Capstone Course Module
Development and Application

國立臺灣師範大學教務處教學發展中心
Center for Teaching and Learning Development, NTNU

I. What is a capstone course?

The "Capstone Experience" allows students to experience meaningful reflection, integrate their academic and professional learning opportunities, and plan their future development. It can be a course, a plan, or an event in the department (institute). Currently, National Taiwan Normal University (NTNU) encourages departments (institutes) to develop students' capstone experience through courses. It is a coming-of-age ceremony before graduation and an opportunity to instill department's (institute's) most treasured value, knowledge, and skills. A capstone course consists of five principles: Integration, reflection, closure, transition, and inspection (ICRTI). Integration refers to the integration of the knowledge and skills learned. Reflection refers to the reflection on their academic, social, and personal developments, and if there were any deficiencies. Closure is the capping of their learning experiences. Transition is the transitioning of professional learning to future careers; and Inspection is the review of department (institute) courses and instruction.

II. Why develop a capstone course module?

NTNU encourages its departments (institutes) to develop a summative, integrated curriculum by reviewing their curricular structure and assessing student learning performance. Since the promulgation of the NTNU Capstone Course Subsidies Project in the 2015 academic year, most of the capstone courses planned by departments (institutes) were stand-alone high level courses. To emphasize the links between foundational courses, core courses, and capstone courses, the Center for Teaching and Learning Development (CTLD) has proposed the planning of capstone course modules in addition to capstone courses starting in the 2017 academic year; the dual-track approach allows CTLD to assist departments (institutes) to review their curriculum, and strengthen the links among courses sequentially and laterally.

III. The Concept of Capstone Course Module

A module comprises three types of courses: foundational courses, core courses, and capstone courses. Among these three types of courses, there should be clear learning pathways and relevance to the core competencies of the department (institute). Simultaneously, to effectively track and evaluate students' specific core competency developments, there should also be a systematic assessment of performance for students who have enrolled in the module.

1. **Foundational Courses:** These are foundational courses of the professional field. They provide learners with foundational knowledge and entry-level practice in a professional context. The courses explore problems and trigger learning motivations through problem-based learning, and take the problems they have generated into the subsequent entry-level core courses.

2. **Core Courses:** These are core courses of the profession. They are foundational research and advanced level practice that integrate professional core knowledge and skills. They are courses that build integrative experiences by strengthening the links and applications between theory and practice.

3. **Capstone Courses:** These courses consolidate and complete student learning. They aim to help students integrate and deepen what they have learned in the university. These courses summarize students' professional learning, help students review and reflect on their university learning experiences and personal development, and transition professional learning to future career development.

IV.   Application Information

In the second term of the 2019 school year, in order to motivate the departments (institutes) to examine the link between the cornerstone courses, keystone courses and capstone courses in the course framework, the capstone course module plan was implemented. From the 2022 school year onwards, in accordance with the adjustment of the school's term weeks from 18 weeks to 16 weeks, and the advancement of EMI courses and other measures by the departments (institutes), the application was fully reopened for all departments (institutes) once more.

1. Application process and review standards

Capstone Course Module
Application Process
How to design a capstone course module: Departments (institutes) that had previously received capstone course subsidies should pair their capstone course with core courses or foundational courses that are aligned with its core competency, and adjust its pedagogy or content accordingly. Choose one capstone course, and couple it with several foundational or core courses. The combination of capstone course modules may be: (capstone + foundational), (capstone + core), or (capstone + core + foundational). Applications should have the department (institute) as the applicant and the department (institute) chair as the project lead in the planning and application of the capstone course module. The applying department (institute) should complete the "Capstone Course Subsidies (Capstone Course Module)" form at the end of October or March (see Attachment 2). Upon approval by department chair and college dean, please send paper application to CTLD and email an electronic copy to the listed email address
Review Standard
1.   Goals and conceptualization of Capstone Course Module

1. The relevance among foundational, core, and capstone courses and the features of capstone course module.
2. The relevance between capstone course module and ICRTI
3. The potential of capstone course module in improving department (institute) framework
4. Feasibility of the project plan
5. The suitability of the proposed budget

2. Course content implementation plan for capstone course module

1. Richness of each course. Please attach course syllabi (e.g., course features, content, instructional activities, assignment assessments, etc.)
2. How the courses respond to student learning outcome and department (institute) core competencies
3. Expected changes in learning and outcome for students
4. Specific assessment methods for learning and rubrics

2. Review Method

CTLD will invite scholars and specialists of the field to review the application.

