

Pathophysiology YAG

One Credit | Double-Blocked | One Semester | 18 Weeks | Recommended Grades 11–12 | Science Graduation Credit

Course Information: PATH = §127.482 Pathophysiology. Prerequisites: one credit in Biology, one credit in Chemistry, and at least one credit in a Level 2 or higher Health Science course. Recommended prerequisite: Anatomy and Physiology. The course studies disease processes and their effects on humans, with emphasis on prevention and treatment. At least 40% of instructional time is devoted to classroom, laboratory, and field investigations using scientific and engineering practices. The 18-week double-block model provides the instructional contact time needed to complete the full one-credit course in one semester. §127.15(d)(2) CTE Employability Skills are integrated throughout. ACCESS supports Health Science/STEM career and postsecondary connections.

GP	Wks	Unit & Focus	Major Learning Tasks & Assessments	Integrated TEKS	Extension Activities
1	1–2	Unit 1 – Scientific Investigation, Safety, Data & Pathology Foundations	- Establish laboratory safety and scientific/engineering investigation expectations - Ask questions, define problems, design investigations and use appropriate laboratory tools/models - Collect/organize qualitative and quantitative data; analyze patterns, error and limitations - Communicate evidence-based explanations and engage in scientific argumentation - Introduce pathology, abnormal cellular processes and homeostatic compensation	- PATH1(A–H) - PATH2(A–D) - PATH3(A–C) - PATH5(A,D)	- Laboratory investigation - ACCESS: health science/STEM careers - Lab notebook launch
1	3	Unit 2 – Cellular Injury, Mutations, Neoplasms & Disease Risk	- Examine abnormal biological/chemical processes at the cellular level - Analyze mutations and neoplasms across cells, tissues, organs and systems - Investigate age, sex, environment, lifestyle and heredity as disease contributors - Develop models showing cellular injury, compensation and progression - Evaluate research evidence and contributions of scientists/engineers	- PATH4(A–C) - PATH5(A–D) - PATH1(G) - PATH3(A–C)	- Cell/tissue microscopy or models - Cancer/mutation case study - Career research
1	4–5	Unit 3 – Pathogenesis, Microbiology, Immunity & Inflammation	- Differentiate pathogenic organisms using appropriate microbiological techniques/simulations - Sequence incubation, prodromal, exacerbation and remission stages - Analyze barriers, inflammation and immune responses - Compare vaccination, antibiotics, chemotherapy and immunotherapy - Evaluate effects of chemical agents, pollution and trauma on disease processes	- PATH6(A–E) - PATH1(A–H) - PATH2(A–D) - PATH3(A–C)	- Microbiology lab/simulation - Inflammation/immune model - Treatment comparison
1	6	Unit 4 – Epidemiology, Infection Control & Emerging/Reemerging Disease	- Compare nosocomial and community-acquired infections - Investigate antibiotic resistance and reemerging diseases - Analyze epidemiological data for trends and predicted outcomes - Evaluate asepsis, isolation, immunization and quarantine as public-health strategies - Research a disease threatening world health and propose an intervention	- PATH7(C–E) - PATH8(A,D–E) - PATH2(B–C) - PATH3(A–C)	- Epidemiology data lab - Outbreak investigation - Global health intervention
1	7–8	Unit 5 – Cardiovascular, Hematologic & Respiratory Pathophysiology	- Investigate etiology, signs/symptoms, diagnosis, prognosis and treatment of selected cardiovascular, blood and respiratory diseases - Connect disrupted physiology to clinical manifestations and homeostatic compensation - Interpret simulated medical/laboratory data related to disease - Explore diagnostic/treatment technologies - Analyze multi-system effects such as congestive heart failure	- PATH7(A–B,F–G) - PATH8(C) - PATH5(D) - PATH2(A–C)	- Cardiopulmonary case studies - Diagnostic-data interpretation - Disease model
1	9	Unit 6 – Endocrine & Metabolic Pathophysiology	- Investigate endocrine/metabolic disease mechanisms with emphasis on diabetes - Analyze risk factors, clinical manifestations, diagnostic data, treatment and prevention - Examine multi-system consequences and compensatory mechanisms - Develop an evidence-based lifestyle-disease prevention plan	- PATH7(A–B,F–G) - PATH8(C,F) - PATH5(C–D)	- Diabetes case study - Lab-value analysis - Prevention-plan draft
2	10–11	Unit 7 – Neurologic, Musculoskeletal & Integumentary Pathophysiology	- Investigate selected neurologic, musculoskeletal and integumentary diseases/disorders - Analyze Parkinson's disease and other conditions that affect multiple systems - Differentiate hereditary, infectious and autoimmune disease mechanisms - Interpret clinical data and compare diagnostic/treatment technologies - Use evidence to explain disease progression and prognosis	- PATH7(A–B,F–G) - PATH8(C) - PATH3(A–C) - PATH4(A)	- Neurologic case analysis - Musculoskeletal/skin investigation - Technology research
2	12	Unit 8 – Renal/Urinary & Fluid-Electrolyte Pathophysiology	- Investigate selected renal and urinary disorders - Connect altered filtration/homeostasis to signs, symptoms and systemic effects - Interpret simulated laboratory values and medical data - Compare prevention and treatment approaches - Analyze stress/aging influences where applicable	- PATH7(A–B,F–G) - PATH8(B–C) - PATH5(D)	- Renal lab-data case - Homeostasis model - Treatment comparison

