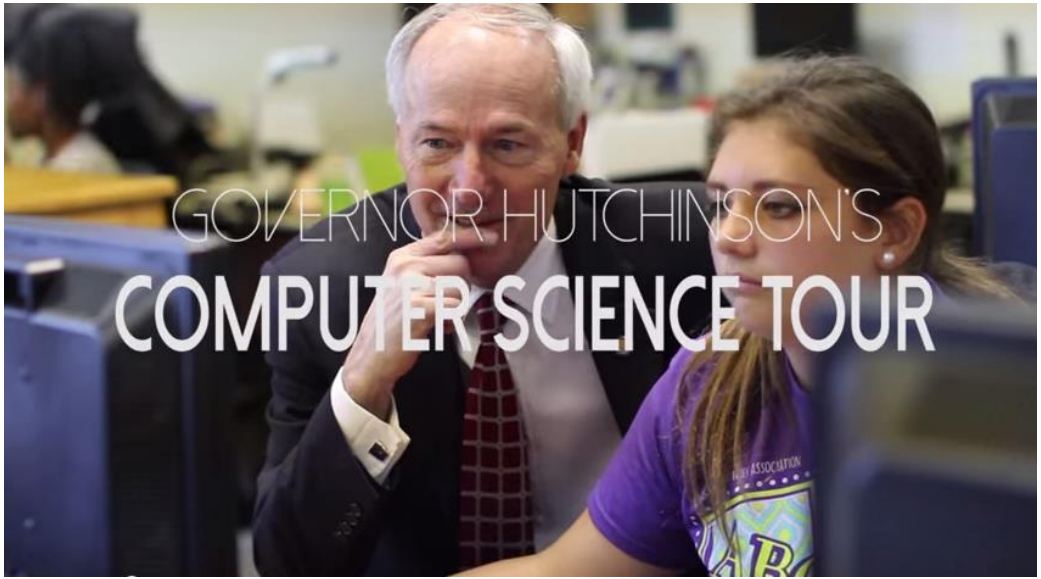
Status of Computer Science in Arkansas

Anthony Owen
Coordinator of Computer Science Education

July 2016

ARKANSAS
K-12 COMPUTER SCIENCE
A FRAMEWORK FOR DYNAMIC LEARNING

Governor Asa Hutchinson's Leadership



https://youtu.be/40UQAzjfpiw

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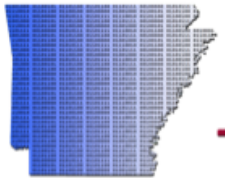
ADE Computer Science Webpage

- access other resources

http://www.arkansased.gov/divisions/learning-services/curriculum-and-instruction/computer-science

(http://goo.gl/j2Y8Sv)



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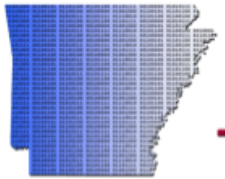
Computer Science K-8 Standards

- Found at: http://goo.gl/WHXkWu
  - Adopted during January SBE Meeting
  - Implementation required beginning in the **2017-2018** school year
  - Separated into three documents
    - K-4 Embedded Standards
    - 5-8 Embedded Standards
    - Coding Block for Grades 7 or 8 (Required instruction for every student; not just offered)



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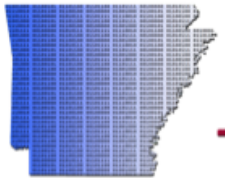
Computer Science K-8 Standards

- Found at: http://goo.gl/WHXkWu
  - Teacher Clarification Statements
    - CT.1.K.1 - Discuss the following basic steps when problem solving: understanding the problem; considering various strategies
    - NOTE for CT.1.K.1 through CT.1.4.1 - *Problems within these standards can be, but are not limited to, real world problems or problems encountered in the student's daily-life. Examples include, but are not limited to, tying shoes and how to get from a classroom to the cafeteria.*



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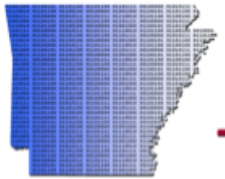
Arkansas Computer Science Practices

Students will exhibit proficiency in computer science through:

- **Perseverance** - Students expect and persist in overcoming the challenges that occur when completing tasks. They recognize that making and correcting mistakes will take place during the learning process and problem solving.
- **Collaboration** - Students effectively work and communicate with others ensuring multiple voices are heard and considered. They understand that diverse thoughts may lead to creative solutions and that some problems may be best solved collaboratively.



