TAIPEI TECH

Innovation Frontier Institute of Research for Science and Technology

發揚務實致用精神

厚植北科創新實力

- **Year Founded: 1912**

- **School Type: Public, Urban**

- **6 Colleges: 19 Departments**
  - ✓ **27 Master's programs**
  - ✓ **17 Ph.D. programs**

- **Student Enrollment: 13,269s**
  - **(B: 6,369s /M: 3,273s /D: 710s /C.E.: 2917)**

- **Int. Student: 1,085 (61 countries)**

- **Faculty & Staff: 2,124**

- **Int. Faculty Ratio: 10.5%**

Campus located at the center of Taipei Metro System

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2024 QS World University Ranking

- QS World University Rankings **#431**

2023 U.S. News & World Report Best Global Universities by subject

- Chemistry **#317**
- Engineering **#408**

2022 UI GreenMetric World University Rankings

- Overall Rankings **#113**

- **#10%** of founders, board directors, CEOs of Taiwan's stock listed companies are Alumni.

Tsu-Hsien Tung

PEGATRON **/ Chairman**

ASUS **/ Co-Founder**

Paul SL Peng

AUO **/ Chairman**

Robert Yeh

EVERLIGHT **/Chairman**

2023 Enterprise Favorite University Rankings

No.2 of the Technical and Vocational University.

- Charles Liang
- Founder, President and CEO of Super Micro Computer Inc. ([SMCI-US](#))
- SMCI is the 3rd largest AI Server manufacturer in the world
- Supermicro stock price surges 600% in 1 year

2024 QS WORLD University Ranking (#431)

World University Ranking by Subject

Engineering & Technology: **#169** (**6**th in TW)

- •**Material Sciences: #97**

- **Engineering - Chemical: #75**

- **Engineering - Mechanical: #123**

- **Engineering - Electrical and Electronic: #122**

- **Civil and Structural Engineering: #151-200**

- **Business & Management Studies: #250-300**

- **Architecture/ Built Environment: #101-150**

TAIPEI TECH

Programs

19 bachelor, 27 masters, and 17 doctoral programs.

Mechanical & Electrical Engineering

- Mechanical Engineering
- Vehicle Engineering
- Energy & Refrigerating Air-Conditioning Engineering
- Manufacturing & Automation Technology

Electronical Engineering & Computer Science

- Electrical Engineering
- Electronic Engineering
- Computer Science & Information Engineering
- Electro-Optical Engineering

Engineering

- Chemical Engineering & Biotechnology
- Material Science & Engineering
- Civil Engineering
- Molecular Science & Engineering
- Environmental Engineering & Management

Management

- Industrial Engineering & Management
- Business Management
- Information & Finance Management

Design

- Industrial Design
- Architecture
- Interaction Design

Humanities & Social Sciences

- English
- Technological & Vocational Education
- Intellectual Property
- Cultural Vocation Development

iFIRST

- Artificial Intelligence (Master, PhD.)
- Cybersecurity (Master, PhD.)
- **Master Program in Semiconductor Technology**

New

Master, Year of 2024!

