Introduction

The Institute of Cognitive Neuroscience (ICN) in National Central University was established in September of 2003 as Taiwan’s first graduate institute that focuses on human behaviors and neural mechanisms. The aim of the institute is to cultivate potential researchers as well as fostering the studies of cognitive neuroscience and brain science. The ultimate goal of strengthening Taiwan’s academic community in the interpretation of human mental operations and applying study results to educational studies, crime prevention and commercial practice are also the intended objectives of ICN.

Scientific Compilation & Professional Erudition

The science of brain and behaviors has been internationally identified as one of the most important studies in scientific research development in the 21st Century. It is also a discipline with a high level of interdisciplinary knowledge, with relevant fields being Genetics, Neural Anatomy, Medical Science, Philosophy, Psychology, Linguistics, Physics, Statistics and Medical Engineering. Due to the importance of compiling numerous fields of study, the ICN keeps closely-connected relations with the Graduate Institute of Network Learning Technology (NLT) and Graduate Institute of Learning and Instruction of NCU as well as departments of physics, electrical engineering, electro-optics and computer science & information engineering with various universities to execute learning and research projects. Enrollment is open to students from all disciplines to enable multi-dimensional interactions and brain-storming, achieving a broad scope of comprehensive learning.

Expert Research & Achievements

The research achievements in the ICN have been continuously progressing over the years. The faculty members not only regulate individual research projects with the National Science Council, Taiwan, but they are also actively involved with many other research organizations to collaborate on group projects. Some on-going projects include: “Brain Processing in a Diversified Linguistic Environment: A Taiwan Perspective,” “The Program Office for Indigenous Peoples’ Science Education,” “A Neuroscience Training Program for Researchers in Education or Other Humanities and Social Science Domains,” “Ecology-City –Network Platform for Lifestyle of Health & Sustainability” and Ministry of Education’s “Teachers’ Training Project correlating to Brain’s Functional Learning.”

Furthermore, the faculty members also publish articles regularly in internationally-renounced periodicals such as: PNAS (Proceedings of the National Academy of Sciences), Cerebral Cortex, Journal of Cognitive Neuroscience, Current Biology, Neuroimage, Neuropsychologia and Neuroreport. Meanwhile, large volumes of research results are presented at occasions such as Taiwan’s Psychological Society’s Annual Meeting, Cognitive Neuroscience Society’s Annual Meeting and many other international symposiums and national workshops.
Aside from the 8 full-time faculty/project investigators in the Institute of Cognitive Neuroscience (ICN) of National Central University (NCU), there are many excellent collaborating faculty members, working as adjunct professors, including:

**Full-time Faculty**

Prof. Daisy Lan Hung  
(PhD in Neurolinguistics, Calif. State University, River Side, USA)  
Emotion & Criminology Laboratory

Prof. Neil Muggleton  
(PhD in Psychopharmacology, University of Bristol, UK)  
Brain & Behaviour Laboratory

Prof. Chi-Hung Juan  
(PhD in Experimental Psychology, Oxford University, UK)  
Visual Cognition Laboratory

Associate Prof. Shih-kuen Cheng  
(PhD in Cognitive Neuroscience, University College London, UK)  
Human Memory Laboratory

Associate Prof. Denise Hsien Wu  
(PhD in Cognitive Psychology, Rice University, Texas, USA)  
Concept & Language Laboratory

Assistant Prof. Erik Chih-Hung Chang  
(PhD in Cognitive Psychology, Rice University, Texas, USA)  
Action and Cognition Laboratory

Assistant Prof. I-Hui Hsieh  
(PhD in Cognitive Sciences, University of California, Irvine, USA)  
Auditory Cognition Laboratory

Assistant Prof. Yong-Yi Chen  
(PhD in Health Psychology, Rutgers University, New York, USA)  
Social Cognition Laboratory
Collaborating Faculty:

Tak-Wai Chan
Professor, Graduate Institute of Network Learning Technology (NLT), NCU

Hwa-Wei Ko
Professor, Graduate Institute of Learning and Instruction, NCU

Ovid Tzeng
Distinguished Research Fellow, Institute of Linguistics, Academia Sinica

Jun-Ren Lee
Associate Professor, Dept. of Educational Psychology & Counseling, NTNU

