國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	表面分析 Surface Analysis	授課教師 Instructor	藍吉特 Dr. Ranjit A. Patil

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
   Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
   Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Books：(100 % 英文內容 Percentage in English) [1] *Surface and Thin Film Analysis* - H. Bubert, H. Jenett, Wiley-VCH, Weinheim, Germany. 2002 [2] *Surface Analysis - The principal Techniques*- J. C. Vickerman, 2nd Ed., John Wiley & Sons, New York, USA, *2009* [3] *Surface Analysis Methods in Materials Science* - D. J. O'Connor, B. A. Sexton, R. St. C. Smart, Springer-Verlag, Berlin, Germany, 1991 2.自製教材 Self-made Materials： Summarized materials for the topics. 　採用英文之比例(Percentage in English) 100 % 3.其他補充說明 Others：

雙語教學方式(可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing ■小組討論 Group Discussion ■口頭問答 Q&A ■問題導向 Problem Based Learning □協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	● 期中/期末考：100 % 以上英文試題，學生以英文答題 100 %。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ● 英文期中/期末報告：100 % 以英文表達。 The percentage of using English in midterm or final oral presentation ● 全英語口頭簡報 (含 QA 問答)20 分鐘以上(**一般科系專業課、碩博專業課程必須包含此評量方式**) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ● 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：100 % English 15 % (Daily Performance and Participation in Class) + 15 % (Homework/Reports) + 30 % (Mid-term exam) + 40 % (Final exam)

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to the Course and Surface Science	Lecturing
W2	Vacuum Technology for Applied Surface Science	Lecturing, Group Discussion, Q & A
W3	Scanning Electron Microscopy (SEM)	Lecturing, Group Discussion, Q & A
W4	Transmission Electron Microscopy (TEM)	Lecturing, Group Discussion, Q & A
W5	Energy-dispersive X-ray Spectroscopy (EDXS)	Lecturing, Group Discussion, Q & A
W6	Electron Backscattering Spectroscopy (EBS)	Lecturing, Group Discussion, Q & A
W7	X-ray photoelectron Spectroscopy (XPS)	Lecturing, Group Discussion, Q & A
W8	X-ray photoelectron Spectroscopy (XPS)	Lecturing, Group Discussion, Q & A
W9	Mid-term Examination	Mid-term Examination
W10	Auger Electron Spectroscopy (AES)	Lecturing, Group Discussion, Q & A
W11	Low-energy Electron Diffraction (LEED)	Lecturing, Group Discussion, Q & A
W12	Atomic Force Microscopy (AFM)	Lecturing, Group Discussion, Q & A
W13	Scanning Tunneling Microscopy (STM)	Lecturing, Group Discussion, Q & A
W14	Surface Enhanced Raman Scattering (SERS)	Lecturing, Group Discussion, Q & A
W15	Secondary Ion Mass Spectrometry (SIMS)	Lecturing, Group Discussion, Q & A
W16	Secondary Ion Mass Spectrometry (SIMS)	Lecturing, Group Discussion, Q & A
W17	Revision of the class	Lecturing, Group Discussion, Q & A
W18	Final Examination	Final Examination

The teacher can make appropriate adjustments to the above weekly schedule as the course progresses, and the schedule may be subject to change.

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	科技英文 Scientific English	授課教師 Instructor	藍吉特 Dr. Ranjit A. Patil

<table>
<tr>
<td colspan="2">教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。
Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
Please state bilingual instructor's teaching weeks and hours in course outline section.</td>
</tr>
<tr>
<td>課程教材
Material</td>
<td>1.指定課本書名 Book：(100 % 英文內容 Percentage in English)

[1] Scientific English - R. A. Day, N. Sakaduski, 3rd Ed, Greenwood Publications, Oxford, 2011

[2] Several online sources will be shared with students from time to time

2.自製教材 Self-made Materials： Summarized materials for the topics.
　　採用英文之比例(Percentage in English)_100 %

3.其他補充說明 Others：</td>
</tr>
<tr>
<td>語教學方式(可多選，或簡述)
Bilingual Teaching Strategies</td>
<td>■教材講述 Lecturing ■小組討論 Group Discussion ■口頭問答 Q&A

■問題導向 Problem Based Learning □協同教學 Collaborative Teaching

■分組報告 Group Report

□其他方式說明 Others：</td>
</tr>
<tr>
<td>評量方式
Grading</td>
<td>● 期中/期末考：100 % 以上英文試題，學生以英文答題 100 %。

The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper.

● 英文期中/期末報告：100 % 以英文表達。

The percentage of using English in midterm or final oral presentation

● 全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)

English oral presentation including Q&A session at least 20 minutes

(Department cores, master's degree and doctoral degree courses so must have

● 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：100 % English

15 % (Daily Performance and Participation in Class) + 15 % (Homework/Reports) + 30 % (Mid-term exam) + 40 % (Final exam)</td>
</tr>
</table>

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction and outline of the class	Lecturing
W2	Principles of Scientific Writing	Lecturing, Group Discussion, Q&A
W3	Kinds of Writing and Writing Style	Lecturing, Group Discussion, Q&A
W4	The English Language and Grammar	Lecturing, Group Discussion, Q&A
W5	Words and Name Words (Nouns and Pronouns)	Lecturing, Group Discussion, Q&A
W6	Action Words (Verbs)	Lecturing, Group Discussion, Writing Practice
W7	Descriptive Words (Adjectives, Adverbs, and Articles)	Lecturing, Group Discussion, Writing Practice
W8	Function Words (Conjunctions, Prepositions, and Interjections)	Lecturing, Group Discussion, Writing Practice
W9	Mid-term Examination	Mid-term Examination
W10	Prefixes and Suffixes	Lecturing, Writing practice, Group Discussion
W11	Redundancies and Jargon	Lecturing, Writing practice, Group Discussion
W12	Abbreviations, Acronyms, and Initialisms	Lecturing, Writing practice, Group Discussion
W13	Phrases and Clauses	Lecturing, Writing practice, Group Discussion
W14	Sentences and Paragraphs	Lecturing, Writing practice, Group Discussion
W15	Voice, Person, and Tense	Lecturing, Writing practice, Group Discussion
W16	Punctuation	Lecturing, Writing practice, Group Discussion
W17	Summary of the Course	Group Discussion, Q & A
W18	Final Examination	Final Examination
Teachers can make appropriate adjustments to the above weekly schedule as the course progresses, and the schedule may be subject to change.		

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	薄膜製程技術與薄膜材料分析 Thin film Fabrication Technology and Materials Analysis	授課教師 Instructor	藍吉特 Dr. Ranjit A. Patil

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Books：(100 % 英文內容 Percentage in English) [1] *The Material Science of Thin Films*- M. Ohring, Academic Press, San Diego, USA, 1992 [2] *Surface and Thin Film Analysis* - H. Bubert, H. Jenett, Wiley-VCH, Weinheim, Germany. 2002 2.自製教材 Self-made Materials： Summarized materials for the topics. 　採用英文之比例(Percentage in English) 100 % 3.其他補充說明 Others：

雙語教學方式(可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing ■小組討論 Group Discussion ■口頭問答 Q&A ■問題導向 Problem Based Learning □協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	● 期中/期末考：100 % 以上英文試題，學生以英文答題 100 %。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ● 英文期中/期末報告：100 % 以英文表達。 　The percentage of using English in midterm or final oral presentation ● 全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have ● 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：100 % English 　15 % (Daily Participation in Class) + 15 % (Homework/Reports) + 　30 % (Mid-term exam) + 40 % (Final exam)

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction and Outline of the Course	Lecturing
W2	Introduction to Thin Films	Lecturing, Group Discussion, Q & A
W3	Vacuum Science and Technology	Lecturing, Group Discussion, Q & A
W4	Physical Vapor Deposition	Lecturing, Group Discussion, Q & A
W5	Chemical Vapor Deposition	Lecturing, Group Discussion, Q & A
W6	Film Formation and Structure	Lecturing, Group Discussion, Q & A
W7	Characterization of Thin Films	Lecturing, Group Discussion, Q & A
W8	Epitaxy	Lecturing, Group Discussion, Q & A
W9	Mid-term Examination	Mid-term Examination
W10	Interdiffusion and Reactions in Thin Films	Lecturing, Group Discussion, Q & A
W11	Interdiffusion and Reactions in Thin Films	Lecturing, Group Discussion, Q & A
W12	Electrical and Magnetic Properties of Thin Films	Lecturing, Group Discussion, Q & A
W13	Electrical and Magnetic Properties of Thin Films	Lecturing, Group Discussion, Q & A
W14	Optical Properties of Thin Films	Lecturing, Group Discussion, Q & A
W15	Optical Properties of Thin Films	Lecturing, Group Discussion, Q & A
W16	Modification of Surfaces and Films	Lecturing, Group Discussion, Q & A
W17	Modification of Surfaces and Films	Lecturing, Group Discussion, Q & A
W18	Final Examination	Final Examination

The teacher can make appropriate adjustments to the above weekly schedule as the course progresses, and the schedule may be subject to change.

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	數位通訊技術 Digital Communication technology	授課教師 Instructor	迪克莎喬娜 Diksha Chauhan

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book： 　　1. Digital communications - Simon Haykin, John Wiley, 2005 　　2. Principles of Communication Systems – H. Taub and D. Schilling, TMH, 2003 　　(100%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_____% 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching □分組報告 Group Report □其他方式說明 Others： Assignments and surprise test/quiz

成績評量方式 Grading	□　期中/期末考：100%以上英文試題，學生以英文答題100%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：100%以英文表達。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：Assignment, quiz/surprise test.

Grading:

Midterm: 30

End term: 40

Oral presentation + QA: 10

Assignments: 10

Quiz: 10

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to course	Lecturing, QA, Discussion
W2	Elements of digital communication systems	Lecturing, QA, Discussion
W3	Elements of PCM: Sampling, Quantization & Coding	Lecturing, QA, Discussion
W4	Quantization error, Companding in PCM systems.	Lecturing, QA, Discussion, Quiz
W5	Differential PCM systems (DPCM). Time Division Multiplexing & Demultiplexing	Lecturing, QA, Discussion
W6	Delta Modulation	Lecturing, QA, Discussion, Assignment
W7	Digital Modulation Techniques	Lecturing, QA, Discussion
W8	Digital Modulation Techniques	Lecturing, QA, Discussion
W9	**Mid term**	
W10	Information Theory	Lecturing, QA, Discussion
W11	Source Coding	Lecturing, QA, Discussion
W12	Linear Block Codes	Lecturing, QA, Discussion
W13	Linear Block Codes	Lecturing, QA, Discussion
W14	Cyclic Codes	Lecturing, QA, Discussion, Assignment
W15	Convolution Codes	Lecturing, QA, Discussion, Quiz
W16	Syllabus revision	Lecturing, QA, Discussion
W17	Syllabus revision	Lecturing, QA, Discussion
W18	**Final exam**	

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	高速半導體元件 High speed semiconductor devices	授課教師 Instructor	迪克莎喬娜 Diksha Chauhan

教學簡要說明	
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.	

課程教材 Material	1.指定課本書名 Book：1.High speed semiconductor devices by SM Sze 2.Semiconductor devices,2nd edition, by J.J.Sparks 3.(＿100＿%英文內容 Percentage in English) 4.自製教材 Self-made Materials：採用英文之比例(Percentage in English)100% 5.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　■小組討論 Group Discussion　　■口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching □分組報告 Group Report □其他方式說明 Others： Assignments and surprise test/quiz
成績評量方式 Grading	■ 期中/期末考：100 %以上英文試題，學生以英文答題 100%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：100%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes □(Department cores, master's degree and doctoral degree courses so must have 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：Assignments and quiz/surprise test

Final grading scheme:

Midterm: 30

End term: 40

Oral presentation + QA: 10

Assignments: 10

Quiz: 10

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to Semiconductors, Overview of Modern Semiconductor Devices	Lecturing, QA, Discussion
W2	Elements of carrier transport in semiconductor devices, PN Junction	Lecturing, QA, Discussion
W3	JFET	Lecturing, QA, Discussion
W4	The submicron MOSFET	Lecturing, QA, Discussion
W5	Homogeneous FET; MESFET	Lecturing, QA, Discussion
W6	Heterostructure FET	Lecturing, QA, Discussion, Assignment
W7	Bipolar transistors	Lecturing, QA, Discussion, Quiz
W8	Microwave diodes: introduction	Lecturing, QA, Discussion
W9	Midterm exams	
W10	Tunnel devices	Lecturing, QA, Discussion
W11	IMPATT	Lecturing, QA, Discussion
W12	Transferred electron devices :Gunn diode	Lecturing, QA, Discussion
W13	High-speed photonic devices: Introduction , LED	Lecturing, QA, Discussion
W14	Semiconductor lasers	Lecturing, QA, Discussion, Assignment
W15	PIN photodetector	Lecturing, QA, Discussion
W16	Avalanche photodiodes	Lecturing, QA, Discussion, Quiz
W17	Syllabus revision	QA, Discussion
W18	Final exam	

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan (114-2)

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	熱交換器設計 Heat Exchanger Design	授課教師 Instructor	庫秉弦 Dr. Abhishek Kumar kumar0313@nfu.edu.tw BAR-509A, Ph.: 05-6313108

<table>
<tr><td colspan="2" align="center">教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。
Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
<tr>
<td>課程教材
Material</td>
<td>1.指定課本書名 Book：Fundamentals of Heat Exchanger Design, Second Edition By Dusan P. Sekulic, Ramesh K. Shah (100%英文內容 Percentage in English)

2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)95%

3.其他補充說明 Others： Lecture notes and self-made study material</td>
</tr>
<tr>
<td>雙語教學方式
(可多選，或簡述)
Bilingual Teaching Strategies</td>
<td>☑ 教材講述 Lecturing ☑小組討論 Group Discussion ☑口頭問答 Q&A

☑ 問題導向 Problem Based Learning ☒ 協同教學 Collaborative Teaching

☒ 分組報告 Group Report

☑ 其他方式說明 Others： Assignment & Quiz</td>
</tr>
<tr>
<td>成績評量方式
Grading</td>
<td>☑ 期中/期末考：90%以上英文試題，學生以英文答題90%。
The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper.

☑ 英文期中/期末報告：90%以英文表達。

The percentage of using English in midterm or final oral presentation

☑全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)
English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have

☑ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：Attendance 10%, Assignment & Quiz 20%, Mid-term 30% ,</td>
</tr>
</table>

Final-term 40%

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Unit-1	Introduction to Heat Exchangers
W2	Unit-1	Heat Exchanger Fundamentals
W3	Unit-2	LMTD Method for Heat Exchanger Design
W4	Unit-2	Effectiveness–NTU Method
W5	Unit-3	Double-Pipe Heat Exchangers
W6	Unit-3	Shell-and-Tube Heat Exchangers
W7	Unit-4	Compact Heat Exchangers
W8	Unit-4	Plate Heat Exchangers
W9	**Midterm**	**Open Book**
W10	Unit-5	Microchannel and mini-channel heat exchangers
W11	Unit-5	Boiling and Condensation Heat Exchangers
W12	Unit-5	Boiling and Condensation Heat Exchangers
W13	Unit-6	Heat Exchanger Pressure Drop Analysis
W14	Unit-6	Thermal and Mechanical Stress in Heat Exchangers
W15	Unit-7	Fouling and Maintenance
W16	Unit-7	Heat Exchanger Optimization and Performance Evaluation
W17	Unit-8	Heat Exchanger Optimization and Performance Evaluation
W18	**Final term**	**Open Book**

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	數值熱傳 Numerical Heat Tranter	授課教師 Instructor	庫秉弦 Abhishek Kumar kumar0313@nfu.edu.tw 05-6313108

<table>
<tr><td colspan="4" align="center">教學簡要說明</td></tr>
<tr><td colspan="4">1.請依照授課班級英文分級程度規劃課程計畫書。
  Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
  Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
</table>

課程教材 Material	1.指定課本書名 Book：F. P. Incropera and D. P. Dewitt, "Fundamental of Heat and Mass Transfer" John Wiley and Sons (100%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) 100% 3.其他補充說明 Others： Lecture Notes

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	☑ 教材講述 Lecturing　☑ 小組討論 Group Discussion　☑ 頭問答 Q&A ☑ 問題導向 Problem Based Learning　☒ 協同教學 Collaborative Teaching ☒ 分組報告 Group Report ☑ 其他方式說明 Others：Assignments

成績評量方式
Grading
	☑ 期中/期末考：100%以上英文試題，學生以英文答題100%。
	  The percentage of English using in designing midterm/final exams; the percentage of English using in answering the exam paper.
	☑ 英文期中/期末報告：100%以英文表達。
	  The percentage of using English in midterm or final oral presentation
	☑ 全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)
	  English oral presentation including a Q&A session of at least 20 minutes (Department cores, master's degree, and doctoral degree courses so must have
	☑ 其他方式(請說明中英文比例)Others (please state the proportion of Mandarin and English in grading) ：100% (Attendance: 10%, Homework: 10%, Midterm: 40%, Final Exam 40%)

