



University of Karachi

Department of Computer Science

First Semester 2006

BSCS 621: Topics of Special Interest (Modeling of Biological Systems)*

Monday 1530h – 1710h; Wednesday 1925h – 2015h (R 22, ISPA Bldg)

Course Supervisor: Dr. Syed Arif Kamal

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Course Objectives

To give the students sound background in the techniques and the methods of modeling of physiological systems with particular applications from clinical medicine

Course Outline

Fundamentals of scientific method, inductive and deductive logic, handling of scientific projects, research-proposal writing

Modeling growth of children, precedence and influence graphs in the physical examination of children

3-D optical imaging techniques (moiré fringe topography and rasterstereography)

Modeling of human heart, mapping of location of heart from 3-D stereophotogrammetric techniques

Modeling of human spinal column (static and dynamic models), 3-D generation of human spinal column, application to quantify curvatures of spinal column (scoliosis, kyphosis and lordosis), study of posture and gait of children

Models of brain (the covariant model, the generalized-coupling model, the covariant-generalized-coupling model, mathematical definition of brain death), applications

Marks Breakdown

<i>Evaluation Parameter</i>	<i>Marks</i>
Research Proposal	20
Software Development and Demonstration	30
Final Examination	50

Total 100

Reading Material

Available to download from my homepage

* To access web page of this course go to my homepage, click on “Pedagogical Section”. In the Pedagogical Section look for “Courses of Current Semester: First Semester 2006 OR Short Cut: Type the following address in the browser window: <http://www10.brinkster.com/drakamal/CS/bscs621.htm>