SCIENCE

SOME OCCUPATIONS RELATED TO INTEREST AND ABILITY IN SCIENCE

Teacher

Biochemist

Herpetologist

Entomologist

Physician/Surgeon

Pharmacist

Forester

Fish & Wildlife Service Worker

Dentist

Practical Nurse

Game Warden

Curator

All Types of Engineers

Forest

Ranger

Zoologist

Anthropologist

Horticulturalist

Dietician

Bacteriologist

Immunologist

Laboratory Technician

Home Economist

Medical Secretary

Optometrist

Registered Nurse

Occupational Therapist

Ophthalmologist

Nuclear Technician

Veterinarian

Forensic Scientist

Drug Technician

Robotics Technician

Landscape Artist

Geologist

Dental Hygienist

SCIENCE

Course Length	Credit	Name of Course	Course Number	9	10	11	12	Prerequisite
Sem 1	.5	Intro to Chemistry	300B1A	X	X	X	X	
Sem 2	.5	Intro to Physics	302B1B	X	X	X	X	
1 Year	1	Applications in Physical Science	303B1X	X	X	#	#	Recommended by 8th grade science instructor and School Counselor
1 Year	1	Physics**	307B1X	#	#	X	X	Math 1
1 Year	1	AP Physics 1 [idx]	309B1X	-	-	X	X	See course description
1 Year	1	AP Physics 2 [idx]	310B1X	-	-	X	X	AP Physics 1
1 Sem	.5	Forensic Science**	315B1B	-	-	X	X	Biology and Chemistry with a "C" or better
1 Year	1	Chemistry**	320B1X	#	X	X	X	Math 1
1 Sem	.5	Organic Chemistry**	322B1A	-	-	X	X	Biology and Chemistry with a "B" or better
1 Year	1	Biology**+	325B2X	X	X	X	X	
1 Year	1	Applications in Biology**+	327B2X	X	X	X	X	Recommended by 8th grade science teacher and counselor or Applications in Physical Science
1 Year	1	AP Biology** [idx]	333B1X	#	#	X	X	1 year of Biology with a "B" average
1 Year	1	AP Chemistry** [idx]	337B1X	#	#	X	X	See course description
1 Sem	.5	Earth Science**+	340B1C	X	X	X	X	
1 Year	1	Basic Anatomy**	342B1X	-	#	X	X	Chemistry or Biology with a "C" or better
1 Year	1	General Anatomy & Physiology** [idx]	343B1X	-	#	X	X	1 year of Biology with a "B" average, "C" or better in Chemistry required.
1 Year	1	AP Environmental Science** [idx]	345B1X	-	X	X	X	Math 1 and Biology
1 Sem	.5	Astronomy	350B1C	X	X	X	X	

\+ Required Course

** College Prep Course

[idx] Course is Grade Indexed

\# Denotes an exception to the standard course sequence. The course is open to students with the pre-approval of both the Counseling and Science Departments. Please contact the PHS counseling office with questions.

X Enrollment available to students in designated grade levels.

X Department recommendation for enrollment

The Wisconsin Department of Instruction and the UW-System has determined that the following courses are "science equivalent" and will be counted by them as science credits: Food Science, Principles of Engineering, Biotechnology, Small Animal Vet Science 2, Animal Science, Large Animal Vet Science, Ag Products & Processing, Zoology & Wildlife Science, Marine Biology & Aquaculture, and Horticulture. For information about these courses, please refer to the appropriate department.

300B1A – INTRODUCTION TO CHEMISTRY			
Sem 1 Course	Grades 9 – 12	.5 Credit	Prerequisite: None
This course is a one semester offering designed to help students explore the fundamental principles of chemistry which characterize the properties of matter and how it reacts. Topics include, but are not limited to: measurement, atomic structure, electron configuration, periodicity, bonding, gas laws, properties of liquids and solids, solutions, stoichiometry, reactions, and equilibrium. The mathematics prerequisite skills are based on middle school mathematics topics such as data analysis, measurement, scientific notation, ratio and proportion, and algebraic expressions.			

302B1B – INTRODUCTION TO PHYSICS			
Sem 2 Course	Grades 9 – 12	.5 Credit	Prerequisite: None
This course is a one semester offering designed to help students recognize the nature and scope of physics and its relationship to the other sciences. Students will learn about basic topics such as motion, forces, energy and heat, momentum, and waves. Students will be engaged in scientific inquiry, investigations, and labs so that they develop a conceptual understanding and basic scientific skills. The mathematics prerequisite skills are based on middle school mathematics topics such as data analysis, measurement, scientific notation, ratio and proportion, and algebraic expressions.			

