Microcontroller

MICO226929

Course introduction

Bui Ha Duc

Nguyen Minh Triet

Faculty of Mechanical Engineering,

Ho Chi Minh City University of Technology and Education

Ho Chi Minh city, 08/2019

Course outcomes

		Sau khi học xong môn học này, người học có thể:
G1	G1.1	Lập trình cho vi điều khiển giao tiếp, điều khiển các thiết bị ngoại vi.
	G1.2	Sử dụng các phần mềm máy tính để thiết kế, mô phỏng hệ thống cơ điện tử sử dụng vi điều khiển.
G2	G2.1	Thiết kế một hệ thống cơ điện tử cơ bản sử dụng vi điều khiển
G3	G3.1	Làm việc trong các nhóm để thảo luận và giải quyết các vấn đề liên quan đến hệ thống cơ điện tử.
	G3.2	Tìm kiếm, phân tích tài liệu kỹ thuật tiếng anh
G4	G4.1	Hình thành kỹ năng thiết kế, phân tích hệ thống cơ điện tử

Course grading

	Grade	% grade
	1. Attendance (*)	10%
(mid-term)	2. Home works	30%
	3. Class exercises	10%
	4. Project teamwork	30%
(end-term)	5. Project report	10%
	6. Project presentation	10%

(*) Student who absent more than 3 weeks will have to re-take the course

Course grading (Home works 30%)

Write an article about MCU application:

- **Individual work:** 1 article
- **Group work:** group of *n members* requires *n articles*

Home works grading	% grade
1. Plan	5%
2. Do	10%
3. Check (review)	10%
4. Act (revise)	5%

Course grading (Home works)

How to write an article?

- Introduction
- Hardware
- Software (programming, library explain, …)
- Results
- Appendix (source code)

Example: https://electrosome.com/uart-pic-microcontroller-mplab-xc8/

Course grading (Home works)

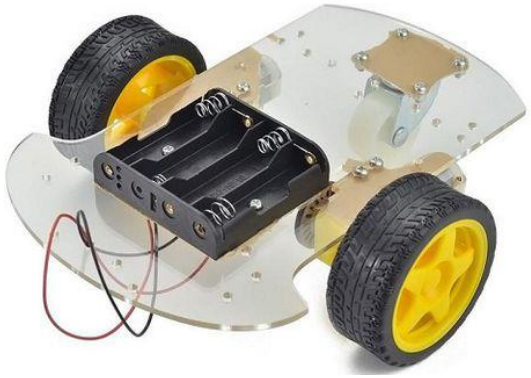
How to review (check) an article?

- Review on the internet for similar article
- Redo as instructed in the article
- Compare the result
- Write review feedback (Revise or Accept and why)

Course grading (Class exercises)

No.	Class exercises	Due
1	Blinking LED	week 2
2	7 segments LED (latch and scan programming)	week 4
3	RS232 interface (USART)	week 6
4	LM35 temperature reading (ADC)	week 8
5	Pulse width modulation (PWM)	week 10

Course grading (The project)



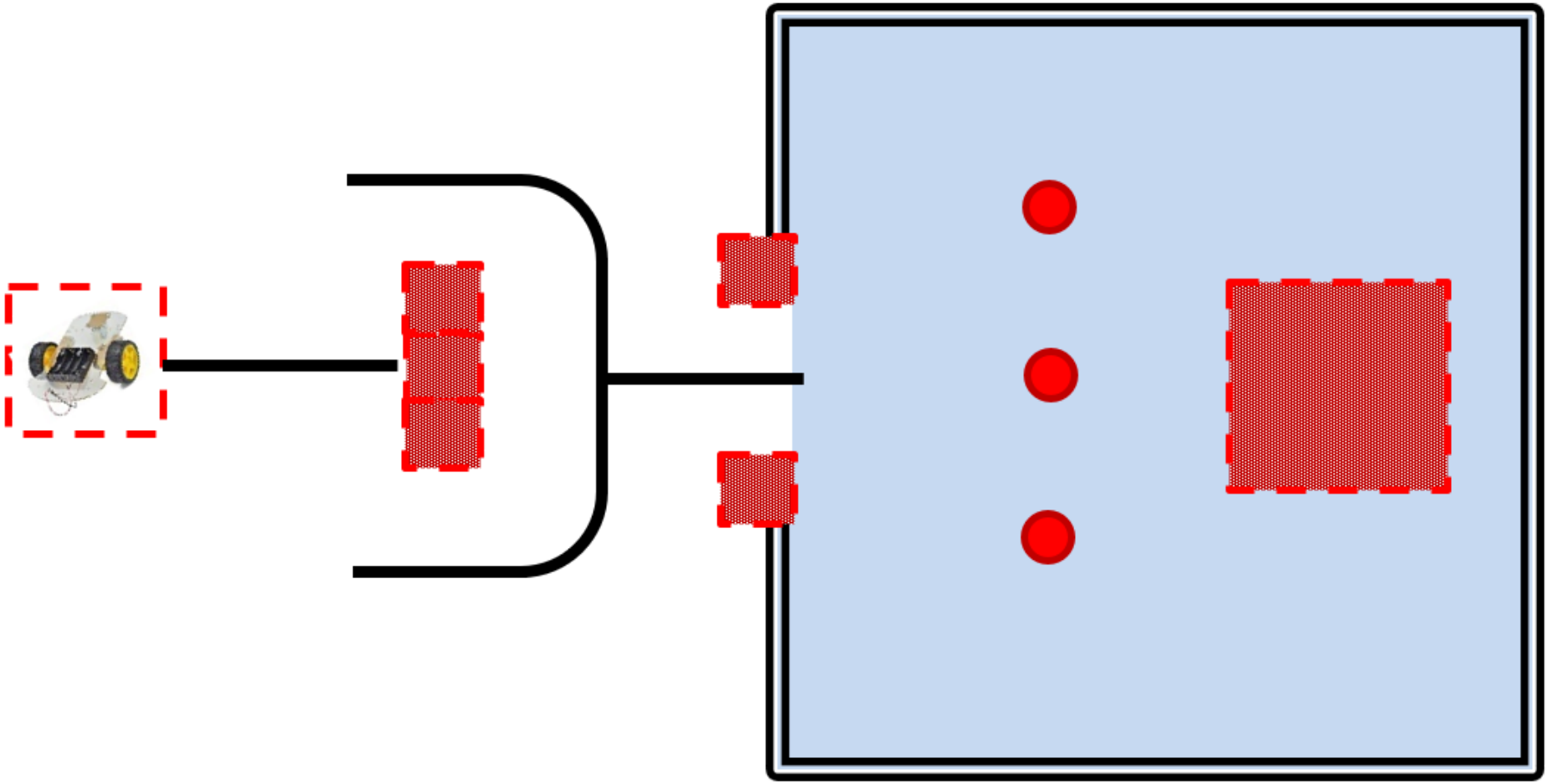
4. Project teamwork	**30%**
5. Project report	10%
6. Project presentation	10%

