CHONRADSADORNUMRUNG SCHOOL
English Program and Mini English Program
215 หมู่ 3 ถนนพระยาสัจจา ตำบลบ้านสวน
อำเภอเมืองชลบุรี จังหวัดชลบุรี 20000

SYLLABUS

COURSE DESCRIPTION: TECHNOLOGY (Computational Science)

Science and Technology Learning Area
Grade Level: Grade 7 (M1)

Course Code: 21213
Duration: 40 hours, 1.0 credit

COURSE DESCRIPTION

This course covers concepts of abstraction, selecting essential attributes for problem-solving, problem-solving steps, pseudocode writing, and flowcharts. Students will learn basic programming skills using variables, conditions, and loops to solve mathematical or scientific problems. The course includes collecting primary data, processing information, creating options, and evaluating outcomes for decision-making. Students will explore software and internet services for data management, secure use of information technology, identity management, and considerations for content appropriateness, agreements, and usage terms for media and resources.

Students will apply abstraction and problem-solving techniques to programming or real-life problem-solving, efficiently gather data, create options for decision-making, and practice safe information technology use, ensuring it benefits learning without causing harm to others.

Indicators
Standard 4.2: Technology (Computing Science)

1. Design algorithms using abstraction to solve problems or explain real-life processes.
2. Design and write simple programs to solve mathematical or scientific problems.
3. Collect primary data, process, evaluate, and present information according to objectives using various software or internet services.
4. Use information technology safely, adhering to terms and agreements for media and resources.

Total Indicators Covered: 4

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SECOND SEMESTER

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

- ☐ Understand the process of collecting and organizing primary data.
- ☐ Use various software and internet services to process, evaluate, and present information.
- ☐ Apply data collection and analysis techniques to meet specific objectives.
- ☐ Communicate findings effectively through charts, graphs, and presentations.
- ☐ Understand the importance of using information technology safely and responsibly.
- ☐ Adhere to terms and agreements for media and digital resources.
- ☐ Recognize the risks associated with unsafe IT practices, such as online scams, malware, and misuse of digital media.
- ☐ Practice ethical behavior in accessing, sharing, and creating digital content.

TOPICS	INDICATOR	CONTENTS	DURATION (HOURS)	ASSESSMENT		
				CP	MT	F
Introduction to Data Collection	3	- What is primary data? - Understanding objective for data collection - Examples of real-life data collection scenarios - (ACT) Brainstorm a class survey topic (e.g., favorite books, hobbies, or school lunch preferences)				
Planning and Designing a Data Collection Tool	3	- Designing effective surveys and forms - Types of questions (open-ended, multiple-choice, rating scales) - Using tools like Google Forms - (ACT) Create a survey form to collect data from classmates				
Collecting Primary Data	3	- Methods of collecting data (online surveys, interviews, observations) - Ethical considerations (consent, anonymity) - (ACT) Distribute surveys and collect responses from classmates or sample groups.				
Organizing and	3	- Introduction to spreadsheets				

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				CP	MT	F
Processing data		- Entering and organizing data in tables - Sorting and filtering data - (ACT) Input collected survey data into a spreadsheet and organize it				
Data Analysis and Evaluation	3	- Analyzing data using basic functions (average, sum, count). - Identifying patterns and trends in data. - Evaluating the accuracy and reliability of data - (ACT) calculate key metrics (e.g., average responses, most popular choice) from survey data.				
Visualizing Data	3	- Creating charts and graphs (bar charts, pie charts, line graphs). - Choosing the appropriate visualization for different data types - (ACT) Create charts to visualize survey results.				
Presenting Information	3	- Structuring a presentation to communicate findings. - Adding visual aids (charts, graphs, images) - Using tools like Google Slides or MS PowerPoint. - (ACT) create a slide deck to present survey results.				
Collaborating Online	3	- Sharing data and presentations using online platforms (Google Drive, Onedrive) - Receiving and incorporating feedback - (ACT) Share presentations with peers and gather constructive feedback.				
Midterm Project	3	- Integrating data collection, processing, and presentation. - Applying learned skills to a new topic of interest. - (ACT) Students work in groups or individually to complete a project (e.g., studying school energy use,				10

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TOPICS	INDICATOR	CONTENTS	DURATION (HOURS)	ASSESSMENT		
				CP	MT	F
		analyzing social media habits)				
Presentation and Reflection	3	- Presenting midterm projects to the class - Reflecting on the process and lesson learned - (ACT) Present project and participate in a class discussion about the importance of data in decision-making				
Introduction to Safe IT Practices	4	- Overview of information technology - Understanding online safety: privacy, passwords, and personal information - Risks of unsafe IT use - (ACT) discuss real-world examples of IT misuse. - (ACT) Create a strong password using best practices				
Understanding Terms and Agreements		- What are terms of service and user agreements? - Key components to look for in terms and agreements. - Consequences of ignoring agreements. - (ACT) Review the terms of a popular app or software and summarize key points.				
Ethical Use of Media and Resources		- Copyright and intellectual property. - Creative Commons and fair use guidelines. - Importance of citing sources. - (ACT) Practice finding copyright-free images and properly citing them.				
Cybersecurity Basics		- Common online threats (e.g., phishing, malware, viruses). - Recognizing suspicious links and messages. - Steps to secure devices and data. - (ACT) Simulate identifying phishing emails and creating an action plan to handle them.				

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Responsible Communication Online		- Netiquette: rules for respectful communication. - Understanding the impact of online behavior on others. - Reporting and handling cyberbullying. - (ACT) Role-play scenarios involving online communication and discussing appropriate responses.				
Managing Digital Footprint		- What is a digital footprint? - Long-term effects of online posts. - Tools to manage and minimize digital footprints. - (ACT) Students analyze their own digital footprint and create a plan to improve it. -				
Case Studies and Problem Solving		- Analyzing real-world scenarios of IT misuse. - Discussing lessons learned and alternative actions. - (ACT) Work in groups to evaluate a case study and present solutions for safer IT use. -				
Project and Assessment		- Recap of key concepts. - Presenting individual or group projects. - (ACT) Students create a poster, infographic, or presentation on a chosen topic (e.g., cybersecurity tips, ethical media use). - (ACT) Summative assessment through a quiz and project evaluation.				10
		TOTAL	40	80	10	10