3. Project duration and financial support

The amount of funding will be adjusted based on the types, number, and content of the courses offered by the department (institute). Maximum funding for capstone course and capstone course module of each department (institute) is NT$150,000. If the courses are offered in different semesters, project duration may be extended to 1 year.

V. Achievement Report and Effectiveness Tracking

1. Achievement Report: Applicants must submit an **End-of-term Achievement Report** (see **Attachment 3** for Capstone Course Module End-of-Term Achievement Report) and the **Capstone Course Student Evaluation Survey** provided by CTLD within one month of the end of the project.

2. Oral Sharing of Achievement: Share project achievements when CTLD holds capstone achievement presentation sessions. Applicants should authorize the Office of Academic Affairs to record video and audio of these sessions, or for other uses.

3. Achievement tracking: After the project's conclusion, should the department or institute continue to offer capstone courses with the same course title, CTLD will provide a capstone course student evaluation survey to the department or institute three times for post-project tracking.

※ Effectiveness Tracking Report: Departments can apply for the " Capstone Course Core Competency Annual Assessment Analysis Report" - The Teaching Development Center will provide the departments with an capstone course student evaluation questionnaire, which can be used to track the same course name for three times, and complete the follow-up tracking for 1+3 times (the current plan test 1 time, the follow-

up tracking test 3 times). The CTLD will produce a report for the departments to refer to. If need this report, please check it in the application form (Annex 2).
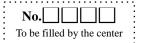
VI. Contact Window

For any questions, please contact Ms. Chen at (02)7749-1892,E-mail: c31430@ntnu.edu.tw.

VII. Capstone Course Module Subsidy Project Implementation Flowchart

	Start	
Understand the spirit of capstone courses and review department (institute) curriculum framework		Capstone Course Core Course Foundational Course Capstone Course Module
Department (institute) chair lead in the planning and application of capstone course module		
Submit capstone course subsidies application (Capstone course module)		
Review	Not Approved	
Approved		
Offer Courses / Teaching	Instructional Content and progress planning Collect evidence of student learning Assess student learning outcome	
	Achievement Report and Outcome Assessment Capstone Course Module Submit "Capstone Course Module End-of-Term Achievement Report" "Capstone Course Student Evaluation Survey" Submit within one month of the end of the project. CTLD will publish and share project achievements.	Participate in the oral sharing session hosted by CTLD Capstone Achievement Presentation Session

	※Achievement Tracking and Department and Institute Feedback After the project has concluded, CTLD will keep track of the capstone courses three times. After the survey has been conducted 1+3 times (once during the project, and three times after the project has concluded), CTLD will provide a "Report on the Analysis of Past Assessments of Capstone Course Core Competencies"	
	End	

Application for NTNU Capstone Course Subsidies
(Capstone Course Module)

I. Project Application Form

Project Title	
Project Duration	_____ Semester _____ Year ~ _____ Semester _____ Year
Principal Investigator (Head of Department/Institute)	Name _____
	Service unit
Other in-campus subsidies	□No □Yes _____(title of subsidy)

Project Contact	□Same as Principal Investigator	
	□Department □Teaching assistant □project assistant	Name: Tel: Email:

Capstone course module course Information **(Peer observation teachers please invite themselves)** ※You can add or delete tables as needed.	Course type	Course title	Teacher	whether to participate in peer observation
	capstone course			□
	keystone courses			□
				□
				□
				□
	cornerstone courses			□
				□
				□

□ The Teaching Development Center will provide the "Integrated Course Core Competency Annual Assessment Analysis Report". If the department continues to offer the same integrated courses, the Teaching Development Center will provide the department with the student evaluation questionnaire for the integrated courses, and the department will conduct follow-up tests for 1+3 times (1 time for the current plan, 3 times for follow-up tests). (If no report is required, please do not check)

Total subsidies (Maximum NT$150,000)	(NT$_____)

Principal Investigator (signature):_____

Department Head (signature): _____

Application date:

II. Goals and Concepts of the Departmental (Institutional) Capstone Course Module Project

I. The concept and connotation of the module

1. Please describe in detail the concepts and features of the capstone course module.

2. Please describe the relevance among the cornerstone courses, keystone courses and capstone courses.

II. The alignment of the Capstone Course Module and the department (institute) core abilities

Please explain the alignment of the courses (cornerstone courses, keystone courses and capstone courses) of this integrated course group module and the department (institute) core abilities

