COURSE SPECIFICATION FORM

for new course proposals and course amendments

| Tree-requisites: MT2630 Co-requisites: - Co-ordinator: - - - Course Staff: - - - Aims: The development of efficient algorithm has certain specifications, for example that it should solve a problem and take at most f(n) steps on any input of size n. This course is about the design of efficient algorithms and proving that they meet the des specification. The course introduces basic principles and methods of algorithm desig and analysis and considers fundamental problems like sorting numbers and multiply matrices. Key aims of the course include: to provide an introduction to the theory of algorithms; to develop the skill of designing algorithms. 1. understand and apply the fundamental principles of algorithm design; 2. analyse basic algorithms; know amortized, average-case and worst-case analysis 3. know basic data-structures 4. know efficient algorithms for sorting numbers; 5. know asymptotic notation. Course Content: Basic algorithms: Recurrences, O-notation, worst-case analysis, amortized an ysis, probabilistic analysis; lower bounds for comparison-based sorting and finding t median. Methods: The total number of notional learning hours associated with this course are 150. 3 hours of lectures: arrays, stacks, balanced search trees, hashing. Teaching & Learning Methods: The total number of notional learning hours associated with this course are 150. 3 hours of lectures a week over 11 weeks. 33 hours total. | Department/School: | Mathematics | Academic Session: | 2017-18 |
|---|------------------------------|--|---|------------------------|
| Course Code: MT3140 (Presse contact Data) Management for advice) Optional Condonable Availability: (Please state which teaching terms) Term 1 Status: Optional Condonable Pre-requisites: MT2630 Co-requisites: - Coordinator: - - - Aims: The development of efficient algorithms is essential when considering problems with large inputs. Usually an algorithm has certain specifications, for example that it should solve a problem and take at most f(n) steps on any input of size n. This course is about the design of efficient algorithms and proving that they meet the design specification. The course introduces basic principles and methods of algorithm design and analysis and considers fundamental problems like sorting numbers and multiply matrices. Learning Outcomes: 1. understand and apply the fundamental principles of algorithm design; 2. analyse basic data-structures 4. know basic data-structures 4. know basic data-structures 4. know stasic data-structures 5. know asymptotic notation. Course Content: Basic algorithms: Recurrences, O-notation, worst-case analysis, amortized an ysis, probabilistic analysis; lower bounds for comparison-based sorting and finding t median. Teaching & Learning Methods: The total number of notional learning hours associated with this course are 150. 3 hours of lectures a week over 11 weeks, 33 hours total. 117 hours of private study, including work on problem sheets and examination preparation. This may include discussions with the course leader if the st | Course Title: | Principles of Algorithm Design | (UG courses = unit value, PG courses = notional learning | 0.5 unit |
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| | Assessment & | | | |
| Updated September 20 | Summative Assessment: | Exam: 100% Written exam. A two ho Coursework: None | | |

Updated September 2017

The information contained in this course outline is correct at the time of publication, but may be subject to change as part of the Department's policy of continuous improvement and development. Every effort will be made to notify you of any such changes.