Global BBA – Bachelor of Business Administration

INTERNET OF THINGS (IOT) FOR ENTREPRENEURS

Course Code **B4CCO_1**

Academic Year **2017-2018**

1. COURSE SPECIFICATIONS*

TEACHING LANGUAGE	English
ECTS CREDITS	2.5
INSTRUCTIONAL DESIGNER	LEVALLOIS Clement
OFFICE HOURS	Friday morning or by appointment at levallois@em-lyon.com …
PEDAGOGICAL AND PROGRAM COORDINATOR	LEVALLOIS Clement
LEVEL	beginner
PRE-REQUISITES	None
RULES	Attendance is mandatory. Plagiarism = course is failed. See section 9 below for the definition of plagiarism in this course.

2. COURSE DESCRIPTION*

This is a course based on video lectures teaching how to make a connected object and why the Internet of things is such a big deal today for entrepreneurs, industries and consumers.

"Internet of Things" (IoT) and connected objects are the tiny pieces of electronics used by consumers and industries to collect data in their environment to provide services: from connected bracelets measuring speed and pulse for runners, to all kind of sensors (GPS, humidity, shock, temperature…) to monitor and optimize supply chains.

The objective of this course is to provide you with the key stakes of IoT in the coming years, so that you can innovate and participate in projects in this domain.

To do so, you will create your own object at the Maker's lab of the school. Then, a series of experts will provide video lectures on how IoT fits in a business strategy.

3. PROGRAMME LEARNING GOALS AND OBJECTIVES*

3.1. Programme learning goals

- **1** Our students are aware/sensitive to a disrupted world
- **2** Our students master business basics and are able to anticipate business transformation
- **3** Students develop a creative mindset and are able to make ideas happen
- **4** Students reflect on themselves and project themselves in the future
- **5** Students are able to identify issues in their own area of expertise

3.2. Links of the course to the programme objectives*

Learning objectives (LO) of the programme Global BBA – Bachelor of Business Administration	Course Matching
Graduates understand and analyze the economic and social news of a digi-global changing world	☒ Yes
Graduates are able to identify and implement solutions to make decisions in an international business environment	☒ Yes
Graduates understand and are able to implement the concepts, methods and tools for management, steering of projects and decision-making on a functional and interdisciplinary point of view	☒ Yes
Graduates are able to use the tools and the professional digital systems to create economic value	☒ Yes
Graduates are able to use the critical, creative and flexible thinking methods to analyse and solve complex problems in a changing and uncertain environment	☒ Yes
Graduates are able to act/react and establish design process and innovating developments	☒ Yes
Graduates know the principles and mechanisms of the corporate social responsibility in its process of decision-making and are able to work ethically and responsibly	☒ Yes
Graduate are able to learn from experience, start over and reassess themselves to develop an ability to anticipate and look into the future	☒ Yes
Graduates are able to develop and implement techniques, tools and methods in the chosen field of specialization	☒ Yes
Graduates are able to present and defend a project from their own field of specialization	☒ Yes

4. LEARNING HOURS ANALYSIS*

Type of learning Hours	Distribution (hours)
Face-to-Face (lecture) *(24 hours max)*	5
Online working Hours	0
Individual working hours *(with mentoring or not)*	30
Team working hours *(with mentoring or not)*	0
Evaluation	6
TOTAL	41

5. LEARNING OBJECTIVES / OUTCOMES

5.1. Academic outcomes

5.1.1. Concepts and theories to which participants are exposed during the course*

1	Internet of Things and connected objects
2	4th industrial revolution
3	The Makers movement and rapid prototyping
4	Data centric business models
5	

5.1.2. Knowledge acquired during the course *

After this course, participants know or master	know the physical process of building a connected object
After this course, participants know or master	know the complementary roles played by software and hardware
After this course, participants know or master	know the relevance of Internet of things for manufacturing, logistics and consumer goods
After this course, participants know or master	know some of the security issues posed by connected objects
After this course, participants know or master	know about rapid prototyping

5.1.3. Competencies acquired during the course *

After this course, participants are able to	create a connected object
After this course, participants are able to	add a sketch (code) to a connected object
After this course, participants are able to	discuss the business relevance of connected objects
After this course, participants are able to	understand the business relevance of the Makers movement
After this course, participants are able to	analyze a connected objects's underlying business model

5.2. Professional outcomes

5.2.1 Productions/Deliverables participants will be able to present after taking this course*

1	A functional connected object made of an Arduino board and an OLED screen
2	A video demonstrating their object
3	A video discussing an existing connected object on the market

5.2.2 The people that participants will have met or contacted during the course: (professors, guest speakers, tutors, companies, external experts, participants…)

Clement Levallois, associate professor emlyon
Julien Calviac, IoT cross-Industry senior director at 3DS
Romain Willmann, emlyon student, emlyon teacher and consultant.
Leo Marius, manager of the Makers Lab at the emlyon campus in Saint Etienne

6. ASSESSMENT OF LEARNING OBJECTIVES*

Assignment 1:

A video showing the connected object built by the student with comments. See graphic below for details of the grading scheme or visit the online version.

