Introduction of Innovation Frontier Institute of Research for Science and Technology

one-stop, interdisciplinary

Taipei Tech iFIRST college was established in 2022 in order to build up the innovative regulations for industry to participate the university governance, including innovation management, and providing an industry-university platform and environment for interdisciplinary R&D cooperation as well as high-level talent cultivation.

Education
Co-cultivation with enterprises

Verification
On-site check of R&D results (POC, POS)

Leveraged Resourse
Survey of government technological innovation break-through points

Research Base
One-stop with end-to-end solution

Cross Domain
Customized research team solving complex engineering problems

Corporate Image
Promote company's image and R&D strength in frontier technology

iFIRST College focuses on the university R& D strengths area: AI, Information Security, and semiconductors. It brings together the research capacity from industry and faculty of six professional colleges, to form the industry research platform, and actively expands the cooperative research relationship between relevant industry-university-research institutions to establish enterprise alliances.

Talent Cultivation Center

Master program in Semiconductor Technology	Master/Doctoral Program in AI Technology	Master/ Doctoral Program in Information Security
30 master students per year + 10 international students per year	At least 30 master students and 5 doctoral students per year	At least 30 master students and 5 doctoral students per year

Enterprise Operation Fields

Semiconductor R&D Center	AI Technology R&D Center	International R&D Alliance
Establish R&D centers and courses with cooperative enterprises	Establish R&D centers and courses with cooperative enterprises	Cooperate with foreign technology-leading well-known schools

pmp · CLAN · AUO · 億光電子 EVERLIGHT · Chicony · 福壽實業 · Sunbird · INTAI · TOPKEY · 陽光電子 · 訊凌電腦 DIMENSION · MECHEMA

TAIPEI TECH 國立臺北科技大學 National Taipei University of Technology

INNOVATION FRONTIER INSTITUTE OF RESEARCH FOR SCIENCE AND TECHNOLOGY FIRST 創新前瞻科技研究學院

Office of international affairs

iFIRST Website

Introduction of Master program in Semiconductor Technology

• Features:

The course areas cover the complete areas of semiconductor technology, including: materials and properties, device physics, electronics, manufacture process, surface analysis, IC design, etc.

Cooperate with TSMC's newcomer training center (NTC) to set up applied courses. Furthermore adding artificial intelligence courses to cultivate students' practical ability and vision for the future industrial development trends.

• Prior Knowledge: basic knowledge of electronics, physics and/or chemistry

Program

Basic Courses

Material Properties
- Semiconductor Materials
- Electronic Materials

Physics of Device
- Physics of Semiconductor Device
- Solid State Physics

Electronics
- Electronics(I)
- Applied Electronics

Artificial Intelligence
- Machine Learning
- Deep Learning and IoT

Master Courses

Semiconductor Materials and Fabrication
- Special Topics in Electronic Materials and Devices
- Introduction to Semiconductor Manufacturing Technology
- Characterization Methods for Semiconductor Materials
- Semiconductor Packaging Technology
- Optoelectronic Semiconductor Device Technology and Application
- Soft Electronic Materials and Device Applications
- Electronic Solid-State Device
- Silicon Nanometer Devices and Physics
- Special Topics in VLSI Processing Technology
- Epitaxy Technology and Measurement

Semiconductor Manufacture Equipment & Facility
- High-tech Factory System
- Clean Room Design
- Tool Introduction in Semiconductor
- Semiconductor Advanced Equipment and Key Components
- Processing Technology and Equipment for Advanced Semiconductor Manufacturing
- Introduction to Automatic System
- Digital Image Processing
- Advanced Robotics and Automation Applications
- Introduction to Optical Electromechanical System and Manufacturing Technology
- Autonomous Mobile Robot

IC Design
- VLSI Design
- Advanced Analog IC Design
- Mixed-Signal Integrated Circuit Design
- Mixed-mode IC Design
- Low-Power Specialist RFIC and mm Wave IC
- RF IC Design
- Computer-Aided VLSI System Design and Practice
- VLSI Digital Signal Processing
- Wireless Communication ICs
- Digital Multimedia IC Design

- Introduction of Semiconductor Tool
- Introduction of Components in Semiconductor Facility

Applied Courses

Advanced Courses

- Processing technology and equipment for advanced semiconductor manufacturing
- Advanced semiconductor equipment and key components

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