# 國立台灣科技大學 114學年 第2學期　課程大綱

## Spring 2026 NTUST Course Outline

授課教師：謝佑明

Instructor:HSIEH,YO-MING

課程名稱：平行與分散式計算
在工程上之應用

Course Title：Parallel and Distributed Computing

2026/11/3

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| 課程代號： CT5708701<br>Course Code<br>學分數： 3<br>Credits | 必選修：選修/半學年<br>Required/Electve:Elective/Half Yr.<br>先修課程：<br>Prerequisites |
| 節次教室：<br>Time/Location | M6(IB-602-2) M7(IB-602-2) M8(IB-602-2) |
| 專業核心能力：<br>Core Professional Competencies | |
| 課程網址：<br>Course Website | |
| 課程宗旨：<br>Course Objectives | 1. Students will develop understandings toward parallel and distributed computing, including hardware architecture and various programming models.<br>2. Students will gain the ability to use parallel computers for solving engineering problems. |
| 課程大綱：<br>Outline of Lectures | * Efficient C/C++ Programming<br>* Programming in the Linux environment<br>* Multi-core and multithread programming through OpenMP<br>* Many-core programming through OpenCL or CUDA.<br>* Parallel and Distributed Computing through MPI<br>* Modern parallel and distributed programming (e.g. SYCL, OneAPI, Hadoop, ...) |
| 授課方式：<br>Method of Instruction | 講授 Lecture：80%<br>分組討論 Group discussion：0%<br>案例研討 Case study：20%<br>操做練習 Practical exercises：0%<br>講授 Lecture：% |
| 教科書：<br>Textbooks | n/a |
| 參考書目：<br>References | ・Williams (2012), C++ Concurrency in Action: Practical Multithreading, Manning Publications, ISBN 978-1933988771.<br>・Cambell (2011), Parallel Programming with Microsoft Visual C++: Design Patterns for Decomposition and Coordination on Multicore Architectures, Microsoft Press, ISBN 978-0735651753.<br>・Reinders, James (2007). Intel Threading Building Blocks: Outfitting C++ for Multi-Core Processor Parallelism |
| 修課須知：<br>Notice | |
| 評量方式：<br>Grading | |

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| | • 30%: Exams<br>• 30%: Personal term project<br>• 30%: Assignments<br>• 10%: Class participation |
| 備註說明：<br>Notes | • C/C++ programming, Engineering Mathematics(linear algebra, vector, matrices)<br>• Passionate about programming! |