



Xi'an Jiaotong-Liverpool University

西交利物浦大学

XJTLU Entrepreneur College (Taicang)

School of AI and Advanced Computing

MODULE HANDBOOK

DTS204TC
Data Visualisation

Module Leader: Yuxuan Zhao

Block 2, Semester 2

2023-2024

SECTION A: Basic Information

□ Brief Introduction to the Module

Well-designed visualizations capitalize on human facilities for processing visual information and thereby improve comprehension, memory, inference, and decision making. In this course we will study techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology and cognitive science. The course is targeted both towards students interested in using visualization in their own work, as well as students interested in building better visualization tools and systems.

□ Key Module Information

Module name: Data Visualisation

Module code: DTS204TC

Credit value: 2.5

Semester in which the module is taught: 2

Pre-requisites needed for the module: *There is no pre-requisite for this module. It would be better if students have basic knowledge of data science, JavaScript and D3.js*

Programmes on which the module is shared: *BEng Data Science and Big Data Technology with Contemporary Entrepreneurialism*

□ Delivery Schedule

<u>Lectures</u>	
Time (Week 8 – Week 12)	Teaching mode
D1/1 Mon 1pm – 2:50pm	TC-FG-2001 / Hua Zhen, Yuxuan Zhao
D2/1 Tue 1pm – 2:50pm	TC-FG-2001 / Yuxuan Zhao

<u>Labs</u>	
Time (Week 8 – Week 13)	Teaching mode
D1/1 Wed 11am – 11:50am	TC-D-2001 Yuxuan Zhao
D1/2 Wed 12pm – 12:50pm	TC-D-2001 Yuxuan Zhao
<u>Seminars</u>	
Time (Week 13)	Teaching mode
D1/1 Mon 1pm – 2:50pm	TC-FG-2001 / Yuxuan Zhao

❑ **Module Leader and Contact Details**

Name: Yuxuan Zhao

Brief Biography: Dr Yuxuan Zhao received the PhD degree in computer science department from UoL in 2021.

Email address: Yuxuan.Zhao02@xjtlu.edu.cn

Office telephone number: 0086-0512-88970775

Room number and office hours: TC-D-5008, 3pm – 5pm Tuesday & 2pm – 4pm Wednesday by appointment

Preferred means of contact: Email

❑ **Additional Teaching Staff and Contact Details**

Co-teacher

Name: Zhen Hua

Brief Biography: Zhen Hua received her bachelor's and master's degrees in control science and engineering from the Harbin Institute of Technology, followed by a Ph.D. in system engineering co-trained by the China Academy of Aerospace Systems Science and Engineering and the University of Manchester.

Email address: Zhen.Hua@xjtlu.edu.cn

Office telephone number: 0086-0512-89167600

Room number and office hours: TC-D-5015, 1pm – 4pm Tuesday & 1pm – 4pm Thursday by appointment

Preferred means of contact: Email

Teaching Assistant

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xinyue.zhang1802@student.xjtlu.edu.cn

SECTION B: What You Can Expect From the Module

□ Educational Aims of the Module

Data visualisation is a tool for both the exploration of a data set and for the clear explanation of the findings. This module aims to let students gain practical experience in data visualisation methods for analysing the structure and dependencies of data sets. Students will also study techniques for creating effective visual data presentations.

□ Learning Outcomes

- A. Use data visualisation methods and techniques to analyse a given data set.*
- B. Use software tools to analyse a given data set.*
- C. Select appropriate analysis and visual encoding methods for a given data type.*
- D. Design an effective visualisation to highlight particular features of a given data set.*
- E. Critically evaluate the effectiveness of a given data visualisation.*
- F. Create visualizations using interactive web graphics programming in JavaScript, and D3.js.*
- G. Describe the fundamentals of 2-D and 3-D graphics.*

□ Assessment Details

□ Initial Assessment

Sequence	Method	Assessment Type (EXAM or CW) ²	Learning outcomes assessed (use codes under Learning Outcomes)	Duration	Week	% of Final Mark	Resit(Y/N/S) ³
001	Project	CW	ALL			100	Y

□ Resit Assessment

Sequence	Assessment Type (EXAM or CW)	Learning outcomes assessed (use codes under Learning Outcomes)	Duration	Week	% of Final Mark
R001	CW	ALL			100

Coursework submission deadline: 23:59 Beijing Time, May 23rd, 2024

Coursework must be submitted electronically through the module webpage on LMO.

□ Methods of Learning and Teaching

The teaching philosophy of the module follows the philosophy of Syntegrative Education. This has meant that the teaching delivery pattern, which follows more intensive block teaching, allows more meaningful contribution from industry partners. This philosophy is carried through also in terms of assessment, with reduction on the use of exams and increase in coursework, especially problem-based assessments that are project focused. The delivery pattern provides space in the semester for students to concentrate on completing the assessments. This module will be delivered by a combination of formal lectures, seminars, and labs.

