

**Centre for Development of Advanced Computing**  
**Schedule for Parallel Computing lectures for Advanced Course in Bio-**  
**Informatics (ACB-2003) at IICT, Hyderabad**  
**HPC Module Coordinator: Dr.VCV.Rao (C-DAC, Pune)**  
**September 02-07, 2003 & September 22-24, 2003**  
**(High Performance Computing: Theoretical Sessions; Venue: IICT-Hyderabad)**

**Day 1: September 02, 2003**

Time (Hrs)	Activity
10:00~11:00	Morning Session I : Overview of Serial Computing
11:30~13:00	Morning Session II : Introduction to Parallel Computing – Part I
14:00~15:00	Afternoon Session I: An Overview of Models of Parallel Computers
15:30~17:30	Afternoon Session II : Introduction to Hands-on Session

**Day 2: September 03, 2003**

Time (Hrs)	Activity
10:00~11:00	Morning Session I : Basics of Parallel Programming
11:30~13:00	Morning Session II : Message Passing Model (MPI) – An Introduction
14:00~15:00	Afternoon Session I : Principles of Parallel Algorithm Design
15:30~17:30	Afternoon Session II : Introduction to <b>Hands-on Session</b> – Basic Programs

**Day 3: September 04, 2003**

Time (Hrs)	Activity
10:00~11:00	Morning Session I: Parallel Computing: Prog. Environment on PARAM 10000
11:30~13:00	Morning Session II: Message Passing Model (MPI) – Advanced Features
14:00~15:00	Afternoon Session I : Hands-on Session – Matrix Computations Implementation
15:30~17:30	Afternoon Session II : Hands-on Session – Matrix Computations Implementation

**Day 4: September 05, 2003**

Time (Hrs)	Activity
10:00~11:00	Morning Session I: Programming Paradigms
11:30~13:00	Morning Session II Performance and Scalability Analysis
14:00~15:00	Afternoon Session I : Hands-on Session – Matrix Computations Implementation
15:30~17:30	Afternoon Session II: Hands-on Session – Matrix Computations Implementation

**Day 5: September 06, 2003**

Time (Hrs)	Activity
10:00~11:00	Morning Session I: An Overview of PARAM 10000 -
11:30~12:30	Morning Session II: An Overview of OpenMP
14:00~15:00	Afternoon Session I : Hands-on Session –Implementation OpenMP
15:30~17:30	Afternoon Session II: Hands-on Session – Implementation OpenMP

**Day 6: September 07, 2003**

Time (Hrs)	Activity
10:00~11:00	Morning Session I: Application and System Benchmarks
11:30~12:30	Morning Session II: Case Study : Molecular Dynamics – Parallel Computing – Implementation aspects and Performance Issues on PARAM Series

**Centre for Development of Advanced Computing**  
**Schedule for Parallel Computing lectures for Advanced Course in Bio-**  
**Informatics (ACB-2003) at IICT, Hyderabad**  
**HPC Module Coordinator: Dr.VCV.Rao (C-DAC, Pune)**  
**(High Performance Computing: Practical Sessions; Venue : C-DAC, Pune)**

September 22, 2003 ~ September 24, 2003

**Day 7: September 22, 2003**

13:00~14:00	<b>LUNCH</b>
14:00~16:00	<b>Hands-on Session:</b> Basic MPI programs in FORTRAN and C, How to write, compile and execute a simple MPI program.
16:00 ~ 16:30	<b>TEA BREAK</b>
16:30 ~ 18:00	<b>Hands-on Session:</b> Continued

**Day 7: September 23, 2003**

09:30~11:00	<b>Hands-on Session:</b> Basic MPI programs in FORTRAN and C, Examples on Point-to-Point and Collective communications and computations, Numerical Integration of $\pi$ function.
11:00~11:30	<b>TEA BREAK</b>
11:30~13:00	<b>Hands-on Session:</b> Matrix-Vector multiplication algorithms, Matrix-Matrix multiplication algorithms; Infinity Norm of a matrix.
13:00~14:00	<b>LUNCH</b>
14:00~16:00	<b>Hands-on Session:</b> Performance of selective application and system benchmarks (NAS, BLAS, LINPACK) on PARAM 10000, Demonstration of visualization tools.
16:00 ~ 16:30	<b>TEA BREAK</b>
16:30 ~ 18:00	<b>Hands-on Session:</b> Continued

**Day 8: September 24, 2003**

09:30~11:00	<b>Hands-on Session:</b> Basic Open MP Programs on PARAM 10000
11:00~11:30	<b>TEA BREAK</b>
11:30~13:00	<b>Hands-on Session:</b> Vector-Vector multiplication algorithms, Matrix-Vector multiplication algorithms using OpenMP
13:00~14:00	<b>LUNCH</b>
14:00~16:00	<b>Hands-on Session:</b> Basic OpenMP programs. Performance of selective application and system benchmarks (NAS, LINPACK) on PARAM 10000, Example Programs using Visualization tools
16:00 ~ 16:30	<b>TEA BREAK</b>
16:30 ~ 18:00	<b>Hands-on Session:</b> Continued