112-2 Full Curriculum of Da-Yeh University

Information

Title	Computational Thinking	Serial No./ID	0036 /CDC 8762
Required/Credit	Required /2	Time/Place	(Tue)56 /H707
Language	Chinese	Grade Type	Number
Lecturer /Full- or Part-time	Lingling Huang /Full-time	Graduate Class	Graduating Class
School System /Dept /Class, Grade	Bachelor /Liberal Arts Center /Class 1, Grade 4		
Office Hour / Place	(Mon) 09:10~10:00, (Tue) 10:10~11:00, (Tue) 11:10~12:00, (Wed) 09:10~10:00 / H429		
Lecturer	n.a.		

Introduction

The goal of this course is to teach students to become digital citizens and to develop logical thinking skills so that they can learn problem-solving strategies, steps, and processes and can make good use of information tools to implement problem-solving practices. Learning computational thinking helps to understand how computers work, that is, how computers "think" and execute instructions. Not only is it helpful to computer science majors, it can also be applied to different disciplines, including literature, arts, sports and other non-computer science fields. After completing this course, students will: 1. get familiar with basic application software, 2. develop system thinking, and 3. be able to analyze a problem, find the core issue, and adopt appropriate methods or effectively use technology to solve the problem.

Outline

The contents of this course include three parts: basic application software, logical thinking training, and problem-solving practice, which are described below.

First, the basic application software will focus on the production of slides commonly used in classrooms and workplaces, including creating presentation materials and presentation skills, editing and beautifying slides and customizing slide playing, designing master slides, and integrating with other software.

Second, logical thinking training centered on visual programming and aided by physical teaching tools (such as the Halocode) for students of different majors to easily get started and strengthen their learning motivation to nurture system thinking, including decomposition, pattern recognition, abstraction, and algorithm.

Third, the problem-solving practice is based on problem-based learning in which students are guided to exert their computational thinking ability, propose comprehensive solutions, and ultimately undertake the practice. The problem for students to solve can be a common problem across different fields or a problem that conforms to the characteristics of the college or department.

Prerequisite

None

Fundamental Ability

Professional Ability

Practical Ability

🟢 Teamwork Spirit

🟢 Active Learning   - 2 -

🟢 Creativity and Innovation

🟢 Global Vision

Professional Ethics

Leadership and Management

Confidence and Perseverance

Humanistic Qualities

Teaching Plan						
Core Capability	Weight(%) A	Ability index(Performance Indicators)	Teaching Methods	Assessment and Weight	Core Competency Learning Outcomes B	Final Exam Grades C=B*A
Teamwork Spirit	25	Consists in helping students display positive attitude in situations involving interpersonal communication, cultivating their ability to align themselves with others’ opinions and needs, and to work together with others for the successful completion	Lecturing Practical Operation (Experiment, Machine Operation	Product Manufacturing: 20% Course Participation: 20% Homework Assignment: 40% Course Request Professional Certificates: 20%	Total: 100	25
Active Learning	25	Consists in helping students actively partake in a variety of learning processes with the aim to achieve self-promotion and self-realization.	Lecturing Practical Operation (Experiment, Machine Operation	Product Manufacturing: 20% Course Participation: 20% Homework Assignment: 40% Course Request Professional Certificates: 20%	Total: 100	25
Creativity and Innovation	40	Consists in fostering students’ creative and critical thinking skills together with their ability to identify and solve problems in an effective way.	Lecturing Practical Operation (Experiment, Machine Operation	Homework Assignment: 40% Course Participation: 20% Product Manufacturing: 20% Course Request Professional Certificates: 20%	Total: 100	40
Global Vision	10	Consists in broadening students’ global perspectives, fostering their ability to understand both the changes of the global community and the development trends of globalization.	Lecturing Practical Operation (Experiment, Machine Operation	Homework Assignment: 40% Course Participation: 20% Product Manufacturing: 20% Course Request Professional Certificates: 20%	Total: 100	10

Grade Auditing

Homework Assignment: 40%

Course Participation: 20%

Course Request Professional Certificates: 20%

Product Manufacturing: 20%

Book Type (Respect intellectual property rights. Please use official textbooks and do not illegally photocopy others' works.)

Book Type	Book name	Author
Reference Books	Blocky Games (https://blockly.games/)	Google
Reference Books	Web:Bit (https://webbit.webduino.io/)	Webduino
Reference Books	(https://ct.dyu.edu.tw/)	
Reference Books	Code.org (https://code.org)	Code.org

Lesson Plan

Weeks	Content	Teaching Methods
1	PowerPoint & Intellectual Property Protection (use legitimate textbooks only) & Traffic safety Propaganda	Lecturing Practical Operation (Experiment, Machine Operation
2	PowerPoint	Lecturing Practical Operation (Experiment, Machine Operation
3	PowerPoint	Lecturing Practical Operation (Experiment, Machine Operation
4	PowerPoint - Example Practice	Lecturing Practical Operation (Experiment, Machine Operation
5	PowerPoint - Example Practice	Lecturing Practical Operation (Experiment, Machine Operation
6	PowerPoint - Example Practice	Lecturing Practical Operation (Experiment, Machine Operation
7	PowerPoint - Example Practice	Lecturing Practical Operation (Experiment, Machine Operation
8	Midterm exam	Lecturing Practical Operation (Experiment, Machine Operation

9	Computational Thinking - Decomposition	Lecturing Practical Operation (Experiment, Machine Operation
10	Computational Thinking - Pattern Recognition	Lecturing Practical Operation (Experiment, Machine Operation
11	Computational Thinking - Pattern Generalization and Abstraction	Lecturing Practical Operation (Experiment, Machine Operation
12	Computational Thinking - Algorithm Design	Lecturing Practical Operation (Experiment, Machine Operation
13	Computational Thinking	Lecturing Practical Operation (Experiment, Machine Operation
14	Computational Thinking	Lecturing Practical Operation (Experiment, Machine Operation
15	Computational Thinking	Lecturing Practical Operation (Experiment, Machine Operation
16	Computational Thinking	Lecturing Practical Operation (Experiment, Machine Operation
17	Computational Thinking	Lecturing Practical Operation (Experiment, Machine Operation
18	Computational Thinking - Student Presentation	Practical Operation (Experiment, Machine Operation