Chia-Ying Lee
Associate Research Fellow, Institute of Linguistics, Academia Sinica

Wen-Jui Kuo
Assistant Professor, Institute of Neuroscience, Yang Ming University

Ming Ann Lui
Adjunct Associate Professor, Institute of Cognitive Neuroscience, NCU

Chun-Chuan Chen
Assistant Professor, Institute of Biomedical Engineering, NCU

Ching-Po Lin
Associate Professor, Institute of Neuroscience, Yang Ming University

Ya-Wei Cheng
Assistant Professor, Institute of Neuroscience, Yang Ming University

Jie-Li Tsai
Assistant Professor, Department of Psychology, National Chengchi University
Internationalization, connecting to the world

In today’s highly globalized world, ICN is aiming to connect with the world community by collaborating with many internationally renowned schools such as Yale University, University of California, Irvine, Oxford University, University College London, Cardiff University, University of Southern California, Ohio State University, Macquarie University and University of Western Ontario. The students and faculty members make frequent exchanges on specified topics and proceed with transnational and trans-cultural research. Concurrently, ICN invites researchers with relevant study interests to give lectures on current study trends and developments, providing the students with an encouraging environment to engage in profound discussion with the scholars.

You can have the cake and eat it, too

Acquiring proficiency is a matter of future emphasis and especially crucial to postgraduate careers for all students. Therefore, ICN believes that theory and practice must be implemented simultaneously in the faculty’s teaching. Students are required to set research targets and actually demonstrate skills in the laboratory to experience the principle of “doing as learning” and “learning as doing.” This method will establish a firm foundation to their training in professional skills.

Aside from the academic field, the faculties of ICN are also actively involved in national industry-university cooperative research in the areas of medical teaching and monitor technology. This collaboration is not only helpful in improving the manufacturers’ research & development quality, but also acts to familiarize the students with industries’ latest trends and operational patterns, which in turn opens up more opportunities in the employment market.

Cognitive Neuroscience Summer School in Taiwan

Modeled after the Summer School in Cognitive Neuroscience of Dartmouth College, ICN established the first and only cognitive neuroscience summer school in Taiwan in 2004. It is held annually, with invited speakers, both nationally and internationally-known researchers with expertise in cognitive neuroscience, for lectures and presentations. While the scientific aspect is made accessible to the public, students have more opportunities to appreciate the latest progression in international research, therefore inspiring potentially superior collaborations. The purpose of the summer school is to combine researchers with various fields of study and also to encourage a new generation of research talent, in hopes of promoting cognitive neuroscience with an internationalized scope and maximizing future research aspirations.
Superior Learning Culture

The Institute of Cognitive Neuroscience (ICN) is not only an excellent organization cultivating professional talent, but also a friendly department comprised of faculty members and students. The instructors provide professional teaching and guidance as well as showing concern for their students’ personal well-being. This close bond between faculty and students act to encourage the students’ learning progress, helping them to advance both their self-discipline and their professional caliber.

Care-free Livelihood

Because every faculty member in the ICN has arranged research projects with the National Science Council or the Department of Education in Taiwan, students can participate in lab projects which foster their learning attitude and practical experience for both scholarship and academic grants. Aside from these projects which help alleviate students’ financial burden, the ICN also provides part-time work opportunities such as assisting the ICN with administrative tasks or other learning and data-related work. Students benefit both in their public interaction skills and in receiving financial aid from taking part in the activities and events held by the ICN.

Career Development

The ICN organizes learning courses ranging from fundamental to advanced levels under explicit educational objectives. The students are trained to think independently and develop problem-solving skills along with research capabilities.

In terms of administration, the ICN provides the students with self-governing networks and sufficient communication channels with a comfortable learning capacity and up-to-date research equipment for the best possible learning environment.

Since the establishment of ICN, there have been a number of graduating students completing their degrees every year. Starting in 2011, ICN set up a doctoral study program. According to follow-up surveys, ICN graduates have a high rate of applying their learning to practical use; their future prospects are often closely related to their area of study, such as continuing studying in doctoral programs in relevant fields or working as research assistants, children’ center researchers or scientific editorial writers. Therefore, ICN’s ultimate goal of fostering the students’ talent and developing potential in cognitive neuroscience is achieved in both academic research and practical applications alike.
Q: How does the Institute of Cognitive Neuroscience differ in research from an Institute of Psychology?