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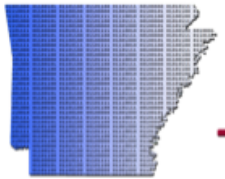
Arkansas Computer Science Practices

Students will exhibit proficiency in computer science through:

- **Patterns -** Students understand and utilize the logical structure of information through identifying patterns and creating conceptual models. They decompose complex problems into simpler modules and patterns.
- **Tools -** Students evaluate and select tools to be used when completing tasks and solving problems. They understand that appropriate tools may include, but are not limited to, their mind, pencil and paper, manipulatives, software application programs, programming languages, or appropriate computing devices.



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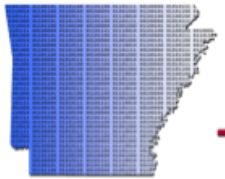
Arkansas Computer Science Practices

Students will exhibit proficiency in computer science through:

- **Communication -** Students effectively communicate, using accurate and appropriate terminology, when explaining the task completion or problem solving strategies that were used. They recognize that good documentation is an ongoing part of the process, and when appropriate provide accurate documentation of their work in a manner that is understandable to others.



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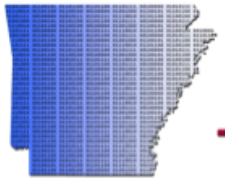
Arkansas Computer Science Practices

Students will exhibit proficiency in computer science through:

- **Ethics and Impact -** Students comprehend the ramifications of actions prior to taking them. They are aware of their own digital and cyber presence and its impact on other individuals and society.
- **Problem Solving -** Students exhibit proficiency in Computer Science through identifying and systematically solving problems (e.g., engineering design process). They recognize problem solving as an ongoing process.



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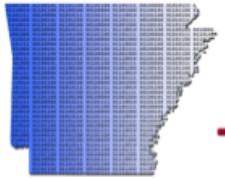
K-8 Embedded Standards

The Arkansas Computer Science Standards for Grades K-8 provide an introduction to computing concepts that are to be embedded across other content areas and are intended to support what is already being done in the classroom. The standards support critical thinking through the essential skills of computational thinking and algorithmic problem solving. The course strands, content clusters, and content standards are to be taught in an integrated manner, not in isolation. Integration of basic computer science skills and knowledge through practical classroom experiences promote connections to all subject areas and to the real world. Formal assessment of these standards is not required; teachers may monitor and measure student learning through normal classroom activities and interactions.



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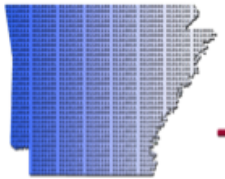
Coding Block for Grades 7 or 8

The computer science 7-8 coding block is designed to be taught during a standalone block of time over a minimum of four to five weeks. As part of this block, students will examine how to formulate algorithms as well as create, analyze, test and debug computer programs in order to solve real-world problems. Students will be required to use a text-based programming language to accomplish these tasks. These standards are not intended to be embedded in activities spread out over multiple courses.



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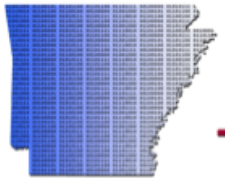
Coding Block for Grades 7 or 8

Schools are to ensure that every student receives instruction necessary to meet these standards in either their 7th or 8th grade year. Schools may choose the implementation mechanism that works best for their school and students. Options for implementation include but are not limited to:

- The standards within this block taught as a 4-5 week module within Keyboarding, business elective, or Career Development during the student's 7th or 8th grade year
- The standards within this block taught as a 4-5 week module within another course or specified period of time during the student's 7th or 8th grade year
- The standards within this block taught as part of a high school level programming course for which the school has received approval to offer to 7th or 8th graders



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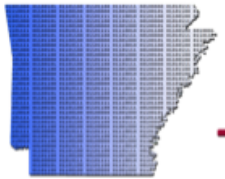
Coding Block for Grades 7 or 8

The teacher of record for the Coding Block for Grades 7 or 8 must hold an Arkansas Educator's License in any content area, which allows them to instruct students of the grade level who are taking the block. Though the licensure is open to any content area, it is the responsibility of the school and teacher of record to ensure that the individual providing the instruction has the requisite knowledge needed to teach the block.



