12th Grade Swiss Online School USA

MEDIA & COMPUTER SCIENCE CURRICULUM

Digital Literacy, Programming, and Information Management

Version July/2025

1. Introduction

The Role of Media and Computer Science in 12th Grade

In 12th grade, Media and Computer Science prepares students for advanced digital literacy, coding, cybersecurity, and responsible media usage. This curriculum focuses on real-world applications of technology, computational thinking, and ethical considerations in digital communication.

By the end of this course, students will:

✓ **Develop proficiency in computer programming, data analysis, and digital problem-solving**.

✓ **Understand cybersecurity, online privacy, and ethical considerations in media and technology**.

✓ **Analyze media influence, digital marketing, and the impact of misinformation**.

✓ **Learn practical computer skills for career readiness, including office software, cloud computing, and data management**.

✓ **Explore emerging technologies such as artificial intelligence, blockchain, and the Internet of Things (IoT)**.

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2. Core Competence Areas

CS.1 Advanced Computer Proficiency and Digital Tools

Learning Outcomes

By the end of this unit, students will be able to:

✓ **Demonstrate proficiency in using productivity tools such as word processors, spreadsheets, and presentation software**.

✓ **Manage cloud computing platforms, file storage, and collaborative tools**.

✓ **Understand operating systems, software troubleshooting, and hardware components**.

Competencies

CS.1.A.1 – Mastering productivity and collaboration tools.

- Use Microsoft Office, Google Workspace, and cloud-based collaboration platforms.
- Learn file organization, data backups, and cloud storage management.
- Explore workflow automation tools to improve productivity.

CS.1.A.2 – Understanding operating systems and troubleshooting.

- Identify the functions of Windows, macOS, and Linux.
- Learn basic troubleshooting techniques for software and hardware issues.
- Explore device connectivity, networking, and remote access tools.

CS.2 Programming and Computational Thinking

Learning Outcomes

By the end of this unit, students will be able to:

✓ **Write, test, and debug simple programs in at least one programming language**.

✓ **Understand the basics of algorithms, logic, and problem-solving in computer science**.

✓ **Apply computational thinking to real-world challenges**.

Competencies

CS.2.A.1 – Learning the fundamentals of coding and algorithms.

- Write basic programs using Python, JavaScript, or C++.
- Understand variables, loops, conditionals, and functions.
- Apply debugging techniques to identify and fix errors.

CS.2.A.2 – Developing problem-solving and logical thinking skills.

- Learn how to break problems into steps using computational thinking.
- Use flowcharts and pseudocode to map out solutions.
- Explore real-world applications of coding in AI, web development, and automation.

CS.3 Cybersecurity, Online Safety, and Ethical Technology Use

Learning Outcomes

By the end of this unit, students will be able to:

✓ **Understand the fundamentals of cybersecurity and data protection**.

✓ **Recognize online threats such as phishing, hacking, and malware**.

✓ **Discuss ethical issues in digital privacy and surveillance**.

Competencies

CS.3.A.1 – Understanding cybersecurity threats and solutions.

- Learn about common cyber threats such as viruses, phishing, and ransomware.
- Understand encryption, firewalls, and multi-factor authentication.
- Explore the role of cybersecurity professionals in protecting information.

CS.3.A.2 – Practicing responsible digital citizenship.

- Understand online privacy, social media risks, and identity protection.
- Learn about digital footprints, reputation management, and responsible social media use.

- Discuss legal and ethical concerns in hacking, surveillance, and digital rights.

CS.4 Media Literacy and Digital Communication

Learning Outcomes

By the end of this unit, students will be able to:

✓ **Analyze how media influences opinions, politics, and culture**.

✓ **Recognize misinformation, bias, and fake news in digital content**.

✓ **Use multimedia tools for digital storytelling, content creation, and communication**.

Competencies

CS.4.A.1 – Analyzing media influence and misinformation.

- Learn how media shapes public perception and social behavior.
- Recognize propaganda, fake news, and biased reporting.
- Discuss ethical journalism and responsible content creation.

CS.4.A.2 – Developing digital communication and content creation skills.

- Create presentations, infographics, and digital media projects.
- Learn how to use video editing, graphic design, and podcasting tools.
- Explore social media branding, blogging, and digital marketing strategies.

CS.5 Emerging Technologies and Career Trends

Learning Outcomes

By the end of this unit, students will be able to:

✓ **Explore new and emerging technologies such as AI, blockchain, and IoT**.

✓ **Understand how computer science is applied in different industries**.

✓ **Prepare for technology-related careers through portfolio development and certifications**.

Competencies

CS.5.A.1 – Investigating artificial intelligence and automation.

- Understand how AI is used in machine learning, robotics, and data analysis.
- Explore ethical concerns in AI decision-making and job automation.
- Discuss the impact of AI on industries such as healthcare, finance, and cybersecurity.

CS.5.A.2 – Developing career readiness and technical certifications.

- Learn how to build a digital portfolio showcasing tech skills.
- Explore certifications such as CompTIA, Google IT Support, or AWS Cloud Practitioner.
- Research careers in software development, IT support, cybersecurity, and digital media.

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3. Assessment and Evaluation

Formative Assessments – Checking Progress Through Interactive Learning

✓ **Quizzes on cybersecurity, programming concepts, and media literacy**.
✓ **Coding exercises and problem-solving challenges**.
✓ **Discussions on ethical technology use and online responsibility**.

Summative Assessments – Final Projects and Exams

✓ **Final coding project using Python, JavaScript, or C++**.
✓ **Research paper on an emerging technology such as blockchain or IoT**.
✓ **Digital media portfolio showcasing projects in graphic design, video, or web development**.

Authentic Assessment – Real-World Applications

✓ **Students create and present a website or app prototype**.
✓ **Collaboration with professionals in the tech industry for mentorship**.
✓ **Students complete online courses in IT, cybersecurity, or programming**.

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4. Instructional Strategies for Online Learning

Inquiry-Based and Problem-Based Learning

✓ **Case studies on cybersecurity breaches and ethical dilemmas in tech**.
✓ **Hands-on coding projects and real-world problem-solving**.

Project-Based Learning (PBL)

✓ **Students develop a small business website or mobile app**.
✓ **Group projects on misinformation and media bias analysis**.

Technology-Integrated Learning

✓ **Interactive coding platforms such as Codecademy, Replit, and Scratch**.
✓ **Cybersecurity simulations and ethical hacking labs**.
✓ **AI-powered writing and fact-checking tools for media literacy**.
✓ **Collaboration using cloud-based tools like Google Workspace, GitHub, and Notion**.