<table>
<tr><td colspan="3" align="center">課程進度 Course Outline</td></tr>
<tr><td align="center">週次
Week</td><td align="center">單元/主題
Unit/Topic</td><td align="center">教學活動重點及教材內容
Teaching Activities</td></tr>
<tr><td align="center">W1</td><td align="center">Unit-1</td><td>Introduction: Conduction, Convection, and Radiation</td></tr>
</table>

W2	Unit-1	Conduction rate equation, Thermal Properties of Matter, and Heat Diffusion Equation
W3	Unit-2	One-Dimensional, Steady-State Conduction: Plane Wall, Cylinder, Sphere Conduction Analysis
W4	Unit-2	Two-Dimensional, Steady-State Conduction: Heat Transfer from Extended Surface
W5	Unit-2	General Consideration and Solution Technique
W6	Unit-3	Transient Conduction: Lumped Capacitance Method
W7	Unit-3	Transient Conduction: Finite-Difference Method
W8	Unit-4	Conduction with Phase Change
W9	**Midterm**	**Open Book**
W10	Unit-4	Conduction with Phase Change
W11	Unit-5	Thermal Radiation
W12	Unit-5	Thermal Radiation
W13	Unit-5	Thermal Radiation
W14	Unit-6	Boiling and Condensation
W15	Unit-6	Boiling and Condensation
W16	Unit-7	Case Studies in Numerical Heat Transfer: Electronics Cooling
W17	Unit-7	Case Studies in Numerical Heat Transfer: Electronics Cooling
W18	**Final Exam**	**Open Book**

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	高等工程分析 Advanced Engineering Analysis	授課教師 Instructor	庫秉弦 Abhishek Kumar kumar0313@nfu.edu.tw

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：Advanced Engineering Mathematics, Dennis G. Zill, 6th Edition, Jones and Bartlett Publishers, 2018 (100% 英文內容 Percentage in English) 2. Bender, Ország, *Advanced mathematical methods for scientists and engineers*, Springer. 3.自製教材 Self-made Materials：80% 採用英文之比例(Percentage in English) 100% 4.其他補充說明 Others： Lecture notes

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	☑ 教材講述 Lecturing　　小組討論 Group Discussion ☑ 口頭問答 Q&A ☑ 問題導向 Problem Based Learning　　☒ 協同教學 Collaborative Teaching ☑ 分組報告 Group Report ☑ 其他方式說明 Others：Assignments

成績評量方式 Grading	☑ 期中/期末考：100 %以上英文試題，學生以英文答題 100%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ☑ 英文期中/期末報告：100% 以英文表達。 The percentage of using English in midterm or final oral presentation ☑ 全英語口頭簡報 (含 QA 問答) 20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ☑ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：100%, (Attendance: 15%, Homework: 15%, Mid-Term: 30%, Final Exam: 40%)

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Unit-1	Introduction to Advanced Engineering Analysis: Course Overview and Structure, Importance of advanced engineering analysis in solving real-world

		problems
W2	Unit-1	Review of basic mathematics: Linear algebra, vector calculus, differential equations, Problem-solving strategies, and tools for engineering analysis
W3	Unit-2	Linear Algebra for Engineering: Applications of linear algebra in structural analysis and system dynamics
W4	Unit-2	Systems of Linear Equations: Direct methods (Gaussian elimination, LU decomposition), Applications in solving large systems from engineering models
W5	Unit-3	Introduction to Ordinary Differential Equations (ODEs): Types of ODEs: First-order, second-order, linear, nonlinear, Initial value problems and boundary value problems
W6	Unit-3	Analytical Solutions to ODEs, Homogeneous and non-homogeneous ODEs, Applications: Vibrations, thermal systems, and circuits
W7	Unit-3	Numerical Methods for ODEs: Euler's method, Runge-Kutta methods, and multistep methods
W8	Unit-4	Partial Differential Equations (PDEs) in Engineering: Classification of PDEs and their significance in engineering
W9	**Mid-Term**	**Project reports and PPT Presentation**
W10	Unit-4	Partial Differential Equations (PDEs) in Engineering: Introduction to the heat equation, wave equation, and Laplace's equation
W11	Unit-4	Analytical Solutions to PDEs
W12	Unit-5	Numerical Methods for Solving PDEs
W13	Unit-5	Fourier Analysis and Transforms
W14	Unit-5	Laplace Transform
W15	Unit -6	Case Studies and Current Trends in Engineering Analysis
W16	Unit-6	Case Studies and Current Trends in Engineering Analysis
W17	Unit-6	Case Studies and Current Trends in Engineering Analysis
W18	**Final Exam**	**Project reports and PPT Presentation**

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	繞射物理 Diffraction Physics	授課教師 Instructor	藍吉特 Dr. Ranjit A. Patil

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
 Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Books：(100 % 英文內容 Percentage in English) [1] Introduction to Optics, 3rd Ed., F.L. Pedrotti, L.S. Pedrotti, L.M. Pedrotti, 2007 [2] Optics, *4th ed*, Eugene Hecht, Pearson 2017 [3] Fundamentals of Photonics, 3rd *Ed*- B. A. Saleh and M. C. Teich, John Wiley & Sons, Inc. 2019 1.自製教材 Self-made Materials： Summarized materials for the various topics. 採用英文之比例(Percentage in English) 100 % 2.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing ■小組討論 Group Discussion ■口頭問答 Q&A ■問題導向 Problem Based Learning □協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	● 期中/期末考：100 % 以上英文試題，學生以英文答題 100 %。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ● 英文期中/期末報告：100 % 以英文表達。 The percentage of using English in midterm or final oral presentation ● 全英語口頭簡報 (含 QA 問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ● 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：100 % English 15 % (Daily Participation in Class) + 15 % (Homework/Reports) + 30 % (Mid-term exam) + 40 % (Final exam)

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to the course	Lecturing, Q & A
W2	Ray optics and Electromagnetic wave optics	Lecturing, Group Discussion, Q & A
W3	Superposition of Waves	Lecturing, Group Discussion, Q & A
W4	Interference of Light	Lecturing, Group Discussion, Q & A
W5	Optical Interferometry	Lecturing, Group Discussion, Q & A
W6	Fraunhofer Diffraction	Lecturing, Group Discussion, Q & A
W7	The Diffraction Grating	Lecturing, Group Discussion, Q & A
W8	Fresnel Diffraction	Lecturing, Group Discussion, Q & A
W9	Mid-term Examination	Mid-term Examination
W10	Fresnel Diffraction	Lecturing, Group Discussion, Q & A
W11	Guided wave optics and Fiber Optics	Lecturing, Group Discussion, Q & A
W12	Optical diffraction and Optical resonant cavities	Lecturing, Group Discussion, Q & A
W13	Optical Scattering	Lecturing, Group Discussion, Q & A
W14	Matrix Treatment of Polarization	Lecturing, Group Discussion, Q & A
W15	Production of Polarized Light	Lecturing, Group Discussion, Q & A
W16	Nonlinear Optics	Lecturing, Group Discussion, Q & A
W17	Review of the Course	Group Discussion, Q & A
W18	Final Examination	Final Examination

The teacher can make appropriate adjustments to the above weekly schedule as the course progresses, and the schedule may be subject to change.

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	類比積體電路設計 Analog integrated circuit design	授課教師 Instructor	迪克莎喬娜 Diksha Chauhan

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
　Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book： 1. Analog integrated circuit design - Chan Carusone, David A. (David Andrew) Johns, and Kenneth W. Martin 2. Op-Amps and Linear Integrated Circuit; 4th Ed. By Ramakant A Gayakwad 3.High speed semiconductor devices by SM Sze 4. Semiconductor devices,2nd edition, by J.J.Sparks 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_____% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching □分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	□　期中/期末考：100%以上英文試題，學生以英文答題100%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □　英文期中/期末報告：100%以英文表達。 　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報(含QA問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have 　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English

in grading）：

Midterm: 30

End term: 40

Oral presentation + QA: 10

Assignments: 10

Quiz: 10

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to course:	Lecturing, QA, Discussion
W2	Basics of Analog Circuits: overview of analog IC design Importance and applications	Lecturing, QA, Discussion
W3	Semiconductor Basics & IC Technology	Lecturing, QA, Discussion
W4	Semiconductor Basics & IC Technology	Lecturing, QA, Discussion, Quiz
W5	Operational Amplifiers (Op-Amps) Op-Amp Fundamentals (Ideal & Practical Models)	Lecturing, QA, Discussion
W6	Operational Amplifiers (Op-Amps) Op-Amp Configurations (Inverting, Non-Inverting, Integrators, Differentiators)	Lecturing, QA, Discussion, Assignment
W7	Op-Amp Applications (Filters, Comparators, Signal Processing)	Lecturing, QA, Discussion
W8	Diodes and Transistors in IC Design	Lecturing, QA, Discussion
W9	**Mid term**	**Mid term**
W10	Diode in Analog Circuits	Lecturing, QA, Discussion
W11	Bipolar Junction Transistor Basics	Lecturing, QA, Discussion
W12	MOSFET Basics	Lecturing, QA, Discussion
W13	Amplifier Design Concepts	Lecturing, QA, Discussion

W14	Feedback and Stability in Analog Circuits Feedback Topologies (Voltage/Current, Series/Shunt)	Lecturing, QA, Discussion, Assignment
W15	Filters and Oscillators, Trends in Analog IC Design ,	Lecturing, QA, Discussion, Quiz
W16	Syllabus revision	Lecturing, QA, Discussion
W17	Syllabus revision	Lecturing, QA, Discussion
W18	**Final exam**	**Final exam**

＊The teacher may make necessary adjustments to the weekly schedule as the course progresses. The

schedule is subject to modification based on course requirements and student needs.

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	AI 硬體加速 AI hardware acceleration	授課教師 Instructor	徐茂修 Hsu Mao-Hsiu

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
　Please design the course plan by following the English using percentage of the course English level.

2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：_ AI 硬體專屬晶片：最新技術未來創新發展 (__55___%英文內容 Percentage in English) 2.自製教材Self-made Materials：採用英文之比例(Percentage in English)____70___% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	□　期中/期末考：_____%以上英文試題，學生以英文答題_____%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：__80___%以英文表達。 　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Course intro & AI hardware overview	Intro to GPUs, TPUs, FPGAs, edge devices
W2	AI workflow & compute needs	From training to deployment, why acceleration is needed
W3	CPU vs GPU basics	Compare architecture, parallel threads, simple examples
W4	Intro to CUDA concepts	Kernels, blocks, grids (concept level, small demo)
W5	Deep learning on GPU	Run simple PyTorch/TensorFlow model on GPU
W6	Profiling & performance metrics	FPS, latency, throughput, power, basic tools
W7	Model compression & pruning	Smaller models, speed vs accuracy trade-off
W8	Quantization basics	FP32 vs FP16 vs INT8, simple quantized model demo
W9	ONNX & model conversion	Export model to ONNX, basic conversion flow
W10	Intro to TensorRT / other runtimes	Optimize and run model with an inference engine
W11	Edge AI devices (Jetson, Coral, etc.)	Deploy a small model to an edge device (concept/demo)
W12	Memory & bandwidth optimization	Batch size, input size, I/O bottlenecks
W13	Parallelism strategies	Data parallel, model parallel, pipeline ideas
W14	Deployment pipelines	Cloud vs edge deployment, containers/basic CI flow
W15	Final project planning	Choose an AI task and target hardware, plan steps
W16	Final project implementation	Optimize and deploy model, measure speedup
W17	Project demo & discussion	Group presentation, show performance results
W18	Review & course reflection	Summarize key ideas, feedback and future directions

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	先進半導體物理與元件專論 Advances in Semiconductor Physics and Devices	授課教師 Instructor	黃士哲 Shyh-Jer Huang

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
   Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
   Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名Book：＿＿＿＿＿＿＿＿＿ (＿＿＿%英文內容Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_100_% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　□小組討論 Group Discussion　　■口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	□　期中/期末考：＿＿＿＿%以上英文試題，學生以英文答題＿＿＿%。 　　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □　英文期中/期末報告：＿＿＿＿%以英文表達。 　　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報(含QA問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　　English oral presentation including Q&A session at least 20 minutes 　　(Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Course kickoff; figure-first presentation method	• Course goals & EMI rules (materials 100% English; brief bilingual clarification allowed) • Live demo: model research talk + Q&A • Deconstruct the demo: storyline, "title-as-claim", slide density • Mini-workshop: ABPNT (Axis–Baseline–Pattern–Numbers–Takeaway) on one sample figure • One-Pager intro (Context–Gap–Method–Results–Limitations) • Topic selection and presentation schedule
W2	Figure–Paragraph–Claim mapping (FPC)	• Locate all "Fig. x" paragraphs in a paper • Build a Figure–Paragraph Map (FPM) for one figure • Extract 3 key numbers and experimental conditions • Draft one-sentence B1-level claim per figure • Pair drill: 60-second ABPNT figure talk • Discussant role & peer-review rubric briefing
W3	Slides that speak; voice & Q&A basics	• "Title-as-claim" rewrite lab • Slide minimalism: ≤12 words/line; one idea/slide • Voice pacing & filler control with shadowing practice • Q&A 4-step method: listen → restate → segment → bridge • Build Round-1 outline and micro-rehearsals (record & time)
W4	Round 1 — Lightning talks	• Student lightning talks with Q&A • Moderated common Q&A pool • Peer scoring and discussant short comments • Instructor clinic: axes, units, numeric claims, scope statements • Reading assignments for next week
W5	Instructor paper lecture: QD-LED/LD I (EL/L–I–V/ASE)	• Guided walkthrough using instructor paper plus two contrasts • Figure-first drill on EL spectra and L–I–V; annotate axes/units/thresholds • ASE/threshold interpretation lab • Pair 60-second figure talks with numeric claims • Class Q&A and clarification of key methods
W6	Storyline & storyboard for Round 2	• Method-flow diagrams: how to "speak" a method slide • Build 12-slide storyboard template • Comparison table: baseline vs. proposed work • Peer edits on titles-as-claims and figure captions • Rehearsal ladder: read → keywords → no script • Extended abstract briefing
W7	Round 2 — Short talks + Q&A	• Student short talks with assigned discussant • Discussant oral critiques and guided questions • Peer scoring (trim extremes) and consolidation • Instructor debrief: validity, statistics, error bars, claim
W8	Instructor paper lecture: HEMT I (transfer/gm, breakdown, double-pulse)	• Instructor walkthrough (e.g., InAlN/GaN on SiC exemplar) • Figure mapping on I_{DS}–V_{DS} / I_{DS}–V_{GS} (log/lin) and g_m • Double-pulse energy interpretation (E_{on}/E_{off}) and conditions • Backup-slide design for corner cases and temperature effects • Pair 60-second figure talks with numeric claims
W9	Midterm rehearsal clinic	• Openings and hooks; clarity in first 20 seconds

	(for Round 3)	• Rotating mini-runs with live editing and timing • "Limitations & applicability" phrasing lab • Q&A hot-seat with challenging questions • Finalize Round-3 storyboard and slide order
W10	Round 3 — Seminar talks + Q&A	• Student seminar talks with discussant prompts • Rubric-based peer scoring and written comments • Instructor synthesis: storyline integrity and evidence chaining
W11	Instructor paper lecture: RRAM I (tri-layer/OPT, endurance/retention, models)	• Instructor walkthrough: tri-layer $HfO_2/Al_2O_3/HfO_2$ and OPT context • Endurance/retention figure reading (log-time, temperature conditions) • Model slide: filament & vacancy migration—speaking the schematic • Figure–paragraph quoting: short quote + English paraphrase • Pair 60-second figure talks with conditions stated
W12	Comparative reading & limitations	• Choose two contrasting papers on the same theme • Build comparison matrix: methods / results / limits • Phrase "limits and scope" in B1 English with numeric bounds • In-class rewrite of over-dense slides (split and clarify) • Capstone storyline planning and slide selection
W13	Capstone rehearsal (Round 4 prep)	• Final checklist: claim titles, numbers, quotes, scope • Full trial runs with timers and recording • Peer critique using rubric; action-item lists • Instructor 1:1 micro-coaching on voice and signposting • Logistics and discussant assignments for Round 4
W14	Round 4 — Capstone talks + Q&A	• Formal capstone presentations with panel-style Q&A • Immediate scoring and concise feedback • Archiving of slides and recordings
W15	Instructor paper lecture: QD-LED/LD II (cavities, mirrors, thermal/reliability)	• Cavity & mirror design figures (DBR, IZO–Ag–IZO) and interpretation • Thermal & lifetime data reading; reliability takeaways • Drill: from figure → claim → condition (with numbers) • Student micro-talks (two figures each) and feedback • Portfolio planning and evidence collection
W16	From slides to a technical brief (writing workshop)	• Structure of a 2–3 pages technical brief (EDL/ASS style) • Convert result slides into prose while preserving numbers/units • Citation workflow: Zotero/CSL → manual DOI/page checks • Language polishing with AI; prompt disclosure & timestamps • Peer editing and revision planning
W17	Speaking portfolio & oral check	• Portfolio requirements and curation (4 talks, figure cards, Q&A bank) • Record 60-second figure clips for before/after comparison • Oral checks: mini viva on methods and limits • Instructor feedback on voice, pacing, signposting • Finalize submissions and documentation
W18	Showcase, make-ups & reflection	• Mini-symposium showcase (invite peers/faculty if available) • Make-up or improved presentations as needed • Course reflection: improvements and next targets • Exit survey and feedback collection

