

# National Taiwan Normal University Online Course Teaching Plan

Instructions: According to **Article 6 of the Implementation Regulations Regarding Distance Learning by Universities**, Departments/Programs offering distance learning courses, shall present a course plan and submit it for approval by the university-level academic affairs committee. The course plan referred to in the preceding paragraph shall set forth learning objectives, the target student group, a course outline, teaching methods, interactive student-teacher discussion, grading and course requirements. The course plan shall be posted on the Internet.

1. **Chinese Course Name:** 生醫與健康數據分析
2. **English Course Name:** Biomedical and Health Data Analytics
3. **Course start date:** Fall semester of 2023 (yyyy)
4. **Course review submission record**(☒ if applicable):
  - ☐ (1) It is a new online course or an existing face-to-face course switching to online course in this semester
  - ☒ (2) It is an existing online course; the latest University's Course Committee approval was in the Fall semester of 2022 (academic year)
    - ☐ (2. 1) The 5-year validity period has expired; a new application is required.
    - ☐ (2. 2) In case of a major change in the original approved course or if the revision ratio exceeds 30%, reapplication is required.

## 5. Basic Course Information (☒ if applicable)

(1)	Instructor Name & Title	Biomedical and Health Data Analytics
(2)	Instructor Sources	<input type="checkbox"/> Appointed by Departments <input checked="" type="checkbox"/> Appointed by General Education Center <input type="checkbox"/> Both of Above <input type="checkbox"/> Others:
(3)	College/Department/Center	教務處共同教育委員會邏輯與程式教育組 Computational Thinking and Programming Education Division
(4)	School System	<input checked="" type="checkbox"/> Undergraduate Program <input type="checkbox"/> Master's Program <input type="checkbox"/> BA/MA Joint Course <input type="checkbox"/> MA/PhD Joint Course <input type="checkbox"/> PhD Program <input type="checkbox"/> Continuing Education Master's Program
(5)	Program Type	<input checked="" type="checkbox"/> Full-time Program <input type="checkbox"/> Part-time Program <input type="checkbox"/> Others:
(6)	Course Type	<input checked="" type="checkbox"/> Common Courses <input type="checkbox"/> General Courses <input type="checkbox"/> School Required Courses <input type="checkbox"/> Professional Courses <input type="checkbox"/> Educational Courses <input type="checkbox"/> Other:
(7)	Required Courses	<input checked="" type="checkbox"/> University-required <input type="checkbox"/> College-required <input type="checkbox"/> Graduate Institute-required <input type="checkbox"/> Department-required <input type="checkbox"/> Others:
(8)	Course Duration	<input checked="" type="checkbox"/> One Semester (half year) <input type="checkbox"/> Two Semesters (one year) <input type="checkbox"/> Others:
(9)	Required/Elective Course	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/> Others:
(10)	Course Credits	2

(11)	Average of Face-to-Face Teaching Hours Per Week	0.75 hour(s)/week (Divide the total "face-to-face teaching" hours, including the hours of face-to-face teaching and synchronous teaching, by the total number of course weeks.)
(12)	Number of Classes	1
(13)	Estimated Total Number of Students	50
(14)	EMI Courses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(15)	Type of Cooperation with Domestic/Foreign Universities (omit if inapplicable)	Cooperative University: _____; Department/Institute: _____ <input type="checkbox"/> Partner University <input type="checkbox"/> Dual-Degree Program <input type="checkbox"/> Overseas Special Program <input type="checkbox"/> Others: _____
(16)	Course Platform Website (asynchronous teaching is required)	NTNU online learning platform: <a href="https://moodle.ntnu.edu.tw/">https://moodle.ntnu.edu.tw/</a>
(17)	Syllabus Website	<a href="http://courseap.itc.ntnu.edu.tw/acadmOpenCourse/index.jsp">http://courseap.itc.ntnu.edu.tw/acadmOpenCourse/index.jsp</a>

## 6. Course Teaching Design and Implementation Method

(1)	Course Goals	This course introduces the use of health data from wearable devices and patient data from electronic health records (EHR) to explore the potential of data driven personal health management and study the role of data in biomedical research and healthcare systems.						
(2)	Target Student Group	Students with basic computational thinking and programming concepts, such as students who have studied "Computational Thinking and Programming" at NTNU or its equivalent.						
(3)	Prerequisite(s)	Elementary English proficiency						
(4)		Week	Topics	Learning Objectives (From the perspective of students)	Teaching Interactive Design (Multiple choices allowed)	Testing/Evaluation Activities (Multiple choices allowed. Choose "None" if not designed for the week.)	Teaching Method and Hours (fill-in the number of hours, omit if none)	
							Face-to-Face Teaching	Distance learning Synchro nous      Asynchr onous
		1	Introduction	Explore the topics and concepts that the course covers	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others: _____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: _ Discussion forum participation		2

				<input type="checkbox"/> None			
2	The Very Basics of Databases	Possess an introductory understanding of databases	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others:_ Discussion forum participation <input type="checkbox"/> None			2
3	Data Types	Learn about the data types	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None			2
4	Data Types	Learn about the data types	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input type="checkbox"/> Others:_____			2
5	Health Data from Wearable Devices	Understand the collection and utilization of health data from wearable devices	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None	2		
6	Data Preparation: Select and Filter	Learn the concepts of data preprocessing and their applications	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None			2
7	Data Preparation: Formula	Learn the concepts of data preprocessing and their applications	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review	<input type="checkbox"/> Tests <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> _____ exam			2