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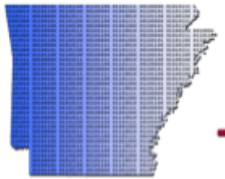

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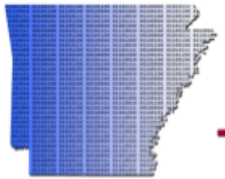
High School Standards and Courses

For the 2016-2017 school year, the approved Act 187 courses include the new College Board Advanced Placement (AP) Computer Science Principles in addition to ADE Computer Science and Mathematics, ADE Essentials of Computer Programming, College Board Advanced Placement (AP) Computer Science A, and International Baccalaureate (IB) Computer Science (SL or HL).



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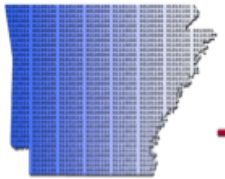
High School Standards and Courses

For 2017-2018 and beyond:

- Was co-written/co-branded with Arkansas Dept. of Career Ed.
- Courses to SBE in August meeting
- Grid of Courses
- Stacking will be allowed
- No-prerequisites

**All is subject to final ADE and SBE approval*



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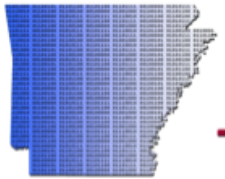
Computer Science Listserv

Use the Google Form found at

http://goo.gl/forms/FqGJ2CtXe1

to join



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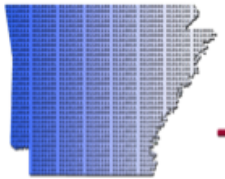
Computer Science PD Grant

- Commissioner's Memo - COM-16-048
  - (http://goo.gl/FRZU1r)
  - for Arkansas STEM Centers, Arkansas Educational Service Cooperatives, Arkansas public universities, Arkansas public community colleges, and other public institutions approved by ADE
  - up to $750,000.00 in total grant funding
  - three focus areas



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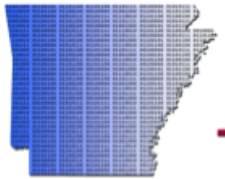
Computer Science Licensure Assessment Cut Score Change

- Commissioner's Memo - LIC-16-022
  - (http://goo.gl/2fVkJ5)

Effective immediately, the State Board of Education adopted 159 as the passing score for the Praxis® Computer Science (5651) test. The Professional Licensure Standards Board approved a recommendation from the Arkansas Department of Education on October 30, 2015. The 5651 test is required for an Arkansas Educator License in Computer Science.



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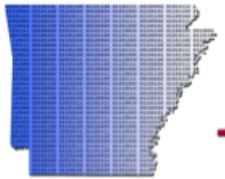
Computer Science Licensure Assessment Reimbursement

- Commissioner's Memo - LIC-15-035
  - (http://goo.gl/8WZgL4)
- To be eligible:
  - Score at least 159 on Praxis™ Computer Science (5651)
  - Add Computer Science Endorsement to your AR License
  - Submit the Reimbursement Request (and other required) forms
  - All within 12 months



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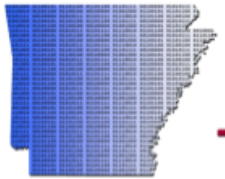
Computer Science FAQ

[Now on Google Docs]

https://goo.gl/f5mIRM



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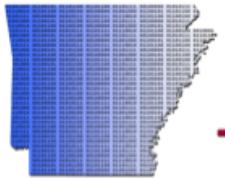
Computer Science FAQ

