STUDYWALKS · COURSE SYLLABUS

Computer Science — High School Course with DSST Preparation

Computing and information technology sit underneath almost every modern job.

CREDIT LABEL	HOURS GOAL	STUDYWALKS LEARNING HOURS	SUGGESTED OFFLINE HOURS
0.5 credit	**60 h**	**12.5 h**	**47.5 h**
high school, with the study plan	the 0.5-credit convention	measured runtime plus assessment time	reading, review and writing

12.5 h StudyWalks (2.6 h of lessons, 5.5 h of lectures, 4.2 h of quizzes and exams) + **47.5 h** suggested offline study = **60 h**. 326 lessons in 12 units; prepares for the DSST Computing and Information Technology exam.

High school credit is granted by the homeschool parent under the state's rules. StudyWalks supplies the record: hours, scores and this syllabus. The credit label is a suggestion; the parent makes the final call.

Course contents

Unit	Title and lecture topics	Lessons	Lecture
1	**What Computer Science Is** The field, and what it is not · The algorithm · The machine · The theory · Computing among people · Two lessons about consequences · The capstone	23	23 min
2	**Computational Thinking & Design** The process, and who it is for · Three moves · Two kinds of reasoning · A rhythm, and two steps · Two ways to run at once · Recursion · The other direction · Structural moves · Architectures · The capstone	27	25 min
3	**Data Structures and Algorithms** Types, and the distinction the unit runs on · Five abstract types · Two ways to build a list · Trees · Heaps · Problems, and models · Measuring cost · Growth · Four families · Searching and sorting, measured · Graphs, traversed · What a machine is, formally · Two classes, and a misreading · The capstone	49	44 min (2 parts)
4	**Machines and Low-Level Programs** Three kinds of model · Translation, and one thesis · The trade · Down to the metal · Four paradigms · Tracing one · One language, close to the machine · Many at once · Small computers, and a newer language · The capstone	31	28 min
5	**Computer Systems** What a system is · The ladder, and three requirements · Bits have no meaning · Numbers, represented · Four readings · Characters, and reals · Into the processor · The memory wall, and the hierarchy · Processor design · The capstone	29	27 min
6	**Operating Systems** The mediator · Two memories, two modes · Processes and threads · Sharing the processor · When timing decides · Round-robin, run · The address a process sees · Files · Protection · The capstone	26	26 min

Unit	Title and lecture topics	Lessons	Lecture
7	**High-Level Programming Languages** High-level, and how to judge one · Four languages, early · Types, primitive and composite · Typing discipline · The cast that dropped four bytes · Expressions, flow, scope, failure · Objects, three properties · Concurrency, in the language · Translation, four ways · The capstone	32	30 min
8	**Data Management** Data, and managing it · What a database knows about itself · The relational model · Transactions, and their price · Redundancy, both directions · Splitting the table · Other shapes · Warehouses, marts, lakes · Scale, and what feeds elsewhere · The capstone	29	28 min
9	**Software Engineering & Architecture** The discipline, and what shapes it · Frameworks and the prescriptive family · Agility · One story, one sprint · Practices · Testing · Free, and what free means · Patterns and architecture · The capstone	26	26 min
10	**Web & Cloud** The founding, and the exchange · Phases, and shapes · One tap, round trip · The cloud, and cloud-native · Three service models · Four deployment models · Pointed home, and the capstone	24	24 min
11	**Security & Governance** Resources, and qualities · What a policy protects · Malware, and its taxonomy · Attacks, organised · Cryptography · One word, enciphered · Responsibility, and the capstone	24	25 min
12	**Course Capstones** The diagnostic · The ledger · The one idea · The museum · The app, complete · The answer	6	25 min

Assessment and grading

- **Unit quizzes.** 12 quizzes, 10 questions each, checked as the student goes, each answer with the lesson to review. Untimed; retakes are unlimited.
- **Mid exam.** 25 questions on units 1–6, drawn fresh each time and scored at the end with a breakdown by content area. Untimed; retakes are unlimited.
- **Final exam.** 50 questions, 45 minutes, on the whole course. Scored 20–80; 50 passes (33 of 50 correct, about 66%). Retakes are unlimited with a 24-hour wait, each a fresh draw.

Suggested composite grade

Part	Weight
Unit quizzes (average of best scores)	20%
Mid exam (best score)	20%
Final exam (percent correct)	60%

Suggested letter scale

Letter	Composite
A	90–100
B	80–89
C	70–79
D	60–69
F	below 60

Suggested; the parent sets the grade. A passing final is the completion standard for the course record.

Study plan

The 47.5 offline hours are spread over the units in proportion to each unit's StudyWalks time. For each unit: read the matching sections of *Introduction to Computer Science (OpenStax)*, review the unit quiz misses, and write a one-page unit summary. Log the time as you go.

Unit	Title	StudyWalks	Offline, suggested	Unit total
1	What Computer Science Is	34 min	3 h 20 min	3 h 54 min
2	Computational Thinking & Design	38 min	3 h 40 min	4 h 18 min
3	Data Structures and Algorithms	1 h 7 min	6 h 30 min	7 h 37 min
4	Machines and Low-Level Programs	43 min	4 h 10 min	4 h 53 min
5	Computer Systems	41 min	4 h	4 h 41 min
6	Operating Systems	39 min	3 h 50 min	4 h 29 min
7	High-Level Programming Languages	45 min	4 h 25 min	5 h 10 min
8	Data Management	42 min	4 h 5 min	4 h 47 min
9	Software Engineering & Architecture	39 min	3 h 45 min	4 h 24 min
10	Web & Cloud	36 min	3 h 30 min	4 h 6 min
11	Security & Governance	36 min	3 h 30 min	4 h 6 min
12	Course Capstones	28 min	2 h 45 min	3 h 13 min
Lessons and lectures		**8 h 8 min**	**47 h 30 min**	**55 h 38 min**
Quizzes, mid exam and final (stated time)		**4 h 12 min**	**—**	**4 h 12 min**

Unit times are the unit's lecture runtime plus its lessons at the course's measured average lesson length; totals can differ from the learning hours by rounding.

Sources

- **Anchor:** Franchitti, OpenStax, *Introduction to Computer Science* (Rice University / OpenStax, 2026). Pinned to the web PDF generated April 20, 2026. 939 pages, 14 chapters in five parts. Digital ISBN 978-1-961584-58-7. CC BY-NC-SA 4.0
- **Secondary witness:** Brookshear & Brylow, *Computer Science: An Overview*, 13th ed. (Pearson). Cited as a whole work rather than by chapter. ISBN 978-0-13-487546-0.

StudyWalks finals are modeled on the DSST exam blueprint in scope and rigor. Scores are StudyWalks scores, not DSST scores, and are not affiliated with or recognized by Prometric, which administers the DSST.

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