Please submit one signed, hard copy of all forms and attachments, as well as email the electronic version, to: Manager, Course Code Directory Office of Articulation Florida Department of Education 325 West Gaines Street, Suite 1401 Tallahassee, Florida 32399-0400 Phone: (850) 245-9543 Email: articulation@fldoe.org	# Course Code Directory ## Request to Add a New Course

DATE: 8/31/2020	**SCHOOL DISTRICT:** Broward
CONTACT NAME/TITLE:	**CONTACT PHONE:**
Dr. Lisa Milenkovic Supervisor, STEM + Computer Science	754-321-2623
CONTACT MAILING ADDRESS:	**CONTACT EMAIL ADDRESS:**
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COURSE TITLE:	**SUBJECT AREA:**	**SUB-SUBJECT AREA:**
Computer Science in Science Honors	Computer Science	

GRADE LEVEL(S):	**COURSE LEVEL:**	**CREDIT:**	**MEETS THE FOLLOWING HIGH SCHOOL SUBJECT AREA GRADUATION REQUIREMENT:**
☐ K-5 ☐ Middle/Junior 6-8 X 9-12/Adult ☐ Other: _____	☐ Level 1 (remedial) ☐ Level 2 (regular) X Level 3 (rigorous)	☐ 0.5 X 1.0 ☐ Multiple ☐ No value	Meets Science requirement for graduation

RECOMMENDED EDUCATOR CERTIFICATION(S):

Chemistry 6-12, Physics 6-12, Science Secondary Grades (7-12), Earth/Space Grades (6-12), Middle Grades General Science (5-9), Computer Science (K-12)

COURSE DESCRIPTION:	Please attach a course description for the recommended course that identifies the Major Concepts/Content, Special Notes, and the Course Requirements aligned with the appropriate state standards available at www.cpalms.org. See example at: http://www.cpalms.org/Public/PreviewCourse/Preview/1723
LOCAL APPROVAL:	Please attach documentation of your School Board approval of this recommended course.

PLEASE DESCRIBE THE NEED FOR THE NEW COURSE, INCLUDING THE REASON WHY AN EXISTING COURSE WILL NOT SERVE THE NEED. Requests could be supported with data indicating the need for the course. Other considerations should include existing courses that might duplicate content or credits.

According to Florida Statute **1007.2616**(6) High school students must be provided opportunities to take computer science courses and earn technology-related industry certifications to satisfy high school graduation requirements as provided in s. 1003.4282(3). Computer science courses and technology-related industry certifications that are identified as eligible for meeting mathematics or science requirements for high school graduation must be included in the Course Code Directory.

This course is an integrated Physical Science and Computer Science course for high school students. This course includes an integration of standards from both physical science and computer science. The integration of computer science with applications in physical science will engage students in science as it is done in academic research and the workforce, better preparing students for college and career. This Computer Science in Science course is to be a problem-based, project-based course that utilizes local partnerships and resources to teach science through various applications. Most of the 9-12 physical science standards, as well as applicable 9-12 computer science standards have been included. Contextual learning through project-based instruction will provide opportunities for full integration of the computer science standards while developing a deep and full understanding of the physical science standards in ways that are both rigorous and relevant. Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, engineering practices and safety procedures are an integral part of this course.

By signing, requestor is acknowledging that the information provided as a part of this *Request to Add a New Course* is true and accurate.

_____ _____

Signature of Superintendent or Designee Date

General Course Information and Notes (Computer Science in Science Honors)

The Computer Science in Science course introduces students to computer science as a vehicle for problem solving, communication, and personal expression. Centering on the immediately observable and personally applicable elements of computer science, this course focuses on the modern practice of extending computer science into the field of physical science. While the content focus of this course is consistent with the Physical Science course, students will explore these concepts in greater depth with an integration of Computer Science Fundamentals and Introduction to Artificial Intelligence Concepts as relates to Scientific Inquiry. This course prioritizes learning experiences that are active, relevant to students' lives, and provide students authentic choice. In general, the academic pace and rigor will be greatly increased for honors level course work. Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. Further, students will understand the limits of a computer model, the role of abstraction when modeling real-world phenomena on a computer. Students should be able to recognize, choose, use and create appropriate computer models and algorithms to engage in scientific inquiry and experimentation. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007).

Special Notes:

Instructional Practices: Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis:

1. Ensuring wide reading from complex text that varies in length.
2. Making close reading and rereading of texts central to lessons.
3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence.
4. Emphasizing students supporting answers based upon evidence from the text.
5. Providing extensive research and writing opportunities (claims and evidence).

