



Dominican International School

Grade 11 Computer

Science

SY: 2023-24



Grade Level 11/12
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 the fantastic Code.org's CS Principles Curriculum, for more details, please see the [2022-23 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 2: The Internet
- Unit 9: Data
- Unit 10: Cybersecurity and Global Impacts
- Unit 7: 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

(NB: Depending on time and interest, the teacher may delete and/or add other selections.)	
Week / Date	Topic / Projects / Assessments
Week 1 Aug 10th to 11th Only 2 School Days <i>10 ~ First Day / Orientation Day</i>	Unit 1 - Digital Information Students explore the way computers store and represent complex information like numbers, text, images, and sound. The unit begins with students investigating what it means to represent information, and challenges students to design their own representation systems. Students then learn the ideas behind real-world systems used to represent complex information. Later lessons focus on the challenges that arise from digitizing information, such as the need to compress it, or questions of intellectual property. The unit project emphasizes the profound impact digital information has on modern life lesson 1 Welcome to CSP
Week 2 Aug 14th to 18th <i>15 ~ Opening Mass</i>	lesson 2 Representing Information lesson 3 Circle Square Patterns
Week 3 Aug 21st to 25th	lesson 4 Binary Numbers lesson 5 Overflow and Rounding
Week 4 Aug 28th to Sep 1st	lesson 6 Representing Text lesson 7 Black and White Images
Week 5 Sep 4th to 8th <i>8 ~ Holy Mass & VIP Induction</i>	lesson 8 Color Images
Week 6 Sep 11th to 15th <i>12-14 ~ Pre-Exam Days</i>	lesson 9 Lossless Compression lesson 10 Lossy Compression
Week 7 Sep 18th to 22nd	lesson 11 Intellectual Property lesson 12 Project - Digital Information Dilemmas Part 1
Week 8 Sep 25th to 29th No Classes <i>25-28 ~Teacher's Conference</i> <i>29 ~ Moon Festival Holiday</i>	lesson 13 Project - Digital Information Dilemmas Part 2 Final Exam
Week 9 Oct 2nd to 6th 3 Days of Class <i>5-6 ~Q1 Exams</i>	Unit 2: The Internet Students learn how the Internet works and discuss its impacts on politics, culture, and the economy. This unit heavily features the Internet Simulator, a tool designed to let students see, use, and explore the way different layers of the internet work. Through a series of activities that build on one another, students investigate the problems the original designers of the internet had to solve and then "invent" their own solutions. At the conclusion of the unit, students research an "Internet Dilemma," both from the standpoint of its technical background and its impacts on different groups of people. Lesson 1 Welcome to the Internet

2nd QUARTER – TENTATIVE COURSE CONTENT

<i>(NB: Depending on time and interest, the teacher may delete and/or add other selections.)</i>	
Week / Date	Topic / Projects / Assessments
Week 1 (10) Oct 9th to 13th 3 Days of Class <i>9-10 – Double 10 Holiday</i>	lesson 2 Building a Network
Week 2 (11) Oct 16th to 20th	lesson 4 Routers and Redundancy lesson 5 Packets
Week 3 (12) Oct 23rd to 27th	lesson 6 HTTP and DNS lesson 7 Project - Internet Dilemmas Part 1
Week 4 (13) Oct 30th to Nov 3rd <i>1 - All Saint's Day Mass</i>	lesson 8 Project - Internet Dilemmas Part 2 Unit 9: Data Students explore and visualize datasets from a wide variety of topics as they hunt for patterns and try to learn more about the world around them from the data. Once again, students work with datasets in App Lab, but are now asked to make use of a data visualizer tool that assists students in finding data patterns. They learn how different types of visualizations can be used to better understand the patterns contained in datasets and how to use visualizations when investigating hypotheses. At the conclusion of the unit, students learn about the impacts of data analysis on the world around them and complete a final project in which they must uncover and present a data investigation they've completed independently. lesson 1 Learning from Data
Week 5 (14) Nov 6th to 10th	lesson 2 Exploring One Column lesson 3 Filtering and Cleaning Data
Week 6 (15) Nov 13th to 17th	lesson 4 Exploring Two Columns lesson 5 Big, Open, and Crowdsourced Data
Week 7 (16) Nov 20th to 24th	lesson 6 Machine Learning and Bias
Week 8 (17) Nov 27th to Dec 1st	lesson 7 Project - Tell a Data Story Part 1
Week 9 (18) Dec 4th to 8th <i>8 - Foundation Day Celebrations</i>	Final Exam
Week 10 (19) Dec 11th to 15th 3 Days of Class <i>14-15 ~ Q2 Exams</i>	lesson 8 Project - Tell a Data Story Part 2
Dec 18th to Jan 1st	Christmas Holiday

3rd QUARTER – TENTATIVE COURSE CONTENT

<i>(NB: Depending on time and interest, the teacher may delete and/or add other selections.)</i>	
Week / Date	Topic / Projects / Assessments