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Focus areas of iFIRST
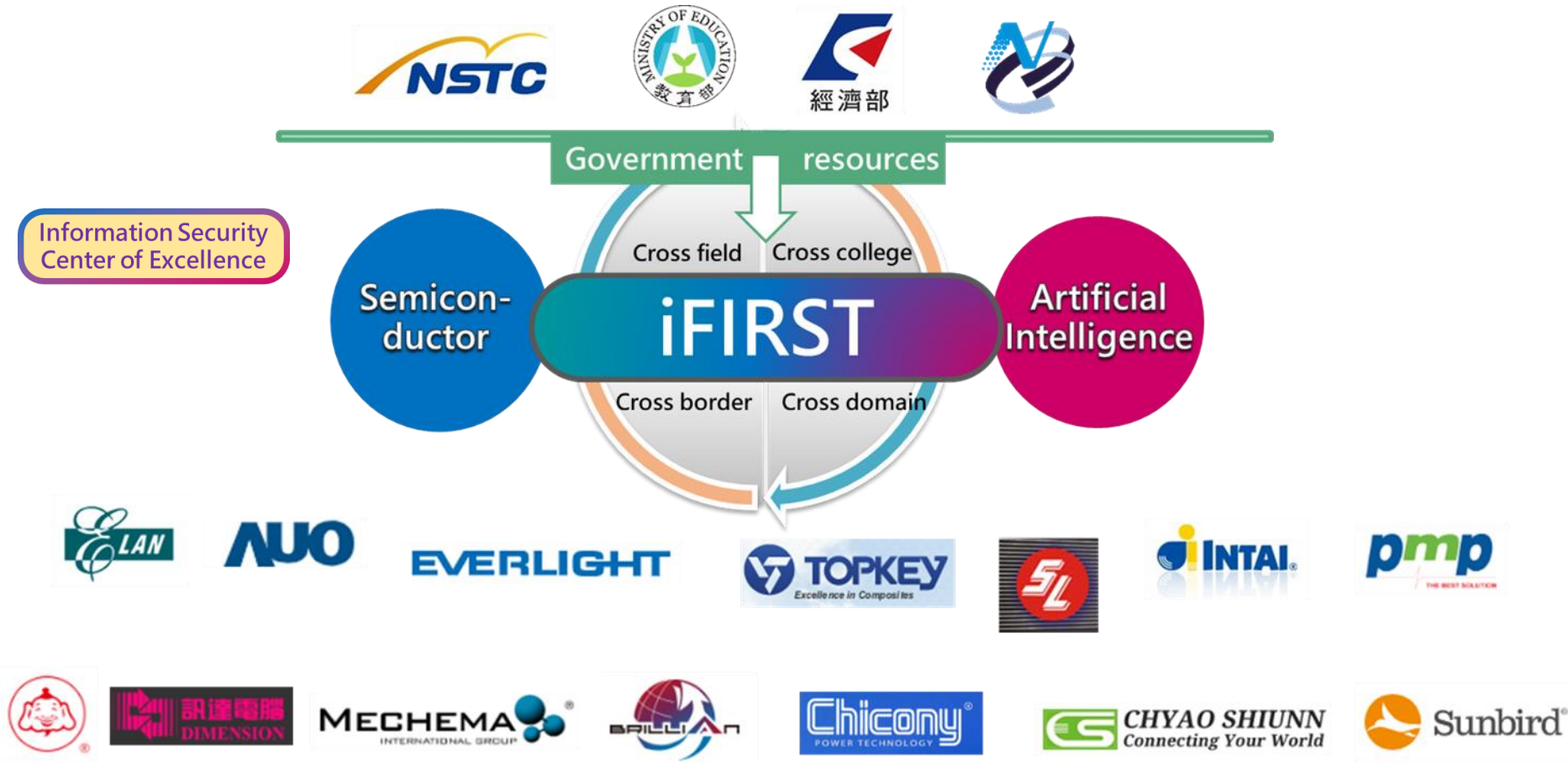
Goals and Purposes of the iFirst –
Open integration services

one-stop, interdisciplinary!

Talent cultivation

School-enterprise co-cultivation; graduate students integrate with the industry early

Field verification

On-site inspection and acceptance of research and development results to reduce cognitive differences between school and enterprise

Leveraging resources

Inventory of technological innovation points that the government needs to break through in industrial governance

Research base

Independent station to deepen industry-university cooperation, and take the needs of enterprises as the terminal convergence

Cross domain integration

Customized exclusive team cross-domain integration to solve complex engineering problems

Corporate image

Enhancing the strength and image of enterprises in advanced technology research and development

Diversifying extension of the business, and university and enterprises complement each other

Industrial talents, excellent research talents, researchers

Enterprise entry and exit mechanism

Flexible expenses

iFRIST

Industry trends

Business management

Personnel diversity

Performance orientation

Financial flexibility

National policy

Expert appointment

Easing restrictions on the use of funds

Independent operation

Self-financing

Talent cultivation、 Active engagement / future trend、 International linkages

Strategy

Support academic and research collaboration with other academic, industrial, business, and government institutions!

