Establishing Innovation and Entrepreneurship Ecosystem for Promoting Industry-Academia Cooperation at Chung Yuan University

Reporter: Prof. Shia-Chung Chen
Vice President of Chung Yuan Christian University
Profile

Year of establishment: **1955**

Educational Philosophy: **Holistic Education**

Faculty: **1275**

- Full-time: **506**
  - Doctor degree: **451 (89.13%)**
- Chair/Honor: **15**
- Professor: **133**
- Associate Professor: **161**
- Assistant Professor: **171**
- Lecturer: **26**

- Part-time: **769**

Staff: Full employer **393**, Contract **300**

Student body: **16,165**

- Undergraduate students: **12,990**
- Graduate students: Master’s **2,814**, Doctoral **361**

Alumni: **106,000+**

Programs: 7 Colleges / 29 Departments / 31 Graduate programs / 13 Doctorate programs
Guiding Principle

Holistic education is carried out based on 7 principles, one of seven principles

**We believe that full development of one’s potential signifies success**

→ developing creativity, innovation and Entrepreneurship

Focus on Society’s Concerns  Innovate Industrial Research

Overall Performance around 10 in Taiwan, top few ones in private universities according to CWUR, SJTU and THEM’s ranking evaluations
World University Rankings By Center for World University Ranking (CWUR)

- Ranked 696th among the Top World 1000
- Ranked Top 1 among Taiwan private comprehensive universities and 9th among Taiwan Universities in 2014

Ranking of Top Universities in The Greater China (ARWU, by Shanghai Jiao Tong University)

- 2013 Ranked Top 57 Within The Great China Area; Top 1 among Taiwan private comprehensive universities 2011~2013

Asia University Rankings by The Times Higher Education Magazine

- Ranked 97th among the Top Asian 100; 13th among Taiwan Universities in 2014
Executive Operation Center for Industry-Academia Cooperation (EOCIAC)

- Self-sustainable
- Profit center

Instruction Committee for I-A cooperation
Convener: President

Executive Operation Center for Industry-Academia Cooperation (EOCIAC) / CEO

Office of Academic Affairs
Office of Research and Development
College

Germination Function Center (CYGC)
Innovation & Entrepreneurship Education Center (CYCIE)
IAC & Technology Licensing Center (CYETLC)
Incubation Center (CYIC)

International Incubation Center
Campus Entrepreneurship Center

Holistic Chung Yuan Incubation Investment Ltd.
Mission

To establish the operation mechanism and become an excellent connecting bridge between the industry and the academic field.

To provide many value-added services to industries and universities.

To actively integrate academia/industry/government/VC and human resources.

To protect, mine and commercialize R&D and professors' IP results.
Target: Knowledge-based innovation, inspire innovation via knowledge

Embryonic Stage
- Cross region platform for industry-academia
- Environmental green industry counseling network

Growing Stage
- Industry cooperation bonus center
- Expanding international incubation cooperation
- Early stage technology commercialization
- Decent eco-system

Incentive Stage
- New industries accelerate counseling
- Asian industry-academia cooperation collaboration

Booming Stage
- Early stage technology commercialization
- Expanding international incubation cooperation
- Industry cooperation bonus center
- Environmental green industry counseling network

1997~2005
2006~2009
2010~2013
2014~2017
Core Strategy for IA corporation

**Specialize**
- Create an innovation and entrepreneurship atmosphere in campus
- Featuring application based on in-campus research strength and industrial needs

**localize**
- Close connection with local industry groups
- Enhance Taoyuan city area industry-academia services function

**Internationalize**
- Expanding industry-academia cooperation to international scope
- Create multi industry-academia cooperation channels

**Integrated resources ability**
Create multi-value added services

**Accelerating R&D results for Industry upgrading & development**

**Extend cooperation and marketing scope**
Foster innovation & entrepreneurship

**Active human resources**
Create triple win situation

Be a role model for universities in knowledge based with innovation and entrepreneurship
Industry-Academia Cooperation Focus

Special Research Output: Innovative plus Research leading to Excellent Applications
Strengthen internal Research and Design analysis, value evaluation and bonus combination. Enhance Research & Innovation management capability, enhance cooperation opportunities.

Value-add Service
Innovation System
Educational Training
Business Model
Technical Service

CYCU specialize in four basic researches linking to Industrial technology fields.