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	程式語言 Programing Language	授課教師 Instructor	徐茂修 Hsu Mao-Hsiu

	教學簡要說明
	1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名Book：＿＿核心開發者親授！PyTorch深度學習攻略(Deep Learning with Pytorch)_ (_70___%英文內容 Percentage in English) 2.自製教材Self-made Materials：採用英文之比例(Percentage in English)＿＿70___% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　■小組討論 Group Discussion　　■口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	□　期中/期末考：＿＿＿＿%以上英文試題，學生以英文答題＿＿＿＿%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：＿＿＿＿%以英文表達。 　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報(含QA問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Course Introduction & Setup	Intro to course, install Python
W2	Python basics: variables	Data types, simple calculations
W3	Python basics: control flow	If, loops, simple games
W4	Lists, dictionaries, functions	Basic data structures, functions
W5	Files & errors	Read/write files, try/except
W6	Data handling with NumPy/Pandas	Simple data analysis, charts
W7	Intro to ML & DL	Basic concepts, small example
W8	Large language models	Text generation concepts
W9	Using LLM API with Python	Call API, simple text bot
W10	Prompt engineering	Write better prompts
W11	Text project I	Simple chatbot / Q&A bot
W12	Text project II	Summarizer / writer tool
W13	Image generation intro	GAN / diffusion overview
W14	Using image tools	Text-to-image practice
W15	Final project planning	Choose topic, plan functions
W16	Final project development	In-class coding, guidance
W17	Project demo	Group presentation & feedback
W18	Review & assessment	Course review, reflection

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	高等振動學與模態分析 Advanced Vibration and Modal Analysis	授課教師 Instructor	黃運琳 / 教授 Yunn-Lin Hwang / Professor

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：_HARRIS' SHOCK AND VIBRATION HANDBOOK, 5th Edition, ISBN: 0-07-137081-1, 1456 Pages._ (_100_%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_____% 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	■ 期中/期末考：__100___%以上英文試題，學生以英文答題__80___%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：__70___%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities

W1	Basic Vibration Theory	Vibration of a Resiliently Supported Rigid Body
W2	Introduction of RecurDyn	Software demonstration, Q&A
W3	Nonlinear Vibration	Self-Excited Vibration
W4	Dynamic Vibration Absorbers and Auxiliary Mass Dampers	Vibration of Systems Having Distributed Mass and Elasticity
W5	Transient Response to Step and Pulse Functions	Effect of Impact on Structures
W6	Mechanical Impedance	Statistical Methods for Analyzing Vibrating Systems
W7	Vibration Transducers	Vibration Measurement Instrumentation
W8	Vibration Analyzers and Their Use	Measurement Techniques
W9	Midterm Examination	Open-Book Midterm Exam.
W10	Condition Monitoring of Machinery	Strain-Gage Instrumentation
W11	Calibration of Pickups	Shock and Vibration Standards
W12	Test Criteria and Specifications	Experimental Modal Analysis
W13	Concepts in Vibration Data Analysis	Concepts in Shock Data Analysis
W14	Vibration of Structures Induced by Ground Motion	Vibration Testing Machines
W15	Vibration Testing Machines	Part I. Shock Testing Machines
W16	Application of Digital Computers	Part I. Matrix Methods of Analysis
W17	Application of Digital Computers	Part II. Finite Element Models
W18	Final Examination	Take-Home Final Exam. and Final Project

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	機器系統動力學 Dynamics of Machine System	授課教師 Instructor	黃運琳 / 教授 Yunn-Lin Hwang / Professor

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
  Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師,請於課程進度註明雙語導師授課之週次時數。
  Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book: _Hamilton H. Mabie, Charles F. Reinholtz, 1987, Mechanisms and Dynamics of Machinery, 4th Edition, ISBN: 978-0-471-80237-2, 656 Pages._ (_100_%英文內容 Percentage in English) 2.自製教材Self-made Materials:採用英文之比例(Percentage in English)_____% 3.其他補充說明 Others:
雙語教學方式 (可多選,或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　■小組討論 Group Discussion　　■口頭問答 Q&A ■問題導向 Problem Based Learning　　□協同教學Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others:
成績評量方式 Grading	■期中/期末考:__100__%以上英文試題,學生以英文答題_80_%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告:_70_%以英文表達。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報(含QA問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading):

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction of Working Model 2D	Software demonstration, Q&A
W2	Introduction of RecurDyn	Software demonstration, Q&A
W3	Degrees Of Freedom	Lectures, Homework, Q&A
W4	Pendulum Dynamics	Lectures, Q&A
W5	Position Analysis of Machine System	Lectures, Homework, Q&A
W6	Velocity Analysis of Machine System	Lectures, Homework, Q&A
W7	Acceleration Analysis of Machine System	Lectures, Homework, Q&A
W8	Impact problems of Machine System	Lectures, Homework, Q&A
W9	Midterm Examination	Open-Book Midterm Exam.
W10	Spur Gear Machine System	Lectures, Homework, Q&A
W11	Bevel Gear Machine System	Lectures, Homework, Q&A
W12	Worm Gear Machine System	Lectures, Q&A
W13	Belt Machine System	Lectures, Homework, Q&A
W14	Chain Machine System	Lectures, Homework, Q&A
W15	High/Low Mobility Track Machine System	Lectures, Q&A
W16	Other Types of Machine System	Lectures, Homework, Q&A
W17	Final project presentation	Oral presentations for final reports
W18	Final Examination	Open-Book Final Exam.

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	線性系統分析 linear System Analysis	授課教師 Instructor	任才俊 Tsai-Jiun Ren

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
  Please design the course plan by following the English using percentage of the course English level.

2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
  Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：_Linear System Theory and Design (_100_%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)__100____% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　□小組討論 Group Discussion　　□口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching □分組報告 Group Report ■其他方式說明 Others：程式模擬 Computer Simulation
成績評量方式 Grading	■期中/期末考：_100____%以上英文試題，學生以英文答題_50___%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：_50____%以英文表達。 　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報(含QA問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction	課程簡介與線性系統課程會使用到的預備數學相關知識與符號 Course overview and a review of the preparatory mathematics and notation required for linear systems analysis
W2	Mathematical Descriptions of Systems	狀態方程式的表示法與系統區域線性化的方法 State-space representations and local linearization methods for nonlinear systems
W3	Mathematical Descriptions of Systems	透過實例來讓學生瞭解系統建模、線性化的應用，以及使用 Matlab 軟體進行系統模擬 System modeling and linearization through practical examples, and system simulation using MATLAB
W4	State Equation Representation	介紹狀態方程式的表示法，以及透過 Lagrange Equation 來建模 Introduction to state-space formulations and modeling using Lagrange equations
W5	Controllability and Observability	介紹系統可控性及其檢測方法 Introduction to system controllability and methods for testing controllability
W6	Controllability and Observability	介紹系統可觀察性及其檢測方法 Introduction to system observability and methods for testing observability
W7	State Space Description	介紹系統可控型態、可觀察型態的模型表示法 Introduction to controllable canonical forms and observable canonical forms of system models
W8	State Space Description	系統可控模型的模擬 Simulation of controllable system models
W9	Mid-Term	以系統模擬和數學檢驗來測驗學生對於線性系統的可控性、可觀察性的瞭解，並評估學生使用數值分析軟體進行模擬的能力。 Assessment of students' understanding of controllability and observability in linear systems through system simulations and mathematical verification, as well as evaluation of their ability to use numerical analysis software for simulation
W10	State Space Description	離散系統之可控性、可觀察性的判別 Criteria for controllability and observability of discrete-time systems
W11	State Space Description	系統可觀察模型的模擬 Simulation of observable system models
W12	Linear Feedback	狀態空間模型之回授系統控制器設計與模擬 Design and simulation of feedback controllers based on state-space models

W13	Linear Feedback	狀態空間模型之回授系統觀察器設計與模擬 Design and simulation of feedback observers based on state-space models
W14	Stabiliity	穩定度定義與推導 Definitions and derivations of stability
W15	Stabiliity	連續時間、離散時間穩定度檢驗 Stability analysis for continuous-time and discrete-time systems
W16	Compensator Design of Feedback System	回授系統補償器的設計 Design of feedback system compensators
W17	Compensator Design of Feedback System	回授系統補償器的模擬 Simulation of feedback system compensators
W18	Final-Term	擬以系統模擬或含論文書報分享模式，讓學生進行全英文期末報告，來瞭解學生對於線性系統的設計、分析與模擬技巧的認知程度及能力。 A final project conducted in English, based on system simulation or research paper/book report presentations, to assess students' understanding in the design, analysis, and simulation of linear systems

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	計算流體力學 Computational Fluid Dynamics	授課教師 Instructor	庫秉弦 Abhishek Kumar Kumar0313@nfu.edu.tw BAR-509A, Ph.: 05-6313108

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book： Computational Methods for Fluid Dynamics by Ferziger and Peric, Springer (100%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) 95% 3.其他補充說明 Others： Lecture PPT and Notes

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	☑ 教材講述 Lecturing　☑ 小組討論 Group Discussion　☑ 口頭問答 Q&A ☑ 問題導向 Problem Based Learning　☒ 協同教學 Collaborative Teaching ☑ 分組報告 Group Report ☑ 其他方式說明 Others： Simulation Project

成績評量方式 Grading	☑ 期中/期末考：100 %以上英文試題，學生以英文答題 100%。 　The percentage of English used in designing midterm/final exam; the percentage used in answering the exam paper. ☑ 英文期中/期末報告：90%以英文表達。 　The percentage of using English in midterm or final oral presentation ☑ 全英語口頭簡報(含QA問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have ☑ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：100% (15% Attendance, 40% Midterm and 45% Final Exam/project reports)

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities

W1	Unit-1	Introduction to CFD and Governing Equations
W2	Unit-2	Mathematical Foundations for CFD
W3	Unit-3	Numerical Methods and Discretization
W4	Unit-3	The Finite Volume Method (FVM)
W5	Unit-4	Solution of the Navier-Stokes Equations
W6	Unit-4	Grid Generation and Mesh Quality
W7	Unit-5	Turbulence Modeling
W8	Unit-5	Advanced Turbulence Models
W9		**Midterm Project Presentation and Report**
W10	Unit-6	Boundary Layers and Wall Modeling
W11	Unit-6	Time-Dependent Flows
W12	Unit-7	Heat Transfer in CFD
W13	Unit-7	External Flow Problems
W14	Unit-7	Internal Flow Problems
W15	Unit-8	Validation and Verification of CFD Models
W16	Unit-8	Parallel Computing and High-Performance CFD
W17	Unit-8	Advanced Topics and Special CFD Techniques
W18		**Final term Project Presentation and Report**

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	熱對流 Heat Convection	授課教師 Instructor	庫秉弦 Abhishek Kumar kumar0313@nfu.edu.tw

<table>
<tr>
<td colspan="4">教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。
　Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
　Please state bilingual instructor's teaching weeks and hours in course outline section.</td>
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<tr>
<td>課程教材
Material</td>
<td colspan="3">1.指定課本書名 Book：F. P. Incropera and D. P. Dewitt, "Fundamental of Heat and Mass Transfer" John Wiley and Sons (100%英文內容 Percentage in English)

2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) 95%

3.其他補充說明 Others：Lecture Notes and PPT</td>
</tr>
<tr>
<td>雙語教學方式
(可多選，或簡述)
Bilingual Teaching Strategies</td>
<td colspan="3">☑ 教材講述 Lecturing　☑ 小組討論 Group Discussion　☑ 口頭問答 Q&A

☑ 問題導向 Problem Based Learning　☒ 協同教學 Collaborative Teaching

☒ 分組報告 Group Report

☑ 其他方式說明 Others：Homework</td>
</tr>
<tr>
<td>成績評量方式
Grading</td>
<td colspan="3">☑ 期中/期末考：100%以上英文試題，學生以英文答題100%。
　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper.
☑ 英文期中/期末報告：100%以英文表達。

　The percentage of using English in midterm or final oral presentation

☑ 全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)
　English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have
☑ 其他方式(請說明中英文比例) Others (please state the proportion of Mandarin and English in grading) ：100% (Attendance: 10%, Homework: 10%, Midterm: 40%, Final Exam 40%)</td>
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<tr>
<td colspan="4" align="center">課程進度 Course Outline</td>
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<td align="center">週次
Week</td>
<td colspan="2" align="center">單元/主題
Unit/Topic</td>
<td align="center">教學活動重點及教材內容
Teaching Activities</td>
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</table>

W1	Unit-1	Brief Introduction of Convective Heat Transfer
W2	Unit-1	Fundamentals of Fluid Mechanics for Heat Transfer
W3	Unit-1	Fundamentals of Fluid Mechanics for Heat Transfer
W4	Unit-2	Forced Convection Basics
W5	Unit-2	Forced Convection
W6	Unit-2	Laminar Flow and Heat Transfer in Pipes
W7	Unit-3	Turbulent Flow and Heat Transfer
W8	Unit-3	Heat Transfer in Turbulent Boundary Layers
W9	**Mid Term Examination**	**Open Book**
W10	Unit-3	Convective Heat Transfer in Porous Media
W11	Unit-3	Heat Transfer in High-Speed Flow
W12	Unit-4	Natural Convection Fundamentals
W13	Unit-4	Buoyancy-Driven Convection
W14	Unit-4	Combined Forced and Natural Convection
W15	Unit-4	Radiation and Combined Convection-Radiation
W16	Unit-5	Advanced Numerical Methods for Convective Heat Transfer
W17	Unit-5	Advanced Numerical Methods for Convective Heat Transfer
W18	**Final Term Examination**	**Open Book**

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	熱交換器設計 Heat Exchanger Design	授課教師 Instructor	庫秉弦 Dr. Abhishek Kumar kumar0313@nfu.edu.tw BAR-509A, Ph.: 05-6313108

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：Fundamentals of Heat Exchanger Design, Second Edition 　　By Dusan P. Sekulic, Ramesh K. Shah (100%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)95% 3.其他補充說明 Others： Lecture notes and self-made study material
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	☑ 教材講述 Lecturing ☑小組討論 Group Discussion ☑口頭問答 Q&A ☑ 問題導向 Problem Based Learning　☒ 協同教學 Collaborative Teaching ☒ 分組報告 Group Report ☑ 其他方式說明 Others： Assignment & Quiz
成績評量方式 Grading	☑ 期中/期末考：90%以上英文試題，學生以英文答題90%。 　　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ☑ 英文期中/期末報告：90%以英文表達。 The percentage of using English in midterm or final oral presentation ☑全英語口頭簡報 (含 QA 問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ☑ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：Attendance 10%, Assignment & Quiz 20%, Mid-term 30% , Final-term 40%

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Unit-1	Introduction to Heat Exchangers
W2	Unit-1	Heat Exchanger Fundamentals
W3	Unit-2	LMTD Method for Heat Exchanger Design
W4	Unit-2	Effectiveness–NTU Method
W5	Unit-3	Double-Pipe Heat Exchangers
W6	Unit-3	Shell-and-Tube Heat Exchangers
W7	Unit-4	Compact Heat Exchangers
W8	Unit-4	Plate Heat Exchangers
W9	**Midterm**	**Open Book**
W10	Unit-5	Microchannel and mini-channel heat exchangers
W11	Unit-5	Boiling and Condensation Heat Exchangers
W12	Unit-5	Boiling and Condensation Heat Exchangers
W13	Unit-6	Heat Exchanger Pressure Drop Analysis
W14	Unit-6	Thermal and Mechanical Stress in Heat Exchangers
W15	Unit-7	Fouling and Maintenance
W16	Unit-7	Heat Exchanger Optimization and Performance Evaluation
W17	Unit-8	Heat Exchanger Optimization and Performance Evaluation
W18	**Final term**	**Open Book**

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	電子構裝 Electronic Packaging	授課教師 Instructor	藍吉特 Dr. Ranjit A. Patil

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：(100 % 英文內容 Percentage in English) [1] *Advanced Electronic Packaging* – R. K. Ulrich, W. D. Brown, 2nd Ed., John Wiley and Sons, New Jersey, 2006 [2] *Fundamentals of Microsystem Packaging* – R. R. Tummala, McGraw-Hill, New York, 2001 2.自製教材 Self-made Materials： Summarized materials for the topics. 　採用英文之比例(Percentage in English) 100 % 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing ■小組討論 Group Discussion ■口頭問答 Q&A ■問題導向 Problem Based Learning □協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	● 期中/期末考：100 % 以上英文試題，學生以英文答題 100 %。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ● 英文期中/期末報告：100 % 以英文表達。 　The percentage of using English in midterm or final oral presentation ● 全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have ● 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：100 % English 　15 % (Daily Performance and Participation in Class) + 15 % (Homework/Reports) + 30 % (Mid-term exam) + 40 % (Final exam)

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction and outline of the course	Lecturing
W2	Introduction and Overview of the Electronic Packaging	Lecturing, Group Discussion, Q & A
W3	Packaging Materials and Ceramic Packaging	Lecturing, Group Discussion, Q & A
W4	Polymer and Metal Packaging	Lecturing, Group Discussion, Q & A
W5	Processing Technologies (Thin films)	Lecturing, Group Discussion, Q & A
W6	Processing Technologies (Patterning, Metal-Metal joining)	Lecturing, Group Discussion, Q & A
W7	Electronic Package Assembly	Lecturing, Group Discussion, Q & A
W8	Surface-Mount Technology and Wafer Preparation	Lecturing, Group Discussion, Q & A
W9	Mid-term Examination	Mid-term examination
W10	Die attachment and Wire bonding	Lecturing, Group Discussion, Q & A
W11	Flip-chip and Package Sealing/Encapsulation/Coating	Lecturing, Group Discussion, Q & A
W12	Package-level Processes and RF, MEMS, MOEMS systems	Lecturing, Group Discussion, Q & A
W13	Multichip Packaging	Lecturing, Group Discussion, Q & A
W14	3D systems (MCM stacks)	Lecturing, Group Discussion, Q & A
W15	Options in Multichip Packaging and Emerging Trends	Lecturing, Group Discussion, Q & A
W16	Reliability Meteorology	Lecturing, Group Discussion, Q & A
W17	Revision of the course	Group Discussion, Q & A
W18	Final Examination	Final Examination
Teachers can make appropriate adjustments to the above weekly schedule as the course progresses, and the schedule may be subject to change.		

