

COMPUTER SCIENCE

COURSE DESCRIPTIONS



Grades K-12

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Grades K-5



Computer Science | Grades K-5 Course Descriptions

Grades 3-5 Unplugged Computer Science

Course Description:

Unplugged Computer Science for Grades 3-5 is designed to provide students with a comprehensive introduction to key concepts in computer science with limited technology use. The course emphasizes communication and collaboration, encouraging students to collaborate on various activities and projects. Students will explore digital citizenship and internet safety principles, understand the basics of computer hardware and software, and learn about algorithms and coding concepts through hands-on, unplugged activities. Problem-solving skills will be developed as students engage in exercises that involve data analysis and explore the role of artificial intelligence in everyday life.

Throughout the course, students will gain awareness of copyright issues and learn to use models and simulations to understand complex ideas. They will practice online searches and utilize digital resources to enhance their learning experience. The course is structured to be taught over a semester but can be extended to a full year if meeting less frequently, such as once per week. This approach allows for a flexible and in-depth exploration of computer science fundamentals in an engaging and accessible manner.

Kindergarten Foundations of Computer Science

Course Description:

Foundations of Computer Science Kindergarten is designed to introduce young learners to essential computer science concepts in a fun and engaging manner. Intended for students who meet daily or frequently, this course focuses on building a solid foundation in digital literacy and problem-solving skills. Students will learn about digital citizenship and internet safety, ensuring they understand the basics of responsible technology use from an early age. The course also includes an introduction to what computers are and how they work, providing a simple yet comprehensive understanding of computer hardware and software.

Throughout the year, students will explore foundational concepts such as sequencing and patterns, which are crucial for developing logical thinking and problem-solving abilities. They will engage in activities that involve recognizing and sorting data, fostering early data analysis and interpretation skills. By working on hands-on projects and interactive exercises, students will build a foundational knowledge of computer science that will serve as a stepping stone for future learning. The course is designed to be taught over a full year but can be adapted to a semester format if meeting more frequently.

Grade 1 Foundations of Computer Science

Course Description:

Foundations of Computer Science Grade 1 is a course tailored for young learners, meeting daily or frequently to introduce them to essential computer science concepts. The course focuses on building a foundation in digital citizenship and internet safety, teaching students how to navigate the online world responsibly. It also covers basic computer hardware and software, helping students understand how computers work. Students will learn to organize and categorize information through activities centered on data recognition and sorting. The



course includes an introduction to problem-solving and algorithms, laying the groundwork for logical thinking and basic coding concepts.

Additionally, students will be introduced to artificial intelligence, helping them grasp the basics of how AI impacts everyday life. Designed to be taught over an entire year, this course can be adapted to a semester format if the course meets more frequently. This comprehensive approach ensures that students understand foundational computer science principles while integrating them with their daily learning experiences.

Grade 2 Foundations of Computer Science

Course Description:

Foundations of Computer Science Grade 2 is designed for students who meet daily or frequently, providing a thorough introduction to essential computer science concepts. The course focuses on enhancing communication skills through digital tools, ensuring students can effectively use technology to express and share ideas. Emphasis is also placed on digital citizenship and internet safety, teaching students how to navigate the online world responsibly. The curriculum covers basic computer hardware and software, helping students understand the foundational components of technology.

Students will engage in problem-solving activities and learn introductory concepts of conditional logic, which are critical for understanding basic programming and decision-making processes. The course includes hands-on experiences with models and simulations, allowing students to visualize and interact with abstract concepts. Data analysis will be introduced, helping students develop skills to organize and interpret information. Additionally, students will recognize artificial intelligence (AI) and its applications in everyday life. Intended to be taught over an entire year, this course can be adapted to a semester format, depending on meeting frequency.

Grade 3 Foundations of Computer Science

Course Description:

Foundations of Computer Science Grade 3 is designed for students meeting daily or frequently and offers a comprehensive introduction to core computer science concepts. The course emphasizes effective communication and collaboration through digital tools, ensuring students can collaborate and share ideas using technology. Key topics include digital citizenship and internet safety, helping students navigate the online environment responsibly. Students will gain a foundational understanding of computer hardware and software, explore introductory algorithms and coding concepts, and develop problem-solving skills.