Week 1 (20) Jan 3rd to 5th 3 Days of Class <i>4 ~ New Year Mass</i>	Unit 10: Cybersecurity and Global Impacts Students research and debate current events at the intersection of data, public policy, law, ethics, and societal impact in the final unit of the course. This unit is built around a simulated "Future School Convention" in which students must take on the persona of a stakeholder in a school setting and propose and debate technological innovations that could improve schools. Throughout the unit, students learn about the privacy and security risks of many computing innovations, and learn about the ways some of these risks can be mitigated. Students complete their Explore Curricular Requirement as part of this project as they investigate at least three computing innovations, then discuss and debate many others with their classmates. At the conclusion of the unit, the class holds a convention in which teams present their overall vision for a school of the future and the computing innovations that would power it. lesson 3 Data Policies and Privacy
Week 2 (21) Jan 8th to 12th	lesson 4 The Value of Privacy lesson 6 Security Risks Part 1
Week 3 (22) Jan 15th to 19th	lesson 7 Security Risks Part 2 lesson 10 Protecting Data 1
Week 4 (23) Jan 22nd to 26th	lesson 10 Protecting Data 2
Week 5 (24) Jan 29th to Feb 2nd	AI and Machine Learning This unit is a hands-on introduction to developing a machine learning model with tabular data. Students explore how computers learn from data to make decisions, then develop machine learning projects around real-world data. The unit culminates in designing a machine learning app to solve a personally relevant problem. Lesson 1: Introduction to Machine Learning Lesson 2: Types of Machine Learning
Week 6 (25) Feb 5th to 9th 3 Days of Class <i>8-9 ~ CNY</i>	
Feb 8th to 16th	CNY Holiday
Week 7 (26) Feb 19th to 23rd <i>19 ~ Lenten Mass</i> <i>21-23 ~ Pre-Exam Days</i>	
Week 8 (27) Feb 26th to March 1st 4 Days of Class <i>28 ~ 228 Memorial Day Holiday</i>	Final Exam
Week 9 (28) March 4th to 8th 4 Days of Class <i>8 ~ Q3 Exams</i>	Project Sharing

4th QUARTER – TENTATIVE COURSE CONTENT

(NB: Depending on time and interest, the teacher may delete and/or add other selections.)	
Week / Date	Topic / Projects / Assessments
Week 1 (29) March 11th to 15th 4 Days of Class <i>11 ~ Q3 Exams</i>	AI and Machine Learning This unit is a hands-on introduction to developing a machine learning model with tabular data. Students explore how computers learn from data to make decisions, then develop machine

<i>12 ~ Q4 Begins</i>	learning projects around real-world data. The unit culminates in designing a machine learning app to solve a personally relevant problem. Lesson 1: Introduction to Machine Learning Lesson 2: Types of Machine Learning
Week 2 (30) March 18th to 22nd <i>18-21 ~ Fire Drill</i>	Lesson 3: Innovations in AI Lesson 4: Patterns in Data
March 25th to Apr 5th	Easter Holiday
Week 3 (31) Apr 8th to 12th <i>10 ~ Easter Mass</i>	Lesson 5: Classification Models Lesson 6: Introduction to AI Lab
Week 4 (33) Apr 15th to 19th	Lesson 7: Importing Models in App Lab
Week 5 (34) Apr 22th to 26th <i>22-26 ~ AP Mock Exams</i>	Lesson 8: Model Cards Lesson 9: Saving Models in AI Lab
Week 6 (35) Apr 29th to May 3rd <i>1-2 ~ Pre-Exam</i> <i>1-10 ~ Final Exams (K, 5, 8, 12 only)</i> <i>4/29 - 5/10 ~ AP Exams</i>	CSDU7L10: Model Cards in App Lab CSDU7L11: Numerical Models
Week 7 (36) May 6th to 10th <i>1-10 ~ Final Exams (K, 5, 8, 12 only)</i> <i>4/29 - 5/10 ~ AP Exams</i>	Lesson 12: Numerical Models in AI lab Final Exam
Week 8 (37) May 13th to 17th <u>2 Days of Class</u> <i>15-16 ~ Q4 Exams</i> <i>17 ~ Record Day</i>	Lesson 13: Customizing Apps Lesson 14: AI Code of Ethics
Week 9 (38) May 20th to 24th <u>ACTIVITIES:</u> Double check the school calendar and emails from the administration.	----- <i>20-24 ~ Student Clearance Days</i> <i>21 ~ Baccalaureate Mass for Graduating classes</i> <i>22 & 23 ~ Middle & High School Sports Day</i> <i>23 ~ Pre-Kindergarten & Gr. 1 - 4 Recognition/Kindergarten Graduation/Gr. 5 Promotion</i> <i>24 ~ Gr. 6 - 7 Recognition and Gr. 8 Graduation</i> <i>24 ~ Lower School Sports Day</i>
Week 10 (39) May 27th to 31st <u>ACTIVITIES:</u> Double check the school calendar and emails from the administration.	----- <i>27 ~ House Culminating Activity</i> <i>28 ~ Gr. 9-11 Recognition and Gr. 12 Graduation</i> <i>29 ~ Class Party</i> <i>30 ~ Last Day of School & Report Card Distribution (half day)</i> <i>31 ~ Teachers/Staff Meeting</i>

The end ~ Have a great summer 😊