Project constrains:

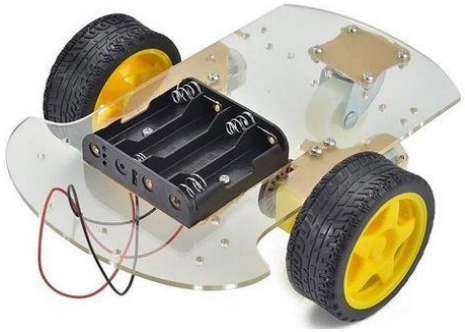
- Chassis: 2 wheels configuration
- Controller: PIC MCU
- Two students per team.
- Same map and target of programming

Course grading (The project)

The map:



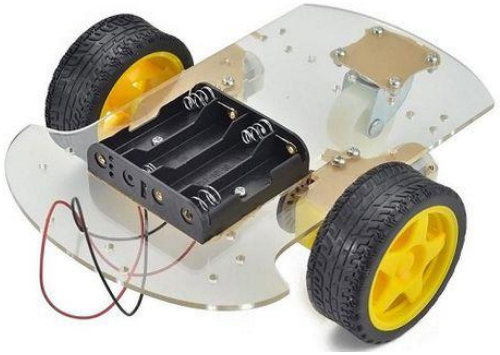
Course grading (The project)



4. Project teamwork	30%

- Project plan + Log book (10%) (weekly check)
- Hardware building
- Software: Module test
- Software: Algorithm development
- Field test - Battle

Course grading (The project)

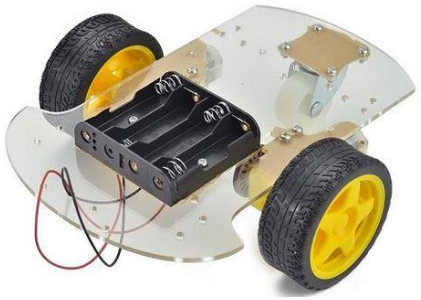


5. Project report	**10%**

Report in English will get 2% bonus

- Introduction
- Hardware (connection)
- Software (programming, library explain, …)
- **Results** (Simulation, experiment)
- Appendix (source code)

Course grading (The project)



6. Project presentation	10%

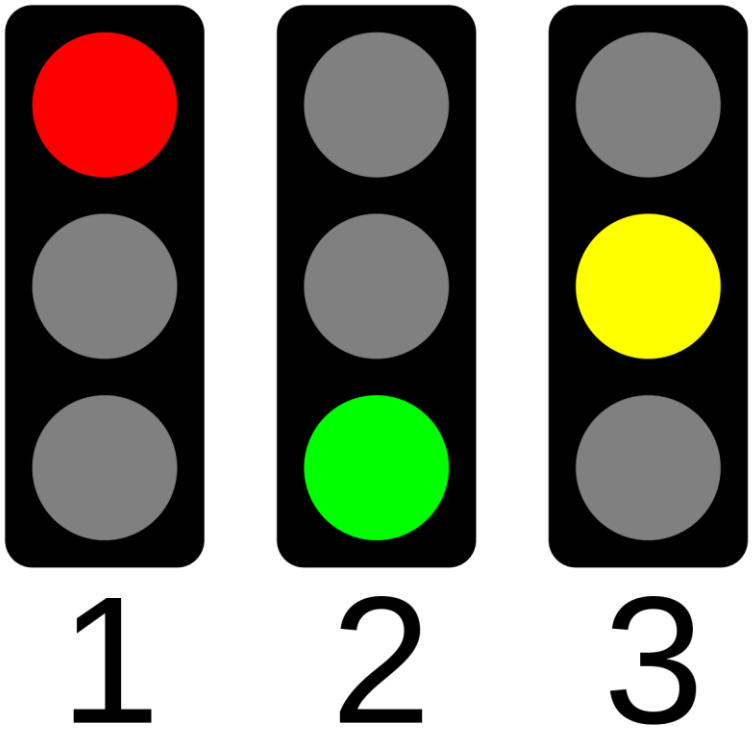
- Video presentation (5%)
- Finished the map at the competition (5%)

Lecture

- **Getting started with**
- **MPLABX Project hand-on**
- **MikroC project hand-on**
- **CCS PICC project hand-on**

Exersice #1

- **Write a program that simulation traffic light**



Thanks for your attention !