Dominican International School
Grade 11 Computer Science
SY: 2025-26

Grade Level 11
1 Year

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Course Description

Welcome to Computer Science 11 at Dominican International School. Computer Science 11 covers half of Code.org's Computer Science Discoveries, a rigorous, entry-level course that introduces high school students to the foundations of modern computing. The CS Principles course covers a broad range of foundational topics such as programming, algorithms, the Internet, big data, digital privacy and security, and the societal impacts of computing. For more details see, the code.org links in the references section. This course uses Code.org's CS Principles Curriculum, for more details, please see the Curriculum Guide.

Curriculum Overview and Goals

Computing affects almost all aspects of modern life and all students deserve access to a computing education that prepares them to pursue the wide array of intellectual and career opportunities that computing has made possible.

Content

The content covered in this year includes:

- Unit 1 - Digital Information
- Unit 5: Data
- Unit 7 (CSP): AI and Machine Learning

Classroom Practices

In this course the teacher acts more as a facilitator in learning, as opposed to the expert providing facts to be memorized by the students. This course focuses heavily on the processes of discovery and how we engage with ideas and information. Students will be presented with problems for which they discover and apply their own solutions based on the skills learned in the unit.

Student Engagement and Learning

The materials provided by Code.org are designed with activities that are relevant to students' lives and provide them with authentic choice. Students will find success in this course when they engage with curiosity and creativity. Social activities include presentations, peer feedback and shared reflections.

ESLRs D'TORCH (Truthful, Organized, Reflective, Courageous and Helpful)

In CS classes the categories of the D'TORCH most practiced and assessed are:

- Organized - Students utilize Google Classroom to edit, submit and keep track of their assignments.
- Reflective - Students will regularly write activity reflections in their online journal.
- Helpful - Students are empowered to ask for and provide explanations and give examples to help classmates through particularly difficult problems.

Class Expectations

- Come to class on time and be prepared
- Have a positive attitude and be willing to learn.
- Respect yourself, others, and our school.
- Always complete your work and try your best.
- Actively participate, listen carefully, but don't speak out of turn.
- All assignments must be completed.

Homework and Quiz Rules

- All assignments must be turned in on the day they are due.
- 1 day late = Maximum of only 60%
- 2+ days late = Project-I & Only 60%
- If a student has been absent, it is his/her duty to find out what work is due, and hand it in a day later.
- All assignments must be satisfactorily completed.
- If you are absent on the day of the quiz, you will only be able to get a maximum of 60%.

Classroom Rules

- All students are expected to follow the rules. Consequences will follow if rules are broken.
- Read and follow the standard school rules.
- Be on time and neatly dressed, in full school uniform.
- Speak in ENGLISH ONLY.
- Respect your teachers, fellow students and their property.
- Keep your seating space and classroom clean and neat.
- No eating or drinking in the ICT Labs.
- Ask permission to leave the class.

Academic Dishonesty means employing a method or technique or engaging in conduct in an academic endeavor that contravenes the standards of ethical integrity expected at DIS. Academic dishonesty includes but is not limited to, the following:

1. Purposely incorporating the ideas, words of sentences, paragraphs, or parts thereof without appropriate acknowledgment and representing the product as one's own work; and
1. Representing another's intellectual work such as photographs, paintings, drawings, sculpture, or research or the like as one's own, including failure to attribute content to an AI.
2. Employing a tutor, making use of Artificial Intelligence without acknowledgement, getting a parent to write a paper or do an assignment, paying for an essay to be written by someone else and presented as the student's own work.
3. Committing any act that a reasonable person would conclude, when informed of the evidence, to be a dishonest means of obtaining or attempting to obtain credit for academic work.

Any act of academic dishonesty will result in an automatic zero on the entire assignment

Discipline

- Verbal warning
- Write-Up, entered into the discipline system and then referral to the Discipline Office.
- Parent-Teacher conference as required.

