

**ITIW 2018**  
**2018 International Teacher's Interdisciplinary Workshop by integrating**  
**Engineering and Design**

**2018 「整合工程與設計」教師跨領域研習國際工作坊**

Advisors:

Ministry of Education, Republic of China 教育部



**教育部**

Central Taiwan Science Park Bureau, MOST 科技部中部科學工業園區管理局



**中部科學工業園區**  
Central Taiwan Science Park

Organizers:

National Formosa University

Office of Research and Development

Office of International Affairs

Co-Organizers:

NFU Central Taiwan Dream Maker Base

Language Teaching Center

Department of Multimedia Design

Department of Computer Science & Information Engineering

Department of Applied Foreign Languages



**中部創新自造教育基地**  
Central Taiwan Dream Maker Base - NFU

**July 3, 2018**

## Lecture and Workshop Information

Date: July 3, 2018, 9:00 - 16:00

Location: General Building II, B1, Cross-disciplinary Dream Maker Space, 2nd Campus,  
National Formosa University

Registration Fee: Free

Participant: University teachers and participation limited to 20

Registration Deadline: June 10 or course is full.

We will provide you a 6 hours completion certificate after lectures and workshop.

Registration: <https://goo.gl/forms/quCtU9YtUthjjGI2>

Language: lectures and workshops taught in English.

Note:

- If for some reason you cannot attend the lecture and workshop, please inform us.
- The participants are required to bring their own laptop with Microsoft Windows.
- For More Information, Please Contact: 05-6313297 Manager Wu.,  
nfu.maker@nfu.edu.tw/irene10108@nfu.edu.tw  
or [iimdLab@gmail.com](mailto:iimdLab@gmail.com), phone: 0939273327, Teacher Cheng

09:00-09:25 Registration

09:25-09:30 Opening & Welcome

09:30-10:10 The Pedagogy in Playful and Tangible Computing

10:20-11:00 Designing Module-based Learning for Robotics Education

11:10-11:50 Education Reform with Design Thinking Approach

11:50-12:00 Q&A

13:00-16:00 Micro:bit Workshop, Topics: Constructionist Learning-by-Making “Interactive  
LED lighting” with “micro:bit” educational tools

日期：107 年 7 月 3 日(二)，9:00 - 16:00

地點：國立虎尾科技大學第二校區第二綜合館，B1 跨領域微創特區  
(雲林縣虎尾鎮文化路 64 號)

費用：免費

參加對象：大學教師，共計正取 20 名。

報名截止日期：5/25(五)~6/10(日)，或課程額滿。

核發研習證書：共計研習 6 小時

請參加人員經單位主管同意，並於 6 月 15 日中午 12:00 前完成線上報名，正取 20 名。  
為珍惜訓練資源，各機關學校薦送參加種子教師培訓人員務必全程參與，不得無故缺席，  
原薦送人員因故無法參訓者，應提早告知主辦學校，主辦學校將通知備取人員。

備註：

- 全英授課。
- 學員當天需自備筆電，Windows 尤佳。
- 服務時間：周一至周五 8:30-12:00 13:30-17:00
- 連絡電話：05-6313297 吳小姐
- 電子信箱：nfu.maker@nfu.edu.tw/irene10108@nfu.edu.tw

## Timetable

Time	Agenda	Speaker
09:00-09:25	Registration	
09:25-09:30	Opening & Welcome	
<b>09:30-10:10</b>	The Pedagogy in Playful and Tangible Computing 遊戲式與實體的電腦運算教學法	Dr. Priyakorn Pusawiro
<b>10:20-11:00</b>	Designing Module-based Learning for Robotics Education 設計模組化學習的機器人教育	Dr. Thavida Maneewarn
	10 minutes break	
<b>11:10-11:50</b>	Education Reform with Design Thinking Approach 運用設計方法重塑教育	Dr. Chujit Treerattanaphan
Lunch Time		
13:00~16:00	Micro:bit Workshop Topics: Constructionist Learning-by-Making “Interactive LED lighting” with “micro:bit” educational tools Micro:bit Workshop 工作坊 使用 micro:bit 教育工具製作互動 LED 燈的建構式學習	Dr. Priyakorn Pusawiro Dr. Thavida Maneewarn Dr. Chujit Treerattanaphan

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  - Topics: Constructionist Learning-by-Making “Interactive LED lighting” with “micro:bit” educational tools

## 1. Introduction

### **2018 International Interdisciplinary Workshop for Teachers: Integrating Engineering and Design**

Industry 4.0 is coming. Intelligent manufacturing, integrating engineering with design, has changed our life style and improved our life quality. Interdisciplinary cooperation upgrades and adds value to the traditional industries and makes everything possible.

We invite three keynote speakers from KMUTT, including the fields of Computer Engineering, Robotics and Industrial Design, to give 3 keynote speeches and a workshop. We hope it will inspire the international and domestic teachers with an innovative thinking model through interaction and exchange of ideas and help teachers to reform their pedagogy.

