DEPARTMENT OF MATHEMATICS,

UNIVERSITY OF KARACHI,

Course Outline

MATH 403: DATA PROCESSING AND PROGRAMMING - I (2 + 1)

Course contents:

Digital logic: Basic computer mathematics, binary, hexadecimal and other arithmetic, symbolic logic, logic circuits and gates, codes, encoding and decoding. Boolean algebras, Karnough maps, arithmetic unit, control unit, memory/storage, input unit, output device.

Computer based communication, networking, fax/modem, electronic mail. Disk operating systems, working with DOS. Information / data processing concepts, data processing cycle, data processing operations. Algorithm design technique. Programming in Visual Basic, problem solving in Visual Basic.

PRACTICALS.

1. Using DOS Commands.

2. Using Windows.

3. Running Visual Basic programs.

Books Recommended:

1. Aho, A., The Design and Analysis of Computer Algorithms, Addison Wesley, Reading Mass, 1974.
2. Burgard, M. J., Dos Unix Networking and Internetworking, J. Wiley, New York, 1994.
3. Date, C. J., An Introduction to Database Systems, Fourth edition, Addison Wesley, Reading Mass, 1986.
4. Horowitz, E., and Sahni, S., Fundamentals of Computer Algorithms, Computer Science Press, Potomac, Maryland, 1978.
5. Ullman, J. D., Principles of Database Systems, Computer Science Press, Potomac, Maryland, 1980.
6. Weiss, M. A., Data Structures and Algorithm Analysis, Benjamin Cummings, New York, 1992.

7. Mashaw, B., Programming Byte by Byte Structures Fortran 77, Little / Brown, Boston, 1983.
8. Rudd, A., Mastering C, J. Wiley, New York, 1994.
9. Crandall, R. E., Mathematica for the Sciences, Addison Wesley, Redwood City, California, 1991.
10. Gray, T., and Glynn, J., Exploring Mathematics with Mathematica, Addison Wesley, Redwood City, California, 1991.
11. Maeder, R., Programming in Mathematica, Addison Wesley, Redwood City, California, 1991.
12. Skiena, S., Implementing Discrete Mathematics: Combinatories and Graph Theory with Mathematica, Addison Wesley, Redwood City, California 1990.
13. Wolfram, S., Mathematica: A System for Doing Mathematics by Computer, second edition, Addison Wesley, Redwood City, California, 1991.
14. Artwick, B. A., Applied Concepts in Microcomputer Graphics, Prentice Hall, Englewood Cliffs, New Jersey, 1984.
15. Demel, J. T., and Miller, M. J., Introduction to Computer Graphics, Brookes / Cole Engineering Division, Monterey1984.
16. Escher, M. C., The Graphic Work of M.C. Esher, Ballantine, New York, 1971.
17. Foley, J. D. and Van D. A., Fundamentals of Interactive Computer Graphics, Addison Wesley, Redwood City, California, 1982.