				<input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> _____ report <input type="checkbox"/> Others:_____				
	8	Data Preparation: Formula	Learn the concepts of data preprocessing and their applications	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None			2	
	9	Midterm Discussion	Brainstorming in a group setting	<input checked="" type="checkbox"/> Topic discussion <input checked="" type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input type="checkbox"/> Others:_____		2		
	10	Final Project Inspiration	Conceptualize the project	<input checked="" type="checkbox"/> Topic discussion <input checked="" type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None			2	
	11	Electronic Health Record (EHR) and Biobank	Learn about EHR and Biobanks	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None	2			
	12	International Classification of Diseases (ICD)	Learn about ICD	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others:_____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None			2	

		13	Blend Different Sources of Data: Join and Union	Learn to deal with data from multiple sources	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others: _____	<input type="checkbox"/> Tests <input checked="" type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input type="checkbox"/> Others: _____ <input type="checkbox"/> None		2	
		14	Data Visualization	Learn to create visualizations	<input checked="" type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input type="checkbox"/> Peer review <input type="checkbox"/> Instructor feedback <input type="checkbox"/> Others: _____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Discussion forum participation <input type="checkbox"/> None			2
		15	Presentation	Present the findings and learn from the others	<input type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input checked="" type="checkbox"/> Peer review <input checked="" type="checkbox"/> Instructor feedback <input type="checkbox"/> Others: _____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Final project presentation <input type="checkbox"/> None		2	
		16	Presentation / Wrap Up	Present the findings and learn from the others	<input type="checkbox"/> Topic discussion <input type="checkbox"/> Group discussion <input checked="" type="checkbox"/> Peer review <input checked="" type="checkbox"/> Instructor feedback <input type="checkbox"/> Others: _____	<input type="checkbox"/> Tests <input type="checkbox"/> Assignments <input type="checkbox"/> _____ exam <input type="checkbox"/> _____ report <input checked="" type="checkbox"/> Others: Final project presentation <input type="checkbox"/> None		2	
(5)	Teaching Methods	( <input checked="" type="checkbox"/> if included; multiple choices allowed) <input checked="" type="checkbox"/> 1. Provide primary and supplementary materials for online courses <input checked="" type="checkbox"/> 2. Provide face-to-face teaching, number: <u>  2  </u> time(s), total hour(s): <u>  4  </u> hour(s) <input checked="" type="checkbox"/> 3. Provide synchronous teaching, number: <u>  4  </u> time(s), total hour(s): <u>  8  </u> hour(s) <input checked="" type="checkbox"/> 4. Provide asynchronous teaching, number: <u> 10 </u> time(s), total hour(s): <u> 20 </u> hour(s) <input checked="" type="checkbox"/> 5. Provide topic discussion activities <input checked="" type="checkbox"/> 6. Provide cooperative learning activities between students <input checked="" type="checkbox"/> 7. Mutual learning through students' works <input type="checkbox"/> 8. Others: (please specify)							

(6)	Learning Management System (moodle)	<p>Which moodle functions are used in this course? (■ if included; multiple choices allowed)</p> <p>■ 1. Personal data</p> <p>■ 2. Course information</p> <p>■ 3. Latest News release &amp; browse</p> <p>■ 4. Course materials viewing &amp; download</p> <p>■ 5. Grade system management &amp; inquiry (omit if inapplicable)</p> <p><input type="checkbox"/> 6. Perform online testing (omit if inapplicable)</p> <p>■ 7. Learning information</p> <p>■ 8. Interactive learning design (chat room or discussion area)</p> <p><input type="checkbox"/> 9. Other related functions: (please specify)</p>
(7)	Public Information about Interactive Teaching	Instructor Profile and Published Works (webpage link instructions can be attached): <a href="https://web.ntnu.edu.tw/~ptm110_14067/">https://web.ntnu.edu.tw/~ptm110_14067/</a>
		Instructor E-mail: elim@ntnu.edu.tw
		Online Office Hours (at least 1 hour per week): Mon 、 Wed : 11:30-12:30
		Teaching Assistant's Name/E-mail (omit if inapplicable):
		Others(omit if inapplicable):
(8)	Course Material Production	<p>(■ if included; multiple choices allowed)</p> <p>■ 1. Provide appropriate reminders of key points</p> <p>■ 2. Provide teaching-related examples</p> <p>■ 3. Provide teaching-related exercises and reflective activities</p> <p>■ 4. Provide supplementary teaching materials or online resources</p> <p>■ 5. Provide instructions for self-directed learning</p> <p>■ 6. Learning objectives are consistent with course goals</p> <p><input type="checkbox"/> 7. Others:</p>
(9)	Assignment Submission Method	<p>(■ if included; multiple choices allowed)</p> <p>■ 1. Provide online assignment content description</p> <p>■ 2. Assignment file upload and download</p> <p>■ 3. Others:</p>
(10)	Assessment	<p>※ <b>To comply with the spirit of online course design, please understand and agree to the contents of the following 3 items, and provide detailed description:</b></p>

		<ul style="list-style-type: none"> <li>■ 1. The course can provide evaluation results and feedback for each learning evaluation</li> <li>■ 2. The evaluation has taken the students online learning history and participation level into account</li> <li>■ 3. The percentage of each score is explained in detail below: (Evaluation methods, and their total score percentage) (1) Assignments : 20% (2) Class participation and involvement : 20% (3) Final project : 40% (4) Final project presentation : 20%</li> </ul>
(11)	Precautions for Class:	<ul style="list-style-type: none"> <li>1. Please provide each group member's email (same as the one on Moodle) when forming a group.</li> <li>2. Please respect intellectual property rights.</li> </ul>
(12)	<p><b><u>Observe intellectual property rights in the creation of course content.</u></b></p> <p>※ Pay attention to any infringement of copyright or other rights in the creation of relevant teaching content.</p> <p>※ If the copyright for any part of the teaching content is owned by others and authorization has been obtained from the rights holder, please indicate the source of the material.</p>	