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	綠色能源工程 Green Energy Engineering	授課教師 Instructor	阮氏儀仁 Thi Nghi Nhan Nguyen

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
  Please design the course plan by following the English using percentage of the course English level.

2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
  Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名Book：＿＿＿＿＿＿＿＿＿＿＿（＿＿＿％英文內容Percentage in English) 2.自製教材Self-made Materials：採用英文之比例(Percentage in English)＿＿100＿＿％ 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■期中/期末考：＿90＿＿＿％以上英文試題，學生以英文答題_70＿＿＿％。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：＿100＿＿＿＿％以英文表達。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

1

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to Global Energy Challenges	Teaching, Class discussion and Video case study
W2	Energy Fundamentals	Teaching and Problem-solving
W3	Fundamental Principles of Solar Energy	Teaching
W4	Basic Mechanisms for Solar Energy Photocatalysis	Teaching
W5	Design, Development, and Modification of Semiconductor Photocatalysts	Teaching and Group activity
W6	Solar Cell Technologies	Teaching and Group discussion
W7	Photothermal Catalysis	Teaching
W8	Solar Thermal & Concentrated Solar Power	Teaching
W9	Midterm Exam	Group Report
W10	Hydrogen Production	Teaching
W11	Hydrogen Storage & Transport	Teaching
W12	Fuel Cell Systems	Teaching and Video case study
W13	Energy Storage Technologies: Batteries	Teaching
W14	Supercapacitors & Hybrid Systems	Teaching
W15	Wind Energy, Biomass & Biofuels	Teaching, Class discussion and Video case study
W16	Sustainability & Applications	Teaching
W17	Student Presentations	Teaching, Discussion & Report
W18	Student Presentations	Teaching, Discussion & Report

課程進度 Course Outline

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	化學(二) Chemistry(2)	授課教師 Instructor	呂芳賢 Lu Fang Hsien

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：＿＿ Chemistry 11th Edition；Chemistry 3rd Edition ＿＿ 　　(_100_%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_50_% 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　■口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學 Collaborative Teaching □分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	■　期中/期末考：_75_%以上英文試題，學生以英文答題_50_%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □　英文期中/期末報告：＿＿＿%以英文表達。 The percentage of using English in midterm or final oral presentation □　全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)**

English oral presentation including Q&A session at least 20 minutes

(Department cores, master's degree and doctoral degree courses so must have

☐ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and

English in grading)：

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Chemical Bonding I：Basic Concept	Lecturing
W2	Chemical Bonding II： Molecular Geometry and Bonding Theory	Lecturing
W3	Intermolecular Forces and the Physical Properties of Liquids and Solids	Lecturing
W4	Physical Properties of Solutions	Lecturing
W5	Chemical Kinetics I	Lecturing
W6	Chemical Kinetics II	Lecturing；Q&A Problem Based Learning
W7	Chemical Equilibrium	Lecturing；Q&A Problem Based Learning
W8	Acids and Bases Acid/Base Equilibria and Solubility Equilibria	Lecturing；Q&A Problem Based Learning
W9	Midterm Exam	-
W10	Entropy、Free Energy、Equilibrium	Lecturing；Q&A Problem Based Learning
W11	Electrochemistry I	Lecturing
W12	Electrochemistry II	Lecturing；Q&A Problem Based Learning
W13	Coordination Chemistry I	Lecturing
W14	Coordination Chemistry II	Lecturing；Q&A Problem Based Learning
W15	Organic Chemistry I	Lecturing
W16	Organic Chemistry II Organic Chemistry III	Lecturing；Q&A Problem Based Learning
W17	Nuclear Chemistry, Chemistry of Metal	Lecturing；Q&A Problem Based Learning
W18	Final Exam	-

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	科技論文的閱讀與寫作 The reading and writing to technical thesis	授課教師 Instructor	迪克莎喬娜 Diksha Chauhan

<table>
<tr><td colspan="4" align="center">教學簡要說明</td></tr>
<tr><td colspan="4">1.請依照授課班級英文分級程度規劃課程計畫書。
  Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
  Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
<tr><td>課程教材
Material</td><td colspan="3">1.指定課本書名 Book: How to read and write a scientific paper, Barbara Gastel and Robert A. Day, Eighth Edition （ __100__ %英文內容 Percentage in English)

2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) 100 %

3.其他補充說明 Others：</td></tr>
<tr><td>雙語教學方式
(可多選，或簡述)
Bilingual Teaching Strategies</td><td colspan="3">■教材講述 Lecturing　　■小組討論 Group Discussion　　■口頭問答 Q&A
□問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching
■分組報告 Group Report
□其他方式說明 Others：　Assignments and surprise test/quiz</td></tr>
<tr><td>成績評量方式
Grading</td><td colspan="3">■期中/期末考：100%以上英文試題，學生以英文答題100%。
The percentage of English using in designing midterm/final exam; the percentage of English using
in answering the exam paper.

■英文期中/期末報告：100%以英文表達。

The percentage of using English in midterm or final oral presentation

■全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)
English oral presentation including Q&A session at least 20 minutes
(Department cores, master's degree and doctoral degree courses so must have

■其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

Midterm: 30

End term: 40</td></tr>
</table>

	Oral presentation + QA: 10
	Assignments: 10
	Quiz: 10

<table>
<tr><td colspan="3" align="center">課程進度 Course Outline</td></tr>
<tr><td align="center">週次
Week</td><td align="center">單元/主題
Unit/Topic</td><td align="center">教學活動重點及教材內容
Teaching Activities</td></tr>
<tr><td>W1</td><td>Introduction to scientific writing</td><td>Lecturing by Power-point presentations, Q/A , Discussion</td></tr>
<tr><td>W2</td><td>Ethics in scientific publishing</td><td>Lecturing by Power-point presentations, Q/A , Discussion</td></tr>
<tr><td>W3</td><td>How to begin and prepare text</td><td>Lecturing by Power-point presentations, Q/A , Discussion, Assignment 1</td></tr>
<tr><td>W4</td><td>How to prepare the abstract, how to write the introduction</td><td>Lecturing by Power-point presentations, Q/A , Discussion,</td></tr>
<tr><td>W5</td><td>How to write the literature, the materials and methods section</td><td>Lecturing by Power-point presentations, Q/A , Discussion,</td></tr>
<tr><td>W6</td><td>How to write the results</td><td>Lecturing by Power-point presentations, Q/A , Discussion</td></tr>
<tr><td>W7</td><td>How to write the discussion</td><td>Lecturing by Power-point presentations, Q/A , Discussion</td></tr>
<tr><td>W8</td><td>How to state the acknowledgments</td><td>Lecturing by Power-point presentations, Q/A , Discussion</td></tr>
<tr><td>W9</td><td>Midterm exams</td><td></td></tr>
<tr><td>W10</td><td>How to cite the references</td><td>Lecturing by Power-point presentations, Software demonstration, Discussion, Assignment 2</td></tr>
<tr><td>W11</td><td>Preparing the tables and figures: how to design effective tables, how to prepare effective graphs, how to prepare effective photographs</td><td>Lecturing by Power-point presentations, Q/A , Discussion, Software demonstration</td></tr>
<tr><td>W12</td><td>Publishing: rights and permissions, copywrite</td><td>Lecturing by Power-point presentations</td></tr>
<tr><td>W13</td><td>Doing other writing for Thesis: how to write a review, research paper, scientific style</td><td>Lecturing</td></tr>
<tr><td>W14</td><td>Where to submit your manuscript, scientific ranking of the journals. How to submit the manuscript</td><td>Lecturing and demonstration on website</td></tr>
<tr><td>W15</td><td>The review process</td><td>Lecturing</td></tr>
<tr><td>W16</td><td>The publishing process, (how to deal with proofs)—and after publication</td><td>Lecturing</td></tr>
<tr><td>W17</td><td>Syllabus revision</td><td>QA, Discussion</td></tr>
<tr><td>W18</td><td>Final exam</td><td></td></tr>
</table>

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	無人機通訊原理 Drone principle of communication	授課教師 Instructor	迪克莎喬娜 Diksha Chauhan

<table>
<tr><td colspan="4" align="center">教學簡要說明</td></tr>
<tr><td colspan="4">1.請依照授課班級英文分級程度規劃課程計畫書。
  Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
  Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
</table>

課程教材
Material
	1.指定課本書名 Book：
	   i) UAV networks and communication by Kamlesh Namuduri, Serge Chaumette, J.H.Kim, James P.G. Sterbenz
	   ii) Wireless Communications and Networking for Unmanned Aerial Vehicles, By Walid Saad, Mehdi Bennis, Mohammad Mozaffari, Xingqin Lin
	2. (100%英文內容 Percentage in English)
	3.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_100 %
	4.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing □小組討論 Group Discussion ■口頭問答 Q&A □問題導向 Problem Based Learning □協同教學 Collaborative Teaching □分組報告 Group Report □其他方式說明 Others： Assignments and surprise test/quiz

成績評量方式 Grading	■ 期中/期末考：100 %以上英文試題，學生以英文答題 100%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：100%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ■ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：Assignments and quiz/surprise test Final grading scheme: Midterm: 30

End term: 40
Oral presentation + QA: 10
Assignments: 10
Quiz: 10

<div align="center">課程進度 Course Outline</div>

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to drones/UAVs	Lecturing, QA, Discussion
W2	Types of Drones and mission, UAV regulations	Lecturing, QA, Discussion
W3	Basics of Communication Systems: Introduction to Communication System of drones	Lecturing, QA, Discussion
W4	Aerial channel modeling: Fundamentals of radio wave propagation and modeling, Wireless communication with drones	Lecturing, QA, Discussion, Quiz
W5	UAV networks and their advantages	Lecturing, QA, Discussion
W6	Wireless Communication Principles, drone communication technologies	Lecturing, QA, Discussion, Assignment
W7	Air to ground and air to air data link communications, Drone Communication Protocols	Lecturing, QA, Discussion
W8	Introduction to FANETS	Lecturing, QA, Discussion
W9	Mid term	
W10	Sensors in drones	Lecturing, QA, Discussion
W11	Telemetry in Drones, Telemetry Basics	Lecturing, QA, Discussion
W12	Global Positioning System (GPS) in Drones, GPS Basics, GPS Applications in UAVs	Lecturing, QA, Discussion
W13	Drone Communication System Architecture	Lecturing, QA, Discussion
W14	Emerging Technologies in Drone Communication	Lecturing, QA, Discussion, Assignment
W15	Challenges and solutions	Lecturing, QA, Discussion, Quiz
W16	Applications of Drone Communication , Future trends in drones	Lecturing, QA, Discussion
W17	Syllabus revision	QA, Discussion
W18	Syllabus revision	QA, Discussion

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	國際民航法規 International Aviation Regulation	授課教師 Instructor	林中彥 Lin, Chung-Yan

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿＿ (＿＿＿%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)＿＿＿％ 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　□口頭問答 Q&A □問題導向 Problem Based Learning　■協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■ 期中/期末考：＿＿＿%以上英文試題，學生以英文答題＿＿＿%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：＿＿＿%以英文表達。 　The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities

W1	Introduction	Overview of the entire course
W2	Basic Concepts of Regulation	Regarding to the regulation, such as common law and civil law system
W3	Basic Concepts of Regulation	
W4	Freedoms of the air	Regarding to the airline right
W5	Freedoms of the air	
W6	The origin and historical evolution of FAR/EASA	History of FAA and EASA and their evolution
W7	The origin and historical evolution of FAR/EASA	
W8	FAR121 regulations	Airline Regulation
W9	Mid-term exam	Written exam in class
W10	FAR91/135 regulations	General Aviation and Charter airline regulation/Project Presentation
W11	CAA China Regulation	History of CAAC and their evolution /Project Presentation
W12	Int'l Aviation Regulation-Public Law	ICAO and IATA and international treaty /Project Presentation
W13	Int'l Aviation Regulation-Private Law	
W14	UAV Regulation in US	UAV law in US and their evolution /Project Presentation
W15	UAV Regulation in Taiwan	UAV law in Taiwan and their evolution /Project Presentation
W16	Airport Regulation	Airport regulation and their evolution /Project Presentation
W17	Airport Regulation	
W18	Final Report	

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	飛機維修實務 Aircraft Maintenance Practice	授課教師 Instructor	王士嘉 Wang, Shih-Chia

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：_Aircraft Maintenance & Repair (_100____%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)__100____% 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學 Collaborative Teaching □分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	■期中/期末考：_100____%以上英文試題，學生以英文答題_100____%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：_100____%以英文表達手工技巧。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Course Preparation	Let's roll
W2	Maintenance Perspective	Aircraft maintenance perspective
W3	Illustrated Parts Catalogue	Look for aircraft Parts

W4	Safety technique demonstration	Aircraft festered skill demonstration
W5	Fuel Pump Operation	Schematics knowledge shown
W6	Lacing Cord	Wiring Bundle skill
W7	1st Term Evaluation	Skill Team test
W8	Aircraft Fuel System	Aircraft Fuel System Lecture
W9	Fuel System -1	Aircraft Fuel System Lecture
W10	Fuel System -2	Aircraft Fuel System Lecture
W11	Fuel System -3	Aircraft Fuel System Lecture
W12	Fuel System -4	Share with students and ask for feedback
W13	2ndTest	Written Test
W14	Human Factor-1	Team Presentation Contest
W15	Human Factor-2	Share with students and ask for feedback
W16	Human Factor-3	From Human Factor point of view lecture
W17	Big5 presentation	Oral Presentation
W18	Final Evaluation	Test and wrap up

國立虎尾科技大學雙語教學課程補助申請書

Incentive/Subsidy Application Form of Bilingual Education Course

教師姓名 Name	王士嘉	所屬單位/ 職稱 Department/Position	飛機系 助理教授	連絡電話 Phone No.	0938-151-620
				Email	arnold@nfu.edu.tw
雙語導師 姓名 Name of bilingual instructor	(無則免填)	所屬單位/ 職稱 Department/Position		連絡電話 Phone No.	
				Email	

雙語教學 開課資料 Course Information	課程名稱(中) Course Title(Mandarin)	飛機維修實務	課程名稱(英) Course Title (English)	Aircraft Maintenance Practice
	詳如附件雙語教學課程開課申請表及雙語教學課程計畫書 **Refer to Bilingual Education Course Application Form and Bilingual Education Course Plan**			

申請注意 事項 Application Notice	1.教師開設雙語教學課程，依本校「雙語教學課程實施要點」辦理，如未依規範進行雙語教學，將作為後續是否補助之參考依據(詳如要點第六點)。 All bilingual courses should follow regulations of the "Bilingual Education Implementation Guidelines". For those who do not follow the regulation of "Bilingual Education Implementation Guidelines", the record will be used as a reference in next bilingual education incentive/subsidy application review. 2.普及英文課程補助：請教師依公告期間內，檢附**雙語教學課程開課申請表、雙語教學課程計畫**及**雙語教學課程補助申請書**至語言教學中心申請，並將前述電子檔寄至承辦單位信箱 kirsty@nfu.edu.tw。 General English Courses：Please submit Bilingual Education Course Application Form, Bilingual Education Course Plan, Incentive/Subsidy Application Form of Bilingual Education Course to LTC and mail to kirsty@nfu.edu.tw. 3.一般科系及碩博專業課程補助：請教師依公告期間內，檢附**雙語教學課程開課申請表、雙語教學課程計畫**及**雙語教學課程補助申請書**，並將前述電子檔上傳至電子化表單簽核系統。 EMI Course：Please submit Bilingual Education Course Application Form, Bilingual Education Course Plan, Incentive/Subsidy Application Form of Bilingual Education Course to Bilingual Teaching Resources Center and mail to vx160213@nfu.edu.tw.