▲ 设置了格式: 英语(美国)

□ Syllabus and Teaching Plan

Lectures

Week Number and/or Date	Lecture/Seminar/Field Trip/Other	Topic/Theme/Title	Pre-reading
Week 8	Lecture	Introduction to Data Visualisation	Chapter 1, 4,
Week 8	Lecture	Data and Task Abstraction	Chapter 2,3
Week 9	Lecture	Visual Encoding: Marks and Channels	Chapter 5
Week 9	Lecture	Colour	Chapter 10
Week 10	Lecture	Interactive Views	Chapter 11,12
Week 10	Lecture	Tables	Chapter 7
Week 11	Lecture	Network Data	Chapter 8,9
Week 11	Lecture	Spatial Data	Chapter 8,9
Week 12	Lecture	Analysis Case Studies	Chapter 1, 4,
Week 13	Seminar		

Labs

Student Group	Time	Day	Venue	Lecturer/Instru
Group A	1pm – 2pm	D1/1 Thursday	TC-D-2001	Yuxuan Zhao
Group B	2pm – 3pm	D1/2 Thursday	TC-D-2001	Yuxuan Zhao

□ Reading Materials

Optional textbook: A

Tamara Munzner. *Visualization Analysis and Design*. A K Peters Visualization Series, CRC Press, 2014. ISBN: 9781498759717

SECTION C: Additional Information

□ Student Feedback

The University is committed to receiving and responding to student feedback in order to improve the quality of the student experience within the institution. It is University policy that the preferred way of doing this is by using the Online Student Module Feedback Questionnaire Survey. Students are encouraged to complete the questionnaire survey for this module at the end of the semester.

You are strongly advised to read the policies mentioned below very carefully, because this will help you perform better in your academic studies. You can find all the policies and regulations related to your academic study on the e-Bridge → 'Quick Reference' → 'Policies and Regulations' page. E-Bridge can be accessed from [here](#) and at <https://ebridge.xjtlu.edu.cn>.

□ **Attendance**

The University expects students to attend all timetabled learning sessions associated with this module, and to engage with the relevant learning and support resources. Student attendance will be recorded using the Attendance Management System (AMS). Please follow your teacher's instructions for recording your attendance at each session. Students are responsible for managing their attendance, and should take prompt action to inform the Module Leader in case circumstances beyond their control affect their class attendance. You are advised to read the University's 'Student Attendance Policy' for more information.

□ **Rules of Submission for Assessed Coursework**

The University has detailed rules and procedures governing the submission of assessed coursework. You need to be familiar with the rules and procedures as detailed in the University's 'Code of Practice for Assessment'.

□ **Late Submission of Assessed Coursework**

The University attaches penalties to the late submission of assessed coursework. You need to be familiar with the rules as detailed in the University's 'Code of Practice for Assessment'.

□ **Mitigating Circumstances**

The University is able to take into account mitigating circumstances, such as illness or personal circumstances, that may have adversely affected student performance on a module. Students who believe that their performance on an examination or item of assessed coursework may have been impaired by illness or other exceptional circumstances should follow the procedures set out in the University's 'Mitigating Circumstances Policy'. Such students are also advised to contact their Development Advisor for further guidance and support.

□ **Academic Integrity**

Offences of plagiarism, collusion, copying, submission of commissioned or procured work, and/or the falsification and fabrication of data can result in investigations and penalties being imposed. You need to be familiar with the University's 'Academic Integrity Policy'.

❑ **Examination Misconduct**

The University values academic integrity in both coursework submission and examination conduct. Any examination misconduct will not be tolerated and will result in penalties in accordance with University procedures and regulations as detailed in the 'Regulations for the Conduct of Examinations' policy.

❑ **Generative AI**

The use of Generative AI for content generation is **not permitted** on all assessed coursework in this module.

For more information and resources on Generative AI and your learning and assessment, please consult the 'XJTLU AI for Learning' pages of the Learning Mall Core.

❑ **Learning Mall Core**

Copies of lecture notes and other materials are available electronically through the Learning Mall Core, the University's virtual learning environment, at learningmall@xjtlu.edu.cn.

❑ **Communication**

All official communication concerning module-related matters will be conducted via e-mail and/or as Learning Mall Core announcements. Other modes of electronic communication are treated as informal.

You are advised to contact your Module Leader in the first instance if you experience any issues with your learning on this module. You may also contact your Academic Advisor or Programme Director. Further information on the kinds of support that the University provides to students can be found in the XJTLU Undergraduate Handbook 2023-24.