

# GENERAL STUDIES PATTERN II/III - NATURAL SCIENCES OR MATHEMATICS 2023-2024, ASSOCIATE IN ARTS

The courses that fulfill the **Natural Sciences or Mathematics** area of emphasis will examine the physical universe, its' life forms and the measurement of natural phenomena. The courses are designed to develop students' appreciation and understanding of the scientific method along with mathematical evaluation, and to encourage an understanding of the relationships between science/mathematics and other human activities. This emphasis enables the student to take courses that will satisfy lower division major preparation requirements for areas including but not limited to Allied Health, Biology, Chemistry, Environmental Science, Geological Sciences, Health Sciences, Mathematics, Nursing, Physics, Pre-Medicine, and Radiology Technology.

Select a minimum of 18 units from the courses below, with a minimum of 6 units in a single discipline. For purposes of this degree, ANAT, BIOL, MICR, and PHSO are all considered to be within the single discipline of Biological Sciences.

Course ID	Title	Units/ Hours
<b>Select and complete at least 18 units from the following</b>		
ANTH M01 or ANTH M01H	Biological Anthropology Honors: Biological Anthropology	3
ANTH M01L	Biological Anthropology Lab	1
ANAT M01	Human Anatomy	4
ANPH M01	Human Anatomy and Physiology	6
AST M01	An Introduction to Astronomy	3
AST M01L	An Introduction to Astronomy Laboratory	1
BIOL M02A or BIOL M02AH	General Biology I Honors: General Biology I	5
BIOL M02B or BIOL M02BH	General Biology II Honors: General Biology II	5
CHEM M01A or CHEM M01AH	General Chemistry I Honors: General Chemistry I	5
CHEM M01B	General Chemistry II	5
CHEM M07A	Organic Chemistry I	5
CHEM M07B	Organic Chemistry II	5
CHEM M11	Foundations of General, Organic, and Biochemistry	5
CHEM M12	Introductory Chemistry I	4
CHEM M13	Introductory Chemistry II	5
ENSC M01	Environmental Science	3
ENSC M01L	Environmental Science Lab	1
ENSC M02	Environment and Human Interactions	4
GEOL M02 or GEOL M02H	Physical Geology Honors: Physical Geology	3
GEOL M02L	Physical Geology Lab	1
GEOL M03	Earth History	3
GEOL M03L	Earth History Lab	1

GEOL M04	Mineralogy	4
GEOL M121	Earth Science with Lab	4
MATH M05	College Algebra for STEM Studies	3
MATH M06	Trigonometry	3
MATH M07	Precalculus and Trigonometry	6
MATH M15 or MATH M15H	Introductory Statistics Honors: Introductory Statistics	4
MATH M16A	Applied Calculus I	3
MATH M16B	Applied Calculus II	3
MATH M25A or MATH M25AH	Calculus with Analytic Geometry I Honors: Calculus with Analytic Geometry I	5
MATH M25B or MATH M25BH	Calculus with Analytic Geometry II Honors: Calculus with Analytic Geometry II	5
MATH M25C	Calculus with Analytic Geometry III	5
MATH M31	Introduction to Linear Algebra	3
MATH M35	Applied Differential Equations	3
MICR M01	General Microbiology	5
PHSO M01 or PHSO M01H	Human Physiology Honors: Human Physiology	4
PHYS M10A	General Physics I	4
PHYS M10AL	General Physics I Lab	1
PHYS M10B	General Physics II	4
PHYS M10BL	General Physics II Laboratory	1
PHYS M20A	Mechanics of Solids and Fluids	4
PHYS M20AL	Mechanics of Solids and Fluids Laboratory	1
PHYS M20B	Thermodynamics, Electricity, and Magnetism	4
PHYS M20BL	Thermodynamics, Electricity, and Magnetism Laboratory	1
PHYS M20C	Wave Motion, Optics, and Modern Physics	4
PHYS M20CL	Wave Motion, Optics, and Modern Physics Laboratory	1

Upon successful completion of this program, students will be able to:

- 1. Communication Competency
  - a. Attend to and clearly express ideas in written, spoken, numerical, and artistic forms.
  - b. Communicate effectively and logically.
- 2. Information Competency
  - a. Evaluate multiple sources of information to apply it critically and appropriately
  - b. Gather, evaluate, analyze, and synthesize information.
- 3. Quantitative Competence
  - a. Implement quantitative and qualitative models to make predictions, draw conclusions, and make decisions that are logical and feasible.
  - b. Collect, organize, analyze, and process research data in a clear, synthesized format.
- 4. Analytic Inquiry Skills
  - a. Distinguish the modes of inquiry and critique used in the natural, social, and behavioral sciences and the humanities.
  - b. Explain the connections among the various disciplines.
- 5. Ethical Reasoning

- a. Apply ethical principles to personal, academic, professional and/or community issues.
- b. Work ethically and effectively with others.
- 6. Ability to Engage Diverse Perspectives
  - a. Recognize the multitude of diversities in the physical and human environments and how these diversities impact the individual and society.
  - b. Recognize the diversity of human experience, the role of the natural environment, and the relationship between the two.
  - c. Describe and appreciate the role of culture and the arts in society and in one's personal life.
- 7. Ability to Create
  - a. Act purposefully in combining awareness, critical thinking, and communication skills with personal responsibility in order to originate, innovate, or build upon ideas.
- 8. Growth Orientation
  - a. Apply the skills necessary for successful living in an ever-changing and global environment.
  - b. Identify and adopt the concepts of personal health and fitness to enhance the quality of life.