A: Research in cognitive neuroscience not only utilizes behavioral experiments to study human information processes, but also make use of various brain imaging tools, such as magnetoencephalography (MEG), electroencephalography (EEG), transcranial magnetic stimulation and functional magnetic resonance imaging to study cognitive processes in the human brains. Areas of study range from language, memory, crime prevention to visual attention and so on.

Q: Of what educational background are current students in the ICN? Are only psychology majors encouraged to apply?

A: Not only psychology major students are encouraged to join the ICN. In fact, current students in the ICN are from various backgrounds, including: life sciences, philosophy and medical engineering. We welcome students of different backgrounds and training to join us, but they should have one trait in common: being strongly motivated and passionate about cognitive neuroscience!

Q: Is there any information or books that act as a good reference for applications and admission to the ICN?

A: Please visit our website under Admissions→ Relevant Resources for admissions references and a books list.

ICN Website: http://icn.ncu.edu.tw
Entrance Exam Information: http://icn.ncu.edu.tw/entrance.htm
Research Labs

Emotion & Criminology Laboratory
Directed by: Prof. Daisy Lan Hung
(PhD in Neurolinguistics, Calif. State University, River Side, USA)

The Emotion and Criminology Lab studies the differences in cognitive control and emotion regulation between normal and the violent/sexual offense criminals. By researching various aspects of cognitive neuroscience combined with other relevant areas, the ultimate goal of crime prevention and correction may be achieved.

Brain & Behaviour Laboratory
Directed by: Prof. Neil Muggleton
(PhD in Psychopharmacology, University of Bristol, UK)

This lab studies various aspects of behaviour, primarily in the visual domain (target detection, eye movement control, 3D perception) but also including such areas as inhibitory control, synaesthesia, and time perception. These are investigated with psychophysical, brain stimulation, imaging and electrophysiological approaches with the aim of offering insight into how our brain gives rise to our perception of the world.
Visual Cognition Laboratory
Directed by: Prof. Chi-Hung Juan
(PhD in Experimental Psychology, Oxford University, UK)

Using tools like psychophysics, eye-tracking, transcranial magnetic stimulation (TMS), transcranial direct current stimulation (tDCS) and electroencephalography (EEG), the visual cognition lab examines the neural mechanisms of visual attention and executive functions and is also increasingly applying research results to areas such as educational learning and crime prevention.

Human Memory Laboratory
Directed by: Prof. Shih-kuen Cheng
(PhD in Cognitive Neuroscience, University College London, UK)

The Human Memory Lab performs behavior experiments through electroencephalography (EEG), event-related potentials (ERPs), magnetoencephalography (MEG) and records of brain electrophysiology from the physical body to examine the characteristics of human memory functions, including the presentational features of memories: how they are formed, distorted as well as the information processing and these related neuro-mechanisms during the processes.
Concept & Language Laboratory
Directed by: Prof. Denise Hsien Wu
(PhD in Cognitive Psychology, Rice University, Texas, USA)

The concept & language lab uses behavioral experiments and electroencephalography (EEG) research in ICN, magnetoencephalography (MEG) in Academica Sinica and functional magnetic resonance imaging (fMRI) in Yang-Ming University to study numerical processing and language representation (both short and long-terms) in normal participants versus brain lesion patients.

Auditory Cognition Laboratory
Directed by: Prof. I-Hui Hsieh
(PhD in Cognitive Sciences, University of California, Irvine, USA)

**Action and Cognition Laboratory**
Directed by: Prof. Erik Chih-Hung Chang  
(PhD in Cognitive Psychology, Rice University, Texas, USA)

The action & cognition lab examines human’s characteristics in action control and the related brain mechanisms. Research topics include humans’ movement ability, motor imagery, motor learning and the differences on gender and age in terms of action cognitive ability.

**Social Cognition Laboratory**
Directed by: Prof. Yong-Yi Chen  
(PhD in Health Psychology, Rutgers University, New York, USA)

Laboratory studies include psychophysiological reactions to psychosocial stressors, adaptation to psychological trauma, and the role of religion/spirituality in coping with psychological stress. Applied studies include examination of cognitive behavioral therapy in treating various types of psychological disorders in the Asian cultural context.