課程補助 類別 (請擇一勾選) Subsidy Category (Choose one)	1.■專業課程英語(無雙語導師)English Level in EMI Courses(without Co-teaching instructor)：■一般科系專業課程 Departmental Cores □碩博專業課程 Master's/Doctoral Cores (1)鐘點費：授課鐘點**每1鐘點加計0.5鐘點**為原則核算。 Hourly Pay: Teaching hours will be multiplied by 1.5 times maximum (2)材料費及教學助理經費最高以**15,000元**為限。 The subsidy amount of teaching material expenses and teaching assistant expenses is limited to NT\$ 15000. 2.□專業課程英語(有雙語導師)English Level in EMI Courses(with Co-teaching

instructor)： □一般科系專業課程 Departmental Cores □碩博專業課程 Master's/Doctoral Cores

(1)鐘點費：授課鐘點**每 1 鐘點加計 0.5 鐘點**為原則核算。
    Hourly Pay: Teaching hours will be multiplied by 1.5 times maximum

(2)雙語教學導師共同授課鐘點費**至多 6 週或每門課每週各 1 小時，至多 18 週。**
    Co-teaching Hourly Pay: Co-teaching EMI course assisted by bilingual instructor is limited to 1/3 of the semester or an hour per week for each course, up to 18 weeks the maximum.

(3)材料費及教學助理經費最高以 **15,000 元**+雙語導師特別補助 **10,000 元**為限。

3.□普及英文課程 English Level in General English Courses：□A 級 □B 級 □C 級

(1)材料費及教學助理經費最高以 **15,000 元**為限。
    The subsidy amount of teaching material expenses and teaching assistant expenses is limited to NT$ 15000.

成果繳交及配合事項

1.雙語教學課程計畫於會議審查期間如須修改，請教師配合修正。
    Please help to revise the bilingual teaching plan if required.

2.雙語教學課程開課教學內容、教學過程、師生互動紀錄(請存放至本校數位學習平台)，依教育部規定需保留五年以上，以供教育部備查，未來如教育部進行實地訪查時，請教師配合提供相關佐證資料及數位教學平台之課程資料。
    All the documents and media files related to bilingual class including teaching materials, class interaction records are required to be kept on the online learning platform at least five years.

3.雙語教學課程實施完成後一個月內，請繳交雙語教學課程成果報告(如附件四)及表列所需成果，包含：
    Please submit the bilingual education teaching achievement report within a month after the class finishes.

(1)將自製英語教材上傳至數位學習平台。
    Upload self-made course materials to the online learning platform

(2)將學生期中考及期中考試卷及答案卷上傳至數位學習平台。
    Upload the examination papers and answer sheets to the online learning platform

(3)將課程師生互動錄影上傳至數位學習平台。
    A.錄製課程授課情形**至少 5 週**，每次課程約 20 分鐘，以聲音影像清晰為原則。檔案大小請依數位學習平台規範處理。
    B.如獲有雙語教學導師補助者，請加強佐證影片資料提供。
    Record classroom interaction videos at least six weeks and upload to the online learning platform. (Videos should focus on the interaction between Ts and Ss, presentations and Q&A or students highlight performance. The length of each file is limited to 30 minutes.)

(4)一般科系專業課、碩博專業課程將修課學生全英語口頭簡報 (含QA問答)20 分鐘影片 1 支上傳至數位學習平台。
    Upload video of 20 minutes English Oral presentation (including Q&A) to the online learning platform

上述(1)至(4)請提供平台檔案清單及一案例畫面擷圖
Please attach the file list and screenshots about one case on the online learning platform

(5)期末教學評量分數(課程結束後一個月內，再由學校提供教學評量結果)
Teaching Evaluation Scores (The result will be provided within one month after class finishes)

4.雙語教學課程成果報告完成後，提送雙語教學課程委員會審查，並做為下次補

	助審查之依據，通過後由雙語教學資源中心備存。 The application form will be reviewed by the Bilingual Language Course Committee as the reference for the next application. 5.(新規定)獲得通過之課程，授課老師若願意在教務處所轄之智慧教室(AIA0104、AIA0405、ATD0704)進行教學活動，除免於繳交上述至少 4 周之錄製課程授課，本計畫將酌予增加補助經費，備註：該通過課程上課時段與智慧教室使用時間搭配由雙語教學資源中心進行協調。
雙語導師 簽章 Bilingual Instructor	

所屬單位核章					
申請教師 Applicant	王士嘉	單位主管 Chairperson		一級主管 Chief Officer	

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	工程分析 Engineering Analysis	授課教師 Instructor	李孟澤 LI ,MENG TSE

<table>
<tr>
<td colspan="4" align="center">教學簡要說明</td>
</tr>
<tr>
<td colspan="4">1.請依照授課班級英文分級程度規劃課程計畫書。
　Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
　Please state bilingual instructor's teaching weeks and hours in course outline section.</td>
</tr>
<tr>
<td>課程教材
Material</td>
<td colspan="3">1.指定課本書名Book：_____(_____%英文內容Percentage in English)

2.自製教材Self-made Materials：採用英文之比例(Percentage in English)_____%

3.其他補充說明 Others：</td>
</tr>
<tr>
<td>雙語教學方式
(可多選，或簡述)
Bilingual Teaching Strategies</td>
<td colspan="3">■教材講述 Lecturing　　□小組討論 Group Discussion　　■口頭問答 Q&A

■ 問題導向 Problem Based Learning　　□協同教學Collaborative Teaching

□分組報告 Group Report

□其他方式說明 Others：</td>
</tr>
<tr>
<td>成績評量方式
Grading</td>
<td colspan="3">■期中/期末考：____100____%以上英文試題，學生以英文答題__70__%。
　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper.

□英文期中/期末報告：_____%以英文表達。

　The percentage of using English in midterm or final oral presentation

□全英語口頭簡報(含QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)
　English oral presentation including Q&A session at least 20 minutes
　(Department cores, master's degree and doctoral degree courses so must have

□其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：</td>
</tr>
<tr>
<td colspan="4"></td>
</tr>
</table>

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Part-1: Introduction	The Introduction to "Modeling"
W2	Part-2: 1st Order ODE Model	1st Order ODE- Phenomenon Observe
W3		1st Order ODE Modeling & Solutions
W4		1st Order ODE Problems
W5	Part-3: 2nd Order Homogeneous ODE	2nd Order Homogeneous ODE- Phenomenon Observe
W6		2nd Order Homogeneous ODE Modeling & Solutions
W7		2nd Order Homogeneous ODE – Free Oscillation
W8	Part-4: Non-homogeneous ODE	Non-homogeneous ODE- Phenomenon Observe
W9	Mid-term Exam	
W10	Part-4: Non-homogeneous ODE	Non-homogeneous ODE Modeling & Solutions
W11		Non-homogeneous ODE Model – Forced Oscillation
W12	Part-5:Linear System of ODE	Introduction to ODE system
W13		Review of the Matrix
W14		Solution methods of System ODE
W15	Part-8: Linear System of ODE Models – Multi-Systems Interaction	Phenomenon Observe
W16		Modeling & Solving (1)
W17		Modeling & Solving (2)
W18	Final Exam	

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	創意與發明 Creation and Innovation	授課教師 Instructor	蔡榮鋒 教授 Prof. R.F. Tsai

<table>
<tr><td colspan="2" align="center">教學簡要說明</td></tr>
<tr><td colspan="2">1.請依照授課班級英文分級程度規劃課程計畫書。
Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
<tr><td>課程教材
Material</td><td>1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿＿＿＿ (＿＿＿%英文內容 Percentage in English)
2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)__90__%
3.其他補充說明 Others：YouTube, PodCast 免費提供 英語教學社群、頻道 跟影片：例如 FUNDAY 英語教育、看影片學英文；只要切實 練習，就會進步。</td></tr>
<tr><td>雙語教學方式
(可多選，或簡述)
Bilingual Teaching Strategies</td><td>□教材講述 Lecturing ■小組討論 Group Discussion ■口頭問答 Q&A

■問題導向 Problem Based Learning □協同教學 Collaborative Teaching

□分組報告 Group Report

□其他方式說明 Others：</td></tr>
<tr><td>成績評量方式
Grading</td><td>□ 期中/期末考：＿＿＿＿%以上英文試題，學生以英文答題＿＿＿＿%。
The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper.

■ 英文期中/期末報告：＿＿＿＿%以英文表達。

The percentage of using English in midterm or final oral presentation

■ 全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式)
English oral presentation including Q&A session at least 20 minutes
(Department cores, master's degree and doctoral degree courses so must have

□ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：</td></tr>
</table>

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction	
W2	Problem description:1	Teaching
W3	Problem description:2a	Interactive Practice

W4	Problem describition:2b	Interactive Practice
W5	Topics Suggestion I	Meeting SOP :Interactive discussion
W6	Topic Suggestion II	Meeting SOP :Interactive discussion
W7	Topic Suggestion III	Meeting SOP :Interactive discussion
W8	Mid Term Brief I	Internal group discussion
W9	Mid Term Brief II	Internal group discussion
W10	Information Integration I	Video, jpg collection practice
W11	Information Integration II	Video, jpg collection practice
W12	Outline Arrangement I	Group coordination:members and materials
W13	Outline Arrangement II	Group coordination:members and materials
W14	Outline Arrangement III	Group coordination:members and materials
W15	Rehersal I	Practice Q&A
W16	Rehersal II	Practice Q&A
W17	Final Presentation I	Q&A
W18	Final Presentation II	Q&A

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	巨量資料分析 Big Data Analysis	授課教師 Instructor	李廣齊 Lee ,Kuang-Chyi

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：<u>J. Han, M. Kamber & J. Pei, Data Mining: Concepts and Techniques, Morgan Kaufmann Publishers(Elsevier)</u> (>70%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) <u>>70%</u> 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　□小組討論 Group Discussion　　□口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	▉期中/期末考：___70___%以上英文試題，學生以英文答題__50__%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □英文期中/期末報告：_____%以英文表達。 The percentage of using English in midterm or final oral presentation ▉全英語口頭簡報(含QA問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to Data Mining.	Oral
W2	Data Preprocessing	Oral
W3	Algorithm of Perception	Oral
W4	Introduction to Linux System	Oral & Practice
W5	Introduction to Anaconda	Oral & Practice
W6	Python Programming	Oral & Practice
W7	Introduction to Neural Network	Oral
W8	Midterm Project Presentation	Oral
W9	Midterm Exam	
W10	Association Analysis	Oral
W11	Introduction to Deep Learning	Oral
W12	Classification and Prediction	Oral
W13	MNIST dataset.	Oral & Practice
W14	Case Study(I): Get Data	Oral & Practice
W15	Case Study(II): Training	Oral & Practice
W16	Case Study(III): Inference	Oral & Practice
W17	Final Project Presentation	Oral
W18	Final Exam	

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	嵌入式系統 Embedded System	授課教師 Instructor	李廣齊 Lee ,Kuang-Chyi

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：<u>Francois Chollet, Deep Learning with Python, Manning Publications Co. , 2018</u> (<u>>70%</u>英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)<u>>70%</u> 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　□小組討論 Group Discussion　　□口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

<table>
<tr><td rowspan="5">成績評量方式
Grading</td><td>

■期中/期末考：_70%以上英文試題，學生以英文答題___50___%。

The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper.

□英文期中/期末報告：_____%以英文表達。

The percentage of using English in midterm or final oral presentation

■全英語口頭簡報(含 QA 問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)**

English oral presentation including Q&A session at least 20 minutes
(Department cores, master's degree and doctoral degree courses so must have

□其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

</td></tr>
</table>

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to Embedded System(I)	Oral
W2	Introduction to Embedded System(II)	Oral
W3	Introduction to Linux System(I)	Oral
W4	Introd uction to Linux System(II)	Oral & Practice
W5	Introduction to Ubuntu(II)	Oral & Practice
W6	Introduction to Python	Oral
W7	import numpy	Oral
W8	Introduction to Neural Network	Oral
W9	Midterm Exam	
W10	Deep Learning	Oral
W11	Softmax	Oral
W12	Classification & Prediction	Oral
W13	MNIST dataset.	Oral & Practice
W14	Case Study(I): Get Data	Oral & Practice
W15	Case Study(II): Training	Oral & Practice
W16	Case Study(III): Inference	Oral & Practice
W17	Final ReportPresentation	Oral
W18	Final Exam	

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	5G 核心網路技術與實務 Technology and Practice of 5G Core Networks	授課教師 Instructor	蘇暉凱 Su, Hui-Kai

	教學簡要說明
	1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：_____ (_____%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_____% 3.其他補充說明 Others：教育部課程推廣計畫教材 The materials of MOE course promotion plan (90%英文內容 Percentage in English)
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing □小組討論 Group Discussion □口頭問答 Q&A ■問題導向 Problem Based Learning ■協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■期中/期末考：100%以上英文試題，學生以英文答題20%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：80%以英文表達。 　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to Telecom Networks: The Evolution of 1G-to-5G Core Networks	Lecturing The Evolution of 1G-to-5G Core networks
W2	Introduction to Telecom Networks: The Evolution of 1G-to-5G Core Networks	Lecturing The Evolution of 1G-to-5G Core networks
W3	Introduction to 5G Core Network	Lecturing 5G Core Network
W4	Introduction to 5G Core Network	Lecturing 5G Core Network
W5	5G Core Network and Private Network Technology	Lecturing 5G Core Network and Private Network Technology
W6	Lab 1: Construction and Measurement Experiment of 5G Private Network	Experiment Construction and Measurement Experiment of 5G Private Network
W7	5G Core Network and Private Network Technology	Lecturing 5G Core Network and Private Network Technology
W8	Lab 2: Experiment of Network Functions and Application Functions (NF/AF) in 5G Core Network	Experiment Experiment of Network Functions and Application Functions (NF/AF) in 5G Core Network
W9	Midterm	
W10	Network Function Application Service (NF/AF) in 5G Core	Lecturing Network Function Application Service (NF/AF) in 5G

	Network	Core Network
W11	Collaborative Application Development of Mobile Devices and Core Networks in 5G Private Networks	Lecturing Collaborative Application Development of Mobile Devices and Core Networks in 5G Private Networks
W12	Lab 3: Collaborative Application Development Experiment of Mobile Devices and Core Networks in 5G Private Networks	Experiment Collaborative Application Development Experiment of Mobile Devices and Core Networks in 5G Private Networks
W13	5G Security Technology	Lecturing 5G Security Technology
W14	Lab 4: Penetration Test and Stress Test of 5G Core Network	Experiment Penetration Test and Stress Test of 5G Core Network
W15	Final Project	Practice and discussion
W16	Final Project	Practice and discussion
W17	Final Project	Practice and discussion
W18	Final Project	Project Presentation

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	科技論文寫作 Scientific writing	授課教師 Instructor	王鳴立 Ming-Li Wang

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
　Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：_Science Research Writing_ (100_%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) _100_ % 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	▓教材講述 Lecturing　　▓小組討論 Group Discussion　　▓口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching ▓分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■ 期中/期末考：_100_%以上英文試題，學生以英文答題_50_%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：_50_%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報(含QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction	Introduction of this class and book
W2	Writing skills	What content block within scientific papers
W3	Writing skills	How to write an introduction
W4	Writing model	How to write an introduction: build a model
W5	Build a model	How to write an introduction: vocabulary
W6	Skill sharing and review	Group sharing and skill review
W7	Practice I	Oral presentation
W8	Practice II	Oral presentation
W9	Midterm week	Review and test
W10	Writing about system model	Writing skills
W11	Writing about result	Writing skills
W12	Writing about result	Build a model/vocabulary
W13	Writing about conclusion	Writing skills
W14	Writing about conclusion	Build a model/vocabulary
W15	Writing about abstract	Structure/model/vocabulary
W16	Practice I	Oral presentation
W17	Practice II	Oral presentation
W18	Final week	Review and test

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	雲端大數據安全 Big Data Security	授課教師 Instructor	江季翰 Ji-Han Jiang

