

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. The format of these assessments is as follows:

*Mathematics – Two-part multiple-choice exam
70 minutes combined (not counting breaks)
Algebra: 32 questions
Trigonometry: 15 questions
Calculators are not permitted for this exam*

*English – Two-part multiple-choice exam
50 minutes combined (not counting breaks)
Written English Expression: 40 questions
Reading Comprehension: 35 questions*

*Computer Literacy – 52 multiple-choice questions
30 minutes*

*Chemistry – 60 multiple-choice questions
60 minutes
Calculators are permitted for this exam*

*Physics – 45 multiple-choice questions
30 minutes
Calculators will not be needed for this exam*

*Biology – 25 multiple-choice questions
30 minutes
Calculators are permitted for this exam*

Placement Assessment Study Topics

Mathematics

The mathematics placement assessment is a two-part, multiple-choice exam covering topics from algebra, trigonometry, and other standard precalculus concepts. Calculators are not allowed.

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

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.

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

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.

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.

Biology topics include:

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

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).

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

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. There is also a short mathematics section which assesses chemistry-related mathematical concepts (mostly algebra and graphing).

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, formulas, equations, and balancing chemical equations
- Gas laws and the kinetic theory of gases
- Acids and bases
- Stoichiometry and chemical calculations
- Simple laboratory skills