開課班級: 四機械二B **授課老師: 陳念慈** **學分數: 3**

課程大綱:

Apart from the textbooks not being in English, the entire course will be taught in English by the instructor during class, including demonstrations and explanations. The PowerPoint presentations and quizzes will also be presented in English. The course begins with an introduction to LabVIEW, covering the LabVIEW user interface (Front Panel), Block Diagram0, Tools Palette, Editing Techniques, Running VI, Special Tools, and Context Help Windows. Hands-on activities and explanations of key proprietary terms are provided to establish connections. The curriculum integrates LabVIEW graphical programming and the design of human-machine control panels, showcasing results in the physical world to enhance the learning experience. This approach aids in interdisciplinary learning and expands career planning opportunities. The learning process includes circuit experiments and simulated questions for the CLAD (Certified LabVIEW Associate Developer) NI Development Assistant Engineer certification, validating learning outcomes. Students familiarize themselves with the actual certification exam content and format, providing an opportunity to demonstrate and assess their abilities, thus boosting confidence in passing certification exams. Each unit is systematically arranged in a progressive manner, offering examples for beginners to operate and learn. To enhance practical learning, MP4 videos are recorded for editing programs and assembling electronic circuits (process), uploaded to YouTube, and the file URLs are placed on the digital learning platform. This facilitates clearer differentiation of the connection status between programs and data when students are learning to edit programs and assemble electronic circuits.

outline:

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教學型態:
課堂教學+實習 (校內、校外)

成績考核方式:
平時成績:%
期中考:0%

期末考:0%
其它:Attendance
60%，缺曠課一堂扣1分。
考試平均分數 40%%

本科目教學目標:

1. Application of mechanical engineering expertise to solve problems in precision machinery and green energy engineering. 2. Possession of enthusiasm for work, a sense of social responsibility, and a commitment to ethical conduct. 3. Cultivation of an international perspective, a lifelong learning attitude, and the ability to collaborate effectively within a team.

參考書目:

LabVIEW 程式設計與應用 - 作者陳瓊興 編著

課程進度表：

週次	起訖月日	授課單元(內容)	備註
第1週	2.19~2.25	02/19(Monday) 13:30 - 15:20 & 02/20(Tuesday) 15:30 - 17:20 / Installation of LabVIEW 1. Student grouping and seating arrangements, explanation of the semester grading method. 2. Registering the names of students who intend to purchase books; 3. Demonstration: Students registering on the NI LabVIEW official website. 4. Creating Shortcuts and Running the Program 5. Hands-on operation of the first LabVIEW user interface: Input and output of LabVIEW values.	8日正式上課。8~12日課程加退選，轉學(系)生、復學生及延修生選課，雙主修、輔系申請，12日申辦抵免學分截止日
第2週	2.26~3.03	2/26(Monday) 13:30 - 15:20 & 2/27(Tuesday);15:30 - 17:20 / LabVIEW Workspace; 1. Human-Machine Interface 2. Graphical Programming Area 3. Tools Palette 4. Toolbar 5. Dropdown Menu	
第3週	3.04~3.10	3/04(Monday);13:30 - 15:20 & 3/05(Tuesday);15:30 - 17:20 /;LabVIEW Workspace; 1. Floating and Fixed Panels; 2. Panel Settings for Front Panel 3. Context Help Windows;Component Description Window 4. File storage, file opening;	28日(日)孔子誕辰紀念日/教師節(放假),29日(一)補假
第4週	3.11~3.17	3/11(Monday);13:30 - 15:20 & 3/12(Tuesday);15:30 - 17:20 /; Numeric;and Comparison Functions; 1.;Basic Numeric Operation Functions 2.;Random Input Values 3.;Arithmetic Operations; 4. Compound Arithmetic;;	29日成績優異提前畢業者提出申請截止日
第5週	3.18~3.24	3/18(Monday);13:30 - 15:20 & 3/19(Tuesday);15:30 - 17:20 /;;Array -1 1.;Array Constant 2. Array Size;	6日(一)中秋節(放假)，10日(五)國慶日(放假)

