you prepare for these assessments so that you will do your very best.

Assessment Format

Placement assessments are given in six subject areas: Mathematics, English, Computer Literacy, Chemistry, Physics, and Biology. The Office of Admissions will determine which of these assessments are required based on your major program and an evaluation of your academic record.

Placement Assessment Study Topics

Mathematics

The mathematics placement assessment is a two-part, multiple-choice exam covering topics from algebra, trigonometry, and other standard pre-calculus concepts. Calculators are not allowed. The two portions are a total of 70 minutes.

Algebra topics include:

- Order of operations
- Fractions and exponents
- Solving equations
- Systems of two linear equations in two variables
- Simplifying and combining rational and radical expressions
- Linear and nonlinear inequalities; systems of inequalities
- Absolute value equations and inequalities
- Factoring polynomials
- Functions, functional notation, and graphs of functions
- Quadratic equations and quadratic functions
- Exponential and logarithmic functions

Trigonometry topics include:

- Angles, both radian and degree measure
- Definitions of the six trigonometric (circular) functions: sine, cosine, tangent, cotangent, secant, cosecant
- Right triangle trigonometry; trigonometry on the unit circle
- Values of trigonometric functions at common reference angles
- Graphs of trigonometric functions
- Trigonometric identities, including reciprocal relationships, even and odd functions, Pythagorean identities, cofunction relationships, sum and difference formulas, double-angle and half-angle formulas, product-to-sum and sum-to-product formulas
- Law of Sines and Law of Cosines
- Inverse trigonometric functions

www.math.com/

English

The English placement assessment is a two-part, multiple-choice exam. The first part of the assessment covers topics related to grammar, punctuation, and editing for clarity. The second part is designed to measure your reading comprehension. Dictionaries and grammatical handbooks are not allowed. The two portions are a total of 50 minutes.

English topics include:

- Run-on sentences
- Fragments
- Comma splices
- Subject-Verb agreement
- Pronouns
- Correct usage of commas in compound sentences, introductory phrases, and when presenting items in a list
- Identifying a main idea in a passage
- Identifying supporting details in a passage

www.chompchomp.com

Computer Literacy

The computer literacy assessment is designed to test your knowledge and understanding of basic computer operations, terminology, and several types of commonly used software applications. The assessment is 30 minutes.

Computer literacy topics include:

- Application and system software programs
- Basic computer operation and terminology
- Data representation
- Files and databases
- Input/Output
- Word processing, spreadsheet, and presentation software applications
- Networks
- Storage devices
- Web browsing

Biology

The biology placement assessment is designed to assess your general knowledge of biological principles as well as your understanding of basic biological topics covered in a typical high school biology course. Calculators are allowed. The assessment is 30 minutes.

Biology topics include:

- Cell theory
- Cell cycle, including mitosis and meiosis
- Scientific method
- Mendelian genetics
- Data analysis and interpretation
- Bioenergetics
- Biological terminology

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Physics

The physics placement assessment is designed to test your conceptual knowledge in the areas of kinematics (position, velocity, and acceleration – one dimensional motion) and dynamics (adding forces, collisions– one dimensional motion, Newton's laws). Calculators are not needed. The assessment is 30 minutes.

Physics topics include:

- Changes caused by applying forces to an object moving along a line
- Directions of forces associated with specific changes in motion (slowing down, speeding up, stopping, starting)
- Forces (and directions) needed to produce constant acceleration or constant velocity
- Connecting the description of an object's motion with the graph of that motion (Example: If an object is slowing down, how would that motion appear on a velocity vs. time graph?)
- Interpreting position graphs, velocity graphs, and acceleration graphs
- One dimensional collisions between objects – analysis of forces on those objects
- One dimensional collisions between objects – with equal or different masses

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Chemistry

The chemistry placement assessment is designed to assess your general conceptual knowledge of chemistry as well as specific chemistry knowledge appropriate to a good high school chemistry course. Calculators are allowed. The assessment is 30 minutes.

Chemistry topics include:

- Chemical and physical properties and changes
- Mass, volume, and density
- Atomic theory, isotopes, and the periodic table
- Moles and molar mass
- Chemical symbols
- Chemical formulas, equations, and balancing chemical equations
- Gas laws and the kinetic theory of gases
- Stoichiometry and chemical calculations
- Molecular geometry
- Electron configuration
- Dimensional analysis
- Significant figures
- Molarity

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