## SAMSEN WITTAYALAI SCHOOL
## ENGLISH PROGRAM

### COURSE OUTLINE

**Subject**: Technology (SC31161)  **Course Classification**: Foundation
**Learning Period**: 2 Periods/Week (40 Hours)  **Credit Unit**: 1.0
**Grade Level**: Mattayomsuksa 4 (Grade 10)  *Semester 2 Academic Year 2022*
**Learning Area**: Science & Technology  **Samsenwittayalai School English Program**
**Teacher**: *Mr. Donjie Mejia Bardos*

### I. COURSE DESCRIPTION

The course is aimed to analyze the main concepts of technology and changes and effects of technology occurring and technology relationships with other disciplines are covered including design, building, developing works for solving problems. Using engineering design process, using knowledge, skills and materials, electrical and electronic equipment are also included. Solving the problem properly and safely, taking into account the intellectual property as well as using software to help design and present the work are the focus.

By studying the principles of computational thinking and applying them in the design of algorithms for solving problems with computers, identifying input and output information, design of algorithms for repetition, sorting and searching is covered. Study of information technology projects. Determining problems, planning, conducting, summarizing, and disseminating to develop a project that integrates with other subjects is included to link to real life

For applying the knowledge and using the concepts of computational thinking to develop projects which integrate to other subjects creatively and connect to real life. The course develops the critical understanding of the impact of design and technology on daily life and the wider world. Additionally, it provides excellent opportunities for students to develop and apply value judgments of an aesthetic, economic, moral, social, and technical nature both in their own designing and when evaluating the work of others.

### II.  INDICATORS
1. Learners' reading analytical thinking and writing skills meet the criteria prescribed by the educational institutions.
2. Learners' desirable characteristics meet the criteria prescribed by the educational institutions.
3. SC4.1.1 Analyze the main concept of technology, the relationship with others especially science or mathematics, evaluate the effect on human, society, economic and environment for the guideline to develop technology.

4. SC4.1.2 Identify the problem or desire which is affecting society, collecting, analyzing data and concept of complex problem for synthesis the method, technique to solve the problem by considerate intellectual property.
5. SC4.1.3 Design the solution by analyzing, comparing and choosing the important data under condition and resources, present guidelines of problem solving to the audiences by various techniques, use the design software to plan the step of working and continue problem solving.
6. SC4.1.4 Test, evaluate, analyze and give the causes of problem or mistake occurring under condition framework, find the solutions, present the result and propose the way to developing.
7. SC4.1.5 Use the knowledge and skill of materials, equipment, tools, mechanisms, electricity, electronics and complicate technology to solve the problem or develop work properly and safely.
8. SC4.2.1 Apply to use the concept of computational thinking to develop projects which integrate to other subjects creatively and connect to real life.

| Week | Topic | Indicators | Remarks |
|---|---|---|---|
| 1 | Introduction to Design Calculation and Technology in 21st Century | 3 | 2 |
| 2 | Design Calculation and Technology Basics, System Program introduction | 3 | 2 |
| 3 | What is a system?<br>• Technological System<br>• Introduction to Programming Languages | 3 | 2 |
| 4 | Technological Complex System and System Failure | 3 | 2 |
| 5 | Causes and Factors of Technological Changes | 3 | 2 |
| 6 | Examples of Technological Changes<br>• Human<br>• Society | 3 | 2 |
| 7 | Examples of Technological Changes<br>• Economy<br>• Environment | 3 | 2 |
| 8 | Examples of Technology Impact Analysis<br>• The Soil Aggravation projects<br>• Airport Building Projects | 3 | 2 |
| 9 | **MIDTERM EXAMINATION** | 3 | 2 |
| 10 | Materials and Basic Tools<br>• The properties of materials<br>Elasticity, Strength and Heat Conduction | 3 | 2 |
| 11 | Basic Tools<br>• Measuring Tools<br>• Cutting Tools<br>• Drilling Tools<br>Cutting, Joining and Forming Tools | 3 | 2 |
| 12 | Electric Mechanism | 3 | 2 |
| 13 | Electronic Devices | 3 | 2 |
| 14 | Microcontroller Board | 3 | 2 |

