



Science

Course Selection Guide

Preparing Our Youth to Succeed in a World of Global Change

Science Courses to Consider for
Diman Students

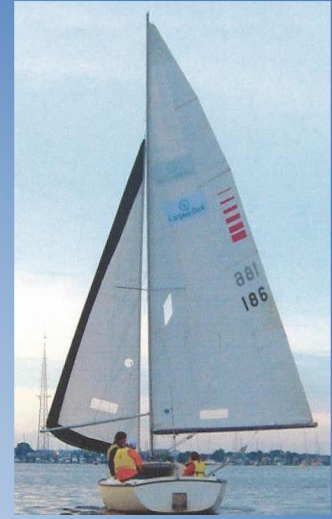
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Why Take Science?



- Science & technology drive our lifestyles & economy.
- Science education is foundational for many careers.
- There are high paying specialties applying science in non-science fields.
- We all benefit from understanding science whether it's related to our job, politics, environment, health of ourselves or loved ones, etc. etc.
- Many colleges and careers require three sciences Physics, Chemistry, Biology.
- Many students that pursue careers or education after Diman voice appreciation for the advantage their science education afforded them.
- Diman students may elect to take more than one science per year as long as it fits in their schedule and graduation credit requirements.

Life Science Path Versus Physical Science



- Most decisions and careers benefit from understanding both.
- Physical and Life science courses are complimentary.
- Physical science includes;
 - Physics: the study of how matter & energy interact (forces & motion).
 - Chemistry: the study of the composition of matter and reactions.
- Life Science includes;
 - Biology: the study of how life and living systems work and the underlying physics and chemistry of life.
- Many careers benefit from one science area more than others.

Prevalent Science Content by Vocation



	Life Science	Physical Science	
Vocational Shop	Biology	Chemistry	Physics
Advanced Manufacturing		✓	✓
Automotive Collision Repair & Refinishing		✓	✓
Auto Technology		✓	✓
Building and Property Maintenance	✓	✓	✓
Business Technology	✓	✓	
Carpentry-Cabinetmaking			✓
Culinary Arts	✓	✓	✓
Dental Assisting	✓	✓	
Drafting			✓
Electricity		✓	✓
Electronics			✓
Graphic Communications		✓	✓
Health Assisting	✓	✓	
HVAC			✓
Medical Assisting	✓	✓	
Metal Fabrication & Joining Technology			✓
Plumbing	✓	✓	✓
Programming and Web Development	✓		✓

Science Courses at Diman

- The following slides provide Insight into science courses offered at Diman:



Biology I / Honors Biology I

CP – 2021

honors - 2221

- Students will learn about the following topics:
 - ecology,
 - chemistry of life,
 - cell structure and function,
 - photosynthesis,
 - cellular respiration and
 - Genetics
- *For entering freshmen, this course is followed by Biology II and is a life sciences oriented path to completion of the Science MCAS to meet science HS diploma graduation requirements at the end of sophomore year.*
- *The course is best suited for students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite: None:**

Physics First I / Honors Physics First I

CP – 2231

honors - 2331

- Students will learn about the following topics:
 - Newton's three laws of motion,
 - potential and kinetic energy,
 - work, power,
 - momentum,
 - impulse,
 - conservation of energy and momentum, temperature,
 - heat and heat transfer,
 - simple machines,
 - machine efficiency
- *For entering freshmen, this course is followed by Physics II and is a physical sciences oriented path to completion of the Science MCAS to meet science HS diploma graduation requirements at the end of sophomore year.*
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** None:

Honors Biology I & II

honors - 2221

- This course is an accelerated biology class in which students will learn both biology I and II in one year including the following topics:
 - ecology,
 - chemistry of life,
 - cell structure and function,
 - photosynthesis,
 - cellular respiration,
 - genetics,
 - evolution and biodiversity,
 - classifications of organisms,
 - environmental effects on organisms,
 - populations,
 - introduction to body structure,
 - in-depth study of eight organ systems
- *For entering freshmen, this course is part of a life sciences oriented path to completion of the Science MCAS to meet science HS diploma graduation requirements. Students may elect to take AP Biology after this course.*
- *The course is best suited for highly motivated students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** None:

Biology II / Honors Biology II

CP –2022

honors - 2222

- Students will learn about the following topics:
 - scientific process,
 - evolution,
 - populations and biodiversity,
 - the form and function of living systems.
- *This course follows Biology I and is a life sciences oriented path to completion of the Science MCAS to meet science HS diploma graduation requirements at the end of sophomore year. Students may elect to take AP Biology after this course.*
- *The course is best suited for students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Biology I (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)