- Cultural and Creative Enterprise
- Green Industry
- Intelligent Manufacturing Industry
- Biotech and Medical Device Industry

Specialty technology fields

Driving
Developing

Biotech
Cultural and Creative
Precision Machinery & Manufacturing
High efficient separation/filtration membrane
12 Major Services for Industry-Academia Cooperation

Multi-functional Services

- International Incubation
- Marketing Promotion
- Award & Incentive Policy
- Space and Facilities Support
- Business Management
- Patents and Technology Transfer
- Raising Capital and Financing
- Industrial Services
- Education Training
- Technical Support
- Governmental Grant and Aid

Matching Enterprises’ needs

Total solution & Values

Incubation Center

IAC & Technology Licensing Center
CYCU - Integration Services of Industry-Academia Cooperation

In-Campus Enterprise -> Domestic Industry -> Foreign Enterprise

Value added Module

Innovation Services
Mentors
Consultant

Business Model Assessment
Intellectual Property Survey and Value Enhancement
Market Analysis
Creativity & Innovation & Entrepreneurship Abilities

Entrepreneurial Team Forming
Trait analysis & Community management

Business Opportunity Leading Technology Transfer
Innovation Cluster
International Assistant

Technology Commercialization
Enterprise Incubation Accelerating
Capital/Market Matching

Intelligent Resource Integration

Innovation & Entrepreneurship
Germination Function
Tech Transfer
Incubation

Systematic Platform
Human Resources
Operating Mechanism
Resource & Capital

Full Services from beginning to the end

New Technology Development
Prototype/Product Development
New Business Development

Develop Campus Entrepreneurship (teacher and student)
Innovation & Entrepreneurship Ecosystem

**Patent Office:** Top Team, Hitek International Patent & Trademark Office… Total#10
**Intelligence Unit:** TIER, CPC, KPMG…
**Legal Consultant:** KPMG, Deloitte…
**Accountant:** PwC Taiwan, KPMG, Deloitte…

**Entrepreneurial Team/ New Start up company**

**Outside Resources**
- Venture Capital
- CYCU Venture
- Technology Transfer
- Industry Cooperation
- Incubation
- Featured Research
- Technical Germination
- Patents Bonus
- International Exchange
- Service Learning
- Teaching Excellence
- CYCU Fund

**Government Resource**
- IP Law
- Ministry of Economic Affairs
- Ministry of Education
- Science and Technology
- Local Government
- Ministry of Culture
- Council Of Agriculture
- Media Advertisement
- Educational Training
- Sales Channel
- Industry Community
- Innovation Industry Group

**Financial**
- Professional Teacher Training

**Outside Resources**
- Corporate Bodies
- International Resources
Main Target of the Germination for 2105

Main job for the future-
Develop new companies

Business Planning with IP Due-Diligence Service Team
Help Fund Raise and Learning Feedback
Matching and Training for Customized Talents People

**Preliminary evaluation**
- Originality
- Applied feasibility
- Tech. Competitiveness
- Market demand

**Background survey**
- Sub-indus. Analysis and risk evaluation
- IP analysis
- Laws & Reg. Positioning

**Strategy selection**
- Market size
- Cost-Effectiveness
- Financial demand
- Uniqueness
- Tech. Application

**Bus. promotion planning**
- **Evaluation**:
  - Form: materials/parts/products/system
  - Mode: tech. transf. or licensing/royalty income or derivative trading income/RD cooperation & re-dev./sales agency/new business
- **Product validation/IPO permission**
- **Sales & Promotion**:
  - brand image building & promotion
  - open innovation cooperation
  - alliance network
  - multiple marketing platforms

GC/tech. managers are responsible for step 0-V.
Mechanism of Innovation and Entrepreneurship Education

Features: Ability Cultivation, Friendly Resource, Characteristic Entrepreneurship, Expected Success

Seeding Stage
- Inspiration Core Curriculum
  1. Regional CIE Camp for High School Students
  2. Thinking & Creativity
  3. Introduction of Technology management
  4. Entrepreneurship Plan
  5. Intellectual Property Lecture
  6. Idea Show Contest

Cultivation Stage
- Training Advanced Curriculum
  1. Advanced Thinking & Creativity
  2. Idea to Patent Lecture
  3. Innovative Technology Entrepreneurship
  4. Social Enterprise entrepreneurship
  5. Online Entrepreneurship
  6. Cultural and creative industry entrepreneurship
  7. Service Industry Entrepreneurship