Table 1 Alignment table between the capstone course goals and the department (institute) core abilities

The objectives of the capstone course	The core abilities of students corresponding
1	□1 □2 □3 □4 □5 □6 □7
2	□1 □2 □3 □4 □5 □6 □7
3	□1 □2 □3 □4 □5 □6 □7
4	□1 □2 □3 □4 □5 □6 □7
5	□1 □2 □3 □4 □5 □6 □7

Core ability 1：
Core ability 2：
Core ability 3：
Core ability 4：
Core ability 5：
Core ability 6：
Core ability 7：
*The department (institute) core abilities can be optionally filled in the cognitive section of the ability indicators.

Table 2 Alignment table between the capstone course module and the department (institute) core abilities

Capstone Course Module	Course title	The core abilities of students corresponding
capstone course		□1 □2 □3 □4 □5 □6 □7
keystone courses		□1 □2 □3 □4 □5 □6 □7
		□1 □2 □3 □4 □5 □6 □7
		□1 □2 □3 □4 □5 □6 □7
cornerstone courses		□1 □2 □3 □4 □5 □6 □7

		□1 □2 □3 □4 □5 □6 □7
		□1 □2 □3 □4 □5 □6 □7

* Please add new pages if needed.

III. The implementation plan of the Capstone Course

1. Please elaborate on the capstone course features, teaching content, teaching activities, homework assessment and other plans of the capstone course, and provide the course syllabus, as well as determine the summative assessment method and grading criteria for the student learning outcomes.

2. Please explain how the capstone course plans for the students' self-learning, so that they can deepen, integrate and reflect on what they have learned in the university (institute), and demonstrate the department (institute) professional learning achievements and future career.

IV. Peer Review

Please list the teachers who are expected to participate in the peer review of the capstone course (at least one teacher for each cornerstone course and keystone course) and the planned process (please see the next page for the process description).If you plan to invite teachers from other departments or schools to participate in the class observation discussion, please list the names of the teachers you plan to invite and explain the reasons for the invitation.

Scheduled time for peer observation and feedback

Pre-lesson briefing	Year Month Day : To :
In-class observation	Year Month Day : To :
Post-lesson discussion	Year Month Day : To : (It is recommended to apply within one week after the class observation.)

V. Expected Efficacy

Please describe (1) the expected change and effectiveness of learning; (2) advantages yielded from the overall improvement of teaching quality of the department (institution); and (3) how the learning efficacy will be promoted.

Note 1: For two or more co-teaching instructors (simultaneously attending classroom teaching) or new courses, please indicate in the course outlines. For capstone course that are co-taught, please fill out the "Application for Simultaneous Co-Teaching Hours".

Capstone course plan peer observation flow chart

Integrated Project - Peer Observation Implementation

During the implementation of the integrated project, peer observation should be conducted according to the subsidy guidelines, and at least one teacher from the basic course and one teacher from the core course of the department (or institute) should be invited to participate.

Pre-observation meeting（Pre-lesson briefing）：

1. Duration: 15 to 20 minutes.
2. Familiarize yourself with the content of the lesson to be observed, and form and confirm the observation focus (question focus).
3. Divide the tasks and propose corresponding data collection methods according to the observation focus.
4. Agree on the time and place for the post-observation feedback session, and announce other matters to be noted.

Classroom observation（In-class observation）：

1. Seek the students' consent before the observation and follow the observation etiquette.
2. Record relevant qualitative or quantitative factual data to answer the focus questions.
3. Collect concrete and objective factual data, such as: teaching modes, student learning, etc.
4. Look for highlights and growth opportunities in the classroom.

Post-lesson feedback session（Post-lesson discussion）：

1. Duration: 20 to 30 minutes.
2. Examine and discuss the collected data from an objective perspective and respond to the focus question.
3. Share the gains and thoughts or inspirations for future teaching and learning with each other.
4. Grow together: draw conclusions, and plan strategies and actions for future teaching and learning.

Submission of relevant forms and documents：

Submit the peer observation record form and the integrated project outcome report together to the Teaching Development Center of the Academic Affairs Office.

