SCIENCE ELECTIVES

0780 COMPUTER SCIENCE AND SOFTWARE ENGINEERING
PREREQUISITE: ONE UNIT OF REGENTS SCIENCE AND ALGEBRA I AND GEOMETRY
GRADES 11-12 • FULL YEAR - 1 UNIT
This course is designed to introduce students to the world of programming. Students create apps for mobile devices, automate tasks in a variety of languages, find patterns in data, and interpret simulations. Students work in teams to develop computational thinking, solve problems and utilize computational tools that foster creativity. Students practice problem solving with structured activities and progress to open-ended projects and problems that require them to develop planning, documentation, communication, and other professional skills. Problems allow for various levels of entry whether students are novice or developing program writers. Each unit focuses on one or more computationally intensive career paths. The course invites students to consider the societal impact of computing, both present and future.

0340 CRIMINALISTICS
GRADES 11-12 • SEMESTER - ½ UNIT
Criminalistics will introduce students to the role of forensic science in criminal investigations. In order to merge theory with practice, a hands-on approach will be taken in the presentation of course materials and laboratories. The major topics of study may include: physical properties of evidence, hair, fiber, and paint analysis; fingerprints, tool marks and other impressions; forensic serology and DNA.

0344 HUMAN ANATOMY AND PHYSIOLOGY I (FALL)
PREREQUISITE: LIVING ENVIRONMENT: BIOLOGY R OR 3R
GRADES 10-12 • FALL SEMESTER - ½ UNIT
This course examines the structure and function of the human body and mechanisms for maintaining homeostasis within the body. It includes the study of basic chemistry, cells, tissues, and the integumentary, skeletal, muscular, nervous, and endocrine systems. Activities include microscope work, case studies and dissection. It is intended as a survey course for students who are interested in pursuing careers in medicine or allied health fields.

0345 HUMAN ANATOMY AND PHYSIOLOGY II (SPRING)
PREREQUISITE: LIVING ENVIRONMENT: BIOLOGY R OR 3R
GRADES 10-12 • SPRING SEMESTER - ½ UNIT
This course is a continuation of Human Anatomy and Physiology I. The cardiovascular, lymphatic, digestive, respiratory, urinary, and reproductive systems, as well as the concepts of immunity and development are included. Activities include microscope work, case studies and dissection. It is geared toward students who are interested in pursuing careers in medicine or allied health fields.

0347 ASTRONOMY
Blended Learning Course
PREREQUISITE: PHYSICAL SETTING: EARTH SCIENCE R
GRADES 10-12 • SEMESTER - ½ UNIT
This is a semester long descriptive course for the science student with an interest in Astronomy. The course begins with a look at the Universe and our place in it, followed by a study of light and telescopes. The remaining topics include: relativity, cosmology, the study of the possibility of life elsewhere in the
universe, galaxies, star life cycles and planetology. It concludes with a discussion of Interplanetary and Interstellar space travel. This course is taught as a blended learning course, using an online learning management system. The class meets 4 periods in a 5 period week. In lieu of the 5th class meeting students are required to complete night observation work as assigned by the teacher.

0348 OCEANOGRAPHY
PREREQUISITE: PHYSICAL SETTING: EARTH SCIENCE R AND LIVING ENVIRONMENT: BIOLOGY R PRIOR TO OR CONCURRENT
GRADES 10-12 SEMESTER - ½ UNIT
A semester long descriptive course designed for the science student with an interest in Oceanography. The course begins with a study of the history and development of Oceanography. Physical, chemical and geological aspects are explored. The course finishes with a study of Marine Biology. We spend a day on Seneca Lake doing oceanographic research.

SCIENCE ELECTIVES - MENDON HIGH SCHOOL ONLY

0324 MICROBIOLOGY
PREREQUISITE: LIVING ENVIRONMENT: BIOLOGY R OR 3R
GRADES 10-12 • SEMESTER - ½ UNIT
Microbiology is a course designed for students who wish to develop an appreciation for the beneficial and harmful impact of microorganisms in our environment. The life cycles and infectious mechanisms of viruses, protozoa, bacteria and parasitic worms will be investigated with emphasis on the organisms which are making headlines today such as Anthrax, Meningitis and AIDS. Students will practice lab techniques unique to the study of microorganisms, including sterile culture techniques, media preparation, staining techniques and oil immersion microscopy.

0325 GENETICS
PREREQUISITE: LIVING ENVIRONMENT: BIOLOGY R OR 3R
GRADES 10-12 • SEMESTER - ½ UNIT
[SHS: OFFERED IN 2016-2017 AND 2018-2019]
This course explores the present state of genetics in the 21st century. Traditional inheritance mechanisms will be studied within the framework of a few common genetic disorders. Students will explore how recent advances in genetic technology have altered our experiences with these disorders from diagnosis and testing to treatment. In addition, students will investigate the many applications of genetic engineering currently in use such as genetically modified food and genetically engineered hormones. The semester concludes with an overview of recent advances in reproductive genetic technology such as cloning and stem cell therapy.

0327 ANIMAL AND HUMAN BEHAVIOR
PREREQUISITE: LIVING ENVIRONMENT: BIOLOGY R OR 3R
GRADES 10-12 • SEMESTER - ½ UNIT
This course investigates and observes the responses to change in an animal’s internal and external environment. The course focuses only on animals and examines how the process of evolution has resulted in the variety of animal life on earth. We will also see patterns emerge from the simplest to the most complex animals and see the interconnectedness of different animal species with each other. This course will include many hands-on activities, projects and presentations. The major topics of study may include: instinct vs. learned behaviors, adaptations, social behaviors, animal communication, aggression, courtship, parenting, and play behaviors.