303B1X - APPLICATIONS IN PHYSICAL SCIENCE			
Year Course	Grades 9-10 (#)	1 Credit	Prerequisite: Recommended by 8th grade science teacher and counselor
Applications in Physical Science is a hands-on course that covers the topics of measurement, physics of motion, states of matter, energy and fuel sources, and waves. **This course is intended for those students with difficulties in science education.** This course will NOT meet 4 year university/college entrance requirements.			

307B1X - PHYSICS			
Year Course	Grades 11-12 (#)	1 Credit	Prerequisite: Math 1
Physics is an introductory survey course covering units in mechanics and motion, vectors, momentum and energy, waves, sound and light. The course combines a conceptual approach with quantitative problem solving. Knowledge of algebra and right triangle trigonometry is expected. Several demonstrations and many hands-on lab activities are used to connect the concepts and applications. The course is intended for students planning to attend a four year college. Pending administrative approval, the course may culminate with a Physics Day field trip to Six Flags in May.			

309B1X - ADVANCED PLACEMENT PHYSICS 1 **Grade Indexed (see pg 16)**			
Year Course	Grades 11-12	1 Credit	Prerequisite: (There is not a Physics prerequisite). Students should have completed geometry and be concurrently taking Math 3 or the equivalent
This course is an algebra-based, introductory college-level physics course that explores topics such as Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory simple circuits. Through inquiry-based learning, students will develop scientific critical thinking and reasoning skills. No prior coursework in physics is necessary. This course serves as the prerequisite to AP Physics 2. Students taking this class will be expected to take the AP Physics 1 exam. Pending administrative approval, the course may culminate with a Physics Day field trip to 6 Flags in May			

310B1X - ADVANCED PLACEMENT PHYSICS 2 **Grade Indexed (see pg 16)**			
Year Course	Grades 11-12	1 Credit	Prerequisite: Students should have completed AP Physics 1 and concurrently taking pre-calculus or the equivalent
This course is an algebra-based, introductory college level physics course that explores topics such as fluid statics and dynamics; thermodynamics with kinetic theory; PV diagrams and probability; electrostatics; electrical circuits with capacitors; magnetic fields; electromagnetism; physical and geometric optics; and quantum, atomic and nuclear physics. Through inquiry-based learning, students will develop scientific critical thinking and reasoning skills. Students taking this class will be expected to take the AP Physics 2 exam.			

315B1B – FORENSIC SCIENCE			
Semester Course	Grades 11-12	.5 Credit	Prerequisite: Biology and Chemistry with a "C" or better
Forensic Science is a semester course which incorporates Biology, Chemistry, Physics, Entomology, Earth Science, Anatomy and Physiology as well as other aspects of Science. Major topics include processing a crime scene; collecting and preserving evidence; identifying types of physical evidence; organic and inorganic analysis of evidence, hair, fibers, and paint; toxicology, arson and explosion investigations; serology; DNA; fingerprints; firearms; and document analysis. This course combines basic theory and real laboratory experiments, creating an experiment-based situation for the better understanding of the students. The experiments used reinforce previously learned scientific principles rooted in Biology, Chemistry and Physics. Students must have completed Biology and Chemistry.			

320B1X – CHEMISTRY			
Year Course	Grades 10-12 (#)	1 Credit	Prerequisite: Math 1

Chemistry is the study of matter and the reason for its physical and chemical properties. The course will explore the model of the atom, periodicity, chemical bonding, chemical formulas and compounds, stoichiometry, the gas laws, states of matter, solutions and acid & base reactions. All topics and major concepts will be reinforced through laboratory activities and experiments. Students will be required to keep a lab notebook. **This course, with its rigor, pacing and material, is intended for the student who plans to attend a four-year college.**

322B1A – ORGANIC CHEMISTRY			
Semester Course	Grades 11-12	.5 Credit	Prerequisite: Biology and Chemistry with a "B" or better

This semester course is designed to provide a fundamental overview of organic chemistry to students interested in pursuing a career in the sciences or medical field (ex: Pre-Med/Nursing). Students interested in a medical field will be required to take organic chemistry in college. This course will give students an advantage by giving them exposure to the material they will experience in their first semester of organic chemistry in college. Upon successful completion of this class, students will understand the relationship between structure and function of molecules, the major classes of reactions, reaction energetics and mechanisms, synthesis of organic compounds, and how to determine structure via various spectroscopic techniques. Several themes are prevalent in each unit of study: nomenclature, chemical and physical properties, structures, mechanisms, common molecules, and the diversity of organic molecules in plants, bacteria, and animals. Many topics also integrate the societal, pharmaceutical or industrial importance of specific compounds.

