Department of Computer Science & Engineering
Jadavpur University
Post Graduate Admission Procedure

Master of Computer Science & Engg. (MCSE) Course

Schedule of Admission Test

Venue: Dept. of Computer Sc. & Engg., Jadavpur University Main Campus.

Examination Date: June 12, 2013
Reporting Time: 11:00 A.M.
Examination starts at: 11:30 A.M.
Verification of Testimonials: June 12, 2013 after the test

Candidates are requested to bring the following attested documents along with the original at the time of admission test, i.e., on June 12, 2013:

a) Admit Card and Score Card of GATE
b) Admit Card of the Secondary Examination for age verification
c) Mark-sheets and Certificates from Secondary Examination to Undergraduate Degree Examination in Engineering and Admit Card of Admission Test
d) SC/ST Certificate issued by the Government of West Bengal, Physically Disabled Certificate and Family Income Certificate issued by the competent authority
e) A ‘No Objection Certificate’ from the employer for the entire course period for Sponsored Category Candidates
f) Applicants are requested to submit the Bachelor course approval letter of AICTE or UGC-AICTE-DEC Joint Committee
g) Final year / semester appearing certificate issued by the Principal / Controller of Examinations of the University

Admission Test

Each applicant has to appear for the admission test. The test will be of 60 minutes duration and will carry a full mark of 50. The question paper will have 15 questions of 2 marks and 20 questions of 1 mark each. Each question will be of multiple-choice type and will be based on the following syllabus. Candidates should not carry programmable calculators / mobile phones during the test.

Syllabus


**Digital Logic**: Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point).
Computer Organization and Architecture: Machine instructions and addressing modes, ALU and datapath, CPU control design, Memory interface, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage.

Programming and Data Structures: Programming in C; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps.

Algorithms: Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching. Asymptotic analysis (best, worst, average cases) of time and space, upper and lower bounds, Basic concepts of complexity classes P, NP, NP-hard, NP-complete.

Theory of Computation: Regular languages and finite automata, Context free languages and push-down automata, Recursively enumerable sets and Turing machines, Undecidability.

Compiler Design: Lexical analysis, Parsing, Syntax directed translation, Runtime environments, Intermediate and target code generation, Basics of code optimization.

Operating System: Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security.

Databases: ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees), Transactions and concurrency control.

Information Systems and Software Engineering: information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project, design, coding, testing, implementation, maintenance.

Computer Networks: ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control, TCP/UDP and sockets, IP(v4), Application layer protocols (icmp, dns, smtp, pop, ftp, http); Basic concepts of hubs, switches, gateways, and routers. Network security basic concepts of public key and private key cryptography, digital signature, firewalls.

Graph Theory: Connectivity, Spanning trees; Cut vertices and edges; Covering; Matching; Independent sets; Colouring; Planarity; Isomorphism.

General Information

Provisional Selection list for admission to MCSE course will be prepared as per the following criteria: For GATE candidates, 70% weight will be given to his/her valid and qualified GATE Score (Marks out of 1000) and rest 30% to marks obtained in the admission test.

For sponsored candidates 40% weight will be given to marks obtained by a candidate in his/her B.E/B.Tech or equivalent examination, 50% weight will be given to marks obtained in the admission test and the rest 10% to experience (at least 1 year of relevant experience after obtaining the qualifying degree and up to 31st July 2013, 1 mark per year of experience up to the maximum of 10).

Self-Sponsored Candidates are not eligible to apply in the course.