| | | | 2 |
|---|---|---|---|
| 15 | Engineering Design Procedure <br> • Identify the Problems <br> • Gather Information | 3 | |
| 16 | Design Solution to the Problem <br> Plan and Implement Solutions | 3 | 2 |
| 17 | Test, Evaluate and Improve Solutions <br> Propose a solution to solve the problem | 3 | 2 |
| 18 | Case Study of Engineering Design Procedure | 3 | 2 |
| 19 | Project Presentation | 3 | 2 |
| 20 | **FINAL EXAMINATION** | | |

## III. TENTATIVE COURSE OUTLINE

***Remarks***: *The course outline is subject to change as appropriate.*

## IV. Teaching Methods and Management

| | | |
|---|---|---|
| ☑ Experiment | ☑ Lecture/Discussion | ☑ Group work |
| ☑ Individual work | ☐ Game | ☐ Song |
| ☑ Self-learning | ☑ Demonstration | ☐ Role play |
| ☑ Project | ☑ Experience | ☑ ICT |
| ☐ Local Wisdom based | ☐ Others | |

## V. Teaching Materials/ Supplements

| | | |
|---|---|---|
| ☑ Handouts(soft copy) | ☑ Worksheets(Softcopy) | ☐ Teacher's text book |
| ☑ Graphs/ Diagrams | ☐ Maps | ☑ Pictures |
| ☑ Samples/ Models | ☑ Exercises | |

☐ Commercial Text Book
☐ DVD/VCD
• Website
  • https://design-technology.org/
  • http://www.design-technology.info/home.htm
  • https://www.ucas.com/job-subjects/design-technology
  • https://www.data.org.uk/campaigns/what-is-design-and-technology/
  • https://www.teachengineering.org/k12engineering/designprocess
  • https://www.sciencebuddies.org/science-fair-projects/engineering-design-process/engineering-design-process-steps
  • https://www.instructables.com/id/What-Is-the-Engineering-Design-Process/
☐ Others

## VI. ASSESSMENT AND EVALUATION

| Indicator / Score from SGS | Formative I | | | Midterm | Formative II | | | | | Final |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | | | 10 | 11 | 12 | 13 | | |
| **Total score** | **10** | **10** | | **20** | **10** | **10** | **20** | **10** | | |
| 1.Learners' reading, analytical thinking | | | | | 10 | | | | | |
| 2. Learners' desirable characteristics | | | | | | 10 | | | | |
| 3. SC4.1.1 | 10 | | | | | | | | | |
| 4. SC4.1.2 | | 10 | | | | | | | | 20 |
| 5. SC4.1.3 | | | | 20 | | | | | | |
| 6. SC4.1.4 | | | | | | | 10 | | | |
| 8. SC4.1.5 | | | | | | | | 10 | | |
| 4. SC4.2.1 | | | | | | | | | | |
| **Total** | **20** | | | **20** | **40** | | | | | **20** |

## VII. ASSIGNMENT

| SGS No. | Score (points) | Assignment | Deadline | Type | | | Remark |
|---|---|---|---|---|---|---|---|
| | | | | Test | Individual | Group | |
| 1 | 10 | Individual Problem Presentation | 3rd week of May 2022 | | ✓ | | |
| 2 | 10 | DCT Project Design Presentation | June (3rd week) 2022 | | | ✓ | |
| 12 | 10 | DCT System Flow | July 2022 | | | ✓ | |
| Midterm | 20 | Midterm Test | August 2022 | ✓ | | | |
| 13 | 10 | Final Output Design Technology Innovation (Working Model) | September 2022 | | | ✓ | |
| Final | 20 | Final Test | Week 18 | ✓ | | | |
| | | **Total** | | | | | |