- Practice Practical Curriculum
  1. Entrepreneurship Plan and Expression
  2. International Innovation & Entrepreneur Leadership Experience Program (IIELE)
  3. Innovation & Entrepreneurship Cultivation Camp
  4. Experimental place for Business Practice
  5. Fieldtrip to enterprises
  6. Case study

- Implementation Contest
  1. Interactions among winning teams
  2. Exhibition of students' work
  3. Technology commercialization
  4. Business Model Contest
  5. Innovation & Creativity Practice Contest
  6. Entrepreneurship Contest
  7. Entrepreneur Internship Program

Maturity Stage
- Coaching Assistance during early stage
  1. Startups Incubation-Accelerating Program Assistance
  2. Customized course
  3. Individual Training by Mentors
  4. Group Tracking and experience inheritance
  5. CEO Reunion
  6. Funding Matching

Innovation & Entrepreneurship Capacities

Basic Capacities
- Brand-new Capacities
  - Creativity
    1. General Education Course with Credits
    2. Interdisciplinary Program- CIE Program
    3. Innovation Classroom
  - Enlightenment
    1. Entrepreneurship Course without Credits
    2. Vocational Program
    3. Disciplinary Program
    4. CIE Platform

Entrepreneur Implementation
Multi-Function of Technology Licensing Center and IA Cooperation Services

Objective

- Advance in Research Planning
- IP Application and Value Added
- Technology Transfer and Industry-Academia Cooperation via Business Orientation basis
- Enterprise Extension/Upgrading

Functions

- For CYCU Community
  - Patent apply and maintenance
  - IP value analysis, added & grouping
  - Explore Tech Transf. opportunities
  - Promote CYCU’s R&D outcomes

- For Industry
  - Patent apply
  - Technology transfer
  - Joint R&D
  - Acquire Government’s R&D fund

Value Chain

- Technology development plan
- Technology position plan
- Technology Commercialization
- Negotiation of Technology Transfer

Business Research Team

Innovative R&D

Product Development

New/Innovative Business
Industry Chain Complex Collaborative Technology Transfer

Base on market opportunity, user and system manufactory demand to promote industry chain complex collaborative technology transfer

Mining analysis

Horizontal Integration
- EX: 「Intelligent molding and Green Forming Technology」

Vertical Integration
- EX: 「Nano Complex Material」

Active Division Integration
- EX: 「Induction heating molding Technology」

Integration

CYCU

Equipment Manufactory A → Controller Maker → Equipment Manufactory B → Equipment Manufactory C

Market of System Integration

《Upstream》Raw materials → 《Midstream》Materials Production → 《Downstream》Product Manufacturing

Creative Product

Software and Channel Company

Market of New Product Application

Software Technology Transfer

Hardware Technology Transfer

Equipment Manufactory
Total Incubation Services

New Tech + Incubation → Success

- Innovation Tech.
  - Green Energy
  - Green Mold
  - Membrane Tech.
  - Nano Tech.
  - ICT Tech.
  - Bio-tech.

Total Incubation Mechanism

Pre-incubation
- Counsel & Evaluation
  - Development Training
  - Tech. Transfer
  - Business Support
  - Gov. Resources

Incubation
- Counseling
- Training
- Tech. Transfer
- Funding
- Value Added Integration
- Intl. Incubation

Post-incubation
- Stationed at Science Park / Trade Center
- Integration
- Funding
- Business Globalization
- Intl. Venture capital
- Natural Resource

Commercialization
- Industry-Academia
- Cooperation
- IP Application
- Gov. Mgmt. Advice
Strategy of International Industry - Academia Cooperation and Incubation

**Objectives**

- Markets
- Resources
- Investment
- Cooperation partners

**Extend service territories**

**Needs of incubates**

- Region Orientated: ASEAN → Emerging Regions → Global Nations
- Industry Demand Orientated: Mold & Manufacturing Industry → Green Industry → Machinery Industry
- Function Orientated: Cluster, Co-incubation, Global Venture Capital, Value Added Supply Chain...