- Act 187 Requirement
  - AP Computer Science Principles added for the 2016-17 School Year
- Licensure Update
  - Praxis Exam (See Commissioner's Memo LIC-15-028)
  - Recommendation Going to SBE Today
- Professional Development
  - ESC Works
  - STEM Center List
  - Lynda.com through IDEAS



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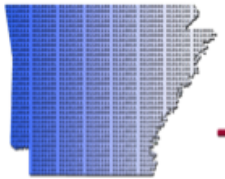
Computer Science FAQ

- Curriculum Standards Documents
  - http://edboard.arkansas.gov/ItemAttachments.aspx?itemid=4588&meetingid=272
- Resources – *You can use whatever your district says aligns to the curriculum frameworks!*
- Computer Science Flex Credit
  - substitutes for the requirement of a 4th math or 3rd science
  - great option for students but schools should help them choose wisely



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Computer Science FAQ

Course [Course Code]	Approved Licensure Area	Credit to be awarded to the student	Area for the 38 Required Courses
Computer Science and Mathematics [439100]	Secondary Mathematics	4th Year Math Beyond Algebra II (Smart Core or Core)	1 of the 6 math, and 1 required computer science
Computer Science and Mathematics [460050]	ADE Computer Science	Computer Science Flex Credit	1 required computer science
Computer Science and Mathematics [460050]	Career and Technical Education (CTE) Business Education	Computer Science Flex Credit	1 required computer science
Essentials of Computer Programming [460020]	ADE Computer Science	Computer Science Flex Credit	1 required computer science
Essentials of Computer Programming [460020]	Career and Technical Education (CTE) Business Education	Computer Science Flex Credit	1 required computer science
College Board Advanced Placement (AP) Computer Science* [539080]	Secondary Mathematics (with current College Board approved training)	4th Year Math Beyond Algebra II (Smart Core or Core)	1 of the 6 math, and 1 required computer science 1 of 9 required CTE Units**
AP Computer Science* [560050]	Any Secondary Certification Area (with current College Board approved training)	Computer Science Flex Credit	1 required computer science, and 1 of 9 required CTE Units**
International Baccalaureate (IB) Computer Science* [539110]	Secondary Mathematics (with the approved IB training)	4th Year Math Beyond Algebra II (Smart Core or Core)	1 of the 6 math, and 1 required computer science 1 of 9 required CTE Units**
IB Computer Science* [560060]	Any Secondary Certification Area (with the approved IB training)	Computer Science Flex Credit	1 required computer science 1 of 9 required CTE Units**

**Refer to the ADE rules for AP and IB courses.*
***Requires Arkansas Department of Career Education program approval*

Computer Science FAQ

- The FAQ is not a static document
- It will be updated as new information is available

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Computer Science Task Force Update

- Task Force Report has been publically released.
- Available on the ADE CS Communication Page


Computer Science and Technology in Public School Task Force:
Initial Report of Activities, Findings, and Recommendations

November 1, 2015

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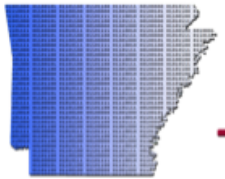
What Does This Mean For You?

- Strategic Plan
- Draft Timeline



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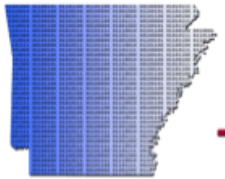
Computer Science Advertisement

https://www.youtube.com/watch?v=PV4NR2uuBC8



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Resources for You

- www.arkansased.gov
- http://www.arkansased.gov/divisions/learning-services/curriculum-and-instruction/resource-materials-for-lesson-plans/computer-science/computer-science-praxis-5651-study-resources

ideas
INTERNET DELIVERED EDUCATION FOR ARKANSAS SCHOOLS

lynda.com

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Q&A / Contact Information

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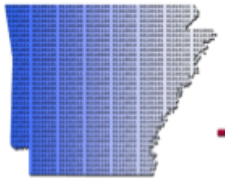
Follow me on Twitter: @AnthonyOwenADE

To be added to the Computer Science ListServ use the form found at: http://goo.gl/forms/FqGJ2CtXe1



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