Physics First II / Honors Physics First II

CP – 2233

honors - 2332

- Students will learn about the following topics:
 - electricity,
 - magnetism,
 - electromotive forces,
 - parallel and series circuit design,
 - Ohms law,
 - Kirchhoff's law,
 - waves,
 - electromagnetic waves (light),
 - optics
- *This course follows Physics I and is a physical science oriented path to completion of the Science MCAS to meet science HS diploma graduation requirements at the end of sophomore year. Students may elect to take AP Physics after this course.*
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Physics I (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)

Chemistry I / Honors Chemistry I

CP – 2033

honors - 2133

- Students will learn about the following topics:
 - modern atomic theory,
 - how chemicals
 - combine,
 - formulas and equations,
 - quantum theory, electron
 - arrangement,
 - chemical and physical properties,
 - States of matter.
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military. Students may elect to take AP Chemistry after this course.*
- **Prerequisite:** Successfully complete Biology I & II or Physics I & II (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)

Applied Physics I

CP – 2053

- Students will learn about the following topics:
 - mechanical systems,
 - fluid systems,
 - electrical systems,
 - thermal systems.
 - levers and pulleys,
 - thermometers,
 - conveyor belts.
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Successfully complete Biology I & II. Not available to students who passed Physics First I & II.

Honors Applied Physics I

honors - 2333

- Students will learn about the following topics:
 - Newton's three laws of motion,
 - potential and kinetic energy,
 - work, power,
 - momentum,
 - impulse,
 - conservation of energy and momentum, temperature,
 - heat and heat transfer,
 - simple machines,
 - machine efficiency
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military. Students may elect to take AP Physics after this course.*
- **Prerequisite:** Successfully complete Biology I & II. Not available to students who passed Physics First I & II. (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)
- **Prerequisite:** None:

Anatomy and Physiology I

CP – 2303

- Students will learn about the following topics:
 - study of structures and functions of major systems of the body
 - dysfunctions of major systems of the body,
 - introduction to structural units,
 - tissues and membranes,
 - the skeletal system,
 - the integumentary system,
 - nutrition. Career
 - opportunities in medicine and related fields.
- *The course is best suited for students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Successfully complete Biology I & II or Physics I & II (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)

Chemistry II / Honors Chemistry II

CP – 2034

honors - 2134

- Students will learn about the following topics:
 - chemical reactions,
 - mass relationships,
 - solutions and concentrations,
 - kinetics and equilibrium,
 - acids and bases,
 - oxidation and reduction reactions.
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Chemistry I (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)

Applied Physics II

CP – 2054

- This course is a continuation of physics I with students will learn about the following topics:
 - mechanical systems,
 - fluid systems,
 - electrical systems,
 - thermal systems.
 - levers and pulleys,
 - thermometers,
 - conveyor belts.
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Applied Physics I (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)

Honors Applied Physics II

honors - 2324

- Students will learn about the following topics:
 - electricity,
 - magnetism,
 - electromotive forces,
 - parallel and series circuit design,
 - Ohms law,
 - Kirchhoff's law,
 - waves,
 - electromagnetic waves (light),
 - optics
- *The course is best suited for students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Physics I (moving from college preparatory to honors level requires honors placement testing and teacher recommendation)

Anatomy and Physiology II

CP – 2304

- Students will learn about the following topics:
 - blood,
 - circulatory system,
 - lymphatic system,
 - respiratory system,
 - digestive system,
 - excretory system,
 - reproductive system,
 - career opportunities in medicine
- *The course is best suited for students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Anatomy and Physiology I

Marine Biology

CP – 2063

- Students will learn about the following topics:
 - basic principles of marine science,
 - different marine ecosystems,
 - echinoderms,
 - cnidarians,
 - algae,
 - fish,
 - worms, and
 - marine mammals.
- *The course is best suited for students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Successfully complete Biology I & II or Physics I & II

Topics in Biology / Forensics

CP – 2224

- Students will learn about the following topics:
 - evidence collection,
 - the court system,
 - fingerprint evidence,
 - blood evidence,
 - forensic anthropology,
 - what occurs to the body after death.
 - Students will be certified to serve in Fall River Youth Court and be required to perform at least four hours of community service at the Youth Court.
- *The course is best suited for students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** Successfully complete Biology I & II or Physics I & II

AP Biology

2136

- Students will learn about the following topics:
 - chemistry of life
 - cell structure and function
 - cellular energetics
 - cell communication and cell cycle
 - heredity
 - gene expression and regulation
 - natural selection
 - Ecology
- *The course is best suited for highly motivated students who intend to enter into life science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** It is recommended students successfully complete Biology I & II

AP Physics

2137

- Students will learn about the following topics:
 - kinematics,
 - dynamics,
 - circular motion and gravitation,
 - energy,
 - Momentum,
 - simple harmonic motion,
 - torque and rotational motion,
 - electric charge and electric force,
 - DC circuits,
 - mechanical waves and sound.
- *The course is best suited for highly motivated students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** It is recommended students successfully complete Honors Physics First I & II or Honors Applied Physics I.