		3. Index Array 4.;Build Array	
第6週	3.25~3.31	3/25(Monday) 13:30 - 15:20 & 3/26(Tuesday);15:30 - 17:20 /;Array -2 1. Array Subset 2. Initialize Array 3. CLAD：Subarray	14日學生宿舍安全輔導暨複合式防災疏散演練。18日多益測驗
第7週	4.01~4.07	4/01 (Monday);13:30 - 15:20 & & 4/02 (Tuesday);15:30 - 17:20 /;Cluster 1. Reorder Control In Cluster 2.;Bundle & Bundle By Name 3. Unbundle 4.;Cluster & Waveform Graph	24日(五)補假，25日(六)光復暨古寧頭大捷日(放假)。
第8週	4.08~4.14	4/08(Monday) 13:30 - 15:20 & 4/09(Tuesday);15:30 - 17:20 /;;Loop 1. While Loop; & Stop Button 2.;For Loop & Increment; 3.;For Loop & Add Shift Register; 4.;For Loop & Feedback Node	30日校課程委員會
第9週	4.15~4.21	4/15(Monday) & 4/16(Tuesday); "Midterm exam week";	3~9日期中考試
第10週	4.22~4.28	4/22(Monday) 13:30 - 15:20 & 4/23(Tuesday);15:30 - 17:20 / Repetitive Loop Structure 1.;Formula Node; 2.; For Loop; & Formula Node 3.; "4 Bit Shift Register" 4.;;CLAD simulated exam practice	13日教務會議,16日教師期中成績上網登錄截止日
第11週	4.29~5.05	5/29(Monday) 13:30 - 15:20 & 5/02(Tuesday);15:30 - 17:20 / Boolean;& Truth Table 1. Boolean to (0, 1); 2. Logic Circuits：AND Gate、OR Gate、XOR Gate、Not Gate、NAND Gate; 3.;Numerical value converted to Boolean; 4. Boolean;converted to Numerical value	
第12週	5.06~5.12	5/06(Monday) 13:30 - 15:20 & 5/07(Tuesday);15:30 - 17:20 /;Adder - Select 1.; Half Adder; 2.; Which do you want ? Select 3.; Full Adder; 4.; Practice hands-on and upload to the digital learning platform.	24~28體育運動週。24日校園路跑。27日運動大會夜間開幕，28日運動大會活動，29日101週年校慶活動日，照常上班
第13週	5.13~5.19	5/13(Monday) 13:30 - 15:20 & 5/14(Tuesday);15:30 - 17:20 / Dialog 1.; Dialog 1： Reminder	

		2.; Dialog 2： Decision 3.;;Dialog 3： Multiple Decision 4.; Practice hands-on and upload to the digital learning platform.	
第14週	5.20~5.26	5/20(Monday) 13:30 - 15:20 & 5/21(Tuesday);15:30 - 17:20 / Graph; 1.; Waveform Chat 2.; Multiple waveforms Chart 3.; Waveform Chart of upper and lower water level limits, as well as changes in water level. 4.; Practice hands-on and upload to the digital learning platform.	12日申請停修課程截止日
第15週	5.27~6.02	5/27(Monday) 13:30 - 15:20 & 5/28(Tuesday);15:30 - 17:20 / String & Path 1. String Control、String Indicator; 2. Concatenate Strings 3. Ring & Enum 4.;Creating a perpetual calendar 5. String/Number Conversion	
第16週	6.03~6.09	6/03(Monday) 13:30 - 15:20 & 6/04(Tuesday);15:30 - 17:20;/ Case Structure 1.; Case(T or F) 2.; Case(0. 1. 2. 3....n); 3.; Sequency Structure：Flat;Sequence 4.; Sequency Structure：Stacked Sequence 5.;;Sequential-like frame	22日校務會議。25日行憲紀念日(放假)
第17週	6.10~6.16	6/10(Monday) 13:30 - 15:20 & 6/11(Tuesday);15:30 - 17:20 /;Timing 1.;Wait 2. Wait Until Next Multiple; 3.;Time Delay; 4. Get Date/Time String; 5. One Shot;	1日(四)開國紀念日(放假)
第18週	6.17~6.23	6/17(Monday) & 6/21(Tuesday); "Final exam week" ;	5~11日期末考試，10~11日學生退宿