Links, tools and references:

- https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf
- https://developer.mozilla.org/en-US/docs/Learn

- https://www.w3schools.com/
- App Lab — A browser-based JavaScript programming environment for creating interactive apps, with the ability to freely switch between programming in blocks or text

Schedule for Grade 11 Computer Science

1st QUARTER – TENTATIVE COURSE CONTENT

Week/Date	Topic/Projects/Assessments
Week 1 (Aug 12 to 15)	**Monday** No School CSPU1 Lesson 1 Welcome to CSP CSPU1 Lesson 2 Representing Information
Week 2 (Aug 18 to 22)	CSPU1 Lesson 3 Circle Square Patterns CSPU1 Lesson 4 Binary Numbers
Week 3 (Aug 25 to 29)	**Q1 Quiz 1** CSPU1 Lesson 5 Overflow and Rounding
Week 4 (Sept 1 to 5)	CSPU1 Lesson 6 Representing Text CSPU1 Lesson 7 Black and White Images
Week 5 (Sept 8 to 12)	CSPU1 Lesson 8 Color Images CSPU1 Lesson 9 Lossless Compression
Week 6 (Sept 15 to 19)	**Q1 Quiz 02** CSPU1 Lesson 10 Lossy Compression
Week 7 (Sept 22 to 26)	CSPU1 Lesson 11 Intellectual Property **Q1 Final Exam**
Week 8 (Sept 29 to Oct 3)	**Monday** No School - Confucius' Birthday **Tuesday** Regular Schedule (Study) **Wednesday** Major Exams **Thursday** Major exams **Friday** No Students Record Day
Week 9 (Oct 6 to Oct 10)	**Monday** No School Oct 6th Moon Festival, **Tuesday - Thursday** No Class Teachers Conference **Friday** No School October 10th Double10 day

2nd QUARTER – TENTATIVE COURSE CONTENT

Week/Date	Topic/Projects/Assessments
Week 1 (10) (Oct 13 to 17)	**Monday** No School Record Day CSPU1 Lesson 12 Project - Digital Information Dilemmas Part 1 CSPU1 Lesson 12 Project - Digital Information Dilemmas Part 2
Week 2 (11) (Oct 20 to 24)	**Unit 5 - Data** CSPU2 Lesson 1 Learning from Data CSPU2 Lesson 2 Exploring One Column **Friday** No School - 24 Oct Taiwan Retrocession Day
Week 3 (12) (Oct 27 to 31)	**Q2 Quiz 1** CSPU2 Lesson 3 Filtering and Cleaning Data
Week 4 (13) (Nov 3 to 7)	CSPU2 Lesson 4 Exploring Two Columns CSPU2 Lesson 5 Big, Open, and Crowdsourced Data
Week 5 (14) (Nov 10 to 14)	CSPU2 Lesson 6 Machine Learning CSPU2 Lesson 7: Algorithmic Bias
Week 6 (15) (Nov 17 to 21)	**Q2 Quiz 2** CSPU2 Lesson 8: Project - Tell a Data Story Part 1
Week 7 (16) (Nov 24 to 28)	CSPU2 Lesson 8: Project - Tell a Data Story Part 2 **Unit 7 - AI and Machine Learning** CSDU7 Lesson 0: Intro to App Lab **Friday** G12 Exams
Week 8 (17) (Dec 1 to 5)	**Monday** Grade 12 Exam **Friday** Christmas Fair Whole Day CSDU7 Lesson 2: Introduction to Machine Learning **Q2 Final Exam**
Week 9 (18) (Dec 8 to 12)	**Monday** No Classes - Foundation Day Mass, cake ceremony, and Class Party (half day) **Thursday** Major Final Exams half day **Friday** Major Final Exams half day
Dec 15 to Jan 2 Christmas Break	

3rd QUARTER – TENTATIVE COURSE CONTENT

Week/Date	Topic/Projects/Assessments

Week 1 (19) (Jan 5 to 9)	**Monday** No Students Record Day CSDU7 Lesson 3: Types of Machine Learning CSDU7 Lesson 4: Innovations in AI **Friday** New Year Mass at 8:00
Week 2 (20) (Jan 12 to 16)	CSDU7 Lesson 5: Patterns in Data CSDU7 Lesson 6: Classification Models
Week 3 (21) (Jan 19 to 23)	CSDU7 Lesson 7: Introduction to AI Lab CSDU7 Lesson 8: Importing Models in App Lab
Week 4 (22) (Jan 26 to 30)	**Q3 Quiz 1** CSDU7 Lesson 9: Model Cards
Week 5 (23) (Feb 2 to 6)	CSDU7 Lesson 10: Saving Models in AI Lab CSDU7 Lesson 11: Model Cards in App Lab
Week 6 (24) (Feb 9 to 13) **13** Chinese New Year Celebration	**Q3 Quiz 2** CSDU7 Lesson 12: Numerical Data in AI Lab
Feb 16-20 Chinese New Year Holiday	
Week 7 (25) (Feb 23 to 26)	**Monday** Morning No Classes IOWA **Tuesday** First Two Periods No classes IOWA CSDU7 Lesson 13: Customizing Apps CSDU7 Lesson 14: AI Code of Ethics **Friday** Memorial Day Holiday (no classes)
Week 8 (26) (Mar 2 to 6)	CSDU7 Lesson 15: Project - Make a Machine Learning App **Q3 Final Exam**
Week 9 (27) (Mar 9 to 13)	Lesson 16: Issue Statements **Friday** Third Quarter Exam (half day)

