Subject Code : P8BI13

ADVANCED COMPUTER PROGRAMMING

UNIT I:

Object Oriented Programming (OOP) - Basic concepts and applications - Differences between C and C++ - Functions in C++ - *inline* Functions - Default arguments.

UNIT II :

Function overloading/polymorphism - Classes and objects - Constructors and destructors - Operator overloading and type conversions.

Unit III:

Extending classes - Inheritance and its types - Single level, multilevel, multiple and hybrid inheritance - Pointers to objects and derived classes - Virtual functions - C++ stream classes - Console I/O operations - Simple Data File operations.

Unit IV:

Introduction to PERL – constants and variables – scalar, arrays and hashes - Input and Output Statement - control statements - regular expressions – bioinformatics application programs - string comparison – searching databases

Unit V:

Introduction to BioPERL – Modules - Bio::SeqIO, Bio::PrimarySeq, Bio::Seq, Bio::Search, Bio::DB, (getting files from web, run local blast using modules) – simple bioinformatics application programs

Reference Books

1. E. Balagurusamy, Programming in C++, Tata McGraw-Hill Publishing Company Ltd, New Delhi, 2004.
2. Robert Lafore, Object-Oriented Programming in Turbo C++, Galgotia Publications, New Delhi, 1991.
3. Bjarne Stroustroup, The C++ Programming Language, Second Edition, Addison-Wesley, New Delhi, 1991.
4. W. H. Press, S.A. Teukolsky, W.T.Vetterling and B.P. Flannery, Numerical Recipes in FORTRAN (/ C / C++) , Cambridge Univ. Press, New Delhi, 2000.
5. E. Balagurusamy, Programming with JAVA A Primer, Tata McGraw-Hill Publishing Company Ltd, New Delhi, 1999.
6. L.Wall, T.Christiansen and J.Orwant, Programming Perl, 3rd Edition, O'Reilly, 2000.
7. J. Tisdall, Mastering Perl for Bioinformatics, O'Reilly, 2003.
8. Rex A. Dwyer, Genomic PERL, Cambridge Univ. Press, UK, 2003.
9. Harshawardhan P. Bal, PERL programming for Bioinformatics, Tata McGraw-Hill, New Delhi, 2003.
10. htrtp://bioperl.org