Lu Verne CSD
Computer Science Plan*

06/27/2022

VISION/MISSION:

Lu Verne - All Iowa students will engage in the concepts and practices of computer science through an intentional progression of experiences in order to prepare them to become enterprising citizens that positively impact society.

Algona - Algona Community Schools mission is to make high quality computer science an integral part of the educational experience for all K-12 students and teachers.

Our vision is to become a STEM leader in Iowa by providing equitable access to support student pathways to college and career success as well as actively participate in a world increasingly influenced by technology.

Why?
- Today's students are going to be entering jobs not yet created. Computer science will continue to redefine our society in every way imaginable, and ways that are unimaginable. We can only prepare students for this transition of societal norms by exposing them to the processes of Computer Science which will cause the change.
- Computer Science underlies most innovation today, from biotechnology to cinematography to national security. This ability to innovate with technology is important for students' future success and ability to make a difference in a global society.
- Computer science teaches students design, logical reasoning, and problem-solving - all valuable well beyond the computer science classroom. The ability to create and adapt to new technologies is a foundational 21st-century skill.
- Computer Science can make curriculum more relevant for students. Computer science can tap into students' interest in technology, helping them become technology innovators. Other teachers can build on these skills, allowing students to design technical solutions to problems in science, math, social studies, the arts, and literacy. This can make learning more relevant for youth, potentially improving their engagement and achievement in these areas.

STANDARDS:

Iowa's computer science standards are the [CSTA K-12 Computer Science Standards](), which were developed by the Computer Science Teachers Association. (Lu Verne Elementary School works on following these standards with any program or software we implement on the student level.)

2022-23 Goals for Computer Science Implementation:
- Lu Verne- Check for alignment of current standards and activities with the Algona MS/HS to look at the so we can create different computer science pathways (led by our media/computer instructor).
- Implement coding and robotics in the science areas in our elementary school (led by our TAG instructor).

- Algona- Create a course offering at the high school level; including who would instruct the class and how to schedule instruction
- Algona and Lu Verne- Determine what learning is needed for all staff in the area of computer science; what it is and what it isn't.

Computer Science Curriculum, Pathways, Scheduling, and Sequencing–

	Curriculum/Content	Format (standalone, integrated, combo)	Standards	Timeline	Frequency
K 1 2		Algona- SeeSaw Computer Science Algona- Lessons Algona- Computer Special Lu Verne- EasyTech Lu Verne - NEW Sphero Robots Lu Verne- Computer Special	See SeeSaw CSTA Alignment See CSTA Standards See CSTA Standards	Twice in a 6-day cycle Once a week Proposed - Once a week	30 min session 30 minute session Proposed- 4 hours per semester
	Spheros				
3		Lu Verne- EasyTech Lu Verne - NEW Sphero Robots Lu Verne - Computer Special	See CSTA Standards See CSTA Standards	Once a week Proposed - Once a week	30 minute session Proposed- 4 hours per semester
	Spheros				
4		Lu Verne- EasyTech Lu Verne - NEW Sphero Robots Lu Verne- Computer Special	See CSTA Standards See CSTA Standards	Once a week Proposed - Once a week	30 minute session Proposed- 4 hours per semester
	Spheros				
5	STEM, Express Course (code.org), Tynker EasyTech Spheros	 Lu Verne- EasyTech Lu Verne - NEW Sphero Robots	See Programming 100 on p.14 See CSTA Standards See CSTA Standards	45 min daily Once a week Proposed - Once a week	One quarter 30 minute session Proposed- 4 hours per semester

		Lu Verne- Computer Special			
	Spheros + Splats	Algona			
6	STEM, CS Discoveries (code.org), Tynker	*ALL STUDENTS TO ALGONA 6-12th*	[See Programming 300 on p. 15](#)	45 min every other day	One semester
	Finch robots, Splats, Hummingbirds/micro bits				
7	STEM			45 min daily	One quarter
	Robotics			45 min daily	One quarter
8	Advanced Robotics (optional)			45 min daily	One quarter
9 10 11 12	[High School Comp Sci Module](#) [Course Brochure](#) *Additional courses to be created for 2023-23 School Year*	Teacher Feedback Model Students will use JavaScript and learn by using the JS Sandbox. The sandbox will be used to quickly write JavaScript code, experiment with new syntax, and problem-solve their JavaScript exercises without leaving their browser.	[Computer Science Module Standards Alignment](#)	At own pace	One Semester

Algona High School Comp Sci Module Standards Alignment–

3B-IC-25 Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.

3B-IC-26 Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society.

3B-CS-01 Categorize the roles of operating system software.

3B-AP-24 Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems.

3B-AP-12 Compare and contrast fundamental data structures and their uses.

3B-AP-13 Illustrate the flow of execution of a recursive algorithm.

3B-AP-14 Construct solutions to problems using student-created components, such as procedures, modules and/or objects.

3B-AP-10 Use and adapt classic algorithms to solve computational problems.

3B-AP-11 Evaluate algorithms in terms of their efficiency, correctness, and clarity.

3B-DA-05 Use data analysis tools and techniques to identify patterns in data representing complex systems.

3B-AP-10 Use and adapt classic algorithms to solve computational problems.

3B-AP-11 Evaluate algorithms in terms of their efficiency, correctness, and clarity.

3B-NI-04 Compare ways software developers protect devices and information from unauthorized access.

3B-DA-06 Select data collection tools and techniques to generate data sets that support a claim or communicate information.

3B-DA-07 Evaluate the ability of models and simulations to test and support the refinement of hypotheses.

3B-NI-03 Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology).

3B-AP-15 Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution.

3B-AP-16 Demonstrate code reuse by creating programming solutions using libraries and APIs.

3B-AP-08 Describe how artificial intelligence drives many software and physical systems.

3B-AP-09 Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem.

LU VERNE PERSONNEL TO SUPPORT COMPUTER SCIENCE:

TAG Instructor
Media Instructor
Classroom Instructors
Supt/Principal
Media/Technology Director

BUDGET:

Lu Verne=$6,000 (Sphero robots, curriculum and PD were purchased out of the FY22 budget).

Algona= See Algona CSD for that information.

PARTNERS-

LU VERNE EQUITABLE ACCESS:

All students in grades K-5 will be provided Computer Science instruction (EasyTech). All students in grades K-5 will be exposed to the new Sphero robotics curriculum and equipment.

DISTRICT POINT OF CONTACT:

Superintendent/Principal

*Note: Lu Verne CSD shares 6th-12th grade with the Algona CSD. All students in those grade levels attend Algona. For more detailed information on the programs in Algona please contact Janie Eischen - Director of Teaching and Learning for both the Algona CSD and the Lu Verne CSD (jeischen@algona.k12.ia.us).