4th QUARTER – TENTATIVE COURSE CONTENT

Week/Date	Topic/Projects/Assessments
Week 1 (28) (Mar 16 to 20)	**Monday** Third Quarter Exam (half day) Lesson 17: Survey Planning Lesson 18: Survey Data in AI Lab

Week 2 (29) (Mar 23 to 27)	Lesson19: Troubleshooting Models Lesson 20: Creating an App
Mar 30 to Apr 6 Easter/Spring Break	
Week 3 (30) (Apr 7 to 10)	**Monday** No School Spring Break **Q4 Quiz 1** Lesson 21: Project - Design an AI App **Day 1 (45 minutes)** - Step 1 - Choose an Issue Statement - Step 2 - App Planning
Week 4 (31) (Apr 13 to 17)	**Day 2 (45 minutes)** Step 3 - Plan Your Data Collection Step 4 - Create Your Survey **Day 3 (45 minutes)** - Step 5 - Data Reflection - Step 6 - Train Your Model
Week 5 (32) (Apr 20 to 24) 20-24 AP Mock Exams	**Q4 Quiz 2** Day 4 (45 minutes) Warm Up - Step 7: Develop Your App - Step 8: Test and Reflect
Week 6 (33) (Apr 27 to 30) 27-30 Senior Project Presentations 28-30 Pre-Exam Days	**Day 5 (45 minutes)** - Step 8: Test and Reflect - Reflection **Friday** No School Labor Day
Week 7 (34) (May 4 to 8) 4-14 Final Exams (K, Gr. 5, 8, & 12 Only) 4-15 AP Exams	**Q4 Final Exam**
Week 8 (35) (May 11 to 15)	**Wednesday** Major Exams Day 1 Half Day **Thursday** Major Exams Day 2 Half Day
Week 9 (35) (May 18 to 22)	Special Events
Week 10 (36) (May 25 to 29)	Special Events

The end ~ Have a great summer 😊

CS Subject Sequence 25-26

The table below outlines the available high school computer science (HS CS) pathways at DIST. Each class is 45 minutes long, and most students are able to complete lessons within that time. Students who need extra practice or review may need an additional 15 minutes to show understanding.

Students who wish to achieve deeper mastery may choose to spend more time on lessons. Enrichment opportunities are always available within the lessons, and in some cases additional activities are provided. These enrichment activities are not part of the course grade but give students valuable chances for extra practice and self-assessment.

Ultimately, a student's effort directly influences their individual growth and success in computer science. While enrichment work does not guarantee higher grades, it helps build stronger skills and deeper understanding.

High School CS Curriculum	
Grade, Curriculum and Description	
G09 CS Discoveries	**G10 CS Discoveries**
Code.org Discoveries Unit 1 Problem Solving and Computing Unit 3 Animations and Games	Code.org Discoveries Unit 4 - The Design Process Unit 6: Physical Computing
G11 CS Principles	**G12 CS Principles**
Code.org CS Principles Unit 1 - Digital Information Unit 5: Data Unit 7 (CSD): AI and Machine Learning	Code.org CS Principles Unit 3 - Intro to App Design Unit 4 - Variables, Conditionals, and Functions Unit - 6 Lists, Loops, and Traversals Unit - 7 Parameters, Return, and Libraries
G11 APCS A JAVA **CSAwesome**	**G12 APCS Principles** **CS50AP**
The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing.	This course offers a multidisciplinary approach to teaching the underlying principles of computation. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing.

High School CS Curriculum Overview

Our computer science curriculum is designed to provide a comprehensive and flexible learning experience from grades 9 through 12, catering to both potential CS majors and students seeking a well-rounded CS education.

