THOMAS MORE
UNIVERSITY

Biochemistry

Dual-Credit Pathway

Pathway Description:

The Biochemistry major is specifically tailored for students with a strong interest in both Biology and Chemistry. This program will provide a strong foundation in the basic areas of Biology and Chemistry designed to prepare the student for a career in industry or further study in graduate or pre-professional programs. The program may be readily adapted for students specifically interested in medical or pharmacy school.

Pathway Courses:

Course	**Title**
CHE 111/L	General Chemistry I (with Lab)
CHE 113/L	General Chemistry II (with Lab)
BIO 101/L	General Biology I (with Lab)
Take these two courses concurrently:	• MAT 151 – Calculus Analytic Geometry I, AND • PHY 141/L – General Physics I (with Lab)
Take these two courses concurrently:	• MAT 152 – Calculus Analytic Geometry II, AND • PHY 142/L – General Physics II (with Lab)

Pathway Course Descriptions:

- **BIO 101/101L – General Biology I with Lab**
  - *Note: If you have taken AP Biology, see additional notes below.*
  - Prerequisite: Minimum ACT Cumulative Score of 22 or permission of the instructor, BIO 101 is a prerequisite for BIO 102
  - Co-requisite: CHE 111 is a co-requisite for BIO 101
  - Description: General Biology I is the study of living organisms at the molecular and cellular level. The nature of molecules and macromolecules, cellular structure, metabolic processes of the cell, reproduction, and various aspects of molecular genetics will be discussed. Three hours of lecture and lab meet each week. This is the introductory biology course required of all majors and minors in the Department of Biological Sciences.
- **CHE 111/111L – General Chemistry I with Lab**
  - *Note: This course can fulfill the Science and Lab core requirement at Thomas More.*
  - *Note: If you have taken AP Chemistry, see additional notes below.*
  - Prerequisite: CHE 101, high school chemistry or the equivalent; successful completion or testing out of MAT 096
  - Concurrent Requisite: CHE 111L
  - Second Century Inner Core: Natural Science Lecture

  - Description: A course offering a concise overview of the basic principles of chemistry, including atomic theory, gas laws, the mole concept, stoichiometry, periodicity, and the study of chemical equilibrium and oxidation reduction principles.
- **CHE 113/113L – General Chemistry II with Lab**
  - *Note: This course can fulfill the Science and Lab core requirement at Thomas More.*
  - *Note: If you have taken AP Chemistry, see additional notes below.*
  - Prerequisite: CHE 111/L
  - Concurrent Requisite: CHE 113L
  - Second Century Inner Core: Natural Science Lab (CHE111L)
  - Description: A two-course sequence studying modern chemical analysis and emphasizing basic laboratory techniques as well as chemical instrumentation and applications in the identification, separation, and quantitative determination of chemical species.
- **MAT 151 – Calculus Analytic Geometry I**
  - *Note: This course can fulfill the Math core requirement at Thomas More.*
  - *Note: If you have taken AP Calculus AB, see additional notes below.*
  - Prerequisite: MAT 115 or successful completion of pre-calculus by passing exam or ACT Math 23+.
  - Description: Topics will include, but not be limited to, the following topics: Limits, Continuity, Chain, Product and Quotient rules, 1st and 2nd Derivative Tests, Relative Extrema and Curve Sketching, Word Problems and Optimization, Implicit Differentiation, Related Rates, Anti-Differentiation, the Fundamental Theorem of Calculus, Areas and Integration by Substitution. Additional topics may include Differentials, Riemann Sums, and Integration by Parts. Calculators with Computer Algebra Systems (CAS) will not be permitted.
- **MAT 152 – Calculus Analytic Geometry II**
  - *Note: If you have taken AP Calculus BC, see additional notes below.*
  - Prerequisite: MAT 151
  - Description: The techniques of one-dimensional calculus developed in MAT 151 are extended. Course topics include transcendental functions, inverse trigonometric functions, hyperbolic functions, advanced integration techniques including parts, trigonometric substitutions, rational integrands, and quadratic expressions. Also included are indeterminate forms and improper integrals, infinite sequences and series, Taylor's series and polynomials and the binomial series.
- **PHY 141 – General Physics I**
  - *Note: This course can fulfill the Science and Lab core requirement at Thomas More.*
  - Corequisite: MAT 151
  - Description: An introductory calculus-based course for Physics, Chemistry, Math and Pre Engineering majors. Topics include mechanics.
- **PHY 141L – General Physics I Laboratory**
  - Corequisite: PHY 141
  - Description: Students will perform selected experiments in mechanics.
- **PHY 142 – General Physics II**
  - *Note: This course can fulfill the Science and Lab core requirement at Thomas More.*

  - Corequisite: MAT 151
  - Description: An introductory calculus-based course for Physics, Chemistry, Math and Pre Engineering majors. Topics include mechanics.
- **PHY 142L – General Physics II Laboratory**
  - Corequisite: PHY 141
  - Description: Students will perform selected experiments in mechanics.

Certifications Earned:

- n/a

Additional Notes:

- Students taking AP Biology earn credit for BIO 101 and BIO 102 at TMU with a score of 3+.
- Students taking AP Calculus AB earn credit for MAT 151 at TMU with a score of 3+.
- Students taking AP Calculus BC earn credit for MAT 151 and MAT 152 at TMU with a score of 3+.
- Students taking AP Chemistry earn credit for CHE 111/111L with a score of 4. Students earn credit for CHE 111/111L and CHE 113/113L with a score of 5.

Links:

- Program website: https://www.thomasmore.edu/program/chemistry/