2	13	Unit 9 – Digestive & Hepatic Pathophysiology	- Investigate selected digestive and hepatic diseases - Trace cellular/tissue dysfunction to organ and system manifestations - Analyze etiologic factors including lifestyle, heredity and environment - Interpret diagnostic data and compare treatment/prevention strategies - Evaluate model limitations when representing disease processes	- PATH5(A-D) - PATH7(A-B,F) - PATH8(C,F) - PATH2(A)	- GI/liver case study - Disease-progression model - Prevention analysis
2	14	Unit 10 – Reproductive Pathophysiology & Genetic/Hereditary Disease	- Investigate selected reproductive diseases/disorders and hereditary conditions - Analyze mutations, heredity and environmental/lifestyle contributors - Differentiate hereditary disease from infectious and autoimmune mechanisms - Explore advanced diagnostic/treatment technologies - Communicate evidence-based findings respectfully and accurately	- PATH5(B-C) - PATH7(A-B,F) - PATH3(A-C)	- Genetics/reproductive case - Technology research - Evidence-based presentation
2	15	Unit 11 – Autoimmune, Multisystem Disease, Stress & Aging	- Analyze autoimmune disease mechanisms with lupus as a multi-system example - Compare disease effects across organ systems - Analyze effects of stress and aging on disease risk/progression - Interpret medical/laboratory data and evaluate treatment approaches - Integrate homeostatic compensation and immune dysfunction concepts	- PATH7(F-G) - PATH8(B-C) - PATH5(D) - PATH6(C-D)	- Lupus/multisystem case - Stress-aging analysis - Integrated concept map
2	16	Unit 12 – Disease Prevention, Public Health & World Health	- Evaluate asepsis, isolation, immunization and quarantine - Analyze epidemiological trends and predict disease outcomes - Research diseases threatening world health and propose interventions - Finalize a prevention plan addressing behaviors contributing to lifestyle disease - Use cost-benefit and research evidence to evaluate prevention/treatment approaches	- PATH8(A,D-F) - PATH4(A-B) - PATH3(A-C)	- Public-health project - Prevention-plan presentation - ACCESS: public health careers
2	17	Unit 13 – Integrated Pathophysiology Clinical Case & Investigation	- Complete an integrated patient case spanning etiology through treatment/prevention - Analyze medical history, laboratory/diagnostic data and multi-system effects - Plan/conduct a culminating investigation or model-based inquiry - Evaluate data, sources of error and model/design limitations - Present and defend an evidence-based explanation using scientific argumentation	- PATH1(A-H) - PATH2(A-D) - PATH3(A-C) - PATH4(A-C) - PATH5-8	- Capstone investigation - Clinical case conference - Career/postsecondary connection
2	18	Semester Exam & Pathophysiology Showcase	- Cumulative written assessment covering scientific practices and disease mechanisms - Performance-based laboratory/data-analysis component - Integrated body-system pathophysiology case - Final prevention/capstone reflection and portfolio evidence	- Cumulative: PATH1-8 §127.15(d)(2)	- Targeted review/remediation - Pathophysiology showcase

Pathophysiology TEKS Coverage Checklist

Coverage verification: All eight Pathophysiology strands and all 40 student expectations in §127.482 are intentionally addressed during the 18-week double-block semester. Scientific/laboratory investigations are embedded throughout to support the required minimum of 40% instructional time. §127.15(d)(2) CTE Employability Skills are integrated throughout.

Strand	SEs	Knowledge & Skills Focus	YAG Placement	Coverage
PATH1	A–H	Questions/problems; investigations; safety; tools; quantitative/qualitative evidence; data organization; models; hypotheses/theories/laws	Units 1, 3; spiraled through labs; Unit 13	100%
PATH2	A–D	Model limitations; data/statistics/error; mathematical relationships; experimental/engineering design	Units 1, 3–4, 7; Unit 13	100%
PATH3	A–C	Evidence-based explanations/solutions; communication; scientific argumentation	Units 1–4, 7, 10, 12–13	100%
PATH4	A–C	Critique scientific explanations; research impact/diverse contributors; STEM/Health Science career resources	Units 2, 7, 12–13	100%
PATH5	A–D	Cellular pathology; mutations/neoplasms; disease factors; compensatory mechanisms/homeostasis	Units 1–3, 5–6, 8–9, 11	100%
PATH6	A–E	Pathogens; stages of pathogenesis; defenses; prevention/treatment; chemical/environmental/trauma effects	Unit 3; Units 4 and 11 reinforcement	100%
PATH7	A–G	Disease etiology through treatment; technologies; reemerging disease; nosocomial/community infection; resistance; disease types; multisystem effects	Units 4–11; Unit 13	100%
PATH8	A–F	Public health control; stress/aging; medical/lab data; epidemiology; world health; lifestyle prevention plan	Units 4–6, 8–9, 11–13	100%
Employability	§127.15(d)(2)	Level 3/4 CTE employability skills	Integrated throughout	100%

Implementation Notes

- The 18-week double-block format delivers the full one-credit Pathophysiology course in one semester. Because Pathophysiology satisfies a high school science graduation requirement, scientific and engineering practices should remain visible throughout instruction rather than being treated as a separate introductory unit.
- At least 40% of instructional time must involve classroom, laboratory, or field investigations. Teachers should maintain sufficient lab/investigation experiences across the semester to meet this requirement while addressing appropriate safety standards.
- Body-system units are organized as an instructional structure for PATH7. Each should emphasize disease etiology, signs and symptoms, diagnosis, prognosis, treatment, prevention, advanced technology, and connections to cellular mechanisms and homeostasis rather than becoming an Anatomy and Physiology review.
- Students should repeatedly interpret simulated medical histories, diagnostic information, epidemiological data, and laboratory results. Use de-identified/simulated data and do not ask students to diagnose real individuals.
- ACCESS should support Health Science/STEM career exploration, postsecondary program research, and connections to diagnostic, therapeutic, biotechnology, public health, and research careers. CTSO and professional-organization experiences should be incorporated where available.
- Week 18 is reserved for the cumulative semester exam and performance-based showcase.