III. Project Members [note 2]

Name of Principal Investigator (head of department/institute	Service Unit		Title	
	Tel:	Tel:	Mobile:	
	Email:			
Name of Co-Principal Investigator 1 (teaching	Service Unit		Title	
	Tel:	Tel:	Mobile:	
	Email:			
Name of Co-Principal Investigator 2 (teaching	Service Unit		Title	
	Tel:	Tel:	Mobile:	
	Email:			
Name of Co-Principal Investigator 3 (teaching	Service Unit		Title	
	Tel:	Tel:	Mobile:	
	Email:			
Project Assistant 1 Name:	Service Unit		Title	
	Tel:	Tel:	Mobile:	
	Email:			
Project Assistant 2 Name:	Service Unit		Title	
	Tel:	Tel:	Mobile:	
	Email:			
Project assistant 3 Name:	Service Unit		Title	
	Tel:	Tel:	Mobile:	
	Email:			

Note 2: Please add pages if needed.
Note 3: Add teaching instructor(s) as co-principal investigator(s) if needed.

IV. Project Funding [note 4]

Item funded	Unit price	Quantity	Sum	Description
Total	NT$			

Budgeting Reference

	Item funded	Description
1	Hourly Pay	1. Rate: Non-NTNU Instructors, NT$2,000 per hour, NTNU Instructors, NT$1,000 per hour. 2. Please also list a 2.11% supplementary insurance premium on the hourly rate.
2	Learning-based Part-time Assistant	1. Based on the "NTNU Thesis Research Learning Reward Program". 2. Please also list a 2.11% supplementary insurance premium on the reward.
3	Meal Compensation	For event and seminars.
4	Domestic Travel Expenses	1. Rate: Based on actual expenses incurred. 2. Limited to the transport expenses incurred for courses related visits and seminars (vehicle rental included), for project members and lecturers (documentation and receipts are required).
5	Printing, Binding Fees	Rate: Based on actual expenses incurred.
6	Author's Compensation	1. Rate: NT$1100 to NT$1600 per thousand words 2. The contents of writing must be for the teaching material, and writers who are NTNU employees shall not be compensated (including teaching instructors, teaching assistants, and temporary staff). 3. Also granted is a 2.11% supplementary insurance premium on the compensation.
7	Miscellaneous Expenses	Rate: Based on actual expense incurred, including stationery, paper, postage, etc.

Note 4: The funding is based on individual departments (institutions), and the ceiling is NT$150,000 each project.

V. Other Attachments

【For any questions, please contact Ms. Chen at Center for Teaching and Learning Development, Tel: (02)7734-1892; Email: c31430@ntnu.edu.tw】

National Taiwan Normal University _____Year _____ Semester

"Capstone Course Subsidiary Program" (Capstone Course Module) Final Report

Project Title	
Project Duration	_____ Year_____ Semester ~ _____ Year _____ Semester

Principal Investigator		Service Unit	

Course Title / Instructor Name	
Summary of Key Results	
Disclosure of Results	The department agrees to disclose the project results as a reference for all NTNU departments (institutes) or teaching instructors interested in implementing the capstone course modules.

Principal Investigator (signature):_____

Department Chair (signature): _____

Date:

I. Status on Project Implementation

Please briefly describe the project implementation status and the evaluation and review of the student core competencies of the capstone course

Table 1 Learning achievement evaluation of the student accomplishment of the department (institute) core abilities

The core abilities of students corresponding to the objectives of the capstone course		Learning outcomes (check)			
The objectives of the capstone course	The core abilities of students corresponding	Excellent	good	Fair	Needs improvement
1		□1 □2 □3 □4 □5 □6 □7			
2		□1 □2 □3 □4 □5 □6 □7			
3		□1 □2 □3 □4 □5 □6 □7			
4		□1 □2 □3 □4 □5 □6 □7			
5		□1 □2 □3 □4 □5 □6 □7			
Core ability 1： Core ability 2： Core ability 3： Core ability 4： Core ability 5： Core ability 6： Core ability 7：					

II. Efficacy Review

1. For each course within the capstone course module, analyze the student learning outcomes and evaluate the efficacy of student core competence development.
2. Suggestions on subsequent implementations to improve the capstone course modules and the teaching, as well as analysis of the gaps between project planning and implementation.

