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ICT & ROBOTICS 7 SYLLABUS

School Year	2025-2026
Subject	ICT & Robotics 7
Grade Level	Grade 7
Teacher	Mr. Edward Solis
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COURSE DESCRIPTION:

Part 1: **Visual Programming Language**. This is an introductory course that provides students with a basic understanding of the field of visual programming. This course lets students create programs by manipulating program elements graphically rather than by specifying them textually. The students will be able to create programs using bricks or blocks in the Scratch editor. Scratch is a visual programming language. It is used as the introductory language because the creation of interesting programs is relatively easy, and skills learned can be applied to other basic programming languages.

Part 2: **The Robotics curriculum** opens the exciting world of computer science and robotics to middle school students in a fun and practical way. The lessons are constructed from hundreds of hours of actual middle school classroom experience. The learning activities are created from fun robotic projects which are designed to be inspiring and engaging, helping students see computing and technology as an important part of their world. The activities are designed with a focus on problem-based learning, creativity, exploration, critical thinking, and problem-solving. Learn computer programming concepts and develop Scratch coding skills. Study the basic elements of algorithms such as sequence, decision, and iteration. Learn about using pseudocode, flowcharts, and block diagrams. Develop programs with variables, loops, conditional instructions, and functions. Learn how to assemble mBot and understand basic robot system components. Use the scientific method to perform characterization studies of mBot sensor operation. Learn about robotic command and control programs by designing a state machine. Design an integrated, multi-input/output, robotic control program using the mBot RGB LEDs, Piezo Buzzer, Motors (Forward, Right Turn, Left Turn, Backwards), Ultrasonic Sensor, Line Follower Sensor, Light Detector Sensor. Explore the Software Development Life Cycle and learn about brainstorming, project planning, and the importance of reuse in technology development. Teaching materials for the course come from textbooks, classroom lectures, newspapers, journals, medical newsletters, videos, and the internet.

REFERENCE:

- **mBot Discovery: Learn & Teach Robotics In 12 Fun Lessons**, 2018 by *David Romano*
- Robotics for Kids, 2019 Robotics AS

REFERENCE/LINKS:

- https://www.amazon.com/mBot-Discovery-Learn-Robotics-Lessons/dp/0692139435/ref=sr_1_fkmr0_1?keywords=mBot+discovery+LEVEL+1&qid=1566007201&s=gateway&sr=8-1-fkmr0

ROBOTICS STANDARDS:
https://educationalliancefinland.com/products/mbot-series-steam-robots

Our school website: http://www.dishs.tp.edu.tw/

Course Content:

The students will learn the different ways of Visual Programming. Also, the course contains the basic modules in C Programming which would lead to basic Robotics.

Course Goal

- The students will learn visual language programming
- The students will develop their skills in creating programs using bricks
- The students will learn to produce positive and constructive interactions among the group members
- The students will learn to enhance further their skills in applying the different software
- The students will learn how to organize their ideas in creating the desired outcome
- The students will learn about using pseudocode, flowcharts, and block diagrams.
- The students will develop programs with variables, loops, conditional instructions, and functions.
- The students will learn how to assemble mBot and understand basic robot system components.
- The students will use the scientific method to perform characterization studies of mBot sensor operation.
- The students will learn about robotic command and control programs by designing a state machine.
- The students will design an integrated, multi-input/output, robotic control program using the mBot RGB LEDs, Piezo Buzzer, Motors (Forward, Right Turn, Left

Turn, Backwards), Ultrasonic Sensor, Line Follower Sensor, Light Detector Sensor.

- The students will explore the Software Development Life Cycle and learn about brainstorming, project planning, and the importance of reuse in technology development

Grading Criteria:

The quarterly grade will be awarded for all student work based on the following criteria:

- ✓ **Class participation and Seatwork** - 3/10 of quarterly grade
- ✓ **Major Projects, Quizzes, and Tests**- 3/10 of quarterly grade
- ✓ **Quarterly Exams**- 3/10 of quarterly grade
- ✓ **Deportment** - 1/10 of quarterly grade

Student Materials Required:

- The students will need to bring a flash drive (USB drive) to save their works

Classroom Expectations:

1. Be on time to class; be seated **before** the bell rings.
2. Wear your uniform neatly.
3. Use English at all times.
4. Come prepared with books, assignments, and supplies and without gum, food, or drink (a sealable water bottle is okay).
5. Be respectful of others (especially when speaking), and of school property.
6. Do your best and participate.
7. Ask permission before leaving the class; take a hall pass.
8. Wait for the bell to ring before you leave class.

Seatwork rules

1. The students may NOT copy from classmates
2. The students are allowed to help each other verbally.
3. The students are NOT allowed to do the work, partially or entirely, for other students. Specifically, they are not allowed to touch the keyboard and mouse of other students' computers.

Discipline:

1. Verbal warning, second reminder (if needed)
2. Write-Up and then refer to the Discipline Office.
3. Parent-Teacher conference.

First Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
Week 1	• Course Introduction • Seat Plan • Netiquettes
Week 2	• The Hardware and Software of Robotics
Week 3	• Block Programming
Week 4	• Block Programming
Week 5	• Block Programming
Week 6	• Block Programming
Week 7	• Block Programming
Week 8	• First Quarter Exam

Second Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
Week 1 (11)	• Introduction to Flowcharting
Week 2 (12)	• Flowcharting with Basic Coding
Week 3 (13)	• Flowcharting with Advanced Coding
Week 4 (14)	• Flowcharting with Blocks Programming
Week 5 (15)	• Flowcharting with Blocks Programming
Week 6 (16)	• Flowcharting with Blocks Programming
Week 7 (17)	• Flowcharting with Blocks Programming
Week 8 (18)	• Second Quarter Exam

Third Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
Week 1 (20)	• Sensors Application
Week 2 (21)	• SumoBot Application
Week 3 (22)	• Add-ons Application
Week 4 (23)	• Add-ons Application
Week 5 (24)	• Add-ons Application
Week 6 (25)	• Add-ons Application
Week 7 (26)	• Add-ons Application
Week 8 (27)	• Third Quarter Exams

Fourth Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
Week 1 (29)	• Scratch Programming Application
Week 2 (30)	• Scratch Programming Application
Week 3 (31)	• Scratch Programming Application
Week 4 (32)	• Scratch Programming Application
Week 5 (33)	• Scratch Programming Application
Week 6 (34)	• Scratch Programming Application
Week 7 (35)	• Fourth Quarter Exams
Week 8 (36)	• Fourth Quarter Exams