The course also covers adaptive technology, showing students how technology can assist and enhance learning and daily tasks. An exploration of artificial intelligence in daily life will help students understand the impact of AI on their world. Copyright awareness is included to educate students about respecting intellectual property, while models and simulations provide hands-on experience with abstract concepts. Additionally, students will learn how to perform online searches and access digital resources effectively. This course is intended for a full-year duration but can be adapted to a semester format if meeting more frequently.



Grade 4 Foundations of Computer Science

Course Description:

Foundations of Computer Science Grade 4 is designed for students meeting daily or frequently and offers a comprehensive introduction to essential computer science concepts. The course focuses on developing communication and collaboration skills through digital tools, emphasizing digital citizenship and internet safety to ensure responsible online behavior. Students will build foundational computer literacy skills, understand computer hardware and software, and learn to write basic computer programs. Problem-solving using algorithms is a key component, fostering students' ability to approach and solve complex problems.

Additionally, the course explores adaptive technology and its applications, introduces the role of artificial intelligence, and covers the consequences of plagiarism to promote ethical use of digital content. Students will also proficiently use digital resources to support their learning and projects. Intended to be taught over an entire year, the course can be adjusted to a semester format if meeting more frequently, providing a flexible structure to accommodate different scheduling needs.

Grade 5 Foundations of Computer Science

Course Description:

In Grade 5 Foundations of Computer Science, students will engage with fundamental computer science and mathematics concepts. The course covers essential skills, including communication and collaboration using digital tools, understanding digital citizenship and internet safety, and addressing cyberbullying. Students will gain hands-on experience with computer hardware and software, develop keyboarding skills, and explore programming and program debugging. Emphasis will be placed on problem-solving and data analysis, with opportunities to understand technology's role in empowering careers and navigating digital resources while respecting copyright.

The course is designed for students who meet daily or frequently, allowing for a deep dive into each topic. It is intended to be taught over a full year but can be adjusted to a semester length if sessions are less frequent. By integrating these focus areas, the course aims to build a strong foundation in computer science while reinforcing critical thinking and technological fluency.



Grades 6-8



Computer Science | Grades 6-8 Course Descriptions

M/J Grade 6 Digital Discoveries

Course Description:

Grade 6 Digital Discoveries introduces students to computer science by focusing on its role in problem-solving, communication, and personal expression. The course highlights the visible aspects of computing, encouraging students to recognize and engage with technology in their surroundings. Students will explore how computer science tools can be applied to various aspects of their lives and gain insight into how technology shapes the world around them.

The course emphasizes active learning experiences that connect with students' personal interests, allowing them to solve relevant problems and express their creativity. Through engaging projects and exploration, students will develop a foundational understanding of computer science principles and learn how to apply them in practical ways. This approach aims to foster curiosity and enable students to see the impact of technology on their daily lives and broader society.

M/J Grade 7 Digital Discoveries

Course Description:

Grade 7 Digital Discoveries introduces students to the fundamentals of computer science by emphasizing how technology serves as a tool for problem-solving, communication, and personal expression. The course encourages students to explore how computing is integrated into various aspects of their daily lives and how it can be used for creative and analytical purposes. By focusing on the visible and practical applications of computing, students are guided to understand and engage with technology in meaningful ways.

The course covers key areas such as computer systems, programming basics, and the impact of technology on society. Students will engage with interactive content that allows them to see the real-world applications of computer science concepts. Through exploring these areas, students develop a broader understanding of how technology influences and shapes their environment, preparing them to use these skills in diverse contexts.

M/J Grade 8 Digital Discoveries

Course Description:

Grade 8 Digital Discoveries provides students with an in-depth exploration of computer science, focusing on its application as a tool for problem-solving, communication, and personal expression. The course highlights how computing is integrated into various aspects of daily life and encourages students to engage with technology to enhance their understanding and creativity. Through interactive projects and real-world examples, students learn to appreciate the role of computer science in solving problems and expressing ideas.

The curriculum emphasizes areas such as programming fundamentals, digital communication, and the impact of technology on society. Students will explore the functional aspects of computing systems and develop practical skills in creating and managing technology-driven solutions. This course prepares students to use computer science



effectively, fostering their ability to understand and influence the technological world around them.