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：Big-Data Analytics for Cloud, IoT and Cognitive Computing, First Edition. Kai Hwang and Min Chen. (100%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_80 % 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學 Collaborative Teaching □分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	■ 期中/期末考：__100_%以上英文試題，學生以英文答題__20_%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □ 英文期中/期末報告：_____%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction	◆ Course Introduction

W2	Introduction to Cloud Computing	• NIST Cloud Computing Standards Roadmap
W3	Importance of Big Data	• Introduction to Big Data
W4	Big Data in the Cloud	• Storage and Database Management for Big Data • Big Data in the Cloud A Survey • Big Data Security Industry Trends
W5	Security and Privacy Issues	• Cryptography Background • Network Security Issues and Challenges
W6	Security in Cloud Computing	• A Survey of Security in Cloud Computing
W7	Big Data Security Threats	• Big Data Security Issues and Challenges
W8	Understanding Big Data Security	• Big Data Security—Challenges Recommendations and Solutions
W9	Midterm	• Midterm exam
W10	Cases Study: Big Data and Cloud Computing Security	• (Problem Based Learning) • CHARON A Secure Cloud of Clouds System.pdf
W11	Analysis Tools: Introduction to ELK stack	• (Problem Based Learning) • 15 Minute Introduction to ELK
W12	Big Data Security Application Practice	• (Problem Based Learning) • Building an IoT Data Hub with Elasticsearch, Logstash and Kibana
W13	Big Data Security Management	• Big Data Security Assurance Technology • Data Security Assurance Practice • Big Data Security Application Technology
W14	Security and Data Storage Aspect in Cloud Computing	• On cloud security attacks a taxonomy and intrusion detection and prevention as a service
W15	Intrusion detection techniques	• Intrusion detection techniques in cloud environment A survey
W16	Intelligent Management and Efficient Operation of Big Data	• A deep learning approach for proactive multi-cloud cooperative intrusion detection system
W17	Final Report	• Group Oral Report and Discussion (in English)
W18	Final Report	• Group Oral Report and Discussion (in English)

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	AI 系統建模與應用 AI system modeling and applications	授課教師 Instructor	林武杰 LIN,WU-CHIEH

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿（＿＿＿％英文內容 Percentage in English) 2.☑自製教材 Self-made Materials：採用英文之比例(Percentage in English)＿80＿% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	☑教材講述 Lecturing □小組討論 Group Discussion □口頭問答 Q&A □問題導向 Problem Based Learning □協同教學 Collaborative Teaching □分組報告 Group Report ☑其他方式說明 Others：上機練習
成績評量方式 Grading	□ 期中/期末考：＿＿＿％以上英文試題，學生以英文答題＿＿＿％。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □ 英文期中/期末報告：＿＿＿％以英文表達。 The percentage of using English in midterm or final oral presentation ☑全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ☑其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：上機程式練習、作業繳交、專題實作

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Artificial Neural Network fundamentals	▌Comparing AI and traditional machine learning ▌Artificial neural network building blocks
W2	Artificial Neural Network fundamentals	▌Activation function and Feed forward propagation ▌Loss function and backpropagation ▌Impact of the learning rate
W3	Introduction to Implementation frameworks and programming language	▌ Docker tools, commands
W4	Introduction to Implementation frameworks and programming language	▌ Docker image, volume
W5	Introduction to Implementation frameworks and programming language	▌ Python programming fundamental
W6	Introduction to Implementation frameworks and programming language	▌ Python object-oriented programming
W7	Build a neural network with pyTorch	▌ Dataset, DataLoader and batch size ▌ Prediction for new data points ▌ Implement a custom loss function
W8	Build a neural network with pyTorch	▌ Fetching the values of intermediate layers ▌ Use sequential method to build a neural network ▌ Save and Load a PyTorch model
W9	midterm	
W10	Application for Image classification	▌ Prepare data for image classification ▌ Train a neural network ▌ Scaling a dataset to improve model accuracy
W11	Application for Image classification	▌ Impact of batch size ▌ Impact of the loss optimizer ▌ Impact of learning rate
W12	Application for Image classification	▌ Build a deeper neural network
W13	Convolutional Neural Networks and its application	▌ Convolution, filter, strides, padding, and pooling ▌ Implement a CNN
W14	Convolutional Neural Networks and	▌ Data augmentation

	its application	▮ Visualizing the outcome of feature learning
W15	Convolutional Neural Networks and its application	▮ Classify real-world images
W16	Paper presentation	
W17	Paper presentation	
W18	final	

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	雲端作業系統 Cloud Operation System	授課教師 Instructor	簡銘伸 JIAN,MING-SHEN

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。
　Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿＿（＿＿＿%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)__100_% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　□口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	□　期中/期末考：＿＿＿＿%以上英文試題，學生以英文答題＿＿＿＿%。 　　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □　英文期中/期末報告：＿＿＿＿%以英文表達。 　　The percentage of using English in midterm or final oral presentation ■　全英語口頭簡報(含 QA 問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** 　　English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Cloud Introduction	Introduction
W2	Cloud O.S. Structure	Cloud O.S. Structure
W3	Cloud O.S. Structure	Cloud O.S. Structure
W4	Laboratory	Build individual Cloud environment
W5	Cloud Resource Management	Cloud Resource Management
W6	Cloud System Management	Cloud System Management
W7	Laboratory	Java Environment Implementation
W8	Laboratory	Build Hadoop/MapReduce Environment
W9	Mid-Exam	Mid-Exam
W10	Hadoop/MapReduce	Hadoop/MapReduce Storage
W11	Hadoop/MapReduce	Hadoop/MapReduce Algorithm & System
W12	Laboratory	WordCount Example implementation
W13	NoSQL Database	Database
W14	Laboratory	NoSQL Implementation
W15	Docker Container	Docker Container Introduction
W16	Laboratory & Certificate Introduction	Docker Container Laboratory & Certificate Introduction
W17	Discussion and Report	Discussion and Report
W18	Discussion and Report	Discussion and Report

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	下世代行動通訊網路 Next Generation Mobile Communication Networks	授課教師 Instructor	杜俊育 Tu, Jiun-Yu

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名：N/A 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)＿ 100＿% 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　■小組討論 Group Discussion　　■口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	□　期中/期末考：＿＿＿%以上英文試題，學生以英文答題＿＿＿%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：＿＿＿%以英文表達。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Course Overview & Introduction to Next-Generation Mobile Networks	Explain course objectives, grading, and project requirements. Brief overview of 4G, 5G, and emerging 6G concepts. Introduce expectations for English oral presentations and technical writing. Materials: course syllabus, introductory slides, short

		survey paper on 5G/6G.
W2	Evolution of Mobile Communication: From 1G to 5G and Beyond	Lecture on historical development of mobile networks (1G–4G), key milestones, and limitations that motivated 5G. Class discussion on how mobile services changed user behavior. Materials: textbook chapter on cellular evolution, review article on 5G motivations.
W3	Wireless Fundamentals for Mobile Networks (System-Level View)	Provide a high-level review of basic wireless concepts from a system perspective: coverage vs. capacity, interference, signal quality, and mobility. Introduce simple terms such as path loss, fading, and SINR without going deep into physical-layer derivations. Use intuitive examples (e.g., why signal is weaker indoors, why cell edge users experience poor throughput). Short in-class exercise: analyze a simple cellular layout and discuss where coverage/capacity problems may occur. Materials: lecture slides with intuitive diagrams, a short tutorial article on wireless fundamentals for 4G/5G, a simple worksheet for group discussion.
W4	5G Service Requirements, QoS, and Performance Metrics	Introduce key performance indicators (KPIs) of 5G networks: data rate, latency, reliability, mobility, connection density, and energy efficiency. Explain QoS concepts and how different applications (eMBB, URLLC, mMTC, AR/VR, V2X) map to different KPIs and service requirements. Focus on system-level thinking, such as how network design choices affect user experience. Group activity: each group selects an application scenario (e.g., smart factory, autonomous driving, cloud gaming) and identifies required KPIs, QoS level, and potential network bottlenecks. Materials: lecture slides, ITU/3GPP summary tables of 5G KPIs, short case-study articles on 5G applications, group activity worksheet.
W5	5G RAN Architecture and Massive MIMO/Beamforming (Conceptual View)	Introduce the 5G radio access network (RAN) architecture and the role of gNB. Compare traditional RAN, centralized RAN (C-RAN), and open RAN (O-RAN) at a high level. Explain the basic idea of Massive MIMO and beamforming using conceptual diagrams and intuition, without detailed math. Show simple demos or videos of beam patterns. Materials: RAN architecture diagrams, short video or simulation demo, selected reading on Massive MIMO, lecture slides.
W6	5G Core Network and Service-Based Architecture	Explain the 5G core (5GC) and its service-based architecture (SBA). Introduce major network functions (AMF, SMF, UPF, etc.) and control-plane vs. user-plane separation. Group activity: map an end-to-end data path for a typical 5G service (e.g., video streaming or IoT service). Materials: 5GC block diagrams, simplified 3GPP references, case study slides, group worksheet.

W7	5G Use Cases: eMBB, URLLC, mMTC & Network Slicing	Explore key 5G service categories and representative applications (AR/VR, autonomous driving, massive IoT, smart city). Introduce network slicing and how different slices can support different QoS requirements. Students form project groups and select tentative project topics related to 5G/6G applications or architectures. Materials: ITU/3GPP use-case overviews, sample application scenarios, project topic suggestion list, lecture slides.
W8	Midterm English Oral Presentations I	First half of groups deliver midterm English oral presentations (e.g., survey of a 5G technology or application). Instructor and peers provide feedback on content, organization, and English presentation skills. Materials: presentation slides from students, grading rubric, feedback forms.
W9	Midterm English Oral Presentations II & Synthesis Discussion	Remaining groups deliver midterm presentations. After presentations, hold a synthesis discussion to connect different topics presented by students and identify research trends. Materials: student slides, rubric, summary notes of key concepts mentioned.
W10	Toward 6G: Vision, Requirements, and Key Technologies	Introduce 6G vision, performance targets, and potential new applications. Overview of candidate technologies: terahertz communications, intelligent reflecting surfaces (RIS), AI-native networks, integrated sensing and communication. Materials: recent 6G white papers, slides summarizing future trends.
W11	Mobile Edge Computing (MEC), Cloud-Native Design & Latency-Sensitive Services	Explain MEC concepts and the idea of bringing computing closer to the user. Introduce cloud-native design (microservices, containers) in mobile networks. Discuss latency-sensitive applications such as AR/VR, industrial IoT, and V2X. Group activity: design a simple MEC-based service architecture and identify where latency can be reduced. Materials: MEC architecture diagrams, tutorial article, example system designs, lecture slides.
W12	Standardization, Regulation, and 5G/6G Industry Ecosystem	Introduce the main standardization and regulation bodies related to mobile networks (e.g., 3GPP, ITU, ETSI, regional regulators). Explain the basic idea of 3GPP Releases (Rel-15, Rel-16, etc.) and how standards evolve from 4G to 5G and toward 6G at a high level. Discuss spectrum policy and licensing (e.g., spectrum auctions, licensed vs. unlicensed spectrum) without going into technical security details. Present the 5G/6G industry ecosystem: roles of network operators, equipment vendors, chipset manufacturers, cloud providers, and vertical industries (automotive, manufacturing, media, etc.). In-class group activity: each group chooses a specific role (e.g., operator, vendor, regulator, vertical industry) and analyzes its interests, challenges, and opportunities in the 5G/6G era. Materials: lecture

		slides summarizing standardization organizations and timelines, simplified 3GPP/ITU overview diagrams, selected industry white papers, group activity worksheet.
W13	Hands-on Lab I: Basic Wireless Channel Simulation & Link-Level Experiments	Start hands-on teaching. Use MATLAB, Python, or another tool to simulate basic wireless channels (e.g., AWGN, simple fading models) and measure BER/throughput. Students implement or modify simple link-level models inspired by 4G/5G systems, focusing on intuition rather than detailed theory. Materials: lab manual, starter code, example datasets, lab report template.
W14	Hands-on Lab II: 5G-Like Parameters and Resource Allocation Experiments	Extend the lab to include 5G-like system parameters (subcarrier spacing, bandwidth, modulation and coding levels, scheduling strategies). Students experiment with different configurations and observe performance trade-offs (throughput vs. reliability vs. resource usage). Materials: lab instructions, parameter configuration tables, code templates, lab report guidelines.
W15	Hands-on Lab III: End-to-End Network / MEC Application Prototype	Students build a simple end-to-end prototype using a network emulation platform or cloud/MEC environment (e.g., simple client–server or IoT application over an emulated 5G-like network). Emphasize measurement of latency, throughput, or reliability. Materials: emulation or cloud platform, lab guide, sample project architectures, troubleshooting tips.
W16	Hands-on Lab IV: Project Integration, Testing, and Presentation Rehearsal	Groups integrate all components of their practical project, conduct performance evaluation, and prepare a demo. In-class rehearsal of final English oral presentations, with feedback on both technical explanation and English delivery. Materials: students' project code and test data, rehearsal checklist, instructor feedback notes.
W17	Final English Oral Presentations I (Project Demo & Technical Report)	First half of the groups give their final English oral presentations, including a live or recorded demo of the project. Students explain system design, implementation choices, and performance results. Q&A session to assess understanding of next-generation mobile communication concepts. Materials: students' slides, demos, final project reports, grading rubric.
W18	Final English Oral Presentations II & Course Wrap-Up	Remaining groups present their final projects. After all presentations, conduct course wrap-up: summarize key learning outcomes, discuss future directions of mobile networks (5G-Advanced, 6G), and collect student feedback for course improvement. Materials: students' presentations, feedback forms, closing summary slides.

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	微處理機實習 Microprocessor practice	授課教師 Instructor	陳國益 CHEN,KUO-YI

<table>
<tr><td colspan="4">教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。
  Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
  Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
</table>

課程教材 Material	1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿＿＿ (＿＿＿%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_100__% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■ 期中/期末考：__100__%以上英文試題，學生以英文答題_100_%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □　英文期中/期末報告：＿＿＿%以英文表達。 　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** 　English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	NUC140 Cortex-M0Introduction	ARM Cortex-M0 Introduction

W2	NUC140 development	NUC140 and Keil C and project create
W3	SPI experiments	SPI control Flash
W4	Watchdog experiments	The timer as watchdog to protect MCU
W5	TSR experiments	TSR lab project
W6	Interrupter experiments	Interrupter lab project
W7	SRAM experiments	SRAM read/write operation
W8	Buzzer experiments	Buzzer operation
W9	File R/W experiments	Local file read/write operation
W10	Mid term	
W11	GPIO application	GPIO usage and PIN
W12	LCD experiments	LCD usage and LCD project
W13	UART experiments	UART protocol
W14	ADC experiments	ADC converter •NuMicro ADC
W15	PWM experiments	PWM controller with motor and buzzer
W16	Timer experiments	Cortex-M0 MCU Interrupt Vector,Timer,WatchDog
W17	I2C experiments	I2C access EEPROM
W18	SPI experiments	SPI protocol

國立虎尾科技大學雙語教學課程補助申請書

Incentive/Subsidy Application Form of Bilingual Education Course

教師姓名 Name	陳國益	所屬單位/ 職稱 Department/Position	資工系 教授	連絡電話 Phone No.	056315572
				Email	kuoyichen@nfu.edu.tw
雙語導師 姓名 Name of bilingual instructor	(無則免填)	所屬單位/ 職稱 Department/Position		連絡電話 Phone No.	
				Email	

雙語教學 開課資料 Course Information	課程名稱(中) Course Title(Mandarin)	微處理機實習		課程名稱(英) Course Title (English)	Microprocessor practice
	詳 如 附 件 雙 語 教 學 課 程 開 課 申 請 表 及 雙 語 教 學 課 程 計 畫 書 **Refer to Bilingual Education Course Application Form and Bilingual Education Course Plan**				

申請注意 事項 Application Notice	1.教師開設雙語教學課程，依本校「雙語教學課程實施要點」辦理，如未依規範進行雙語教學，將作為後續是否補助之參考依據(詳如要點第六點)。 All bilingual courses should follow regulations of the "Bilingual Education Implementation Guidelines". For those who do not follow the regulation of "Bilingual Education Implementation Guidelines", the record will be used as a reference in next bilingual education incentive/subsidy application review. 2.普及英文課程補助：請教師依公告期間內，檢附**雙語教學課程開課申請表、雙語教學課程計畫**及**雙語教學課程補助申請書**至語言教學中心申請，並將前述電子檔寄至承辦單位信箱 kirsty@nfu.edu.tw。 General English Courses：Please submit Bilingual Education Course Application Form, Bilingual Education Course Plan, Incentive/Subsidy Application Form of Bilingual Education Course to LTC and mail to kirsty@nfu.edu.tw. 3.一般科系及碩博專業課程補助：請教師依公告期間內，檢附**雙語教學課程開課申請表、雙語教學課程計畫**及**雙語教學課程補助申請書**，並將前述電子檔上傳至電子化表單簽核系統。 EMI Course：Please submit Bilingual Education Course Application Form, Bilingual Education Course Plan, Incentive/Subsidy Application Form of Bilingual Education Course to Bilingual Teaching Resources Center and mail to vx160213@nfu.edu.tw.