**Benefit**

- Extend research activities abroad to enhance research resource
- Help developing country to upgrade technology and provide various service meanwhile helping domestic enterprises business opportunity
- Link to alumni abroad to help their business and provide well-trained employees
International Incubation Network
Since 2006

Country: 15
Partner: 10
Incubation Center: 6
INDUK KUD-CYCU
Co-Incubation Center in 2009

Sign MOU and set up of INDUK KUD-CYCU Co-Incubation Center in Jakarta, Indonesia. An important Corporative Association of Fishery and Agriculture with 60 Million population and 9000 branched office

International Cooperation

✓ Joint open professional courses for students in both countries
✓ Joint national projects and industry-academia cooperative activities (such as biofuel and national fishery)
✓ Assistance on industry investment development in Indonesia
✓ Business development in Indonesia
International Industry-Academia Cooperation

- Joint open professional courses for students in both countries
- Joint national science park project and business innovation program (from metal mines to value-add products)
- Assistance on industry investment development in Mongolia
- Business development in Mongolia

MUST – CYCU Sign the MOU in 2012
Sharing Incubation Experience & Knowledge

International Industry-Academia Cooperation

- Joint research project, summer camp, DIGS program, and industry-academia cooperation activities
- Upgrade the automobile part manufacturing technology in Thailand

2013/04 Signed MOU with King Mongkut's University of Technology Thonburi (KMUTT)

2014/01 Signed MOU with KMUTNB

2014/07 CYCU held an intl. mold workshop at Bangkok with KMUTNB & NSTDA

2014/07 Signed MOU with NSTDA
Co-incubation Centers in Asia Area

Setup Co-Incubation Center in Hanoi & HCM, Vietnam, Penang, Malaysia, Xiamen & Changzhou, China, Jakarta, Indonesia

Co-incubation center in the near future: Bangkok, India and Mongolia

International Industry-Academia Cooperation

✓ Joint open professional courses for students in IT, distance learning, IP patent and entrepreneurial training area
✓ Raising the level of high education on business and engineering area
✓ Business development in both countries
2013 & 2014 OHEC initiated a fellowship program and sent three groups of delegations (10 / 16 / 16 trainees each) to Taiwan. CYCU incubation center designed curriculum and on-site training program.

2014/07 CYCU held an intl. mold workshop at Bangkok and sign MOU with NSTDA

OVEC intends to seed trainees to CYCU for the practical incubation training (meeting hold in March 11)

International Industry-Academia Cooperation

✓ Joint open professional courses, research and industry-academia cooperative activities for students in cultural creative & precision machinery area
Case 1: Foxsign Tech Co., Ltd (1/2)

FOXSIGN International Co., Ltd. in CYCU and INDUK-KUD Co-incubation Center at Jakarta

Development of the Membrane Oil Refinery System with CYCU

Subcontract Project to Bogor Agricultural University from CYCU

Exchange students and faculties between two universities

FOXSIGN Int’l Co., Ltd. Bio-oil Press and Refinery Factory Sumatra, Indonesia
Overseas industry-academia project (International Co-Incubation Center)

Tech Transfer
3 Biomass technologies from Department of Chemical Engineering/Develop the first small and automatic biomass machine

International Cooperation
Join the National Jatropha Biofuel Project (seeding cultivation)

International Incubation
Apply to INDUK KUD-CYCU Co-Incubation Center and establish a factory and find farm in Indonesia

New Business
From semiconductor industry to green energy industry

Investment
Setup Foxsign International Co. Ltd in Indonesia feedback company stocks to CYCU

Perspective Revenue Increase
more than NTD$ 40 Million

Jatropha

Foxsign Tech Visited INDUK KUID
Small / Automatic Bio-Energy Machine
Commercialization
Case 2: Manufacturing Food Oil (1/5)

Oil Seeds → **Heating** → **Press** → **Filtration** → **Membrane Ultrafiltration** → Purified Food Oil

Membrane Supplier: CYBR
Traditional oil degumming process has some drawbacks, such as high energy cost, chemicals demand and the loss of neutral oil.

The newly developed two-step membrane degumming process can be effectively applied for the preliminary degumming of crude plant oils used for manufacturing the biofuels or edible oils.

In the case of peanut oil press, the protein can be extracted from the waste of press cake and the extraction solution will be purified by membrane filtration process to have proteins in different molecular weight distributions for making cosmetics and edible proteins.
Degumming is the first stage in the refining process. It is sued to separate the gums, phospholipids, proteins etc… that are insoluble in oil when hydrated.