Science and Engineering Practices (NRC *Framework for K-12 Science Education, 2010*)

- Asking questions (for science) and defining problems (for engineering).
- Developing and using models.
- Planning and carrying out investigations.
- Analyzing and interpreting data.
- Using mathematics, information and computer technology, and computational thinking.
- Constructing explanations (for science) and designing solutions (for engineering).
- Engaging in argument from evidence.
- Obtaining, evaluating, and communicating information.

Honors and Advanced Level Course Note:
Advanced courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Literacy Standards in Science:
Secondary science courses include reading standards for literacy in science and technical subjects 6-12 and writing standards for literacy in history/social studies, science, and technical subjects 6-12. The courses also include speaking and listening standards. For a complete list of standards required for this course click on the blue tile labeled course standards. You may also download the complete course including all required standards and notes sections using the export function located at the top of this page**.**

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Science. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: http://www.cpalms.org/uploads/docs/standards/eld/SC.pdf

For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

Computer Science in Science Standards			
SC.912.E.7.1	SC.912.P.10.10	SC.912.CS-CP.1.4	LAFS.910.WHST.2.5
SC.912.L.18.7	SC.912.P.10.12	SC.912.CS-CP.2.6	LAFS.910.WHST.2.6
SC.912.L.18.8	SC.912.P.10.14	SC.912.CS-CP.3.1	LAFS.910.WHST.3.7
SC.912.L.18.12	SC.912.P.10.15	SC.912.CS-CP.3.2	LAFS.910.WHST.3.8
SC.912.N.1.1	SC.912.P.10.18	SC.912.CS-PC.1.2	LAFS.910.WHST.3.9
SC.912.N.1.2	SC.912.P.10.21	SC.912.CS-PC.1.3	LAFS.910.WHST.4.10
SC.912.N.1.3	SC.912.P.12.2	SC.912.CS-PC.2.11	ELD.K12.ELL.SC.1
SC.912.N.1.4	SC.912.P.12.3	SC.912.CS-PC.2.12	ELD.K12.ELL.SI.1
SC.912.N.1.5	SC.912.P.12.4	SC.912.CS-PC.3.3	MAFS.912.N-Q.1.1
SC.912.N.1.6	SC.912.P.12.7	SC.912.CS-PC.3.4	MAFS.912.N-Q.1.3
SC.912.N.1.7	SC.912.P.12.10	SC.912.CS-PC.4.5	
SC.912.N.2.1	SC.912.P.12.11	SC.912.CS-PC.4.6	
SC.912.N.2.2	SC.912.P.12.12	LAFS.910.RST.1.1	
SC.912.N.2.3	SC.912.CS-CC.1.3	LAFS.910.RST.1.2	
SC.912.N.2.4	SC.912.CS-CC.1.4	LAFS.910.RST.1.3	
SC.912.N.2.5	SC.912.CS-CS.1.1	LAFS.910.RST.2.4	
SC.912.N.3.1	SC.912.CS-CS.1.2	LAFS.910.RST.2.5	
SC.912.N.3.2	SC.912.CS-CS.1.5	LAFS.910.RST.2.6	
SC.912.N.3.3	SC.912.CS-CS.2.10	LAFS.910.RST.3.7	
SC.912.N.3.4	SC.912.CS-CS.2.4	LAFS.910.RST.3.8	
SC.912.N.3.5	SC.912.CS-CS.2.5	LAFS.910.RST.3.9	
SC.912.N.4.1	SC.912.CS-CS.2.7	LAFS.910.RST.4.10	
SC.912.N.4.2	SC.912.CS-CS.4.8	LAFS.910.SL.1.1	
SC.912.P.8.1	SC.912.CS-CS.6.4	LAFS.910.SL.1.2	
SC.912.P.8.2	SC.912.CS-CS.6.5	LAFS.910.SL.1.3	
SC.912.P.8.4	SC.912.CS-CS.6.6	LAFS.910.SL.2.4	
SC.912.P.8.5	SC.912.CS-CS.6.7	LAFS.910.SL.2.5	
SC.912.P.8.7	SC.912.CS-CP.1.1	LAFS.910.WHST.1.1	
SC.912.P.10.1	SC.912.CS-CP.1.2	LAFS.910.WHST.1.2	
SC.912.P.10.7	SC.912.CS-CP.1.3	LAFS.910.WHST.2.4	