325B2X - BIOLOGY			
Year Course	Grades 9-12	1 Credit	Prerequisite: None

A two-semester course featuring the study of ecology, animals, plants, microbes, cells, human body, genetics and reproduction. The course includes class work, discussions, labs and some topic videos. **<u>This course is required for graduation.</u>**

327B2X – APPLICATIONS IN BIOLOGY			
Year Course	Grades 9-12	1 Credit	Prerequisite: Recommended by 8th grade science teacher and counselor or Applications in Physical Science

Applications in Biology is a hands-on course that covers the topics of ecology, animals, plants, microbes, cells, human body and reproduction. **This course is intended for those students with difficulties in science education.** This course will NOT meet 4 year university/college entrance requirements. All tests are read aloud in this course.

333B1X - ADVANCED PLACEMENT BIOLOGY			Grade Indexed (see pg 16)
Year Course	Grades 11-12 (#)	1 Credit	Prerequisite: Biology with at least a "B" average

This course is designed to be the equivalent of the general biology course usually taken during the first year of college. AP Biology is designed to give students an opportunity to do an in-depth study of life science using college level resources, and lab applications. Some of the topics to be studied include molecular biology, genetics, evolution and plant/animal function and development. The course is intended for students with a high interest in biology and who plan post-high school training in a life science related field. Students who take this class will be required to take the Advanced Placement Biology exam.

337B1X - ADVANCED PLACEMENT CHEMISTRY			Grade Indexed (see pg 16)
Year Course	Grades 11-12 (#)	1 Credit	Prerequisite: Chemistry with at least a "B" average.

This course is designed to be the equivalent of the general chemistry course usually taken during the first year of college. Fundamental topics are covered in greater depth and with more refined concepts. AP Chemistry provides students the opportunity to develop their ability to think clearly and to express their ideas orally and in writing with clarity and logic. Strong emphasis is placed on lab work, chemical calculations, and the mathematical formulation of principles. The course is intended for students who plan post high school training in a physical science related field. Students who take this class will be required to take the Advanced Placement Chemistry exam.

Students will be given a mandatory summer assignment that will involve the topics and learning targets for the first chapter and test of the school year.

340B1C - EARTH SCIENCE			
Semester Course	Grades 9-12	.5 Credit	Prerequisite: None

Earth Science is a study of the planet Earth – its features, its forces, and its place in the solar system. In this semester course, students will explore Earth's complex and interrelated processes. Topics will include, but are not limited to: systems of matter and energy, rock and mineral resources, plate tectonics, natural hazards, Earth's surface processes, geologic time, and climate patterns. This course

emphasizes science and engineering practices such as defining problems, carrying out investigations, developing models, and analyzing data. Students will also investigate the sustainability of human activities and possible solutions to resource problems.
This course is required for graduation.

342B1X – BASIC ANATOMY*			
Year Course	Grades 11-12 (#)	1 Credit	Prerequisite: Chemistry or Biology with a "C" or better

This course examines concepts of anatomy and physiology as they relate to health careers. Learners correlate anatomical and physiological terminology to all body systems.
***This course is transcribed with NWTC's Basic Anatomy (10-806-189) for 3 credits when taken as a junior or senior.**

343B1X - GENERAL ANATOMY and PHYSIOLOGY*			**Grade Indexed (see pg 16)**
Year Course	Grades 11-12 (#)	1 Credit	Prerequisite: Biology with at least a "B" and "C" or better in Chemistry required

General Anatomy and Physiology is an upper-level course intended for students interested in studying how the human body works, continuing studies in human biology, or pursuing a career in the science, medicine, or health-related fields. The course would include a significant amount of laboratory and research work used to expand student understanding of the body's structures and functioning. Using a body system approach, the course emphasizes the interrelationships between structure and function at the gross and microscopic levels of organization of the entire human body. It is intended to prepare future health care professionals, who need to apply basic concepts of whole body anatomy and physiology, in making informed decisions and communicating professionally with colleagues and patients.
***This course is transcribed with NWTC's General Anatomy and Physiology (10-806-177) for 4 credits when taken as a junior or senior**.

345B1X - ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE			**Grade Indexed (see pg 16)**
Year Course	Grades 10 – 12	1 Credit	Prerequisite: Math 1 and Biology

AP Environmental Science Provides an investigative approach to the interrelationships of the natural world through the study of the fundamental concepts, principles, and methodologies of environmental science, with an emphasis on inquiry and critical thinking skills including problem solving and experimental investigations. Topics of study include Earth systems and resources, ecosystems and energy flow, population biology, land and water use, energy resources and consumption, pollution, agriculture conservation and global change. Laboratory work and field studies are an integral component of this course.
Students will be required to take the Advanced Placement test.

350B1C - ASTRONOMY			
Semester Course	Grades 9 - 12	.5 Credit	Prerequisite: None

This course offers a one semester introduction to astronomy. Astronomy provides students with the opportunity to study the physics of the universe, the galaxy, and the solar system. Topics will include properties of light, stars and the structure of the sun, planets, galaxies, gravity and planetary motion, sky cycles and cosmology. Students will also learn the basics of backyard observational astronomy and be able to identify constellations, stars, and planets in the night sky.