INT202

Complexity of Algorithms
Department of Intelligent Science Stage 3 | Level 2

SECTION A: Basic Information

Brief Introduction to the Module

A compulsory module for BSc Information and Computing Science

Key Module Information

Module name	Module code	Credit value	Semester in which the module is taught	Pre-requisites needed for the module
Complexity of Algorithms	INT202	5	SEM2	N/A
Programmes on which the module is shared	BSc Information and Computing Science			

Module Leader and Contact Details

Module Leader:

Name	Email address	Office telephone number	Room number	Office hours	Preferred means of contact
Rui Yang	R.Yang@xjtlu.edu.cn	88161502	SD529(SIP Campus-Science Building)	10:00-12:00 Wednesday	Email
Brief Biography	Rui Yang received his Ph.D. degree and B.Eng degree from National University of Singapore (NUS). His research centers on Intelligent Control and Optimization, with special interests in *pattern recognition (PR), artificial neural networks (ANN), transfer learning (TL), deep learning (DL), brain-computer interface (BCI), human-machine interaction (HMI), cognitive computation (CC), and evolutionary computation (EC)*. He serves as Associate Editor for esteemed international SCI indexed journals, including IEEE Transactions on Instrumentation and Measurement (IF=5.6), Neurocomputing (IF=5.5), and Cognitive Computation (IF=4.3). Dr. Yang is the Founding Director of The Centre for Intelligent Control and Optimization (CICO), the XJTLU-AUO-Optronics (AUO) Collaborative Research Centre. The research center aims to carry out in-depth cooperation in scientific research and industrial collaboration. By integrating artificial intelligence methods such as data analysis, visual inspection, data mining, machine learning, decision support, and optimization, with industrial expert knowledge, the Centre strives to achieve the ultimate goals of intelligent control and system optimization.				

Additional Teaching Staff and Contact Details:

Role	Name	Email address	Office telephone number	Room number	Office hours	Preferred means of contact
Co-Lecturer	YARAN CHEN	Yaran.Chen@xjtlu.edu.cn	81880412	SC564F	15:00-17:00 Tuesday	Email

SECTION B: What You Can Expect from the Module

Educational Aims of the Module

To demonstrate how the study of algorithmics has been applied in a number of different domains.
To introduce formal concepts of measures of complexity and algorithms analysis.
To introduce fundamental methods in data structures and algorithms design.
To make students aware of computationally hard problems and possible ways of coping with them.

Learning Outcomes

Students completing the module should be able to:

A. Show an appreciation of the diversity of computational fields to which algorithmics has made significant contributions;
B. Use basic data structures (queues, stacks, trees, graphs, etc) in conjunction with classical algorithmic problems (searching, sorting, graph algorithms) and be aware of basic number theory applications and the security and safety issues in communication of computing systems, etc.;
C. Demonstrate a familiarity with formal theories providing evidence that many important computational problems are inherently intractable, e.g., NP-completeness;
D. Apply the knowledge gained in this module to the specification and analysis of data structures and algorithms.

Methods of Learning and Teaching

Students will be expected to attend three hours of formal lectures as well as to participate in one hour of supervised problem classes in a typical week. Lectures will introduce students to the academic content and practical skills which are the subject of the module, while problem classes will allow students to practice those skills.
In addition, students will be expected to devote three hours of unsupervised time to solving continuous assessment tasks and private study. Private study will provide time for reflection and consideration of lecture material and background reading.
Continuous assessment will be used to test to what extent practical skills have been learnt. A written examination at the end of the module will assess the academic achievement of students.