課程補助 類別 (請擇一勾選) Subsidy Category (Choose one)	1.■專業課程英語(無雙語導師)English Level in EMI Courses(without Co-teaching instructor)： □一般科系專業課程 Departmental Cores □碩博專業課程 Master's/Doctoral Cores (1)鐘點費：授課鐘點**每1鐘點加計0.5鐘點**為原則核算。 Hourly Pay: Teaching hours will be multiplied by 1.5 times maximum (2)材料費及教學助理經費最高以**15,000元**為限。 The subsidy amount of teaching material expenses and teaching assistant expenses is limited to NT$ 15000. 2.□專業課程英語(有雙語導師)English Level in EMI Courses(with Co-teaching

	instructor)： ☐一般科系專業課程 Departmental Cores ☐碩博專業課程 Master's/Doctoral Cores (1)鐘點費：授課鐘點**每1鐘點加計0.5鐘點**為原則核算。 　　Hourly Pay: Teaching hours will be multiplied by 1.5 times maximum (2)**雙語教學導師共同授課鐘點費至多6週或每門課每週各1小時，至多18週。** 　　Co-teaching Hourly Pay: Co-teaching EMI course assisted by bilingual instructor is limited to 1/3 of the semester or an hour per week for each course, up to 18 weeks the maximum. (3)材料費及教學助理經費最高以**15,000元**+雙語導師特別補助**10,000元**為限。 3.☐普及英文課程 English Level in General English Courses：☐A級 ☐B級 ☐C級 (1)材料費及教學助理經費最高以**15,000元**為限。 　　The subsidy amount of teaching material expenses and teaching assistant expenses is limited to NT\$ 15000.
成果繳交及配合事項	1.雙語教學課程計畫於會議審查期間如須修改，請教師配合修正。 　Please help to revise the bilingual teaching plan if required. 2.雙語教學課程開課教學內容、教學過程、師生互動紀錄(請存放至本校數位學習平台)，依教育部規定需保留五年以上，以供教育部備查，未來如教育部進行實地訪查時，請教師配合提供相關佐證資料及數位教學平台之課程資料。 　All the documents and media files related to bilingual class including teaching materials, class interaction records are required to be kept on the online learning platform at least five years. 3.雙語教學課程實施完成後一個月內，請繳交雙語教學課程成果報告(如附件四)及**表列所需成果，包含：** 　Please submit the bilingual education teaching achievement report within a month after the class finishes. (1)將自製英語教材上傳至數位學習平台。 　　Upload self-made course materials to the online learning platform (2)將學生期中考及期中考試卷及答案卷上傳至數位學習平台。 　　Upload the examination papers and answer sheets to the online learning platform (3)將課程師生互動錄影上傳至數位學習平台。 　A.錄製課程授課情形**至少4週**，每次課程約20分鐘，以聲音影像清晰為原則。檔案大小請依數位學習平台規範處理。 　B.如獲有雙語教學導師補助者，請加強佐證影片資料提供。 　　Record classroom interaction videos at least six weeks and upload to the online learning platform. (Videos should focus on the interaction between Ts and Ss, presentations and Q&A or students highlight performance. The length of each file is limited to 30 minutes.) (4)一般科系專業課、碩博專業課程將修課學生全英語口頭簡報 (含QA問答)20分鐘影片1支上傳至數位學習平台。 　　Upload video of 20 minutes English Oral presentation (including Q&A) to the online learning platform **上述(1)至(4)請提供平台檔案清單及一案例畫面擷圖** Please attach the file list and screenshots about one case on the online learning platform (5)期末教學評量分數(課程結束後一個月內，再由學校提供教學評量結果) Teaching Evaluation Scores (The result will be provided within one month after class finishes)

	4.雙語教學課程成果報告完成後，提送雙語教學課程委員會審查，並做為下次補助審查之依據，通過後由雙語教學資源中心備存。 The application form will be reviewed by the Bilingual Language Course Committee as the reference for the next application. 5.(新規定)獲得通過之課程，授課老師若願意在教務處所轄之智慧教室(AIA0104、AIA0405、ATD0704)進行教學活動，除免於繳交上述至少 4 周之錄製課程授課，本計畫將酌予增加補助經費，備註：該通過課程上課時段與智慧教室使用時間搭配由雙語教學資源中心進行協調。
雙語導師 簽章 Bilingual Instructor	

<table>
<tr><td colspan="6" align="center">所屬單位核章</td></tr>
<tr><td>申請教師
Applicant</td><td>陳國益</td><td>單位主管
Chairperson</td><td></td><td>一級主管
Chief Officer</td><td></td></tr>
</table>

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	科學計算 Scientific Computing	授課教師 Instructor	游允帥 Yu,Yun-Shuai

<table>
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2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
　Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
</table>

課程教材 Material	1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿＿ (＿＿％英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)__60__% 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report ■其他方式說明 Others： ● 上一學年度教學影片有提供英文字幕，本學年預計針對重點內容再增加中文字幕，提高學生的理解程度。 ● 將教學影片的時間長度縮短，增加學生觀看的興趣。

成績評量方式 Grading	■ 期中/期末考：__30__%以上英文試題，學生以英文答題__30__%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □ 英文期中/期末報告：＿＿＿％以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

<table>
<tr><td align="center">課程進度 Course Outline</td></tr>
</table>

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction of this course	Goals, Main contents、Development environment
W2	Introduction of Python	Basic knowledge of Python
W3	Introduction of Python	CSV and DataFrame
W4	Introduction of Python	DataFrame
W5	Unsupervised learning	K-means Clustering
W6	Unsupervised learning	Apriori
W7	Data preprocessing	Numerical data processing
W8	Data preprocessing	Categorical data processing
W9	Mid-term exam	
W10	Linear regression	Simple linear regression
W11	Linear regression	Save and load model
W12	Supervised learning	Logistic regression (IRIS)
W13	Supervised learning	Prophet (Apple stock price forecast)
W14	*Oral report demo*	*A GUI predictor for California House Price*
W15	Supervised learning	K nearest neighbor
W16	Oral presentation in English	
W17	Oral presentation in English	
W18	Final-term exam	

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	科學計算 Scientific Computing	授課教師 Instructor	游允帥 Yu,Yun-Shuai

教學簡要說明

1. 請依照授課班級英文分級程度規劃課程計畫書。
   Please design the course plan by following the English using percentage of the course English level.
2. 如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
   Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1. 指定課本書名 Book：_____ (____%英文內容 Percentage in English) 2. 自製教材 Self-made Materials：採用英文之比例 (Percentage in English)__60__% 3. 其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report ■其他方式說明 Others： ● 上一學年度教學影片有提供英文字幕，本學年預計針對重點內容再增加中文字幕，提高學生的理解程度。 ● 將教學影片的時間長度縮短，增加學生觀看的興趣。

成績評量方式 Grading	■ 期中/期末考：__30__%以上英文試題，學生以英文答題__30__%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □ 英文期中/期末報告：_____%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction of this course	Goals, Main contents、Development environment
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W13	Supervised learning	Prophet (Apple stock price forecast)
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W15	Supervised learning	K nearest neighbor
W16	Oral presentation in English	
W17	Oral presentation in English	
W18	Final-term exam	

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	計算機網路概論 Computer Network	授課教師 Instructor	黃世昌 HUANG,SHIH-CHANG

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Network Fundamentals: CCNA Exploration Companion Guide, Mark A. Dye, Rick Mcdonald, Antoon W. Rufi. ISBN: 978-1587133480 (_100_%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_50_% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　□小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching □分組報告 Group Report ■其他方式說明 Others：自製線上刷題系統練習（可控制英文出題比例）
成績評量方式 Grading	□　期中/期末考：__60__%以上英文試題，學生以英文答題__30-60___%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. □　英文期中/期末報告：_____%以英文表達。 The percentage of using English in midterm or final oral presentation ■　全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities

W1	Overview of Computer Network	Network layer, topology
W2	Communicating concept	Analog and digital, baseband broadband, wired media
W3	Media and devices	UTP,CABLE, Modem, Router,Switch
W4	Protocols	Layer Protocol, TCP/UDP, OSI
W5	Local Area Network framework	Ethernet, Fast Ethernet, build the LAN/WLAN
W6	Network Planning	Layout, backbone, case study
W7	Layer 2 Protocol	CS/MACD, Frame format, collision
W8	IP protocol	IP class, CIDR, DHCP, DNS, IPV6
W9	Midterm	Midterm exam
W10	Addressing and Network I	IP Classification CIDR, Network Mask,
W11	Addressing and Network II	Subnet Scheduling
W12	TCP Protocol I	UDP/ TCP. TCP
W13	TCP Protocol II	Segment format, TCP connection
W14	ARP,RARP, ICMP	ARP,RARP, ICMP, header format
W15	Routing Protocols I	OSPF, RIP, DSRV, AODV
W16	Routing Protocols II	Static route, dynamic route
W17	Security	Firewall, digital signatual, hacker,
W18	Final	Final exam

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	科技英文 English for Science and Technology	授課教師 Instructor	蔡柏祥 TSAI, PO-HSIANG

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：＿科技英文，陳志的，高立，2006＿＿ (_80__%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)＿＿＿＿% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■ 教材講述 Lecturing　■ 小組討論 Group Discussion　■ 口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■ 期中/期末考：_30_%以上英文試題，學生以英文答題__30__%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：__30__%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities

W1	Introduction	Overview, Syllabus
W2	Liquid Crystals	Liquid Crystals
W3	Artificial Intelligence	Artificial Intelligence
W4	Balloon Flight	Balloon Flight
W5	Banner Ads	Banner Ads
W6	Domino's Store Management	Domino's Store Management
W7	Dow Chemical	Dow Chemical
W8	Expert Systems	Expert Systems
W9	Mid-Term Exam	Mid-Term Exam
W10	Hen's Egg	Issue about Hen's Egg
W11	Hindenburg	Issue about Hindenburg
W12	Jaw Crusher: Coarse Range	Issue about Jaw Crusher: Coarse Range
W13	Leadscrew Linear Actuators	Issue about Leadscrew Linear Actuators
W14	Superconductors	Issue about Superconductors
W15	Systems Software	Issue about Systems Software
W16	The Transformer	Issue about The Transformer
W17	Transistor Appliers	Issue about Transistor Appliers
W18	Final-Term Exam	Final-Term Exam

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	科技文件閱讀 English Reading for Science and Technology	授課教師 Instructor	蔡柏祥 TSAI, PO-HSIANG

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：科技英文導讀(5th)，李開偉，全華，2016 (__80_%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_____% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■期中/期末考：__30___%以上英文試題，學生以英文答題_30____%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：_30__%以英文表達。 　The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　English oral presentation including Q&A session at least 20 minutes 　(Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction	Overview, Syllabus

W2	Tablets	Issue about Tablet
W3	Touchscreens	Issue about Touchscreens
W4	Unmanned Aerial Vehicle	Issue about Unmanned Aerial Vehicle
W5	Accelerometer and Gyroscope	Issue about Accelerometer and Gyroscope
W6	Knowledge Management	Issue about Knowledge Management
W7	What are Trademarks?	Issue about What are Trademarks?
W8	What is Copyright?	Issue about What is Copyright?
W9	Mid-Term Exam	Mid-Term Exam
W10	Patents in the USA	Issue about Patents in the USA
W11	Filing a Design Paten	Issue about Filing a Design Paten
W12	Non-Provisional Utility Paten Application	Issue about Non-Provisional Utility Paten Application
W13	Development of E-commerce in Manufacturing Operations	Issue about Development of E-commerce in Manufacturing Operations
W14	Digitization in Telecommunications	Issue about Digitization in Telecommunications
W15	Origin of Integrated Circuit	Issue about Origin of Integrated Circuit
W16	Virtual Reality	Issue about Virtual Reality
W17	Applications of Nanotechnology in Bio-Engineering	Issue about Applications of Nanotechnology in Bio-Engineering
W18	Final-Term Exam	Final-Term Exam

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	Python 程式設計 Python Programming Design	授課教師 Instructor	劉育松 Liu, Yu-Sung

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 　Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 　Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿＿＿ (＿＿＿%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例 (Percentage in English)__80__% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　　■小組討論 Group Discussion　　■口頭問答 Q&A ■問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	□　期中/期末考：＿＿＿%以上英文試題，學生以英文答題＿＿＿%。 　The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：__100__%以英文表達。 　The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) 　English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式 (請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities

W1	*Ch1 Getting Started and Ch2 IDE installation*	Introduce lesson requirements and set up the developing tools.
W2	*Ch3 Basic Concepts of Computer Languages. Ch4 Basic programming*	Introduction to the history of Python and the motivation of using computer programming. How to write a simple Python program? Basis of data types and flow controls.
W3	*Ch5 Functions, Modules, Packages, Object-Oriented Programming*	Introduce the functions, modules, packages. Understand the main concepts of Object-Oriented Programming
W4	*Ch6 Graphical User Interface*	Discuss about how to implement a window program with the Python supported GUI libraries.
W5	*Ch7 Containers*	Introduce the Python special data structures - containers, including Lists, Dictionaries, Sets, and Tuples.
W6	*Ch8 Matplotlib Libraries*	Discuss about how to show and manipulate the diverse figures by matplotlib libraries.
W7	*Ch16 Pandas Data Analysis*	Introduce how to handle python DataFrames and convert them between Excel and CSV. Exhibit good scientific or statistical figures with the help of Pandas.
W8	*Ch17 Numpy Matrices and Mathematic library*	Basic knowledge of classes, objects, data members and function members.
W9	Midterm Examination	Oral presentations on interesting topics
W10	*Ch19 Machine Learning - Regression*	Learn the concepts of artificial intelligence. Implement the machine learning regression algorithm by Python modules and functions.
W11	*Ch20 Machine Learning – KNN, Ch21 Machine Learning – K-means*	Learn the concepts of KNN and K-means. Implement the machine learning KNN and K-means algorithms by Python modules and functions.
W12	*Ch22 Machine Learning – Decision Tree Ch23 Machine Learning – Random Forest*	Learn the concepts of decision tree and random forest. Implement the machine learning decision tree and random forest algorithms by Python modules and functions.
W13	*Ch24 Machine Learning – Bayes' theorem*	Introduce the basic concepts of – Bayes' theorem and how it is implemented in Python.
W14	*Ch25 TensorFlow Installation*	Install and setup the developing environment of TensorFlow modules.
W15	*Ch26 TensorFlow Neural Networ-Fundamental*	Show the basic concepts of neural networks. Exhibit the steps and functions of how the neural networks are implemented by TensorFlow.
W16	*Ch27 TensorFlow neural network-Advanced*	Discuss more advanced manipulation and concepts of TensorFlow.
W17	*Ch31 TensorFlow neural network-CNN*	Understand the basic concepts of CNN algorithm and it is implemented in the TensorFlow developing system.
W18	*Final Examination*	Oral presentations on innovative application

Course Objectives:

The Python Programming course helps students develop a strong foundation in Python, covering basic syntax, data types, loops, and functions. Students will learn how to use Python libraries for tasks like data manipulation and visualization. The course also introduces object-oriented programming (OOP) principles such as the usage of classes and objects. Students will apply problem-solving techniques to real-world challenges, build software applications, and implement machine-learning and neural network algorithms. By the end of the course, students will also gain skills in communicating and presenting their results in English.

Teaching Methods:

The course emphasizes hands-on coding practice through exercises and projects. Lectures combine theoretical concepts with live coding demonstrations to reinforce learning. Collaboration is encouraged through group work and discussions in English. By working on projects, assignments, and English oral reports, students will gain extensive experiences in practicing English and refine their concepts in program data types, flow controlls, and object-oriented programming. Students will also have the opportunity to design applications based on artifical intelligent algorithms.

Assessment methods

student self-assessment of understanding 10%
class quizzes 30%
students solve course exercises and explain them in English 30%
midterm and final exam English oral reports 30%
students answer class questions in English + extra20%

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	Python 程式設計 Python Programming Design	授課教師 Instructor	劉育松 Liu, Yu-Sung

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：＿＿＿＿＿＿＿＿＿＿ (＿＿＿%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)＿80＿% 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A ■問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	□ 期中/期末考：＿＿＿%以上英文試題，學生以英文答題＿＿＿%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：＿100＿%以英文表達。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities

W1	*Ch1 Getting Started and Ch2 IDE installation*	Introduce lesson requirements and set up the developing tools.
W2	*Ch3 Basic Concepts of Computer Languages.* *Ch4 Basic programming*	Introduction to the history of Python and the motivation of using computer programming. How to write a simple Python program? Basis of data types and flow controls.
W3	*Ch5 Functions, Modules, Packages, Object-Oriented Programming*	Introduce the functions, modules, packages. Understand the main concepts of Object-Oriented Programming
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W6	*Ch8 Matplotlib Libraries*	Discuss about how to show and manipulate the diverse figures by matplotlib libraries.
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W16	*Ch27 TensorFlow neural network-Advanced*	Discuss more advanced manipulation and concepts of TensorFlow.
W17	*Ch31 TensorFlow neural network-CNN*	Understand the basic concepts of CNN algorithm and it is implemented in the TensorFlow developing system.
W18	*Final Examination*	Oral presentations on innovative application

Course Objectives:

The Python Programming course helps students develop a strong foundation in Python, covering basic syntax, data types, loops, and functions. Students will learn how to use Python libraries for tasks like data manipulation and visualization. The course also introduces object-oriented programming (OOP) principles such as the usage of classes and objects. Students will apply problem-solving techniques to real-world challenges, build software applications, and implement machine-learning and neural network algorithms. By the end of the course, students will also gain skills in communicating and presenting their results in English.