Overcome membrane fouling, solve oil flux decline problem.

Phosphorous content and other impurities should be low not only for edible oil but biofuel applications.

Food oil process

Biofuel process

Other Purification process
Incubation of a New Company (5/5)
From Laboratory to Market Cultivation-Various Business Model

University-Industry Platform:
◆ CYCU
◆ Induk-KUD
◆ Lee Yanping Foundation
◆ CYBR Co., Ltd.
◆ Foxsign International Co. Ltd.
◆ China Food Industry Corp. (CFC)
◆ Beidahuang Agricultural Group

Co-incubation Center
(CYCU + Induk KUD)

University-Industry Platform

Incubated Company

Technology Transfer to the Manufacturing Company of Oil Membrane Purification Device

Incubated Company

Protein from Press Cake

High Quality PPO

Related Commodities from the Platform

PPO: Purified Plant Oil

Commodities

Finance
Case 3(1/2): Innovation Business model - Fantasy Story Inc.

Culture & Creative Cluster Operator

- Good example: Fantasy Story Inc.
- Remodel old houses
- Culture & Creative Cluster Business
- Services for Accelerating

- Strategic partner for capital raise & business development
- Duplicate Business model to other locations (China & South of Taiwan)
- Private Culture & Creative Incubator for One-stop value-added service

Old house remodeling
Culture & Creative Incubator

- 5F Classroom
- 3,4F Co-working Space
- 1,2F Exhibition Space
Case 3 (2/2): Innovation Business model
-Fantasy Story Inc.
Ecosystem & Instruction for Entrepreneurship (similar to MIT)

1. Entrepreneurship contest
2. Pre-contest training
3. Forum & gathering
4. Contest reward
5. Prototype designed reward
6. Platform of university-industry cooperation
7. Community of CIE

1. International incubated cooperation (India, Malaysia, Thailand, and Vietnam)
2. Social enterprise (Lakbay)

1. Reward/subsidy for patent application
2. Reward for outstanding invention

1. SOP of germination procedure
2. Innovation and entrepreneurship rooted training
3. Idea-to-Entrepreneurship Model
4. Accelerating up new industries incubated

1. Mechanism from Germination Center
2. HOCYII
3. Mentoring and fund matching
4. Research fund

Contest

Positioning

Idea to Entrepreneurship

Entrepreneurship Center

Invention Reward

Innovation Center

Venture mentoring service

Technology Transfer

Developing Countries Cooperation

CYCU

1. Interdisciplinary entrepreneurship
2. Research results commercialization
3. Lean startup
4. Entrepreneurship curriculum
5. Business team joining
6. Subordinate to EOCIAC
7. Activities including practice courses, mentoring, visiting and workshop
8. Mentors from alumni

1. Reward/subsidy for patent application
2. Reward for outstanding invention

1. Patent mining
2. Tech transfer evaluation and negotiation
3. Assistance from experienced mentors

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Achievements & Honors
In Industry-Academia Cooperation

- 2009~2014- The best incubator award
- 2008~2012- Best TLO Award from NSC
- 2008~2011- University-Industry Economic Contribution Awards from Ministry of Economic Affairs
- 2007~2012- Excellent Performance of industry-academia cooperation evaluated by Ministry of Education
- 2009- R&D Center for Mold & Molding Technology received University Contribution to Industry Economic Award
- 2011- R&D Center for Membrane Technology received National Industrial Innovation Award
- 2012- R&D Center for Mold and Molding Technology received National Industrial Innovation Award

Social Concern Focus
Industry Innovation Research
Establish Innovation & Entrepreneurship Ecosystem to provide integrated resources/services and promote & connect business opportunity including possible cooperation overseas to create industry-academic blue sea.

Our concept of service is: “Do more than we can do”, we provided comprehensive support to the domestic industry.

Guiding & helping industrial development
New industry acceleration
International industry-academia matching
Create industry clusters
Traditional industry upgrading
IP value-added and bonus services

Will enhance entrepreneurial atmosphere and to establish high quality enterprise on campus; Will extend international IA cooperation area
To be the model of knowledge-based innovation & entrepreneurship university in Asia
Thank You for Attention!

Confidence

Innovation

Improvement

全人教育・學用合一・國際視野