Master Program in Semiconductor Technology

- **Prior Knowledge：basic knowledge of physics and chemistry**
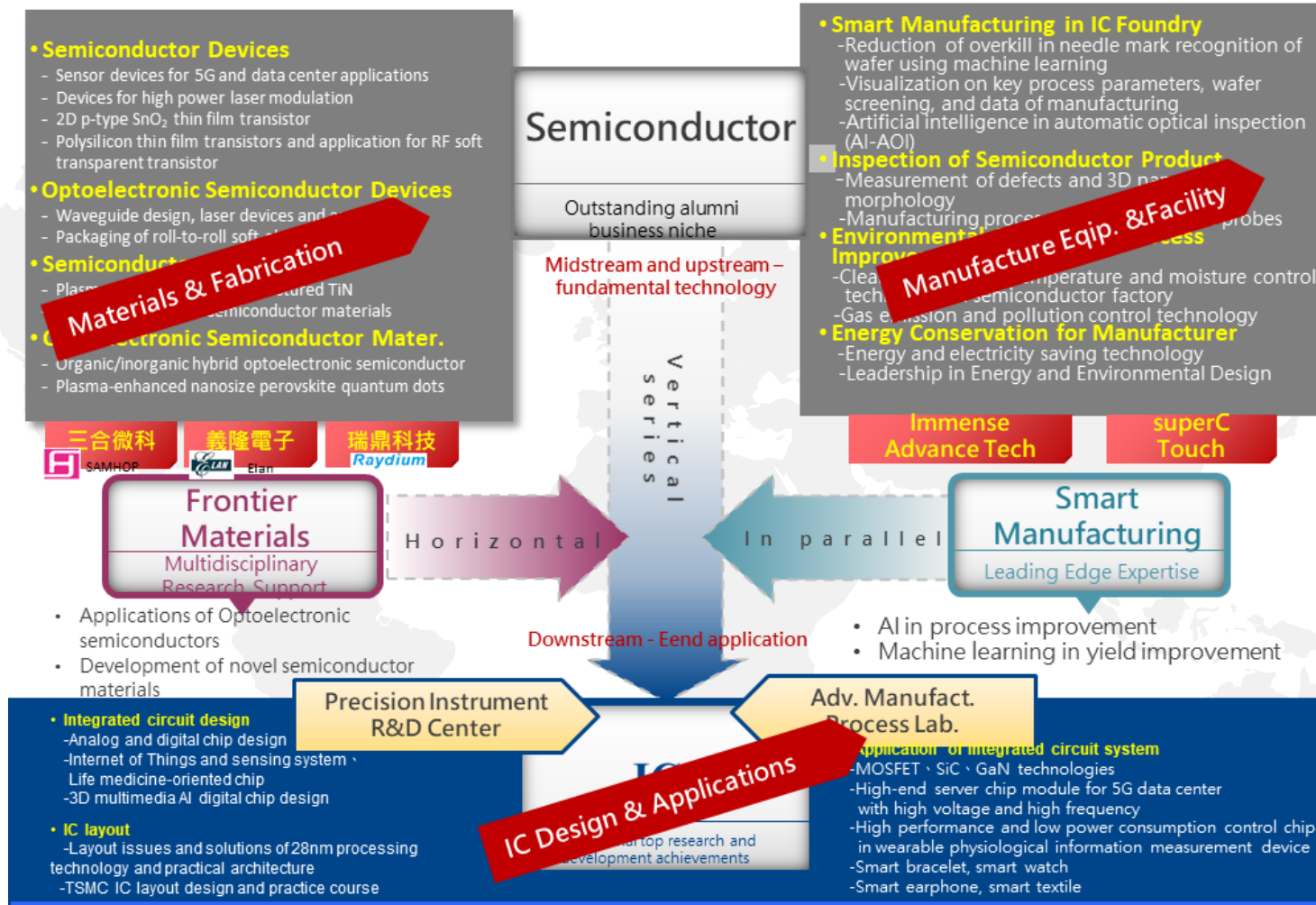
30 students

