

112-2 生物統計學一

# 課程說明與統計軟體介紹

2024/02/20

# 助教名單與聯絡方式

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# 課程規劃與成績評量方式

- **正課 (13:20 – 15:10 @ 公衛 215)**
  - 李文宗老師授課
  - 統計觀念講解
  - 不定期進行小考
- **實習課 (15:30 – 17:20 @ 公衛 214)**
  - 助教授課
  - 操作統計軟體 SAS、R
  - 每周有實習課作業 (到 COOL 上繳交)

評分項目	百分比
第一次期中考	20%
第二次期中考	20%
期末考	20%
出席及隨堂測驗	10%
實習課 (作業+上機考)	30%

# 出席、請假

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- **出席紀錄**

- 正課：小考視同點名
- 實習課：每周需簽到（第3周起）

- **請假方式**

- 一律使用學校請假系統 (myntu)
- 事假、公假請事先提出
- 病假最晚於一週內提出

- 以 Pagano and Gauvreau 的書為主

1. Pagano and Gauvreau (2000). Principles of Biostatistics. 2<sup>nd</sup> edition, Duxbury Press.
2. Pagano and Gauvreau (2022). Principles of Biostatistics. 3<sup>rd</sup> edition, Chapman & Hall.
3. Chernick and Friis (2003). Introductory Biostatistics for the Health Sciences. Wiley InterScience. (NTU e-book)
4. Chap T. Le (2003). Introductory Biostatistics. Wiley InterScience. (NTU e-book)
5. Daniel and Cross (2014). Biostatistics: Basic Concepts and Methodology for the Health Sciences. 10th Edition, John Wiley & Sons.

# 課程大綱(視進度調整)

週次	日期	正課單元主題	實習課單元主題
1	02/20	描述性統計	課程介紹、統計軟體介紹
2	02/27	基本機率概念	R資料建立、Excel 描述性統計(補充)
3	03/05	條件機率及貝氏定理	SAS 資料建立
4	03/12	機率分布	R資料整理、篩選
5	03/19	抽樣分布	SAS資料整理、篩選
6	03/26	【第一次期中考試】	
7	04/02	信賴區間	R、SAS 描述性統計
8	04/09	假說檢定	R、SAS 圖表製作
9	04/16	兩組樣本的比較	R 單一樣本檢定、兩組樣本檢定
10	04/23	變異數分析與多重比較、無母數分析(補充)	SAS 單一樣本檢定、兩組樣本檢定
11	04/30	【第二次期中考試】	
12	05/07	比率的分析	R & SAS 變異數分析
13	05/14	列聯表分析、勝算比與相對危險性(補充)	R & SAS 列聯表分析
14	05/21	相關分析	R & SAS 迴歸分析、無母數分析(補充)
15	05/28	迴歸分析、隨機抽樣的方法(補充)	【實習課上機考】
16	06/04	【期末考試】	

# 實習課規劃 (佔總成績30%)

- 作業 (20%)
  - 內容應包括：(1)語法 (2) 結果 (3) 結論
  - 隔周二 20:00 前，於 COOL 線上繳交
    - 若上傳失敗請於 20:10 前將檔案寄給振博助教 ([f09849002@ntu.edu.tw](mailto:f09849002@ntu.edu.tw))
  - 遲交一天扣 10 分；若抄襲則以 0 分計
- 上機考 (10%)
  - 時間：05/28(二) 15:30 — 17:20
  - 考試範圍：實習課內容(選擇一種統計軟體作答即可)
- 統計軟體: R, SAS

# 統計軟體介紹–SAS與R

## 共通點:

- 需撰寫程式執行分析
- 有完整的統計/資料分析功能
- 可以生成多種統計報表

## SAS: Statistical Analysis Software

- 商業統計軟體(需授權且費用昂貴)
- 僅適用於Windows系統
- 屬於模組化的軟體，有現成的工具去處理特定的分析工作
- 學校提供 SAS 9.4，需每年更新授權碼

## R:

- 開源的統計軟體(可以免費使用)
- 適用於 Windows 、 MAC 、 LINUX 作業系統
- 提供多種套件 (R packages)解決特定的分析問題
- 通常以R Studio整合開發環境來使用



# 統計軟體介紹–SAS下載與安裝(1)

- 計中首頁下方 -> 熱門服務 -> 校園授權軟體 (<https://download.cc.ntu.edu.tw/>)(需在校內網域或使用VPN)



# 統計軟體介紹-SAS下載與安裝(2)

- 登入 -> 軟體下載 -> 統計軟體
- 下載檔案
  - SAS 9.4 安裝檔 (含授權碼)
  - 21GB, 請盡早下載
- 依說明文件進行安裝

[回首頁](#)[臺大首頁](#)[臺大計中](#)[English](#)