AP Chemistry

2135

- Students will learn about the following topics:
 - atomic structure and properties
 - molecular and ionic compounds
 - intermolecular forces and properties
 - chemical reactions
 - kinetics
 - thermodynamics
 - equilibrium
 - acids and bases
 - Thermodynamics
- *The course is best suited for highly motivated students who intend to enter into physical science oriented careers or supporting workforce, continue their post-secondary education at a two or four year college or post-secondary vocational school or who intend to enlist in the military.*
- **Prerequisite:** It is recommended students successfully complete Honors Chemistry I



Still Wondering What You Should Take Next Year?



- You may select one or more science courses based on what comes next in Diman's course catalog depending on your shop, schedule & graduation requirements.
- Select one or more science courses that best suit your plans for and after graduation.

Science Course Exiting

- The following slides provide Insight into your science options for next year:



Exiting Biology I

- Science courses available to students next year:
 - Biology II (or Honors)
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.

Exiting Physics First I

- Science courses available to students next year:
 - Physics II (or Honors)
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.

Exiting Biology II or I&II

- Science courses available to students next year (no repeats):
 - Chemistry I (or Honors)
 - Applied Physics I (or Honors)
 - AP Biology
 - Anatomy and Physiology I (required for Health, Dental)
 - Marine Biology
 - Topics in Biology / Forensics
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.
- More than one possible within schedule & graduation constraints.

Exiting Physics First II

- Science courses available to students next year (no repeats):
 - Chemistry I (or Honors)
 - AP Physics
 - AP Biology
 - Anatomy and Physiology I (required for Health, Dental)
 - Marine Biology
 - Topics in Biology / Forensics
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.
- More than one possible within schedule & graduation constraints.

Exiting Applied Physics I

- Science courses available to students next year (no repeats):
 - Applied Physics II (or honors)
 - Chemistry I (or Honors)
 - AP Physics
 - AP Biology
 - AP Chemistry
 - Anatomy and Physiology I (required for Health, Dental)
 - Marine Biology
 - Topics in Biology / Forensics
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.
- More than one possible within schedule & graduation constraints.

Exiting Chemistry I

- Science courses available to students next year (no repeats):
 - Chemistry II (or Honors)
 - Applied Physics I (or honors)
 - AP Chemistry
 - AP Physics
 - AP Biology
 - Anatomy and Physiology I (required for Health, Dental)
 - Marine Biology
 - Topics in Biology / Forensics
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.
- More than one possible within schedule & graduation constraints.

Exiting Anatomy and Physiology I

- Science courses available to students next year (no repeats):
 - Anatomy and Physiology II (required for Health, Dental)
 - Chemistry I (or Honors)
 - Applied Physics I (or honors)
 - AP Biology
 - AP Physics
 - AP Chemistry
 - Marine Biology
 - Topics in Biology / Forensics
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.
- More than one possible within schedule & graduation constraints.


Exiting Marine Biology or Topics in Biology / Forensics

- Science courses available to students next year (no repeats):
 - Chemistry I (or Honors)
 - Applied Physics I (or honors)
 - AP Biology
 - AP Physics
 - AP Chemistry
 - Anatomy and Physiology I (required for Health, Dental)
 - Marine Biology
 - Topics in Biology / Forensics
- All moves from college preparation (non-honors) to honors courses require an honors placement test and teacher recommendation.
- More than one possible within schedule & graduation constraints.

Decision Time!



- Please **talk** to your teacher about what course you would like to take next year.
- **Share** the findings of this conversation with your parents/guardians and guidance counselor.
- **RECORD** your choice and **SAVE** it somewhere safe until you complete your course selection form.

A photograph of a classroom scene from behind several students. They are all raising their hands, indicating they want to ask a question or have something to say. The students are wearing various colored shirts: light blue, dark blue, red, orange, and green. In the background, a large chalkboard is filled with faint, illegible chalk writing. A semi-transparent yellow oval is centered over the image, containing the text 'Thank You. Questions?'.

Thank You.
Questions?