III. Conclusions and Suggestions

Please describe the benefits or value gained through this implementation of capstone course module for the following:
1. Development of the department (institute)
2. Improvements in departmental (institutional) courses and teaching
3. Future departmental (institutional) courses and instructors

IV. Appendix

1. Attach the information of the related lectures/visits or other supporting materials of the capstone course.
2. Attach the student self-learning (such as student reflection, learning portfolio) or other supporting materials.
3. Attach the peer review feedback form and related attachments, such as peer review photos or other supporting materials.

NTNU Capstone Course Subsidiary Program (Capstone Course Module) Peer Review Feedback Form

The capstone course "Peer Review and Feedback" consists of three parts: pre-lesson briefing, in-class observation and post-lesson discussion. The main purpose is to enable the teachers of each course in the capstone course module (including cornerstone courses, keystone courses and capstone courses) to understand the relevance of students' professional core abilities in these courses, and to provide the department with a review of the course structure and strengthen the vertical alignment or horizontal connection of the courses.

The process of the integrated course can be: 1. The department head and the integrated course teacher can first invite the teachers of the relevant cornerstone courses and keystone courses; 2. Agree on the time of pre-lesson briefing, in-class observation and post-lesson discussion; 3. In-class observation is filled out by each observing teacher (form as P.3), pre-lesson briefing and post-lesson discussion meetings can be assisted by teaching assistants to organize (form as P.2, P.4), as a reference basis for the department's course structure.

Observation teacher information form

Department		School year	
Course type	Course title	Teacher	
Capstone course			
Keystone course			
Cornerstone course			
Other	If teachers from other departments or schools observe the class, please fill in the name of the school and department in this space.		

Note: You can add or delete tables as needed.

I. Pre-lesson briefing

The pre-lesson briefing time can be arranged for 15-20 minutes. The meeting can prepare relevant information such as the department's course structure, the capstone course syllabus, etc. for the observing teachers. The capstone course teacher can first explain the course design and arrangement. The observing teachers can look at the observation aspects of the in-class observation (next page) to understand the observation aspects and content, form and confirm the observation focus (choose one of the concerned observation suggestions), and propose corresponding data collection methods according to the observation focus. In addition, confirm the time and place of the in-class observation and post-lesson discussion meeting again, and explain other matters needing attention.

Pre-lesson briefing time	Year____Month____Day ___：___To___：		
Filler	（Filler）	Method/Location	☐On-line ☐Physical meeting：_____ room
Summary			
Appendix: Please provide relevant attachments for peer observation, such as briefing photos or other information.			

II. In-class observation

The capstone course teacher should explain to the students at least one week before the observation that the teacher will observe the class and other matters. The observing teachers can use the following table to record relevant quantitative factual data to answer the observation focus of concern in the pre-lesson briefing, and collect concrete factual data, such as: student reactions, student cooperation status, etc., as discussion topics for the post-lesson discussion.

In-class observation time	Year____Month____Day ___：___To___：	
Observation teacher name		
Observation aspects	**Observation suggestions**	**Observation summary**
Capstone Course Module	1. Which department courses/field specialties are integrated in the capstone course ? 2. Which core abilities of the department are examined in the capstone course? 3. Is the capstone course closely related to the requirements and relevance of the department's professional accreditation? 4. Is the capstone course closely related to the basic courses and core courses? 5. **What do you think you can do to modify your fundamental course or core course that you instruct, according to the students' performance in the comprehensive course, to assist them in better preparation?**	
Student learning behavior	1. Can students integrate and apply the specialized knowledge they have learned in the department appropriately? 2. Can students clearly understand the knowledge context of their field of study? 3. Are students' abilities in literature or data analysis sufficient? 4. Are students' abilities in teamwork sufficient? 5. Are students' oral/written expression abilities sufficient?	
Comprehensive feedback	You can give 1-2 advantages and features. You can list one area for improvement (if any).	

III. Post-lesson discussion

The post-lesson discussion time can be arranged for 20-30 minutes. The observing teachers can examine and discuss the collected data from different perspectives and respond to the focus questions, share their gains and ideas with each other, and provide feedback and inspiration for the department's courses, and formulate future teaching and learning strategies and actions.

Post-lesson discussion time	Year＿＿Month＿＿Day ＿＿：＿＿To＿＿：		
Filler	（Filler）	Method/Location	☐On-line ☐Physical meeting：＿＿＿＿room
Summary			
Appendix: Please provide relevant attachments for peer observation, such as photos or other information.			

Observation teacher (signature)： **Date**：

Department head (signature)：