Curriculum Progression and Options

1. **Grades 9-10: CS Discoveries**

- Foundational for all students
- Covers problem-solving, web development, animations, games, and the design process
- Introduces physical computing concepts

2. **Grades 11-12: Flexible Pathways**

   a) **Minor Subject Track: CS Principles**

   - Ideal for non-CS majors or those seeking a science AP credit
   - Builds on CS Discoveries with more advanced topics
   - Explores digital information, the Internet, data analysis, cybersecurity, and machine learning
   - Provides a well-rounded CS experience without the intensity of the AP track

   b) **AP Track for Prospective CS Majors**

   - Grade 11: APCS A JAVA
     - Introduces fundamental CS topics with a focus on Java programming
     - Covers problem-solving, design strategies, data organization, and algorithmic approaches
   - Grade 12: CS50AP (AP Computer Science Principles)
     - Culminating course offering a multidisciplinary approach to computation
     - Prepares students for college-level CS and the AP exam

Curriculum Flexibility and Benefits

1. **Options for Various Academic Paths**:

   - Students not planning to major in CS can take CS Principles in grades 11 and 12 as a minor subject, fulfilling science AP credit requirements while gaining valuable CS knowledge.
   - Those considering a CS major in college can opt for the more intensive AP track.

2. **Well-Rounded CS Experience**:

   - The CS Principles track ensures students gain a comprehensive understanding of CS concepts without the rigorous demands of AP courses.
   - Ideal for students interested in CS as a complementary skill to their primary academic focus.

3. **Preparation for CS Majors**:

   - The AP track provides in-depth preparation for students planning to pursue CS in college.
   - APCS A JAVA and CS50AP offer college-level content and prepare students for advanced studies.

4. **Flexibility to Change Paths**:

   - Students can reassess their interests and switch tracks between grades 10 and 11 if their academic goals change.

CS50AP as the Capstone for AP Track

For students on the AP track, CS50AP serves as a rigorous capstone, building upon APCS A JAVA and previous coursework. Its comprehensive nature makes it an ideal final course, covering advanced topics and preparing students for college-level CS studies.

Practical Application

To complement both curriculum tracks, we encourage all CS students to apply their skills through our Service Learning program. The HS CS department collaborates with this program to help students identify opportunities where they can

use their computer science knowledge in real-world contexts, enhancing their learning experience regardless of their chosen track.

Curriculum Development and Stakeholder Feedback

At our school, we are committed to continuously evaluating and improving our CS curriculum to ensure it meets the needs of our students and prepares them for future academic and career challenges. Our approach includes:

1. **Curriculum Trials and Evaluation**:
    - We regularly explore potential additions to our curriculum. For example, in previous years, we conducted trials of CS50 SQL and CMU's College Level Programming courses.
    - These trials helped us assess the value and fit of new courses within our existing framework.
2. **Rigorous Assessment**:
    - Through these trials, we found that even with highly capable and enthusiastic students, our current AP track, culminating in CS50AP, already provides sufficient content, topics, and rigor.
    - This reinforced our confidence in the comprehensive nature of our existing curriculum.
3. **Stakeholder Engagement**:
    - We actively seek and encourage feedback from all stakeholders, including students, parents, administrators, and industry professionals.
    - This collaborative approach ensures our curriculum remains relevant and aligned with both academic standards and real-world needs.
4. **Adaptive Planning**:
    - Based on stakeholder input, we continually refine our approach to practical skill application.
    - For instance, after extensive consultation, we determined that integrating industry-related skills and community engagement through our existing Service Learning program was the most effective approach.
5. **Ongoing Collaboration**:
    - The High School CS department works closely with the Service Learning program to help students identify opportunities to apply their CS skills in meaningful ways.

Our commitment to curriculum development and stakeholder feedback ensures that our CS program remains dynamic, relevant, and responsive to the evolving needs of our students and the broader community.

Practical Application through Service Learning

Building on our stakeholder feedback, we are focusing future efforts towards encouraging students to make use of our existing Service Learning program. This approach allows students to:

- Apply their CS skills in real-world contexts within the community
- Gain valuable experience that complements their classroom learning
- Develop a deeper understanding of how CS can be used to address real-world challenges

As this initiative evolves, the HS CS department continues to work closely with the Service Learning program to identify and create opportunities that allow students to maximize the practical application of their CS skills.