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 Tech
- Epitaxy Technology and Measu

Semiconductor Manufacture Equipment & Facility

- High-tech Factory System
- Clean Room Design
- Tool Introduction in Semiconductor
- Semiconductor Advanced Equipment and Key Components
- Processing Technology and ___ment for Advanced Semic___ ___ring
- Introducti___
- ___ ___on Applications
- ___ctromechanical System
- ___g Technology
- ___us Mobile Robot

IC Design and Applications

- 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

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.

Semiconductor Research of Taipei Tech

Semiconductor Devices
- Sensor devices for 5G and data center applications
- Devices for high power laser modulation
- 2D p-type SnO_2 thin film transistor
- Polysilicon thin film transistors and application for RF soft transparent transistor

Optoelectronic Semiconductor Devices
- Waveguide design, laser devices and ...
- Packaging of roll-to-roll soft ...

Semiconductor ...
- Plasm... ...tured TiN
- ... semiconductor materials

Optoelectronic Semiconductor Mater.
- Organic/inorganic hybrid optoelectronic semiconductor
- Plasma-enhanced nanosize perovskite quantum dots

Materials & Fabrication

Smart Manufacturing in IC Foundry
- Reduction of overkill in needle mark recognition of wafer using machine learning
- Visualization on key process parameters, wafer screening, and data of manufacturing
- Artificial intelligence in automatic optical inspection (AI-AOI)

Inspection of Semiconductor Product
- Measurement of defects and 3D nan... morphology
- Manufacturing proces... ...probes

Environmental ... ...ess Improve...
- Clea... ...mperature and moisture control tech... semiconductor factory
- Gas emission and pollution control technology

Energy Conservation for Manufacturer
- Energy and electricity saving technology
- Leadership in Energy and Environmental Design

Manufacture Eqip. &Facility

Semiconductor

Outstanding alumni business niche

Midstream and upstream – fundamental technology

Vertical series

三合微科 SAMHOP
義隆電子 ELAN Elan
瑞鼎科技 Raydium

Immense Advance Tech

superC Touch

Frontier Materials
Multidisciplinary Research Support

Horizontal

In parallel

Smart Manufacturing
Leading Edge Expertise

- Applications of Optoelectronic semiconductors
- Development of novel semiconductor materials

Downstream - Eend application

- AI in process improvement
- Machine learning in yield improvement

Precision Instrument R&D Center

Adv. Manufact. Process Lab.

Integrated circuit design
- Analog and digital chip design
- Internet of Things and sensing system、 Life medicine-oriented chip
- 3D multimedia AI digital chip design

IC layout
- Layout issues and solutions of 28nm processing technology and practical architecture
- TSMC IC layout design and practice course

Application of integrated circuit system
- MOSFET、SiC、GaN technologies
- High-end server chip module for 5G data center with high voltage and high frequency
- High performance and low power consumption control chip in wearable physiological information measurement device
- Smart bracelet, smart watch
- Smart earphone, smart textile

IC Design & Applications

IC...
...artop research and ...velopment achievements

Courses offered for Master Program in Semiconductor Technology

Material & Processing

| 電子材料與元件技術* Special Topics in Electronic Materials and Devices |
| 半導體製程技術導論* Introduction to Semiconductor Manufacturing Technology |
| 半導體材料檢測技術及原理 Characterization Methods for Semiconductor Materials |
| 半導體構裝技術 Semiconductor Packaging Technology |
| 光電半導體元件技術及應用 Optoelectronic Semiconductor Device Technology and Application |
| 軟性電子材料與元件應用 Soft Electronic Materials and Device Applications |
| 固態電子元件 Electronic Solid-State Device |
| 矽奈米元件物理 Silicon Nanometer Devices and Physics |
| 積體電路製程特論 Special Topics in VLSI Processing Technology |
| 磊晶技術與量測 Epitaxy Technology and Measurement |

