



MASTER'S PROGRAM FOR INTERNATIONAL STUDENTS IN DIGITAL MECHATRONIC TECHNOLOGY

INTRODUCTION

The Institute of Digital Mechatronic Technology was established in 1997, with the mission of first integrating the resources of the three existing Departments of Mechanical Engineering, Electrical Engineering, and Information Science at the College of Engineering of Chinese Culture University and then put them into the academic and application works in the newly emerging area of mechatronics. The curriculum is devoted to offer students in-depth knowledge in mechatronic systems design, control and instrumentation, robotics and automation. There are well-equipped laboratories, to name a few, the Simulation of Real Objects Lab, Development of Intelligent System Lab, Telecommunication and Networks Lab, Development of the Integrated Energy System Lab, and Mechatronics and Control Lab.

These facilities can be used to fully satisfy the teaching needs and also serve the academic research needs at the same time. The faculty of the Institute at PCCU includes well qualified professors with educational and industrial experiences from around the globe: USA, Germany, and Taiwan. etc. This faculty was, and still is heavily involved in works of discussing and developing mechatronic systems curricula, which in turn enable the graduates possessing high-level skills and knowledge in industry highly desired areas, such as robotics, automation, instrumentation and intelligent systems.

MISSION STATEMENT

1. To promote training and education program in the interdisciplinary mechatronics fields.
2. To emphasize the equal importance of theory and practice and the close connection to the local science-based industry.
3. To foster the education of moral integrity.

ADMISSION

Eligible Applicants:

The international applicants have to hold a valid, ROC-recognized bachelor's degree, or its equivalent. Furthermore, the international applicants have to satisfy all applicable requirements stated in the CCU Regulations for International Admission.

Criteria for Admission:

1. The international master program requires applicants to provide school transcript(s)

(including proofs of outstanding academic achievements).

2. The applicants have to submit one copy of English or Chinese Master Research Plan (including a statement describing the applicant’s Chinese language ability).
3. Works or papers related to mechatronics are to be attached to the application package.

PROGRAM STRUCTURE

On the path to the master’s degree, each student must complete 29 credits, including 11 credits in the required courses and at least 18 credits in elective courses, and pass the oral thesis test.

The international master’s program in the Institute of Digital Mechatronic Technology at Chinese Culture University gives most courses in English. After completing the required courses, each candidate has to initiate a thesis writing process guided by his/her advisor. The thesis could be written in English or Mandarin and conform to the standard format used by CCU.

COURSE INFORMATION:

Required Courses

Course	Unit	Course Description
SEMINAR(1,2)	2 credits	This course, as a continuum to its former course in the last semester, keeps on the track of two major topics: oral report and research paper written .
CONTROL THEORY	3credits	The objective of this course is to give a detailed description of core control theory and designs, so that the students are enabled to carry out the controller designs of practical systems.
DIGITAL MECHATRONIC SYSTEM INTEGRATION	3 credits	This course is a project-based course that presents the concepts, principles, issues, and techniques for managing design, development and analysis of actual mechatronic systems.
DIGITAL SIGNAL PROCESSING	3 credits	The course will enable students to rapidly understand the signal processing principle and apply DSP in one's own research subject.

Elective Courses

Course	Unit	Course Description
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<p>WIRELESS NETWORKS</p>	<p>3 credits</p>	<p><u>Object:</u> establish the concepts of various existing wireless technologies, or the work being carried out. The important aim of this course is to provide the topology control in wireless ad hoc and sensor networks.</p>
<p>EMBEDDED SERVO DRIVE SYSTEM</p>	<p>3 credits</p>	<p>Object: establish the linking techniques of intelligent control theories related to the servo motor driving system and implementation techniques via microprocessor, microcontroller or embedded system.</p>
<p>IMAGE MODELING TECHNIQUES</p>	<p>3 credits</p>	<p>A detailed introduction of several central topics in image modeling and machine vision will be given in the class, including: Basic Image Signal Processing, Image Modeling (Binary-Value Image 、 Monochrome 、 Color), Patten Recognition, MV based Feedback Control, Robot Vision.</p>
<p>ARTIFICIAL INTELLIGENCE</p>	<p>3 credits</p>	<p>Objectives: Establish the developing ability of small rule-based and frame-based expert systems. After the course study, students can design the fuzzy system and artificial neuro-network and a simple evolution computation question can be made.</p>
<p>ROBOTICS</p>	<p>3 credits</p>	<p>This course aims to provide the fundamental knowledge of robotics, such as kinematics, dynamics, trajectory planning, control theory, computer language, and image processing, etc.</p>
<p>COMPUTER AIDED DESIGN ANALYSIS</p>	<p>3 credits</p>	<p>This course leverages three core competencies in service to diverse needs in such areas as education, space and ocean exploration, and autonomous systems in air, land, and underwater.</p>
<p>SYSTEM ENERGY TRANSFORMATION EFFECTIVENESS STUDY</p>	<p>3 credits</p>	<p>Major topic areas include: economic and efficiency comparisons of power generation technologies. Methods of improving the environmental impact of conventional energy generation technologies.</p>
<p>MICROELECTRONIC DEVICES AND MANUFACTURING TECHNOLOGY</p>	<p>3 credits</p>	<p>The goal is to bring together quantum mechanics, the quantum theory of solids, semiconductor material physics, and semiconductor devices physics (bipolar</p>

junction transistors, FET, MOS transistors, diodes, capacitors and resistors).

FACULTY

Professor	Position	Educational Background
Dr. Yi-Yang <u>Chen</u>	Professor&Dean	Ph.D., Dept. of Electrical Engineering, Tulane University, USA.
Dr. Yih-Cherng <u>Chiang</u>	Professor&Chairman	Ph.D., Dept. of Mechanical Engineering, University of Delaware, USA.
Dr. Jeng-Tze <u>Huang</u>	Professor&Director	Ph.D., Institute of Eletrical and Control Engineering, National Chiao-Tung University.
Dr. Han-Chang Shih	Professor	Ph.D., Universität Tübingen, Tübingen, Germany
Dr. Min-Hsiung <u>Hung</u>	Professor	PH.D., Dept. of Electrical Engineering and Computer Science, Ohio university, USA
Dr. Ho-Ling <u>Fu</u>	Associate Professor	Ph.D., Dept. of Aerospace Engineering, University of Colorado, Boulder, USA.
Dr. Kuo-Ho <u>Su</u>	Associate Professor	Ph.D., Electrical Engineering, Tatung University.
Dr. Shiang-Yu Tan	Assistant Professor	Ph.D., SUNY at Stony Brook, Stony Brook, New York Doctor of Philosophy In Materials Science
Dr. Jia-Chuan Lin	Adjunct Associate Professor	Ph.D., National Cheng Kung University Research institute of electrical engineering Engineering doctor
Dr. <u>Tsing-Tshih Tsung</u>	Adjunct Professor	Ph.D., Department of Mechanical Engineering, RWTH Aachen University.

Contact Information

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