Syllabus & Teaching Plan

Week Number	Mode of Delivery(Lecture/Tutorial/Seminar/Field Trip/ Other)	Topic	Pre-reading and others
W1	Lecture/Tutorial		
W2	Lecture/Tutorial		
W3	Lecture/Tutorial		
W4	Lecture/Tutorial		
W5	Lecture/Tutorial		
W6	Lecture/Tutorial		
W7	Lecture/Tutorial		
W8	Lecture/Tutorial		
W9	Lecture/Tutorial		
W10	Lecture/Tutorial		
W11	Lecture/Tutorial		
W12	Lecture/Tutorial		
W13	Lecture/Tutorial		

Assessment Details

Initial Assessment

Final Written Exam (80% of the module mark)

Assessment Type: EXAM

Assessment Task	Learning Outcomes	Weighting	Release Date	Due Date
Final Written Exam	ALL	80%	/	/
Generative AI Permissions	/			
Requirements and Guidelines for the Exam				
Closed-book onsite written exam				

In-Class Test Assessment (10% of the module mark)

Assessment Type: CW
Learning outcomes assessed: A,B
Duration: N/A
Resit opportunity: S

Assessment Task	Learning Outcomes	Weighting	Release Date	Due Date
In-Class Test Assessment	A,B	10%	Week 6	/
Generative AI Permissions	No			
Requirement and Guideline of the Assessment Task				
/				

In-Class Test Assessment (10% of the module mark)

Assessment Type: CW
Learning outcomes assessed: C,D
Duration: N/A
Resit opportunity: S

Assessment Task	Learning Outcomes	Weighting	Release Date	Due Date
In-Class Test Assessment	C,D	10%	Week 13	/
Generative AI Permissions	No			
Requirement and Guideline of the Assessment Task				
/				

Resit Assessment

Summer resits are not applicable for Undergraduate Stage 4 students.

Exam (100% of the module mark)

Assessment Type: EXAM
Learning outcomes assessed:
Duration: 2 hours

Assessment Task	Learning Outcomes	Weighting	Release Date	Due Date
Exam		100%	/	/
Generative AI Permissions	/			
Requirements and Guidelines for the Exam				
Closed-book onsite written exam				

Reading Materials

Type	Title	Author	ISBN/Publisher
Mandatory Textbooks	N/A		
Optional Textbooks	N/A		
Reference Textbooks	ALGORITHM DESIGN	M. T. GOODRICH AND R. TA MASSIA	9780471383659/WILEY
	INTRODUCTION TO ALGORITHMS, FOURTH EDITION	THOMAS H. CORMEN, CHARLES E. LEISERSON, RONALD L. RIVEST AND CLIFFORD STEIN	9780262046305/MIT PRESS
Additional Materials			

SECTION C: Additional Information

This section provides students with essential information and resources pertaining to their academic studies to ensure a successful academic journey and engagement with the module.

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.

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 on 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 on Assessment'.

Mitigating Circumstances:

Students who experience serious illness or other unforeseen circumstances as defined in the Mitigating Circumstances (MC) Policy that prevent them from submitting coursework or taking final/resit exams on time can apply for coursework deadline extension or final/resit exam authorized absence. The application should be made before the assessment date under Academic Records page on e-Bridge. Misuse of the MC policy will result in disciplinary actions and demerit points.

Academic Integrity:

The University aims to foster a learning environment which produces students who embrace academic integrity, understand that they must produce their own work, are able to acknowledge explicitly any material that has been included from other sources or legitimate collaboration, and to present their own findings, conclusions or data based on appropriate and ethical practice. Any violation of academic integrity including plagiarism, coll

usion, copying, submission of commissioned or procured work, and/or falsification and fabrication of data will result in penalties and demerit points. Please be familiar with the University's Academic Integrity Policy.

Examination Misconduct:

The University also values academic integrity in the conduct of examinations. Any behavior that violates examination regulations will not be tolerated and will result in penalties and demerit points, as detailed in the policy of Regulations for Conduct of Examinations.

Student Discipline Point System:

Any violation of Academic Integrity Policy, Regulation for Conduct of Examinations, and abuse of the Mitigating Circumstances Policy will accrue demerit points. These points will be placed in the university system, and on the official XJTLU transcript. For details, please refer to the Student Discipline Point System appended to the Regulations for the Conduct of Examinations.

Generative AI:

Information on whether the use of Generative AI is permitted or not for each assessed coursework is indicated in the Assessment Details section of this module handbook.

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.

Further Support:

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 Student Handbook.

You are strongly advised to read the policies mentioned above 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 → 'Document Zone' page.

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Cut-off Date: 12/Feb/2025