M/J Navigating Technology: Digital Literacy and Digital Citizenship

Course Description:

Navigating Technology: Digital Literacy and Citizenship is a comprehensive year-long course for grades 6-8 that equips students with the foundational skills needed to thrive in the digital age. The course focuses on essential aspects of digital literacy, including online safety, information literacy, ethical technology use, and digital communication. Students will explore the societal impact of technology and learn how to engage with digital tools responsibly and effectively.

Throughout the course, students will develop confidence and responsibility in their digital interactions, learning to make informed decisions about their online activities and understanding the broader implications of their digital actions. By the end of the course, students will have gained a deep understanding of digital literacy and citizenship, enhanced their critical thinking and communication skills in digital environments, and fostered safe and responsible online behavior. The course also encourages creativity and collaboration, providing students with the tools to navigate and evaluate online content while understanding the importance of privacy, security, and ethical considerations in the digital world.

M/J Introduction to Cybersecurity

Course Description:

Introduction to Cybersecurity provides students with a foundational understanding of computer science, emphasizing the critical aspects of computing and networking systems. The course covers a range of topics including computer hardware and software, wired and wireless networking, and the principles of internet and online safety. Students will also explore the impact of copyright and digital footprint, as well as career opportunities in the field of cybersecurity.

In Grades 6-8, this course is designed to introduce students to the essential concepts and practices of cybersecurity. Through examining rules, guidelines, and laws that govern the use of technology in various contexts, students will gain insights into how cybersecurity principles apply to education, business, and everyday life.



Grades 9-12



Computer Science | Grades 9-12 Course Descriptions

9-12 Conceptual Cybersecurity

Course Description:

Conceptual Cybersecurity offers a comprehensive introduction to the core principles of cybersecurity. Students will delve into topics such as cyber threats, vulnerabilities, and attacks, gaining an understanding of how these elements impact digital security. The course also covers essential areas like encryption, network security and malware, providing a solid foundation in the basics of cybersecurity.

By the end of the course, students will have developed the skills necessary to recognize potential cyber threats, assess security risks, and apply basic cybersecurity practices to protect personal information. This course equips students with the foundational knowledge required to navigate the increasingly complex digital landscape.

9-12 Computer Programming Fundamentals Honors

Course Description:

Computer Programming Fundamentals offers an introduction to the essential concepts of computer science through programming. Students will explore key topics such as problem-solving techniques, data structure organization for managing large datasets and the development and implementation of algorithms for data processing and information discovery.

The course emphasizes the evaluation of potential solutions and considers the ethical and social impacts of computing systems. A strong focus is placed on object-oriented programming and design using an appropriate programming language. This course covers core programming concepts typically found in a first-semester college-level Computer Science course, preparing students for more advanced studies in the field. A solid understanding of mathematical reasoning, including linear functions and the Cartesian (x, y) coordinate system, is recommended for success in this course.

9-12 Principles of Computer Science

Course Description:

Principles of Computer Science provides students with a foundational understanding of key computer science concepts and explores how computing and technology influence the world. This course goes beyond basic programming to cover fundamental ideas such as algorithms, data structures, and the impact of technology on society. It aims to show how these concepts are shaping the modern world and preparing students to understand and engage with the technological landscape.

Throughout this course, students gain a critical perspective on how computer science can be applied to solve problems and drive innovation. It emphasizes the importance of computing as a liberal art, equipping students with the knowledge to be informed contributors to our increasingly digital society, whether they pursue careers in technology.



9-12 Discovering Computer Science

Course Description:

Discovering Computer Science introduces high school students to the fundamental principles of computer science, emphasizing its role as a tool for problem-solving, communication, and personal expression. This course highlights the visible and impactful aspects of computing, encouraging students to explore how computer science influences the world around them. Students will engage with the design process, understand how data can solve widespread issues, and learn how physical computing with circuit boards can facilitate various input and output functions.

The course aims to provide students with a comprehensive understanding of computer science as a critical component of modern education. Through hands-on projects and real-world applications, students will develop the skills needed to become active contributors to our increasingly technological society. Whether they pursue careers in technology or not, this course equips students with the knowledge and tools to interpret and influence the digital world, fostering an appreciation for the profound impact of computer science on everyday life.