#### **2018 「整合工程與設計」教師跨領域研習國際工作坊**

「工業 4.0」智慧製造時代來臨，工程與設計的整合，改變我們生活的模式與品質，跨領域的合作，使得傳統工業升級、增值，未來有無限的可能。

此次的研習我們邀請到泰國 KMUTT 三個領域的學者(資訊工程、機器人、工業設計)，藉由三個領域的主題演講和 1 個實作的 Micro:bit Workshop，帶來一個創新的思考模式，透過國外學者與國內的老師的互動，希望迸出新的火花，讓研習的老師，思考重塑教育方法的可能性。

# The Pedagogy in Playful and Tangible Computing

## 遊戲式與實體的電腦運算教學法



Dr. Priyakorn Pusawiro

**Position:** Lecturer/Computer Engineering Department &  
Director of ESIC LAB

**Research interests:**

1. Learning Process with Interactive Digital Media
2. Learning Space and Integrated Learning
3. Interactive and Entertainment Computing
4. Digital Media Technology and Educational Tools
5. Technology in Higher Education

Using project-based learning within a small group of learners can promote interactive and collaborative learning, in particular playful learning model powerfully. At the moment, the information and communication technology (ICT) plays a great role in educational society. The emerging technologies, digital media, and hardware-software co-design in term of electronic signals, basic circuit, sensors, and micro-controllers can enhance the playful learning amongst teachers and learners throughout semester.

Implementing playful and tangible computing project, especially in art event, museum, exhibition, stage performance can enable new form of interactivity and pedagogy process inside classroom.

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## Designing Module-based Learning for Robotics Education

### 設計模組化學習的機器人教育



Dr. Thavida Maneewarn

**Position:** Assistant Professor/ Institute of Field Robotics

**Research interests:**

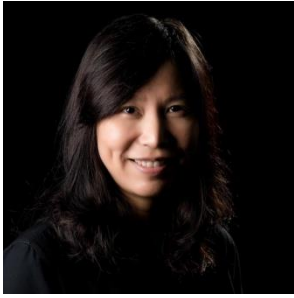
Mobile Robotics, Humanoid Robot, Teleoperation,  
Intelligent System and Control

Robotics is an interdisciplinary subject which requires hands-on skills together with theoretical understanding in electrical, mechanical and computer engineering. Institute of Field Robotics (FIBO) designed the Robotic curriculum using module-based approach which integrates theoretical knowledge with practical skills and measurable outcome.

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## Education Reform with Design Thinking Approach

### 運用設計方法重塑教育



Dr. Chujit Treerattanaphan

**Position:** Assistant Professor/ Industrial Design  
Department & Associate Dean for Research, School of  
Architecture and Design

**Research interests:**  
user-centered design, design psychology, communication  
design, interaction design, and service design

Preparing students for 21<sup>st</sup> century, education need to reform in more collaborative way. An interdisciplinary collaborative working process can enhance learning experience and bridge between classroom education and real world practice. Applying design thinking approach through this teaching and learning process can create environment that engage students, foster their creativities and encourage collaboration from diverse areas of expertise.

As part of a technology oriented university, types of collaborative classes with design thinking approach will be demonstrated on how to enhances and drives design creativity and innovation on real-world immersion.

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## Micro:bit Workshop

### Constructionist Learning-by-Making “Interactive LED lighting” with “microbit” educational tools

Micro:bit Workshop 工作坊：使用 micro:bit 教育工具製作互動 LED 燈的建構式學習



Dr. Priyakorn Pusawiro

**Position:** Lecturer/Computer Engineering Department & Director of ESIC LAB

**Research interests:**

1. Learning Process with Interactive Digital Media
2. Learning Space and Integrated Learning
3. Interactive and Entertainment Computing
4. Digital Media Technology and Educational Tools
5. Technology in Higher Education

Learning to make things talk, think, blink, sing or move! The workshop will explain the potential implementation of “micro:bit” as an educational tool for teachers. The pedagogy is based on “Constructionism”, which is "learning-by-making" concept. Learners use information they already know to acquire more knowledge, while teachers deploy the student-centered and discovery learning concept in order to achieve the learning outcome. In workshop, the best practices and case studies of using “microbit” in various classroom projects will be presented and discussed on how to apply state-of-the-art hardware and software development tools to promote project-based learning.

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# transportation

https://www.nfu.edu.tw/zh/aboutnfu/formosa

國立虎尾科技大學交通資訊			
自行開車	國道一號	北上	下 243 雲林系統交流道 > 銜接 78 線東西向快速公路台西古坑線 往 <b>虎尾/土庫</b> 方向行駛 > 下虎尾交流道 > 林森路二段 (或至中正路) > 右轉文化路, 即可到達虎科大校門口。
		南下	下 240 斗南交流道往 <b>虎尾</b> 出口>接大業路>光復路左轉直行至虎尾市區>過圓環左轉林森路二段 (或中正路) >左轉文化路, 即可到達虎科大。
	國道三號	北上 南下	銜接 78 線東西向快速公路台西古坑線 (古坑系統交流道) 往『 <b>西</b> 』(虎尾/土庫) 方向行駛>下虎尾交流道>林森路二段 (或至中正路) >右轉文化路, 即可到達虎科大校門口。
高鐵交通	雲林站下車		<ul style="list-style-type: none"> <li>● 自行開車。</li> <li>● 臺西客運：7102 虎尾-斗南車次、7120 斗六-虎尾 車次均有行經虎科大。</li> </ul>



上課地點位置圖

