

and concepts being discussed in class and will be a substantial part of the curriculum.

1322 COLLEGE CHEMISTRY - E

This course is also offered at the Foundation level (1310 Foundations in Chemistry)

This course is designed for the student who is interested in a chemistry course that focuses on the environmental and societal applications of the science rather than the quantitative (mathematics oriented) problem solving applications. Topics covered in this course are those found in any first year chemistry course and are presented within an environmental case study of general topics such as water, the atmosphere, and conserving chemical resources.

The course is designed to help students realize the important role that chemistry will play in their personal and professional lives. Students will use chemistry knowledge to think through and make informed decisions about issues involving science and technology. Further, students will develop a lifelong awareness of both the potential and limitations of science and technology.

A double period lab is incorporated in each cycle. The lab portion of the class mirrors the topics that are being discussed and will embed the chemical concepts under consideration within the context of a larger problem. This course will emphasize the conceptual, rather than the mathematical nature of chemistry. While broad in scope, the student electing to enroll in this course should understand that the level of material presented will not prepare the student for the SAT II in chemistry.

1325 COLLEGE PRINCIPLES OF CHEMISTRY

This course is designed for the student who may need additional support in problem solving and quantitative reasoning. Topics covered in this course are those found in any first year chemistry course.

1330 HONORS PHYSICS

Prerequisite: B- or above in Honors Chemistry or A- or above in College Quantitative Chemistry or department head approval; College or Honors Precalculus taken concurrently

Honors Physics is an introductory survey course in physics for students who have demonstrated proficiency in algebra and geometry. A rigorous analytical approach is used in the study of the applications of physics to everyday phenomena. Topics include mechanics (rotational and linear), kinematics, conservation laws, electricity, waves, and sound. Laboratory work and experiment design work are an integral part of the curriculum. A double period laboratory is included each cycle. This course is preparation for the AP Physics 1 exam if students choose to take the exam. Evaluation is based on quizzes, tests, homework, laboratory work and projects.

1410 COLLEGE PRINCIPLES OF TECHNOLOGY

This course is also offered at the Foundation level (1412 Foundations in Principles of Technology)

This college-level course, designed for senior students, explores the application of physics principles in contemporary technologies. Study units describe how technical concepts can be analyzed and applied to equipment and devices in mechanical, fluid, electrical, and thermal energy systems.

Emphasis is placed on understanding underlying principles rather than the specifics of a technology. Some math skills are required. The curriculum is structured so that students will learn about these principles through activities such as video presentations, teacher demonstrations, hands-on laboratory exercises, and design projects. This course does not include a double period lab. Evaluation is based on quizzes, tests, homework, laboratory work and projects.

Before entering this course during the school year, parents and the student should give careful consideration to the recommendation of the teacher and the department head.

1420 COLLEGE PHYSICS

Prerequisite: Algebra 2

College physics challenges students to apply basic physical principles to an understanding of the world around them. Double period laboratory work, student designed projects and class work demonstrations relevant to course content are major components of the instructional strategy. Students use various analytical techniques to understand experimental data. Areas of study include mechanics, light, waves, sound, electricity, and magnetism. Evaluation is based on quizzes, laboratory reports, projects, homework and tests.

1440 ADVANCED PLACEMENT BIOLOGY

Prerequisite: Honors or College Biology and Honors or College Chemistry

AP Biology is designed for highly motivated and capable seniors seeking college level work in high school with the intention of satisfying college requirements for advanced standing and/or course credit in biology. AP Biology is equivalent to a college level introductory biology course for biology majors, utilizes a college level text, and offers college level lab experiences. **Two double periods for laboratory work is included in each cycle.**

To prepare students for the advanced placement biology examination, teacher-made quizzes and tests include both objective and essay questions. Some unit tests are double period examinations. To receive credit for the course, students must take the appropriate advanced placement examination and pay the required fee. Scholarships are available through guidance for students for whom the fee poses a financial hardship.

1442 ADVANCED PLACEMENT CHEMISTRY

Prerequisite: One year of chemistry

AP Chemistry examines patterns of chemical behavior which relate fact to theory. Observed chemical properties lead students to an understanding of the structure of molecules. Principles, concepts and specific facts of chemistry are used in both inductive and deductive reasoning processes. Topics in the course include the structure of matter, kinetic theory, equilibria, thermodynamics and electrochemistry. The laboratory program (**two double periods each cycle**) includes both quantitative experiments and qualitative analysis of unknowns.

