



Data Analytics

Offered in 114-2 | Updated

♡ Save

Add Preselect



Serial Number

51699



Course Number

IE5054



Course Identifier

546 U4040



No Class



3 Credits



Compulsory / Elective

English-Taught Intelligent Engineering and Technology Undergraduate Program / Mas...



JAKY BLUE



Mon 2, 3, 4



綜604



Type 2



42 Student Quota

NTU 32 + non-NTU 10



2 Specialization Programs



🇬🇧 English

↔ NTU COOL

↔ Core Capabilities and Curriculum Planning

📖 Notes

The course is conducted in English ◦

↗ NTU Enrollment Status

Enrolled	Remaining	Registered
66 / 32	0	0

📄 Course Description

Data analytics has become an increasingly vital component across a wide range of industries. This course is designed to make sense of commonly encountered terms such as data mining, big data, artificial intelligence, machine learning, and deep learning, which frequently appear in contemporary discourse. We will dive into the fundamental principles underlying these buzzwords and explore the diversified methodologies, including multivariate statistical inference and both supervised and unsupervised learning algorithms. The course will employ R or Python as key analytical tools, enabling participants to integrate theory with practice and apply these methodologies to real-world challenges.

Structured as a blended learning format, this course combines several pedagogical elements, such as asynchronous video lectures for self-

paced learning, interactive in-person discussions, hands-on assignments, and a collaborative group project. This dynamic format ensures the depth of understanding and engagement. You are highly encouraged to attend the initial session to evaluate how well the course aligns with their academic and professional needs.

Students who are interested in enrolling MUST attend the first lecture and remain until the end of the class. ADDITIONAL enrollment codes will be distributed during the final part of the first lecture. Students who do not attend the first lecture should NOT email to request an enrollment code.

🕒 Course Objective

Students from this course shall learn to:

1. understand the data characteristics and the fitness of different algorithms;
2. pretreat and clean the data;
3. extract and select significant features;
4. explain the analytical results;
5. use R/Python for quick data analytics.

⚙️ Course Requirement

probability, statistics, linear algebra, and programming skills

🕒 Expected weekly study hours before and/or after class

📅 Office Hour

TBD

 Designated Reading

 References

- Strang, G. (2006). Linear Algebra and Its Applications
 - Montgomery, D. C., & Runger, G. C. (2014). Applied Statistics and Probability for Engineers
 - Rencher, A. C., & Christensen, W. F. (2012). Methods of Multivariate Analysis
 - Johnson, R., & Wichern D. (2014). Applied Multivariate Statistical Analysis
 - Izenman A. J., 1st edition, Modern Multivariate Statistical Techniques
 - James, G., Witten, D., Hastie, T., & Tibshirani, R. (2017). An Introduction to Statistical Learning
 - Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning
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 Grading

25%	Homework
35%	Mid-term Exam
37%	Team Project
3%	Participation

1. NTU has not set an upper limit on the percentage of A+ grades.
2. NTU uses a letter grade system for assessment. The grade percentage ranges and the single-subject grade conversion table in the NATIONAL TAIWAN

UNIVERSITY Regulations Governing Academic Grading are for reference only.
Instructors may adjust the percentage ranges according to the grade definitions.
For more information, see [the Assessment for Learning Section](#) °

 Adjustment methods for students

 Make-up Class Information

 Course Schedule

Feb. 23 Review & Preview × Send Enrollment Code*
Week 1

Mar. 02 Regression Analysis
Week 2

Mar. 09 Regression Analysis
Week 3

Mar. 16 Multivariate Statistical Inference
Week 4

Mar. 23 Dimension Reduction Techniques
Week 5

Mar. 30 Partial Least Squares Regression
Week 6

Apr. 06* Big Data Infrastructure × Team Building*
Week 7

Apr. 13 Supervised Learning Algorithms
Week 8

Apr. 20* Supervised Learning Algorithms × 5-minute Project Pitch*

Week 9

Apr. 27 Unsupervised Learning Algorithms

Week 10

May 04 Unsupervised Learning Algorithms

Week 11

May 11 Mid-term Exam

Week 12

May 18 Machine Learning Techniques

Week 13

May 25 Deep Neural Nets

Week 14

Jun. 01 Deep Neural Nets (Possibly Another Project Presentation Day*)

Week 15

Jun. 08 Project Presentation Day (Peer Review*)

Week 16

Sponsor |



NTU Course

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