Equipment & Facility

| 高科技廠務系統* High-tech Factory System |
| 無塵無菌室設計 Clean Room Design |
| 半導體機台基礎 Tool Introduction in Semiconductor |
| 半導體尖端設備與關鍵元件 Semiconductor Advanced Equipment and Key Components |
| 積體電路製程先進技術與設備* Processing Technology and Equipment for Advanced Semiconductor Manufacturing |
| 自動化系統導論 Introduction to Automatic System |
| 數位影像處理 Digital Image Processing 陳金聖 |
| 高等機器人與自動化應用 Advanced Robotics and Automation Applications |
| 光機電系統概論與實務製造 Introduction to Optical Electromechanical System and Manufacturing Technology |
| 自主移動式機器人 Autonomous Mobile Robot |

IC Design

| 超大型積體電路設計* VLSI Design |
| 高等類比積體電路設計 Advanced Analog IC Design |
| 混合訊號積體電路設計 Mixed-Signal Integrated Circuit Design |
| 混波積體電路設計 Mixed-mode IC Design |
| 低耗能射頻暨毫米波積體電路特論 Low-Power Specialist RFIC and mmWave IC |
| 射頻積體電路設計 RF IC Design |
| 電腦輔助積體電路系統設計實務* Computer-Aided VLSI System Design and Practice |
| VLSI 訊號處理架構設計 VLSI Digital Signal Processing |
| 無線傳輸積體電路 Wireless Communication ICs |
| 數位多媒體晶片設計 Digital Multimedia IC Design |

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Scholarships

TAIPEI TECH SCHOLARSHIP			TAIWAN SCHOLARSHIP		
	Hua Yu	International Graduate Student	MOA	MOE	MOST
Target	Bachelor program	Master program	Doctoral program	Students from countries that have official diplomatic relations with Taiwan	Students from countries that don't have official diplomatic relations with Taiwan	Postgraduate students from countries that don't have official diplomatic relations with Taiwan
Reward	Tuition Fee 50% off	Tuition Waiver (2 years) + Monthly Stipend NT$ 6,000/month (1 year)	Tuition Waiver (4 years) + Monthly Stipend NT$ 12,000/month (4 years)	Tuition Fee 50% off + Monthly Stipend NT$ 30,000	Tuition Waiver + Monthly Stipend NT$ 15,000-20,000	Monthly Stipend NT$ 30,000
How to Apply	Directly submit application to NTUT (Taipei Tech)	Directly submit application to NTUT (Taipei Tech)	Directly submit application to NTUT (Taipei Tech)	Taipei Economic and Cultural Office (TECO) or Taipei Economic and Trade Office (TETO) in your country	Taipei Economic and Cultural Office (TECO) or Taipei Economic and Trade Office (TETO) in your country	Taipei Economic and Cultural Office (TECO) or Taipei Economic and Trade Office (TETO) in your country

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iFIRST Location-Pioneer International R&D Building

14F   Graduate Institute of Intellectual Property

13F   FIRST Office, Department of Intelligent Automation Engineering, Visiting Scholar Offices

12F   Elan-Taipei Tech AI Center

11F   Cybersecurity Center, National Applied Research Lab.

9-10   FIRST: Joint Research Centers

8F   Taiwan Space Agency (TASA)

7F   Precision Analysis & Material Research Center, MOE Top Research Centers

4-6F   Vanguard Classroom and Innovation Space
3F   Trend Auditorium

2F   UC Berkeley Global Research Center

1F   City Science Lab @ Taipei Tech

B1   Energy Research Centers