Teaching Methods:

The course emphasizes hands-on coding practice through exercises and projects. Lectures combine theoretical concepts with live coding demonstrations to reinforce learning. Collaboration is encouraged through group work and discussions in English. By working on projects, assignments, and English oral reports, students will gain extensive experiences in practicing English and refine their concepts in program data types, flow controlls, and object-oriented programming. Students will also have the opportunity to design applications based on artifical intelligent algorithms.

Assessment methods

student self-assessment of understanding 10%
class quizzes 30%
students solve course exercises and explain them in English 30%
midterm and final exam English oral reports 30%
students answer class questions in English + extra20%

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	網路與運籌 Networks and Logistics	授課教師 Instructor	謝益智 Hsieh ,Yi-Chih

	教學簡要說明
	1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：_____ (_____%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_100_% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	☑教材講述 Lecturing　□小組討論 Group Discussion　☑口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ☑分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	☑ 期中/期末考：100%以上英文試題，學生以英文答題 60％。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ☑ 英文期中/期末報告：60％以英文表達。 The percentage of using English in midterm or final oral presentation ☑ 全英語口頭簡報 (含 QA 問答)20分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次	單元/主題	教學活動重點及教材內容

Week	Unit/Topic	Teaching Activities
W1	1.Introduction of Graphs & Networks	Lecturing
W2	1.Introduction of Graphs & Networks	Lecturing
W3	2.Integer Programming	Lecturing
W4	2.Integer Programming	Lecturing, Presentation
W5	3.Assignment problem	Lecturing, Presentation
W6	3.Assignment problem	Lecturing, Presentation
W7	4.Transportation problem	Lecturing, Presentation
W8	4.Transportation problem	Lecturing, Presentation
W9	Midterm exam	Midterm exam
W10	5.Location Problem	Lecturing, Presentation
W11	5.Location Problem	Lecturing, Presentation
W12	6.Center Problem	Lecturing, Presentation
W13	6.Center Problem	Lecturing, Presentation
W14	7.Set Covering Problem	Lecturing, Presentation
W15	7.Set Covering Problem	Lecturing, Presentation
W16	8.Assembly Line Balancing	Lecturing, Presentation
W17	8.Assembly Line Balancing	Lecturing, Presentation
W18	Final exam	Final exam

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	智慧製造系統 Intelligent Manufacturing System	授課教師 Instructor	鄭宗明 Cheng,Tzong-Ming

<table>
<tr><td colspan="4" align="center">教學簡要說明</td></tr>
<tr><td colspan="4">1.請依照授課班級英文分級程度規劃課程計畫書。
Please design the course plan by following the English using percentage of the course English level.
2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。
Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
</table>

課程教材 Material	1.指定課本書名 Book： <u>Manufacturing Execution Systems: Optimal Design, Planning, and Deployment</u> （<u>100</u> %英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) <u>98</u> % 3.其他補充說明 Others：

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　　□協同教學 Collaborative Teaching ■分組報告 Group Report ■其他方式說明 Others：個人簡報

成績評量方式 Grading	□ 期中/期末考：_____%以上英文試題，學生以英文答題_____%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：<u>100</u>%以英文表達。 The percentage of using English in midterm or final oral presentation ■ 全英語口頭簡報 (含 QA 問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ■ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：僅非報告形式之小組討論中允許含中文50%發問，及生字以中文提示。

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Course Introduction	Lecturing 80% and Video Watching 20%
W2	Factory of Future	Lecturing 80% and Video Watching 20%

W3	Concepts and Technologies	Lecturing 80% and Group Discussion 20%
W4	Production Flow-Oriented Design	Lecturing 80% and Group Discussion 20%
W5	Production Flow-Oriented Planning	Lecturing 80% and Group Discussion 20%
W6	Order Processing	Lecturing 80% and Group Discussion 20%
W7	Technical Aspects	Lecturing 80% and Group Discussion 20%
W8	Evaluation of the Cost-Effectiveness	Lecturing 80% and Group Discussion 20%
W9	Journal Paper Presentations	Individual Paper Presentations
W10	Journal Paper Presentations	Individual Paper Presentations
W11	Examples for Application	Lecturing 80% and Group Discussion 20%
W12	Design of Intelligent System	Lecturing 80% and Group Discussion 20%
W13	On-line Simulations	Lecturing 80% and Group Discussion 20%
W14	Knowledge Management	Lecturing 80% and Group Discussion 20%
W15	Smart Interface	Lecturing 80% and Video Watching 20%
W16	Man-machine Collaborations	Lecturing 80% and Video Watching 20%
W17	Team Project Presentations	Team Presentations
W18	Team Project Presentations	Team Presentations

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	生產管理與實務 Production Management and Practice	授課教師 Instructor	胡智熊 Chih-Hsiung Hu

教學簡要說明
1.請依照授課班級英文分級程度規劃課程計畫書。 Please design the course plan by following the English using percentage of the course English level. 2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。 Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：<u>Operations Management/ William J. Stevenson /14th Edition</u> (<u>100</u> %英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English) <u>100%</u> 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　■口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：
成績評量方式 Grading	■期中/期末考：<u>100</u> %以上英文試題，學生以英文答題 <u>100</u> %。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：<u>100</u> %以英文表達。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have □　其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline		
週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Course Introduction	Lecturing / Q&A
W2	Chapter 1 Introduction to Operations Management	Lecturing / Q&A
W3	Chapter 2 Competitiveness, Strategy,	Lecturing / Q&A

	and Productivity	
W4	Chapter 3 Forecasting	Lecturing / Q&A
W5	Chapter 3 Forecasting	Lecturing / Q&A
W6	Chapter 4 Product and Service Design	Lecturing / Q&A
W7	Chapter 5 Strategic Capacity Planning for Products and Service	Lecturing / Q&A
W8	Chapter 6 Process Selection and Facility Layout	Lecturing / Q&A
W9	Mid-term	
W10	Chapter 11 Aggregate Planning and Master Scheduling	Lecturing / Q&A
W11	Chapter 11 Aggregate Planning and Master Scheduling	Lecturing / Q&A
W12	Chapter 13 MRP and ERP	Lecturing / Q&A
W13	Chapter 16 Scheduling	Lecturing / Q&A
W14	Chapter 16 Scheduling	Lecturing / Q&A
W15	Scheduling case practice introduction	Lecturing / Q&A
W16	Scheduling case scenario 1, 2, 3 report and discussion	Group Discussion and Report/Q&A Scheduling Assignment 6
W17	Scheduling case scenario 4, 5, 6 report and discussion	Group Discussion and Report/Q&A Scheduling Assignment 7
W18	Conclusion	Lecturing / Comments on Performance

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	資料庫管理 Database Management	授課教師 Instructor	侯雍聰 Yung-Tsung Hou

教學簡要說明
This course aims at giving students an understanding of basic database concepts, terminologies and technologies. The student will learn the theoretical and practical knowledge from both the technical and organization perspectives.

課程教材 Material	1.指定課本書名　Fundamentals of Database Systems＿＿＿＿＿（　100＿＿％英文內容 Percentage in English) 1.自製教材 Self-made Materials：採用英文之比例(Percentage in English)＿＿100＿＿% 2.其他補充說明 Others：Materials from the Internet

雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	▓教材講述 Lecturing ▓小組討論 Group Discussion □口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ▓分組報告 Group Report ▓其他方式說明 Others：AI 輔助

成績評量方式 Grading	□　期中/期末考：＿＿＿％以上英文試題，學生以英文答題＿＿＿％。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ▓　英文期中/期末報告：＿＿100　％以英文表達。 The percentage of using English in midterm or final oral presentation ▓全英語口頭簡報 (含 QA 問答)20分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ▓其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in

grading）：課堂練習與筆記　80　%以英文表達

課程進度 Course

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Database System Introduction	An overview of database systems
W2	Architecture of Database Systems	Learning data, schemas and instances
W3	Relational Model of Data	Introduction of conceptual data modeling
W4	Algebraic Query Language	Mathematics behind databases
W5	Design Theory of Relational Database	The design issues of databases
W6	Database Schema	Learning entity, attribute and key
W7	High-Level Database Model	Using high-level conceptual model to
W8	ER Model	ER diagrams, naming and design
W9	Midterm	
W10	Logical Query Language	Introduction of query languages
W11	SQL I	Basic SQL
W12	SQL II	Complex SQL
W13	SQL III	Advanced SQL
W14	Normalization I	First and second Normal Forms
W15	Normalization II	BCN form
W16	Views and Indexes	DB file structures and indexing
W17	Advanced Topics in Relational Data-bases	Query processing and Optimization
W18	Final Exam	

國立虎尾科技大學雙語教學課程計畫書
Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	智慧影像處理 Intelligent Image Processing	授課教師 Instructor	林彥昆 Yen-Kun Lin

教學簡要說明

1.請依照授課班級英文分級程度規劃課程計畫書。

This course will outline the techniques of intelligent processing of images, starting from the basics up to applications that involve real-life systems, at a graduate level. Theoretical and implementation aspects will be considered in this course in order to prepare students for projects that are research-oriented or for innovative system design.

The fundamental mathematical concepts that the students will be dealing with include calculus, linear algebra, probability, geometry, signal processing, and graph theory. The students will also be introduced to programming in Python or C++ as they implement algorithms for constructing intelligent image-processing systems.

This includes topics from acquisition, enhancement, and restoration of images; segmentation and compression; and morphological processing of images. Besides textbook material, students will be exposed to recent research papers with a view to understand state-of-the-art developments in this field.

In the process, they will learn how to formulate a problem, review the literature, propose and analyze methods, run experiments, and present results in paper reading, presentation, and the final project. The final project requires the students to exercise originality and innovation, both in design and in implementation.

By the end of the course, students will be able to:

a. Learn and apply the main techniques of digital image processing.

b. Compare the different intelligent models and computational tools that execute tasks based on images.

c. Design and implement a complete image processing system.

d. Communicate technical knowledge through effective written reports and also through oral presentations.

2.如有聘請雙語導師，請於課程進度註明雙語導師授課之週次時數。

Please state bilingual instructor's teaching weeks and hours in course outline section.

課程教材 Material	1.指定課本書名 Book：Digital Image Processing, Rafael C. Gonzalez and Richard E. Woods, 4th Edition, Pearson (100%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)100% 3.其他補充說明 Others：
雙語教學方式 (可多選，或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing ■小組討論 Group Discussion □口頭問答 Q&A ■問題導向 Problem Based Learning □協同教學 Collaborative Teaching ■分組報告 Group Report ■其他方式說明 Others：The instructor provides lectures and reviews of the research papers on core concepts and recent advances in intelligent image processing. Each student is encouraged to choose one topic covered in class and propose a midterm research plan (a 10-page proposal). During the whole semester, students are involved in group discussions, presenting papers, and consulting the instructor. The final project is a complete research project, including the introduction, the literature review, the proposed method and analysis, the experiment, the conclusion, and the reference. Oral presentations and written reports will be required for all students. The process aims to develop innovation, collaboration, and research-oriented learning.
成績評量方式 Grading	■期中/期末考：_100_%以上英文試題，學生以英文答題__50__%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■英文期中/期末報告：_100__%以英文表達。 The percentage of using English in midterm or final oral presentation ■全英語口頭簡報 (含 QA 問答)20 分鐘以上(一般科系專業課、碩博專業課程必須包含此評量方式) English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ■其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：HW x 4: 20%, Midterm proposal: 20%, Final presentation & implementation: 35%, Final exam: 25%

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Introduction to Computer Vision and Intelligent Systems	• Introduction lecture • Study Chapter 2 • Generate an AVI movie using geometric

		transformations (Example1, Example2)
W2	Geometric Transformations: 3D, Projections and Intensity transforms	• Lecture + examples
W3	Spatial filtering	• Lecture and demonstrations
W4	Image Similarity	• Lecture + similarity metrics examples
W5	Color, Texture, PCA	• Lecture on Color (Ch. 6) • Texture (11.4) • PCA • Demo program (11.5)
W6	Image Segmentation, Clustering	• Lecture • Clustering • Homework
W7	Image Segmentation (continuation)	• Lecture + examples
W8	Template Matching, Digital Topology	• Lecture + examples
W9	Shape Descriptors	• Lecture • Deadline for project proposals
W10	Repetition: Sample Questions, Video processing	• Review session • Sample Questions • Video processing
W11	Midterm Exam	• 10-page proposal
W12	Image segmentation by clustering	• Mahalanobis distance in Lab • Image segmentation by clustering
W13	Background learning and letter detection, Independent Component Analysis	• Background learning and letter detection (texture with PCA) • Independent Component Analysis
W14	Detection of lines and ellipses; Detection of coins; Independent Component Analysis	• Detection of lines and ellipses • Detection of coins • Independent Component Analysis
W15	Object recognition, Steganography	• Object recognition • Steganography
W16	Range image processing	• Range image processing
W17	Range image processing (continuation)	• Range image processing
W18	Final Project	• Oral presentation • Final project report

國立虎尾科技大學雙語教學課程計畫書

Bilingual Education Course Plan

課程名稱(中) 課程名稱(英) Course title in Mandarin and English	Machine Learning and Big Data 機器學習與大數據	授課教師 Instructor	Nian -Ze Hu 胡念祖

<table>
<tr><td colspan="4" align="center">教學簡要說明</td></tr>
<tr><td colspan="4">1.請依照授課班級英文分級程度規劃課程計畫書。

This introductory course gives an overview of many concepts, techniques, and processes in Big Data, beginning with topics such as business process and data business matrix and ending up with more recent topics such as slowly changing dimension, bridge tables and some advance fact table techniques.. The course will give the students the basic ideas and intuition behind modern data modeling methods as well as a bit more formal understanding of how, why, and when they work. The underlying theme in the course is ETL method as it provides the data flow for most of the scenarios covered.

Help students obtain the skills of:

The goal of this course is to give an introduction to the modeling technique of Big Data. The course will teach student basic skills to decide which approaches to use for what scenarios, build up your own data warehouse structure., etc

Instructor introduces the concepts and provides some workshop for students.

2.如有聘請雙語導師,請於課程進度註明雙語導師授課之週次時數。

Please state bilingual instructor's teaching weeks and hours in course outline section.</td></tr>
</table>

課程教材 Material	1.指定課本書名 Book：Data Science from Scratch, Joel Grus, O'Reilly (100%英文內容 Percentage in English) 2.自製教材 Self-made Materials：採用英文之比例(Percentage in English)_____% 3.其他補充說明 Others：
雙語教學方式 (可多選,或簡述) Bilingual Teaching Strategies	■教材講述 Lecturing　■小組討論 Group Discussion　□口頭問答 Q&A □問題導向 Problem Based Learning　□協同教學 Collaborative Teaching ■分組報告 Group Report □其他方式說明 Others：

成績評量方式 Grading	■ 期中/期末考：＿＿＿＿%以上英文試題，學生以英文答題＿＿＿＿%。 The percentage of English using in designing midterm/final exam; the percentage of English using in answering the exam paper. ■ 英文期中/期末報告：＿＿＿＿%以英文表達。 The percentage of using English in midterm or final oral presentation □ 全英語口頭簡報 (含 QA 問答)20 分鐘以上**(一般科系專業課、碩博專業課程必須包含此評量方式)** English oral presentation including Q&A session at least 20 minutes (Department cores, master's degree and doctoral degree courses so must have ■ 其他方式(請說明中英文比例)Others(please state the proportion of Mandarin and English in grading)：

課程進度 Course Outline

週次 Week	單元/主題 Unit/Topic	教學活動重點及教材內容 Teaching Activities
W1	Big Data	
W2	•Introduction to Big Data	
W3	•Architecture	
W4	•Database fundamental	
W5	•Data Modeling	
W6	•Dimensions	
W7	•Modeling Myths	
W8	• Project and team group discussion	
W9	Midterm	
W10	• Fact Table Techniques	
W11	• Dimension Table Techniques	
W12	Machine Learning	
W13	• Design for various Scenarios	
W14	• ETL Modeling	
W15	•ETL Plan	
W16	•ETL Implmentation	
W17	•Project and team group discussion	
W18	Final Exam	