計算機及資訊網路中心  
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軟體下載

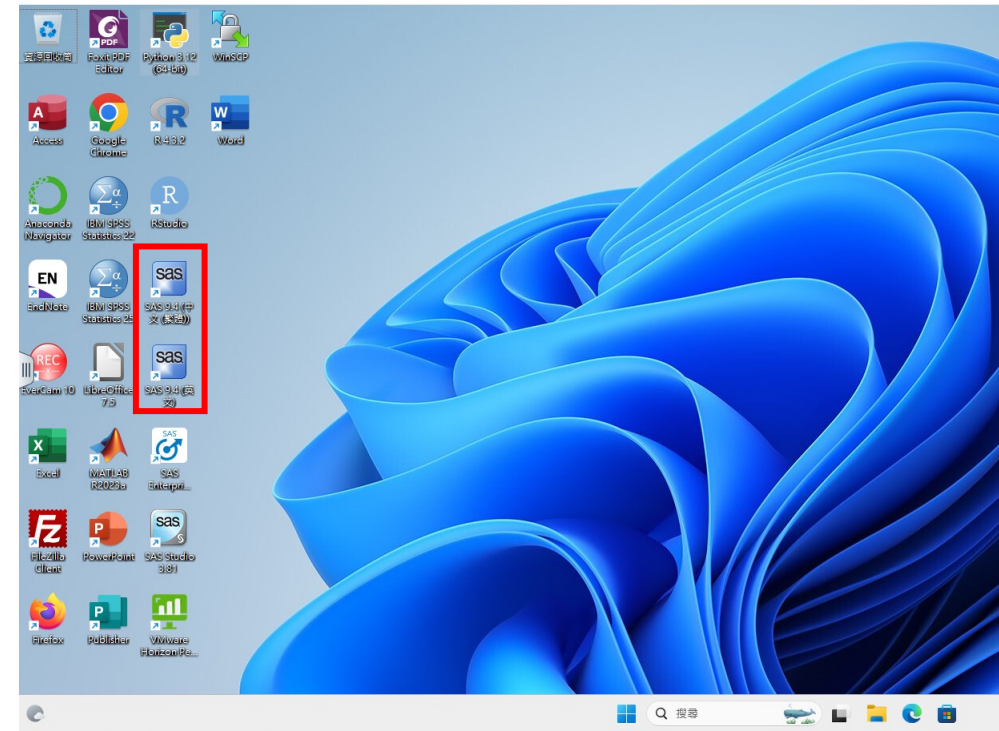
請下載 7-zip 來解壓縮zip檔案

[工具程式 Utility](#)[文書處理Office](#)[作業系統Windows](#)[書目管理EndNote](#)[統計軟體Statistic](#)

檔案連結	版本
SAS 安裝檔	SAS 9.4 (含授權碼至2024-12-31止)
<a href="#">SAS 9.4 授權碼</a>	SAS 9.4 (至2024-12-31)
SAS 安裝檔	SAS 9.4 (含授權碼至2023-12-31止)
<a href="#">SAS 授權碼</a>	SAS 9.4 (至2023-12-31)
<a href="#">SAS 授權碼</a>	SAS 9.3 (至2023-12-31)

# 統計軟體介紹–SAS下載與安裝(3)

- 在個人電腦上安裝 SAS
  - 只適用於 Windows 使用者
  - 若是 macOS 使用者，可以用 Parallels Desktop 執行 Windows
- 在計中或電腦教室（公衛214）進行操作
- 以 NTU VDI（台大虛擬桌面系統）進行操作
  - <https://vdi.cloud.ntu.edu.tw/>



# 統計軟體介紹–R下載與安裝(1)

- [RStudio 官網](#) -> Install R -> Taiwan mirror (<https://cran.csie.ntu.edu.tw/>)

## RStudio Desktop

Used by millions of people weekly, the RStudio integrated development environment (IDE) is a set of tools built to help you be more productive with R and Python.

Don't want to download or install anything? Get started with RStudio on [Posit Cloud for free](#). If you're a professional data scientist looking to download RStudio and also need common enterprise features, don't hesitate to [book a call with us](#).

### 1: Install R

RStudio requires R 3.3.0+. Choose a version of R that matches your computer's operating system.

DOWNLOAD AND INSTALL R

### 2: Install RStudio

DOWNLOAD RSTUDIO DESKTOP FOR MACOS 12+

This version of RStudio is only supported on macOS 12 and higher. For earlier macOS environments, please [download a previous version](#).

Size: 382.66 MB | [SHA-256: C8D9185D](#) | Version: 2023.12.1+402 | Released: 2024-01-29



## The Comprehensive R Archive Network

### Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux \(Debian, Fedora/Redhat, Ubuntu\)](#)
- [Download R for macOS](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

### Source Code for all Platforms

Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

- The latest release (2023–10–31, Eye Holes) [R-4.3.2.tar.gz](#), read [what's new](#) in the latest version.
- Sources of [R alpha and beta releases](#) (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are [available here](#). Please read about [new features and bug fixes](#) before filing corresponding feature requests or bug reports.
- Source code of older versions of R is [available here](#).
- Contributed extension [packages](#)

### Questions About R

- If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

### Supporting CRAN

- CRAN operations, most importantly hosting, checking, distributing, and archiving of R add-on packages for various platforms, crucially rely on technical, emotional, and financial support by the R community.
- Please consider making [financial contributions](#) to the R Foundation for Statistical Computing.

