111-1 Full Curriculum of Da-Yeh University

Information			
Title	Computational Thinking	Serial No./ID	0040 /CDC8768
Required/Credit	Required /2	Time/Place	(Tue)56 /A406
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	(Tue) 10:10~11:00, (Tue) 11:10~12:00, (Fri) 10:10~11:00, (Fri) 11:10~12:00 / 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

The Relationship Between Courses and Departmental Core Competencies and Basic Skills

- Fundamental Ability
- Professional Ability
- Practical Ability
- Teamwork Spirit
- Active Learning
- 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	Course Participation: 10% Homework Assignment: 40% Final Exam: 25% Course Request Professional Certificates: 25%	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	Course Participation: 10% Homework Assignment: 40% Final Exam: 25% Course Request Professional Certificates: 25%	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	Final Exam: 25% Homework Assignment: 40% Course Participation: 10% Course Request Professional Certificates: 25%	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	Final Exam: 25% Homework Assignment: 40% Course Participation: 10% Course Request Professional Certificates: 25%	Total: 100	10

Grade Auditing

Homework Assignment: 40%
Course Request Professional Certificates: 25%
Final Exam: 25%
Course Participation: 10%

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

Book Type	Book name	Author
Reference Books	Microsoft MOS PowerPoint 2016 原廠國際認證應考指南(Exam 77-729)	劉文琇
Reference Books	Blocky Games (https://blockly.games/)	Google
Reference Books	Web:Bit 教育版 (https://webbit.webduino.io/)	Webduino
Reference Books	大葉大學運算思維教學網 (https://ct.dyu.edu.tw/)	大葉電算中心
Reference Books	Code.org網站 (https://code.org)	Code.org

Lesson Plan

Weeks	Content	Teaching Methods
1	PowerPoint & Intellectual Property Protection (use legitimate textbooks only) & Traffic safety Propaganda	Lecturing、 Case Study、 Practical Operation (Experiment, Machine Operation 、 Film Appreciation
2	PowerPoint	Lecturing、 Case Study、 Practical Operation (Experiment, Machine Operation 、 Film Appreciation
3	PowerPoint	Lecturing、 Case Study、 Practical Operation (Experiment, Machine Operation 、 Film Appreciation
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	Practical Operation (Experiment, Machine Operation
9	Computational Thinking - Decomposition	Lecturing、 Group Discussion、 Case Study 、 Practical Operation (Experiment, Machine Operation、 Film Appreciation
10	Computational Thinking - Pattern Recognition	Lecturing、 Group Discussion、 Case Study 、 Practical Operation (Experiment, Machine Operation、 Film Appreciation
11	Computational Thinking - Pattern Generalization and Abstraction	Lecturing、 Group Discussion、 Case Study 、 Practical Operation (Experiment, Machine Operation、 Film Appreciation
12	Computational Thinking - Algorithm Design	Lecturing、 Group Discussion、 Case Study 、 Practical Operation (Experiment, Machine Operation、 Film Appreciation
13	Computational Thinking	Lecturing、 Group Discussion、 Practical Operation (Experiment, Machine Operation 、 Group Work
14	Computational Thinking	Lecturing、 Group Discussion、 Practical Operation (Experiment, Machine Operation 、 Group Work
15	Computational Thinking	Lecturing、 Group Discussion、 Practical Operation (Experiment, Machine Operation 、 Group Work
16	Computational Thinking	Lecturing、 Group Discussion、 Practical Operation (Experiment, Machine Operation 、 Group Work
17	Computational Thinking	Lecturing、 Group Discussion、 Practical Operation (Experiment, Machine Operation 、 Group Work
18	Computational Thinking - Student Presentation	Practical Operation (Experiment, Machine Operation