The video should be 5 minutes MAX. Upload this video to Youtube, Dailymotion, Vimeo or an equivalent service. Then submit the link to this video via the Dropbox on Brightspace. ASSIGNMENTS NOT FOLLOWING THIS PROCEDURE WILL NOT BE GRADED (GRADE = 0)

Assignment 2:

A video showing a connected object on the market, with comments. The 3 dimensions to be discussed are:

- technical dimension: how does the object work? (sensors, actuators, connectivity)

- business dimension: what is the business model for this object?

- security dimension: what are the security risks this object can be exposed to?

The video should be 5 minutes MAX. Upload this video to Youtube, Dailymotion, Vimeo or an equivalent service. Then submit the link to this video via the Dropbox on Brightspace. ASSIGNMENTS NOT FOLLOWING THIS PROCEDURE WILL NOT BE GRADED (GRADE = 0)

See graphic below for details of the grading scheme.

		Assignment 1 *					
	grade is on on 0 to 20 scale (French grading system)	video not uploaded	video uploaded, object not working, explanations showing you did not do your best effort	video uploaded, object not working, explanations showing you understand why and you did your best effort	video uploaded, object working, bad explanations on how you got it to work	video uploaded, object working, good explanations on how you made it	video uploaded, new features added to the object, great explanations
Assignment 2 **	video not uploaded	0	4	6	7	8	10
	video uploaded, comments are weak on all 3 dimensions	4	6	7	8	10	12
	video uploaded, comments are good on 1 dimension	6	7	8	10	12	13
	video uploaded, comments are good on 2 dimensions	7	8	10	12	13	15
	video uploaded, comments are good on 3 dimensions	8	10	12	13	15	18
	video uploaded, comments are outstanding on 3 dimensions (outstanding means you demonstrate some level of expertise)	10	12	13	15	18	20

* Assignement 1: video showing your connected object, working (powered up with a display on the screen), and with your comments.

** Assignement 2: video showing a connected object on the market, with your comments on 3 dimensions: the technical, business and security aspects of the object

Note for assignment 2: you don't have to buy the object.

-> Find this picture in spreadsheet version, online:

https://docs.google.com/spreadsheets/d/e/2PACX-1vSQSiGQ7VncRdSQaZtQ1aoFsIW1CxWN5AFgQX0ALLnnBqnHXBFpYdNo5t7QMAIDx3UpBcAbOSEl0Ji/pubhtml

7. SEQUENCES DESCRIPTION, LEARNING ACTIVITIES AND ASSIGNMENTS

3 essential dates:

22 Sept 2017: in class session. I distribute the parts to build the object.

13 Oct 2017: in class session. Videos of experts are put online.

1st Dec 2017: in class session and deadline for the 2 assignments.

The lecturing content course is essentially provided online:

- videos

- text documents (pdf, web pages or both)

- essential readings.

All this material can be found here: https://seinecle.github.io/IoT4Entrepreneurs/

The 3 in class sessions of this course will be devoted to:

1st session: kick off. I distribute the parts of the connected object, repeat instructions for the course and make sure you understood them well. You meet the Makers Lab manager and check when you can visit the lab to use soldering stations under his supervision.

2nd session: tracking progress, answering questions, getting back to some key points of the online lectures.

3rd session: closing of the course. I will give directions for further studies and ask for feedback on the course.

8. PEDAGOGICAL RESOURCES AND ACTIVITIES (videos, books, articles, links, etc)*

PEDAGOGICAL RESOURCE/ACTIVITY	RESOURCE LINK
Introduction to the course	https://seinecle.github.io/IoT4Entrepreneurs/
Definitions of Internet of Things / connected objects / smart objects	https://seinecle.github.io/IoT4Entrepreneurs/
Where to buy the components for this course?	https://seinecle.github.io/IoT4Entrepreneurs/
What kind of board are we going to use?	https://seinecle.github.io/IoT4Entrepreneurs/
How to do soldering	https://seinecle.github.io/IoT4Entrepreneurs/
How to install the Arduino IDE	https://seinecle.github.io/IoT4Entrepreneurs/
How to adapt the Arduino IDE to a custom board	https://seinecle.github.io/IoT4Entrepreneurs/
How to install libraries in the Arduino IDE	https://seinecle.github.io/IoT4Entrepreneurs/
How to write code to get the air quality index on screen	https://seinecle.github.io/IoT4Entrepreneurs/
Expert on IoT and manufacturing	https://seinecle.github.io/IoT4Entrepreneurs/
Expert on IoT and logisitics	https://seinecle.github.io/IoT4Entrepreneurs/
Expert on IoT and security	https://seinecle.github.io/IoT4Entrepreneurs/

9. OTHER USEFUL INFORMATION

The definition of plagiarism for this course is the following:

You can copy and paste the code from the course material onto your Arduino IDE. The reason is that this course does not teach you how to code, so it would be too demanding and meaningless to write this code yourself. Please consider that this rule is specific to this course and need not apply in other courses (especially in programming courses).

You are allowed and encouraged to help others and receive help from others. This extends to seeking info on online forums. This is normal and this is how makers and coders do in real life.

You are not allowed to disengage yourself from creating the object and making it work. The help you receive should help you do things, not having somebody else do things for you. For example, a friend can help you understand how to do the first steps in soldering, but at the end you should do most of the soldering yourself.

In the assignments, you should present your own material.

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Date* : 21/09/2017 **Document status* : Valid**