# 統計軟體介紹-R下載與安裝(2)

- 依作業系統 (Windows / macOS) 點選連結 -> Install R for the first time



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## R for Windows

Subdirectories:

<a href="#">base</a>	Binaries for base distribution. This is what you want to <a href="#">install R for the first time</a> .
<a href="#">contrib</a>	Binaries of contributed CRAN packages (for R >= 3.4.x).
<a href="#">old contrib</a>	Binaries of contributed CRAN packages for outdated versions of R (for R < 3.4.x).
<a href="#">Rtools</a>	Tools to build R and R packages. This is what you want to build your own packages on Windows, or to build R itself.

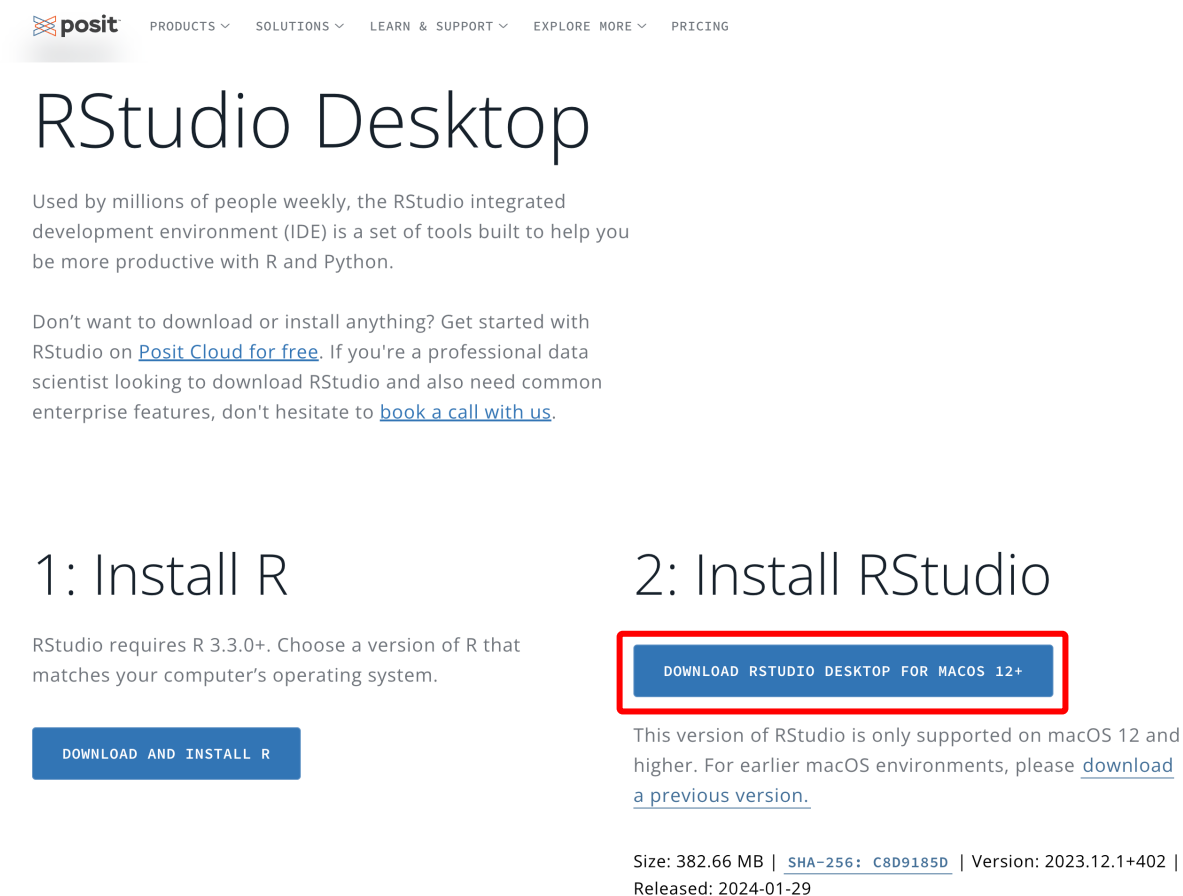
Please do not submit binaries to CRAN. Package developers might want to contact Uwe Ligges directly in case of questions / suggestions related to Windows binaries.

You may also want to read the [R FAQ](#) and [R for Windows FAQ](#).

Note: CRAN does some checks on these binaries for viruses, but cannot give guarantees. Use the normal precautions with downloaded executables.

# 統計軟體介紹–使用R Studio來操作

- 安裝 RStudio (更清楚的操作介面)
  - 請先安裝 R, 再安裝 RStudio
  - 下載網址: <https://www.rstudio.com/products/rstudio/download/>



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# 作業

- 在個人電腦安裝 SAS 與 R (R Studio), 並確認可以正常開啟軟體
  - 若不安裝在個人電腦, 請確保自己可以在上課以外的時間順利操作 SAS 與 R, 以完成實習課作業
  - 若有安裝上的問題, 可於下次實習課後請助教協助, 或寫信向助教詢問
  - 本次作業不納入計分