Quarterly grades are computed on the basis of tests and laboratory and class work. To receive credit for the course a student must write the appropriate advanced placement exam and pay the required fee.

Open to grade 12 - Year

Seniors who completed EBM as a junior may opt to enroll in the School Store Operations course. School Store Operations is a project-based course designed to provide hands-on opportunities for the application of retailing and marketing theories. Students study the principles of retail merchandising, conduct market research, plan and maintain inventory, and price/promote/sell goods as a service to the Wayland High School community. Additional class time will be devoted to the application of social media and its relevance to marketing and retail operations. Students should expect to work shift(s) in the school store outside of normally scheduled class time.

As was the case with EBM, students learn to think critically, solve problems, and develop creativity, and teamwork skills. Picking up where EBM left off, students will orchestrate their own leadership team to ensure smooth operations.

COMPUTER SCIENCE

9625 EXPLORING COMPUTER SCIENCE

Open to grades 9-12 – Semester

This course, offered in partnership with the non-profit organization Code.Org, is new this year. Exploring Computer Science is an inclusive class for high school students with no prior experience required. Students will learn how to solve problems with computer science, cover how it fits into our culture, and practice basic skills for areas like web design, robotics, data analysis and computer programs. ECS is organized around six units:

- **Human Computer Interaction.** Design basic user interfaces for web sites and apps.
- **Problem Solving.** Take complicated problems, break them down into smaller pieces and use computers to help solve these parts of the puzzle.
- **Web Design.** We all use the web every day -- but how many of us know how to design and build their own website?
- **Introduction to Programming.** Learn the basic building blocks of computer programming.
- **Computing and Data Analysis.** Learn how to manipulate and analyze data, which people do every day, in every field.
- **Robotics.** Programming a robot to carry out your commands is fun. Bring everything else you've learned so far together to make your work come to life.

9628 COLLEGE COMPUTER PROGRAMMING WITH PYTHON

Open to grades 9-12 – Semester

Students will learn how to create computer programs using the Python language. There will be a focus on learning computer programming skills, including functions, lists, iteration and conditionals, while developing modeling and problem-solving skills. Students will create variety of programs, ranging from text-based utility programs to interactive games, both text-based and graphical.

This course is open to all grade levels, and requires no previous programming experience.

9627 HONORS ANDROID APP DEVELOPMENT

Prerequisite: A- or better in a college level math class, or a B- or better in an honors level math class, or an A- or better in College Python Programming or computer science teacher/DH recommendation.

Open to grades 9-12 – Semester

This course focuses on introducing students to creating computer programs for Android devices. Students are introduced to app development and programming principals using MIT's App Inventor. Students then learn how to create Android apps using the Java programming language. This course introduces many basic programming skills, including variables, control structures, data structures, and methods.

This course is open to all grade levels, and requires no previous programming experience.

9540 ADVANCED PLACEMENT COMPUTER SCIENCE

Prerequisite: A- or better in a college level math class or College Python, or a B- or better in an honors level math class or Honors Android App Development, or computer science teacher/DH recommendation. This course is open to students in grades 10-12.

Students will learn the basics of computer programming using the Java language. The fundamentals of program design, basic algorithms, and data structures are explored. There is an emphasis on programming, both independently and in teams. Students are not expected, nor required, to have prior programming experience. In order to receive credit for this course students are required to take the Advanced Placement Computer Science A exam and pay the required fee. Scholarships are available through guidance for students for whom the fee poses a financial hardship.

9650 GENIUS BAR INDEPENDENT STUDY

Prerequisites: Students should be comfortable with technology, be self starters, and have the desire to figure out how to solve problems. Open to grades 9-12 - Semester (Semester 2 only for 9th grade)

This half-year course provides students with the skills to support the high school student and teacher mac laptops. Students will be required to attend one class session every rotation, as well as man the genius bar at least one block per day, six out of eight days per rotation. If the student wishes to do it more there is flexibility in the schedule. Primary responsibility of the genius students is to assist students and teachers with any mac usage issues, including software and hardware identification issues. The genius will be trained in an "on-the-job" training environment, where hands on issues will be the primary training vehicle. There will be material provided for the student to work towards an Apple Certification, at their own pace. When the student feels ready to take the Apple certification exam, the school will pay for the exam registration. There is a triage schedule, appointment calendar, a blog and video tutorials that will be maintained by the student genius interns.

This internship has training flexibility, and therefore the students involved will help drive what is taught. There is also the possibility of doing online training through Apple iTunes University. The student will earn (2) credits per semester, and students are able and encouraged to take the genius internship independent study more than one semester.